

Transcending the Hamster Cage

Unfettering New York's Static
Innovation Economy



*The key to unlocking the
innovation economy is talented,
driven and risk favorable people.
Motivation, inspiration, and the
capacity to dream and to act on
those dreams are the greatest
assets in the global innovation
competition.*

The Public Policy Institute of New York State, Inc.

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Unfettering New York's Static Innovation Economy

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PUBLIC POLICY INSTITUTE

Transcending the Hamster Cage Unfettering New York’s Static Innovation Economy

Executive Summary

As countless studies have demonstrated, the key to unlocking the innovation economy is talented, driven and risk favorable people. Motivation, inspiration, and the capacity to dream and to act on those dreams are the greatest assets in the global innovation competition.

The innovation economy revolves around the creation of ideas and the translation of these ideas into products, techniques and services...

Few places exceed New York in terms of the talent that arises and comes here. However, where we consistently fall short is in nurturing and retaining that talent. A vibrant, supportive culture of innovation simply does not exist in New York.

The innovation economy revolves around the creation of ideas and the translation of these ideas into products, techniques and services that rationalize and ultimately reinvent the human ecosystem. To revive the New York State economy the state must lead in the creation of these ideas and turn them into profit-making ventures. This is the path to the well compensated and fulfilling jobs of the future.

At its core, the push for the innovation economy is a demand for new knowledge and the development of new job-creating ventures from it. The power to make all New Yorkers' lives better. It is the premier competitive issue of our time.

Despite the efforts of scientists, engineers, educators and public policy experts going back to the administration of Governor Hugh Carey, there has been limited success in New York State when it comes to overcoming the systemic constraints that inhibit the growth of this type of a vibrant innovation economy that rewards entrepreneurship.

The prevailing belief in Albany has been that if we just devise the right funding programs, training courses, research resources or business supports, we will reverse the loss of many thousands of manufacturing jobs and create an innovation economy. We hope that with some new program we will turn around the “brain drain” that has seen hundreds of thousands of our most talented and energetic workers leave the state, with relatively few arriving to take their places.

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To be successful, each cluster needs a major private employer, vertically integrated with the region's research universities and four year and community colleges. State policy and local actions need to focus on attracting or expanding strategic "anchor" employers.

Despite a parade of state-sponsored initiatives over many years, the metrics relevant to innovation continue to put New York near the bottom of the list of places where an entrepreneur would want to start and grow a business in the United States.

There is constant talk about leveraging New York's strengths, but we need a broader vision than that. We need a long-term strategic plan for a vibrant, sustainable innovation economy in New York. We need political leadership that recognizes that developing the new economy will take a new sense of direction, urgency and, especially, a long-term government commitment spanning many election cycles. We have to significantly change the way we go about the business of creating a competitive innovation economy in New York.

The global recession and the financial services meltdown in New York give us a unique opportunity -- if not an obligation -- to re-think the importance of a successful innovation economy to our state. The current economic crisis and our state's own fiscal crisis require us to develop a new vision, new strategies and practical, cost-effective tactics to advance our innovation economy.

We need a new sense of discipline. It is inefficient and ineffective to let every region of the state think that it can be at the forefront of multiple innovation sectors. We have to make choices. We have to take stock of regional legacies and economic strengths and promote the development of regional industry clusters built on existing assets and local competitive advantages.

Dedicated, focused regional innovation clusters should be based on proven local strengths rather than a desire to grab onto the latest technology.

Successful clusters require integrated academic – commercial partnerships that leverage each region's research universities, colleges and community colleges, employers, private sector research capacity, development sites and incentives, workforce, state and local development professionals as well as transportation and other infrastructure assets.

To be successful, each cluster needs a major private employer, vertically integrated with the region's research universities and four year and community colleges. State policy and local actions need to focus on attracting or expanding strategic "anchor" employers. A global research institute for each technology should also be established that is open to all researchers in the state and actively seeks to maximize successful commercialization of cutting-edge ideas – no matter where they originate.

Degree granting and local training programs tailored to each technology cluster are essential. These should be coupled with world-class academic research programs working closely with academic incubators, technology parks and other small and large scale industrial sites.

Viewed from a distance, concentrated regional technology clusters are the best way to brand and promote emerging research, investment, business and career opportunities in New York. Without distinctive technology clusters, the image beyond New York's borders is blurry and confusing and efforts to attract new investment will continue to fall short.

When the conditions for competitive innovation clusters are met, the enactment of economic policies to incentivize and support technology cluster growth is more likely to avoid waste and duplication and to bear fruit.



The implementation of long-term marketing programs to brand regions and their technology clusters and promote them to the global marketplace will be critical toward recruiting globally recognized anchor tenants.

Long term success will require a business climate in New York State that is attractive to investment, supportive of commercial success and open to competition. We must stop burdening our existing high-tech sectors, such as semiconductors, digital imaging, advanced energy and pharmaceuticals, with policies that discourage investment and growth and, in the end, drive businesses and jobs elsewhere. Attracting new bio-tech firms to New York, for example, will be nearly impossible if incumbent life sciences enterprises are frustrated by state policies and proposals that restrict their ability to operate

We need to make sure that our economic development programs and tax incentives support innovation sectors, especially the emerging businesses that drive job creation. In addition, our state and local economic development agencies will need to focus on developing and marketing the emerging technology clusters, and resist serving as closed-door conduits for one-off deals and ad hoc incentives for politically motivated projects.

In our urban areas we face industrial decline, blight and the massive scars of brownfields and economic obsolescence. New York cannot make the leap to a vibrant and sustainable innovation economy without overcoming these historical impediments.

We must be honest about the negative aspects of New York's business climate and the discouraging message that our high tax, high regulation policies at both the state and local level send across the country and around the globe. We will never advance in the highly competitive global innovation economy if we don't first look in the mirror and accept how we appear to others. Then we have to adopt reforms to improve our business climate and begin to change these negative impressions.

In the end, the contributors to this report believe that New York can and must succeed in the innovation economy. We are confident that we have the talent and the unique mix of people, institutions, resources and historic and local assets needed for success. If we fail to develop a prosperous and enduring innovation economy in New York, it won't be for the lack of any of these attributes, but because we failed to develop and agree on a practical plan and/or we failed to muster the discipline and resources to execute it seriously over the long haul.

Seven Essential Innovation Themes

The following seven areas have been the focus of attention for our Advisory Panel of contributors:

- 1. Human Capital:** How do we support and increase sufficient human talent? Do leaders in state government recognize the overriding importance of human capital in the global economy?
- 2. Regional Innovation Clusters:** Can we leverage New York's historical strengths through the formation of distinct, vertically integrated regional innovation clusters where human capital can thrive? Can the clusters be used to successfully market New York to the world business community?
- 3. Business Climate:** What can we do to significantly improve the state's dismal business climate for innovation and entrepreneurship?



We need to make sure that our economic development programs and tax incentives support innovation sectors, especially the emerging businesses that drive job creation.

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New York should be at the forefront of the green energy revolution through encouraging the development and commercialization of alternative energy technologies.

4. **Economic Development:** How do we form sound and affordable economic development policies that properly emphasize the innovation economy's role in New York's future?
5. **Tax Policy:** We must reform the state's business tax code with the goal of promoting the international competitiveness of New York's businesses. The tax code should also be the main instrument for encouraging innovation by providing incentives for the drivers of productivity and competition through investments in R&D, new physical capital and work-force training.
6. **Green Energy:** New York should be at the forefront of the green energy revolution through encouraging the development and commercialization of alternative energy technologies without, increasing the already uncompetitive energy rates that New York businesses face.
7. **Biotechnology and Pharmaceuticals:** New York must encourage and strengthen our bio-pharma and biotechnology industries, for both large and small firms, through integrated policies that support these industries' key roles in the state's economy.

Many of our recommendations regarding the State's business climate, human capital and economic development strategies for innovation will require changes in statute. This study includes proposals for bill drafts targeted at specific policy changes. However, in no way should these recommendations be seen as covering the entire scope of ideas to aid our innovation culture. We look forward to receiving additional suggestions from readers that can be shared with New York's executive and legislative leaders.

Summary of Recommendations

1. Human Capital

- a. Provide cutting edge training including more dedicated AAS or AS degrees tied to the needs of anchor firms in each region.
- b. Establish or strengthen a preeminent collaborative research institute for each major technological cluster, connected to neighboring research universities.
- c. Modify the state's Centers of Excellence program to strengthen each regional cluster's technology focus.
- d. Enact a Personal Income Tax Credit for graduates of New York colleges and universities with science or engineering degrees to encourage STEM majors.
- e. Support the creation of university technology parks and incubators.
- f. Include entrepreneurship support services at academic incubators.
- g. Make these incubators "tax free" zones.
- h. Expand the state's efforts to support entrepreneurship by aiding firms' facilities, operations and training expansions.
- i. Create incentives to encourage high-tech firms to hire and retain interns.
- j. Revitalize urban areas by supporting cultural and redevelopment programs to attract a sufficient density of talent.





Create a targeted regional tax credit to provide investment, operations and training support for an anchor industrial tenant in each region...

2. Regional Innovation Clusters

- a. For each region, focus on one geographically defined technology sector based on the region's existing strengths and assets.
- b. Integrate local community college, college and graduate programs to create research and training initiatives for each regional cluster.
- c. Strengthen Empire State Development's, and NYSTAR's marketing efforts – and coordinate these state programs with private sector efforts – to seek to brand the clusters nationally and internationally.
- d. Encourage the Governor and the Legislature, in cooperation with each region's economic development professionals, to do "whatever it takes" to land an anchor private sector facility for each cluster.
- e. Create a targeted regional tax credit to provide investment, operations and training support for an anchor industrial tenant in each region
- f. Design, develop and market distinct technology clusters for each of the following regions (several are already in formation):
 - ◆ Long Island / New York City / Westchester / Rockland
 - ◆ Hudson Valley
 - ◆ Capital District
 - ◆ Syracuse / Mohawk Valley / Adirondacks
 - ◆ Rochester / Finger Lakes
 - ◆ Southern Tier
 - ◆ Buffalo – Niagara /Erie Corridors
- g. Each cluster should focus on a specific technology sector based on regional strengths to date. These sectors could include:
 - ◆ Advanced Manufacturing and Distribution
 - ◆ Vision and Digital Imaging
 - ◆ Aviation, aerospace and defense
 - ◆ Bio-fuels
 - ◆ Nano-scale Technology
 - ◆ Solar Technology
 - ◆ Biotechnology and Pharmaceuticals

3. Business Climate

- a. The Governor and Legislature must advance policies to create a more competitive business climate in the state.
- b. Enact a hard cap to limit annual increases in real property taxes.
- c. Eliminate income and consumption tax liabilities on designated manufacturers and high-technology firms.
- d. Make New York an attractive location for global headquarters.
- e. Adopt the Business Activity Tax Simplification Act at the federal level.

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The State should recognize that innovation requires targeted credits and a tax code that is high-tech biased.



- f. Eliminate barriers to the inflow and outflow of capital, including penalties for foreign investments and restrictions on licensing.
- g. Encourage immigration of technology workers.
- h. Support sustainable private development of urban and industrial brown-field and distressed properties.
- i. Use ESDC and NYSTAR to encourage entrepreneurs through new support programs for start-up firms.
- j. Upgrade intercity passenger rail system with immediate goal of trains averaging 100 MPH

4. Economic Development

- a. Make refundable tax credits the state's primary economic development tool.
- b. Reform the state's Empire Zone program to provide a statewide ITC and R&D credit.
- c. Limit the use of state debt for construction and fit-out of private facilities in favor of direct tax incentives. The use of state capital funding for private ventures often results in poor projects rife with cost overruns. A refundable tax credit commits state resources only upon the successful completion of a project strongly bound by market constraints.
- d. The State should recognize that innovation requires targeted credits and a tax code that is high-tech biased; this should translate into conforming statutes, executive agency implementation and local government actions.
- e. Provide incentives for large-scale firms to collaborate with academic incubators.
- f. Strengthen Industrial Development Authorities' capacity to make local decisions and to provide local incentives to spur development.
- g. Make the creation of vibrant regional technology clusters Empire State Development's leading economic development goal.
- h. Create a virtual "One-Stop Shop" to streamline, facilitate and promote state assistance for entrepreneurs.
- i. Provide a strong NYSTAR role for cluster enhancement and for aligning Centers of Excellence with cluster technologies.
- j. Make economic development power available for energy intensive, but efficient, high-tech startups and mezzanine level companies.
- k. Remove barriers that discourage global competition by limiting restrictions on the flow of capital, labor and immigration.
- l. Urge Congress to eliminate the federal taxation of state economic development incentives.
- m. Strive to make the Federal Tax code more innovation friendly.
- n. Maximize utilization of innovation ARRA and other federal funds.



5. Tax Policy

- a. Create a fully refundable statewide ITC and R&D program as part of comprehensive reform of the Empire Zone program.
- b. Expand the QETC program and provide incentives for larger firms to make R&D intensive investments.
- c. Create a Human Pharmacological Credit to help with high FDA fees.
- d. Enact a Facilities, Operations and Training Credit for each regional cluster.
- e. Adopt an Alternative Energy Storage and Distribution Credit.
- f. Establish a Cellulosic Bio-fuels Production Credit.
- g. Create an Alternative Energy Credit for businesses.
- h. Provide sales-tax exemptions for academic incubators.
- i. Roll back certain recent business tax "loophole" closers that inhibit investment and discourage firms to locate their headquarters in New York.
- j. Urge New York's congressional delegation to oppose federal "loophole" closers that will inhibit New York firms' global competitiveness.

6. Green Energy

The Public Service Commission, NYSERDA, NYPA and LIPA should adopt policies to:

- a. Encourage the generation of power locally, including solar and wind systems.
- b. Further the effort to decouple utility revenues from usage and toward efficiency
- c. Further diversify the state's power generation.
- d. De-carbonize through alternative generation and "on-the-go" refueling.
- e. Promote on-site generation for universities and large industrial sites via the use of innovative systems.
- f. Promote distributed generation to make overall system more redundant and less vulnerable to cataclysmic failure.
- g. The State needs to utilize new energy technologies such as smart-grid to help alleviate New York businesses' energy cost burdens.

7. Biotechnology and Pharmaceuticals

- a. End the "cross-purposing" of New York's economic development and health spending policies through regulatory barriers, limitations on access to therapies, reimbursement restrictions and price controls.
- b. Provide parity between researched-based and generic treatments.
- c. Launch the already authorized "Downstate Center of Excellence in the Life Sciences" tied to the East River Science Park and the Brooklyn Army Terminal facility.

Create a fully refundable statewide ITC and R&D program as part of comprehensive reform of the Empire Zone program.

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- d. Foster a legislative and regulatory environment to support adequate property protection and recompense for state-of-the-art treatments and technologies.
- e. Encourage broader university tech transfer, intellectual property and licensing policies.
- f. Aid New York firms with the high cost and risks with therapy developments.
- g. Require that any proposed regulations on the life-sciences industry assess the potential impact of such regulations on the economic viability and competitiveness of the industry in the state.
- h. Reform existing state incentive programs administered by ESDC and NYSTAR so that they provide more support for biotech firms.
- i. Encourage the NYS congressional delegation not to further restrict IP protections for biotech.

What Can the Business Community Do?

- ◆ Fully participate in the creation and strengthening of the regional clusters.
- ◆ Advocate for spending and tax policies that foster innovation.
- ◆ Provide mentoring and support for high-tech entrepreneurs.
- ◆ Invest in academic incubators and university technology parks.
- ◆ Promote New York's innovation strengths and successes to date.
- ◆ Play a leadership role in urban revitalization projects.
- ◆ Work to minimize regional competition.



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Introduction to Innovation in New York New York's Natural Growth Engine

Let us start with a question. Why, for at least the last thirty-five years, does New York State show such poor results when it comes to building innovation economy sectors compared to every other peer State including Massachusetts, California, North Carolina, and to a lesser extent Maryland and New Jersey? Every Governor since Hugh Carey has formed innovation economy task forces and launched funding initiatives to help jump-start the new economy. Although some local successes have arisen, such as in bioinformatics at Buffalo and nanotechnology in the Albany area. New York consistently has shown disappointing results in the creation of world-class innovation economy sectors. Regrettably, the depths of these lags seem to keep growing with each succeeding administration.

New York consistently has shown disappointing results in the creation of world-class innovation economy sectors.

The State's response to this lag has consistently been, with both the executive and legislative branches, to create yet another panel to once more point out that the innovation economy is the absolute essential key to the successful creation of sustainable jobs.

Increasingly, non-governmental organizations, including the Public Policy Institute, have issued reports with guiding principals and new proposed spending programs that urge, over and over again, that New York has the resources and must take measures to promote the State to the forefront of the emerging global advanced technology sectors.

All of these task forces, study groups, panels and reports have been led and staffed by nationally and internationally recognized experts in various aspects of the innovation economy. The efforts that have gone into each of these initiatives are readily apparent and many outstanding and world recognized centers and programs have been the enduring legacies of these labors. Yet each succeeding year seems to produce another report with a series of new general recommendations to deal with New York's continuing slippage in this struggle.

These efforts have continued right to the present with the issuance of the Governor's Task Force on Diversifying the New York State Economy through Industry-Higher Education Partnership's final report, and his recently announced initiatives in the 2010 State of the State address. In his address the

New York consistently has shown disappointing results in the creation of world-class innovation economy sectors.

Governor stressed that New York's future economic health lies in the creation of, at a minimum, hundreds of thousands of jobs in the manufacturing and technology sectors. The emerging Roundtable on Innovation is but the latest, and hopefully most promising, ongoing non-governmental organization looking to make substantial positive impacts on our innovation economy standing. But do these last two most recent efforts contain the breadth and strategic vision needed to overcome our imposing internal barriers?

So why the reference to the hamster?

The hamster demonstrates incredible motivation and results from its time in an exercise wheel. If laid out linearly, it is not uncommon for an experienced runner to cover the equivalent of six miles in a twelve hour period. Furthermore, the more experienced the runner, the greater the expertise shown in covering more distances in shorter periods.

The danger is that the running inside the wheel becomes rewarding in itself and produces a euphoria that something substantial outside the wheel is being accomplished. Hamsters tend to show a state equivalent to the human feeling of the runner's high.

Instead of feeding eternal strivings for meaningful activity and the desire to continually explore and test the possibilities in the wider environment, the hamster run leads to a sense that one has done enough for now, until the need to get back on the treadmill strikes again. The short term sense of accomplishment that someone has made a major impact on an overriding need is great, the substantial impact on the global struggle for success, not so much.

This is the sense in which we mean that we need to transcend the wheel and unfetter our innovation economy. We must refocus upon our internal needs and see how the rest of the world views us and what it will take truly to make a substantial global impact. Without these sorts of enormously powerful consequences, our dreams for an ever prospering and growing middle class in New York seems even further away.

We need to focus on creating a thriving culture of innovation, or put another way, we must ensure the viability of diverse innovation ecological systems in New York.

Another approach taken in this report is to set up an advisory panel made up by research heads at our major technology driven corporations, ground level entrepreneurs, developers and associated professionals and heads of enterprise institutes and academic incubators.

We have strived here to reach out to those on the front lines. We have asked what do you need to succeed? What can you tell us about what New York is doing, or not doing that is holding your efforts back? If the tone of the report seems at times strident, it is because it is informed by these front line leader of innovation in New York.

We have placed only one caveat on their contributions. We have requested that any new initiatives be self-funded or at least identify resources that could be transferred from other, less effective or sources. We have identified at least \$1.250 billion in existing State expenditures that we are urging be redirected in new and more effective ways. This includes recommended reforms to the Empire State program for use in statewide as-of-right refundable investment tax and research and development credits, relying on refundable business and



personal income tax credits as the primary incentive tool in lieu of the use of State capital debt for private development projects, limits on State refunded ad valorem taxes to increase market values and "lock-boxing" fees on energy costs and NYPA to provide alternative generation incentives and reducing energy expenditures for high-tech firms.

Why do we need to start focusing on a *culture* of innovation?

Because, despite the dedicated and individually outstanding efforts of scientists, engineers, policy technicians and business experts going back to at least the mid-1970's, there has been a consistent limiting perspective on getting past the systemic constraints that inhibit the formation and growth of a vibrant innovation economy that rewards and cherishes entrepreneurialism.

In our view, New York's legacy dominance in many key areas of the global and national economy has kept its political leadership from firmly establishing sector priorities, and pushing those priorities at the expressed expense of other sectors. Governors and the legislative leaders have believed, or at least acted as if they believed, that the State could support all initiatives (e.g., urban development, job retention, non-high technology workforce development, private-public economic development projects and social spending programs) with no loss of its relative standing in the global competition for the innovation economy.

Surely this state can no longer maintain this level of hubris. We are losing the global struggle in these areas despite our massive strengths. We need to make the development of the emerging economy our first priority.

The state's business climate is likely the most dismal in the country. We also have the most depressing record; given our inherent advantages, in the biotechnology sector anywhere in the nation.

At the most simplistic level, we argue that we need to do whatever it takes to attract the most talented people here, and then get out of their way.

We will make the case that the key will be the creation of dedicated and focused clusters.

What will it take to have a cluster?

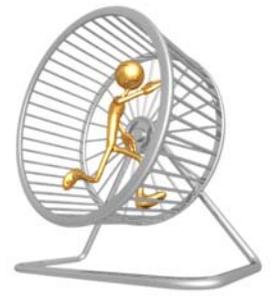
First, an integrated academic - commercial partnership that leverages each region's major research universities, colleges and community colleges major employers, site selection capability, state and local development professionals and other education and infrastructure assets.

The keys here are degrees and training programs tailored to the technology cluster desired; coupled with world-class academic research programs and centers working closely with academic incubators, technology parks, and other small and large scale industrial sites.

The emerging cyber-security center at Griffiss is a model for these of partnership.

Then the creation and enactment of economic policies that incentivize cluster fostering activities, but that do not encourage waste and duplication.

And finally, the implementation of a long-term strategic planning and marketing design to brand the region and its cluster to the global marketplace, and an all-out effort to land a global-scale anchor tenant. The emphasis on the targeted regional cluster is, first and foremost, a global marketing brand. It is not



We must refocus upon our internal needs and see how the rest of the world views us and what it will take truly to make a substantial global impact.

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**No one outdoes
New York in the
talent that
arises from and
comes here.**

designed to limit work anywhere in this State. It is designed to let that work translate to jobs for our citizens.

The nurturing of these clusters will go far a field from site selection, workforce training, entrepreneurial support and the right mix of incentives; not that each of these elements do not need a rethinking in themselves. We must take a long look at what we are, where we hope to be, and how others truly see us.

The lessons will be hard. Now matter how we wish or strive, we just cannot have three or four successful biotech clusters in this State. In reality, right now we have none. We will not be at the forefront of the green energy revolution unless that type of technology cluster is announced, trumpeted and carried forward now. What is more, to be successful in the long run will require a business climate that is open to competition, even in areas that we do not play well at this time. We must stop bleeding our existing high-tech areas, such as semiconductors, digital imaging, advance energy and pharmaceuticals, with policies that discourage investment and new research in the State.

Yet we must not ever lose site of our existing strengths. Every area of this State has first rate researchers and entrepreneurs in every area of the innovation economy. It is essential that each regional cluster be accessible and open to the contributions occurring elsewhere.

Furthermore, we must accept that New York is basically alone in this struggle. Our innovation business climate is so poor at this point that we will have to design successful programs on our own out of our own whole cloth. Looking for best practices in other States will just give us one more program that still leaves us with a business climate at the bottom of the well.

We urgently need to de-politicize our economic programs. The State's Empire Zone program often pits localities against each other and is encouraging wrong activities. Economic development power programs play favorites and none of them provide any benefits to new high-tech firms.

No longer can we use shotguns for economic development when we need to employ lasers. Our economic development agencies need to go all out to market and develop each of these clusters, and stop serving as a closed-door conduit for deals and ad hoc incentives. Our urban areas were situated at the greatest ecological resources and natural connections. Now they face decline, blight, and massive scars of brownfields and economic obsolescence. New York cannot make the leap to a vibrant and sustainable innovative economy without overcoming these historical impediments. We have become so inured by these scars upon our physical and psychic sense of beings that we no longer viscerally sense them, but the rest of the world certainly does. Until we truly see ourselves, we will never become the place where the talented wish to come and stay.

We must fundamentally alter our general business climate. This State taxes too much, it spends too much in the wrong ways, and it stifles new ideas too often. Every recommendation in this report could be adopted, but until we turn around the sense that New York is the last place you wish to come and do business, we will spend more time competing with ourselves rather than with our global contestants.

The contributors to this report all believe that New York can and must succeed. There is just too much talent, opportunity and the fortunate and mix of people, institutions, resources and environmental assets for New York to fail, unless we defeat ourselves.



There are many areas that are customarily part of innovation reports that we are being generally silent on. We are not making a recommendation on a specific statewide public-university-industry business model. This topic has been extensively covered in Governor Paterson's recent university industry collaboration report and is of vital importance. We just do not have anything original to say on that issue.

We are not asking for new seed capital funds. We believe that the State already offers hundreds of millions in venture capital enhancements and that these programs should be reformed to make them work better for high-technology and other emerging economy firms. Our primary incentive tool, even for start-ups and mezzanine level firms, is the refundable tax credit. The State just gets better results through the use of these credits than for grants that get the State involved in trying to decipher which firms are going to "make-it" as a term of the grant rather than rewarding the market success of building plants and installing equipment, conducting primary research and making products for distribution that tax credits reward.

Lastly, we recognize the vital roles of Science, Technology, Engineering and Mathematics education at the pre-college levels. There is much good work already accomplished in this area and so many alarm bells have been rung, that one more peal, especially coming from non-experts in the field, would not have much impact. Especially since we have no new ways to look at this type of education and associated training at the pre-college level or programs to suggest.

This report is produced without direct in-body references of footnotes. All reference materials, including over thirty new tables and links to existing studies, will be posted separately on the Public Policy Institute website. You will find the link at www.ppinys.org.

Innovation: New York's Natural Growth Engine

By Linda Sanford, International Business Machines

Public and private sector leaders around the world are recognizing that innovation has emerged as the key to competitiveness. Many economies have replicated the characteristics that once formed the basis of American advantage – open markets, investment in research and development, strong education systems and skilled workers. Once you combine these reforms with global information networks then many countries can compete on the basis of cost and quality. For states, this means they no longer are just competing with other states for new investment, but with countries around the world.

For advanced economies like New York, that means the only path to sustainable growth is through innovation – the blend of invention, insight and entrepreneurship that launches growth industries, generates new value and creates high-value jobs. Innovation enables companies to capture high-margin returns rather than compete in commoditized markets against low-cost competitors. For a state, creating a climate conducive to producing innovative goods and

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Every region of this State can no longer take the luxury of thinking that it can be at the forefront of every innovation sector.

What is more, to be successful in the long run will require a business climate that is open to competition, even in areas that we do not play well at this time.

services and ideas is the surest approach to building a vibrant, resilient economy.

On the surface, the focus on innovation should play to New York's strengths. Indeed, innovation has been a virtual natural resource for the New York economy throughout the state's history: from creating the nation's banking system to building the Erie Canal to launching fiber optics to establishing the SUNY system of public higher education. Innovation is in our DNA, and we have many capabilities on which to build. After all, we're home to leading companies in many growth industries. We have outstanding colleges and universities. We have a highly educated workforce. New York City remains the media capital of the world, so we have a great megaphone to tell our story.

And yet New York's inherent strengths as an innovation hotbed are offset by systemic issues that have long plagued our economic competitiveness. For companies considering doing business in New York, our capacity for innovation is too often overshadowed by a daunting counterbalance of excessive costs for energy, workers' comp and health care and one of the heaviest state and local tax burdens in the nation.

The negative impact of New York's high cost structure for doing business has been well-documented – and the business community must continue to press our elected officials to address these issues. Meanwhile, there are significant steps that can be taken in the near term to capitalize on the state's strengths and build our innovation capacity for the future. Recent advances in technology have empowered leaders to develop more intelligent solutions to long-time issues around energy, transportation, water, health care and a range of areas where New York can invest in new solutions. The goal should be not simply to repair what's broken, but to prepare for a new economy by delivering the new ideas and innovation that will restore the Empire State as the world capital of progress.

Public/Private Partnerships

Wealth and economic growth results from innovation and the generation of IP --patents, know how, copyrights, etc. that addresses significant problems to industry, government, academia, and society in general.

Joint research projects among the appropriate industry, academic, and government parties are an excellent way to efficiently share the high cost of research, improve time to market of innovative products and services, fuel the economic growth engine, and provide desired benefits to all parties:

- ◆ Industrial members wish to gain market differentiation, growth, and profit by sharing the high cost of research and by commercializing the IP resulting from joint research projects.
- ◆ Academia seeks to develop groundbreaking IP, thereby enhancing its status in New York State and the world, and establishing world class curriculum drawing the best and brightest researchers, instructors, and students.



- ◆ New York State wishes to improve its economy by stimulating capital investment, adding more high tech companies and jobs, and establishing itself as a leader in high tech research.

The Albany Nanotech Center is a shining example of this synergy. The Albany Nanotech partnership has resulted in a world class curriculum, faculty, and students at UAlbany and established Albany as the world's foremost center for semiconductor nanotechnology research.

The successful partnership involving New York State, IBM and other leading firms and SUNY-Albany has made New York a leader in attracting both high-tech investment and high-tech jobs from global companies, versus competing locations in Taiwan, Eastern Europe, and China.

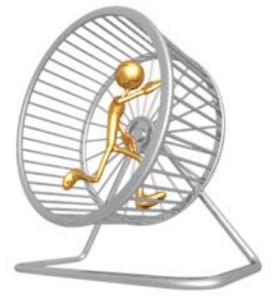
New York's "Tech Valley," which stretches from Westchester and Dutchess counties to Albany and Rensselaer counties, has become the world's epicenter for nanotechnology, or research conducted at the atomic level. Globalfoundries, a spinoff of AMD, broke ground recently on a new \$4 billion semiconductor chip manufacturing plant in Saratoga County, which will bring up to 1,000 jobs to New York. The company could have located anywhere in the world, but chose to locate here, due to the success of the Nanotech Center.

Despite budget deficits, New York State must continue and perhaps increase economic development funding for similar public-private partnerships to support potential growth areas. The state cannot "cut" its way to prosperity. Economic growth is fueled by the creation of IP, and that requires investment.

Here are a few guiding principles that must be followed:

- ◆ Shared Private – Public partnership investment of selected targeted technology areas that will a) provide the growth opportunities for New York State, and b) are consistent with the skills and resources available in New York State industry and academia.
- ◆ New York State needs to focus on a more strategic and targeted set of investments and partners in order to systematically, efficiently and affordably spur growth in the New York State economy.
- ◆ Create/expand tax incentives for emerging and growing high-tech businesses that create green jobs and services.
- ◆ Expand university-based incubator/accelerator programs and research parks to support the creation and growth of new high-tech business. Historically, the most successful incubators/accelerators and research parks have been associated with research universities and have focused on developing technology clusters (e.g., biotech).
- ◆ Adopt public-private partnership models to capitalize on emerging and growing high-tech businesses.
- ◆ Initial projects must be narrowly defined with short term objectives and measurements of success.

Unlocking the State's Potential



There is just too much talent, opportunity and the fortunate and unique mix of people, institution, resources and environmental assets for New York to fail.

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The goal should be not simply to repair what's broken, but to prepare for a new economy by delivering the new ideas and innovation that will restore the Empire State as the world capital of progress.

- ◆ New York State already has most of the skills necessary for success. What is required is an ongoing New York State government – academia – industry council of leaders with the authority to evaluate, prioritize, commission, and oversee the appropriate targeted partnerships, technologies, and participants.
- ◆ Investment in P-20 education (pre-school thru graduate/professional school). The University of California (UC) Discovery Grants program, an industry-university cooperative program based on a partnership between the UC, industry sponsors and the State of California, is an example... student participants have been recruited by California companies and built new businesses in the State.
- ◆ Investment in world-class facilities to attract and support best-in-class scientists and engineers focused on the applied side of their discipline.
- ◆ A tax structure (both business and personal) that supports growth and risk.
- ◆ Infrastructure to support the launch and growth of emerging companies/industries (a la Silicon Valley, Route 128, Research Triangle, etc.) ranging from capital to business services.
- ◆ Create templates of university-industry master research agreements to minimize the transaction cost of the research and/or development partnership.
- ◆ Create templates of state contracts, grants and agreements to support university-industry partnerships. (e.g., adopting the basic principles of the Federal Demonstration Partnership (FDP) which is designed to streamline and establish common terms and conditions and reporting requirements for federal research grants and contracts.)

Measures of Progress

Deciding on what are the key metrics to focus on is essential. Our experience has been that the state's primary metric is job creation. We agree that sustaining jobs and the creation of new jobs is key; however, jobs are a lagging metric and therefore should not be the sole measure of the success of projects aimed at stimulating the New York economy.

Innovation and generation of intellectual property (IP) are fundamental to economic growth and prosperity. Therefore, to measure the success of private-public collaborations, the focus first and foremost should be on metrics which can be applied earlier and more directly to innovation and IP. If we can do a good job of innovation and IP generation in New York State, the resulting benefits will be the creation of companies, jobs, and wealth.

The movement of IP to the marketplace is a key factor (licensing transactions to either existing industry or new, start-up companies) in economic development. Currently, when funds are available, the playbook inside the academic institutions has been to protect it through patent, copyright, trademark. This is done early and often. As a result, we usually have a significant overhang of protected IP which is not necessarily aligned with the marketplace and industry. We will need to stress the importance of market analysis to ensure proper alignment. Translating university IP into new business formation probably





represents our greatest opportunity to directly impact the New York State economy resulting in job creation, expansion of tax base, etc. This is, however, not to diminish the importance of licensing transactions to existing industry--which represents the majority (upwards of 80 percent) of university-based licensing transactions.

With that as a backdrop, the following NYSTAR CAT list is a good start for key metrics to apply to private-public partnership projects:

- ◆ Patent and copyright disclosures/received.
- ◆ R&D grants received -- both number and dollar amount.
- ◆ R&D and capital investment in chosen area (perhaps New York State should have a guideline to provide a XX-YY% match on chosen collaborations).
- ◆ Number of students/faculty drawn to New York State due to the "Project".
- ◆ Number of students in project field hired by industry from participating New York State universities.
- ◆ Research awards, industry/academia recognition.
- ◆ Number of companies and jobs, existing or new, drawn to/growing in New York State because of project (includes mainstream, infrastructure and support services; e.g., restaurants, hotels, etc.).
- ◆ New York State Return on Investment.

In addition to the above results-oriented metrics, consideration should be given to having NYSTAR and Empire State Development Corporation measure and benchmark some underlying New York State competitiveness issues:

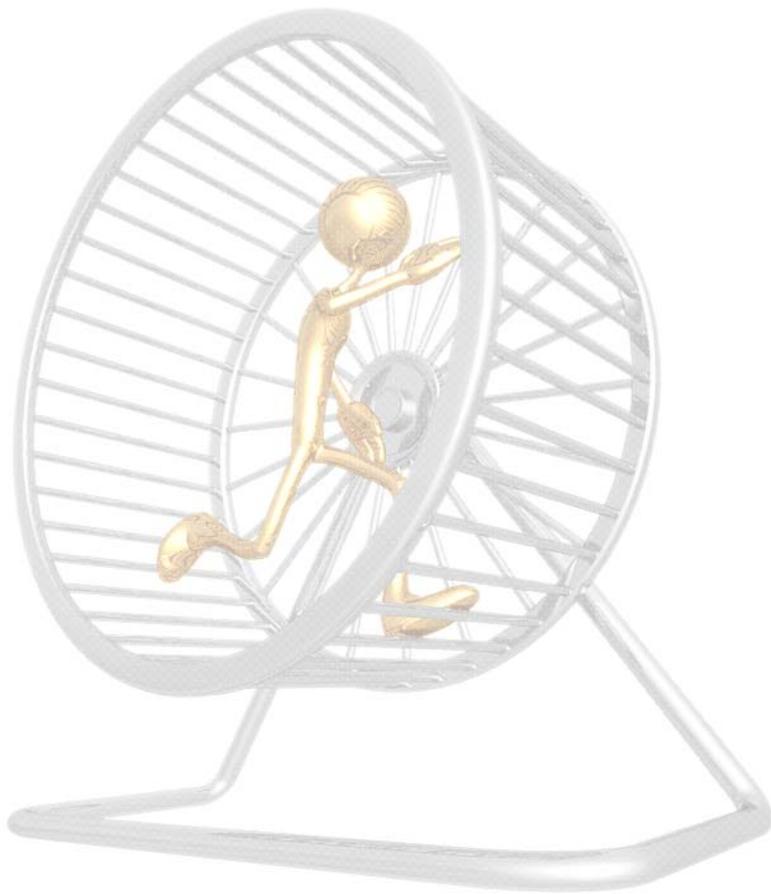
Percentage of New York State budget invested in R&D and economic development versus other states and countries.

- ◆ Cost of manufacturing in New York State versus other states and countries (electricity, labor, real estate, taxes, etc.).
- ◆ Provide economic benchmarks including, but not limited to, workforce education, knowledge migration, economic dynamism, entrepreneurial activity, and foreign investment

Today's global economy rewards the innovators – who can deliver unique value that cannot be easily replicated. Creating a climate that consistently produces new ideas and advances intellectual property effectively to the marketplace is the best way to remain competitive in the innovation economy.

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Transcending the Hamster Cage



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Transcending the Hamster Cage Unfettering New York's Static Innovation Economy

Human Capital

The talent base that New York needs to compete is declining. This decline may be the greatest impediment the State faces in the goal of creating a culture of innovation and a successful innovation economy. New York's migration has seen nearly 1.7 million individuals, mostly young and educated families, leave the State during this decade for better jobs and life opportunities. This net out migration is by far the largest exodus of talent seen in the country.

This migration used to be a fundamentally Upstate concern. We could take some solace in that New York City was the constant hub that attracted and retained the best and the brightest. Unfortunately, even that small bit of consolation has been recently ripped from us. Since 2007, the largest amounts of talent, by far, leaving the State have come from the Downstate metropolitan area. Only in Detroit and New Orleans have we seen comparable talent drains that New York City has faced in the last couple of years

...commercialization of technologies that allow our State to successfully face a fierce and growing global competition.

No doubt we have strengths. We contain arguably the best combined public and private university system in the world, the globe's greatest financial center, and we have cutting-edge research practiced by outstanding scientists and engineers in every emerging area occurring in every part of the State. However, these strengths are beginning to pale compared to

the drags, including our general psychological malaise that holds New York back.

We lack a single global technology cluster, although arguably, the Capital District is well on its way in applied nano-science. We have a pitiful lack of private investment in nascent innovation firms compared to the level of science that is conducted here. Many argue that the failure is the lack of public seed money. When you talk to the Venture Capital firms' opportunity specialists and Angel Investors, what you hear is that New York just lacks enough companies to justify risky investments.

Talent is the key to innovation. New York needs policies designed to attract, retain and grow this talent. This goal requires the creation of critical masses of

To attract this talent takes a high quality-of-life and growth opportunities, and it all starts with our colleges and universities.

people working in a similar, cutting-edge area; in a word – a cluster where entrepreneurs want to come and stay.

To attract this talent takes a high quality-of-life and growth opportunities, and it all starts with our colleges and universities. Therefore, to grow this talent pool more must be done to support Science, Technology, Engineering, and Mathematical (STEM) education in the State.

SUNY's and CUNY's campuses generally lack first rate undergraduate physical science teaching and accessible research facilities compared to research intensive private universities and our competing state's public higher education systems making similar innovation economy commitments.

We graduate at the baccalaureate level, especially at our public colleges and universities, far too many management and other business majors, and applied psychology majors, and way too few in the physical and life sciences, engineering, and to a lesser extent, the social sciences outside psychology. The fields that provide the critical thinking necessary to produce the ideas that innovation arise from.

A truly innovative program that would help us provide the key workers for emerging sectors would be to have our State's community colleges target a training and degree program for the front-line workers in the emerging sectors of the State, and its individual regions. The model here could be the Tec-Smart initiative partnering Hudson Valley Community College for the nano-tech sector. A similar dedicated program for bio-tech workers at, say, Kingsborough Community College, should also be launched. This pattern should be expanded for the clean-tech, bio-fuel and other alternative energies, and the advanced manufacturing sectors.

However, the best education attainable is not enough by itself to retain these talented individuals. We need to take a long hard look at what drives this talent away, and keeps new talent from seeking us out.

The bottom line is we lack the jobs needed to be talent magnets. This lack of employment opportunities make our entrepreneurs overly risk-averse. As a rule, and especially Upstate, our workers and owners in high-tech fields are over-educated, over-trained and underpaid compared to their counterparts in other states. It is a myth that New York is a high labor cost state, at least outside of the financial services and traditional union heavy old economy manufacturing sectors.

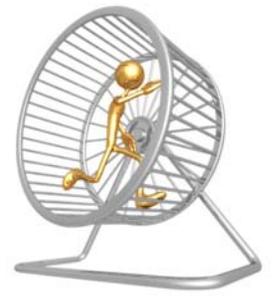
This negative pay differential only occurs because we lack sufficient high-tech private sector jobs to allow workers to successfully market their talents. This poor pay base, combined with all the other drags in our business climate, is what really drives and keeps talent away.

Pay alone does not an innovation culture make. Quality of life issues also play a crucial part. We need great elementary, middle and secondary schools, either public or private, to get people to want to live, work and thrive here. A vibrant artistic ambiance revolving around vibrant municipal centers is also an innovation culture necessity. Our upstate urban and suburban environments must be enhanced through redevelopment of brownfields and turning around urban blight.

In short, we must consciously focus on and create a culture – the culture of innovation. Here are some specific proposals we believe can help us in this creation:



- ◆ For each regional cluster, universities should actively strengthen and promote programs that provide training for that sector workforce.
- ◆ Community colleges should develop a dedicated AAS or AS degrees tailored to the needs of the regional sector similar to, but expanding upon, the TEC-SMART initiative at Hudson Valley Community College. The President Obama's community college initiative and other programs such as the Recovery Act, should be used, to as great extent as possible, to establish and fund such programs.
- ◆ Each region should establish a global preeminent research institute, on a collaborative basis with the major research universities in the region, dedicated to collaborative research and the storing and dissemination of such research.
- ◆ The State's Center of Excellence program should be modified so that the Centers expressly exist and function for the purpose of strengthening each regional cluster.
- ◆ A personal income tax credit should be created to provide a rebate, equal to the amount of tuition paid over a four year period, for graduates of New York State public and private universities and colleges that obtain a BS or its equivalent in a biological or physical science, mathematics, or engineering. The credit would be capped at the tuition level for a full-time State University student during the respective graduate's period of attendance.
- ◆ State statute should be modified to encourage the creation of university affiliated research parks and academic run business incubators centered on strengthening the regional cluster. Such parks and incubators should be allowed to lease and otherwise encumber property to private firms and should work actively and closely with the local Industrial Development Agencies on local property and sales tax agreements.
- ◆ We need a major research university President or Chancellor to take the lead and make their institution truly hospitable for the commercialization of research that comes out of the efforts occurring there. We do not recommend a statewide IP, royalty or rights program, but are looking for best market practices. The focus should not be, first and foremost, on the revenue a campus hopes to obtain from commercialization, but the talent it hopes to attract and the employees that will arise out of its research. If the talent comes and the firms and jobs are created and stay in New York, the license and royalty fees will take care of themselves.



Each region should establish a global preeminent research institute, on a collaborative basis with the major research universities in the region.

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What It Takes to Produce a Truly Entrepreneurial Culture?

By Dr. Carolyn Curtis, Hudson Valley Community College

Discover, recognize and act on the aspects crucial to an entrepreneurial culture. These include:

- ◆ Taking ownership.
- ◆ Staying ahead of the competition.
- ◆ Being part of a team.
- ◆ Ability to motivate, inspire, and dream.

The climate must be created that there is overriding value put on being part of something, working together with counterparts, and contributing to a shared interest sparks risk-taking behavior. Also, skills must be developed and the environment must be receptive to creating a clear picture in the minds of others of how a new initiative will change the world—before the idea is even launched. We must invest in leaders that inspire colleagues to do more and become more---no matter what the challenges.

Leaders from all sectors in the innovation economy must work toward a common goal with willingness to abandon myopic attitudes.

What assets can be brought to bear to make the State and especially Upstate the world leader in advanced, value added manufacturing?

- ◆ Innovation in attracting regional cluster anchor tenants—look to GLOBALFOUNDRIES.
- ◆ Remain at the forefront of changes in STEM training—look to duplicate the TEC-SMART initiative on the STEP Campus for other industries and community colleges.
- ◆ Address obstacles—look to creative partnerships between business, industry, academic institutions, government agencies
- ◆ It is greatly important to work on a comprehensive plan to create the right innovation culture -- risk encouraging, talent concentration, clustering, hyper-competitiveness
- ◆ Embrace the future

It is time to recognize the critical role played by community colleges in the area of workforce training and these colleges' ability to produce a vibrant and well-educated citizenry. As soon as possible, the State needs to implement President Obama's vision for the high-skilled workforce the innovation economy requires.



Leaders from all sectors in the innovation economy must work toward a common goal with willingness to abandon myopic attitudes.

The State needs to do a coordinated, comprehensive review of economic development policy and announce an economic development agenda that propels, rather than directs, the private economy.

- ◆ We require the ability to think about things differently and speak openly about errors or the fact that others have not behaved properly.
- ◆ What's needed is the ability to communicate with people and get the point across despite resistance to change. Individual charisma will only go so far. Consensus-building—being able to listen, learn and turn what other people want into policy is what is required from our State's policy leaders.
- ◆ The State needs the courage to direct our resources so to regionalize operations. Waste occurs when similar programs are run at colleges or other entities within the same region. Waste occurs when incentive programs are awarded to similar operations within the same region. We need the courage to recognize each others' strengths and not be threatened by this. We all have a particular set of strengths and skills—this is good. We can complement each others' work, not compete with each other for the same piece of the pie.



It's Worse than You Think. Yet, It Could Be so Much Better than You Imagine.

By Claire McMahon Hazzard, The Public Policy Institute of New York State, Inc.

It's worse than you think. Yet, it could be so much better than you imagine.

That's the introductory sentence to the Public Policy Institute's 2006 report, *Ahead of the Curve*, which documented the state's poor economic performance but pointed out that New York "potential far greater than our dispirited, partisan public dialogue allows us to imagine."

And it still does.

Our state is perfectly positioned to get ahead of the curve in innovation – and in many respects, New York already is.

The New Economy Index, a 2009 report sponsored by the Ewing Marion Kauffman Foundation, ranked the Empire State 10th in the nation in overall readiness to compete in the New Economy. That report found that New York, along with the other leading states, have high "value-added, technologically advanced manufacturing sectors."

Data from the National Science Foundation shows other good news about the state's workforce: in 2006 New York had the second-highest number of employed science, engineering and health doctored holders in the nation.

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Our state is perfectly positioned to get ahead of the curve in innovation – and in many respects, New York already is.

New York, once a leader in educating and employing scientists and engineers, is falling behind.

New York was the recipient of \$144 million in federal R&D spending in 2006 – the third highest amount in the nation. The state’s inventors were granted more than 5,000 patents that year – the third highest in the nation.

But there are clouds on New York’s innovation horizon.

The same 2008 report that ranked the state 9th overall did note that we 20th on high-tech jobs and 32nd in non-government R&D spending.

And our public colleges and universities produce too few math and science majors, and attract too few students from other states (while managing to produce an astonishing number of psychology and undergraduate business majors).

In making New York the leader in the new innovation economy, we need to regain our competitive edge by revamping our workforce and repairing our economy. In 2006 the PPI issued several recommendations to help New York regain its competitive edge. Those recommendations are still valuable now.

The key competitive asset of New York’s economy today is our workforce – among the most highly educated and productive in a nation which is itself, the world leader in this respect.

But today this leadership is under challenge. Nations like South Korea are increasingly doing as well as, or better than, we are in giving a strong, basic education to their entire populations. And our competitors in Asia are positioned too far outstrip the U.S. in terms of educating new scientists and engineers – the specialists most critical to innovation in products and services.

New York, once a leader in educating and employing scientists and engineers, is falling behind. This state is graduating fewer than 4,000 new engineers each year – about 1,000 fewer than if we matched the (inadequate) U.S. average. In fact, New York annually graduates about twice as many psychology majors as engineers.

In preparing our state for the economy of the future, our students must come first. What can we do for them?

For more than a decade, the business community in New York has given top priority to the drive to raise minimum standards in the schools – to ensure that a high-school diploma is meaningful. It’s been a struggle, and the job is not finished. **We must continue to support the highest standards, and to resist any and all attempts to water down New York’s achievement measures, or the assessments that under-gird them.**

But focusing on minimums, alone, will not be enough to ensure that we produce the leaders needed to drive our success in the innovation economy.

Our nation urgently needs more graduates and advanced degrees in science, math and engineering. Here are three proposals to address this issue.

First, we need more and better science and math teachers at the middle- and high-school level. In part because of stiff competition for new science graduates from the private sector, this is an area of chronic shortage in New York. Yet it is in these middle- and high-school years that too many of our students first get the idea that science isn’t interesting or is “too hard.” International comparisons show that U.S. students, including New Yorkers, are ahead of



those in our peer nations through the fourth grade – but by the 12th grade, they are at or near the bottom in science and math. We need inspired and inspiring teachers to turn this around.

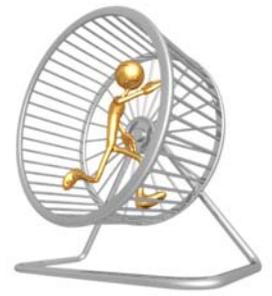
The State should adopt a ***Teach for the Future*** initiative, drawn from a model developed by the National Academies of the Sciences, to produce 500 new, highly qualified science teachers every year.

Under this plan, the state would fund 500 competitive scholarships each year, at up to \$20,000 per year for up to five years, for students who agree to earn a bachelor's degree in a science or math, as well as the master's degree needed for full teacher certification.

In return, the recipients would agree to teach science or math in New York public schools for a minimum of five years – with an extra \$10,000 bonus for those who agree to teach in inner-city or rural school districts.

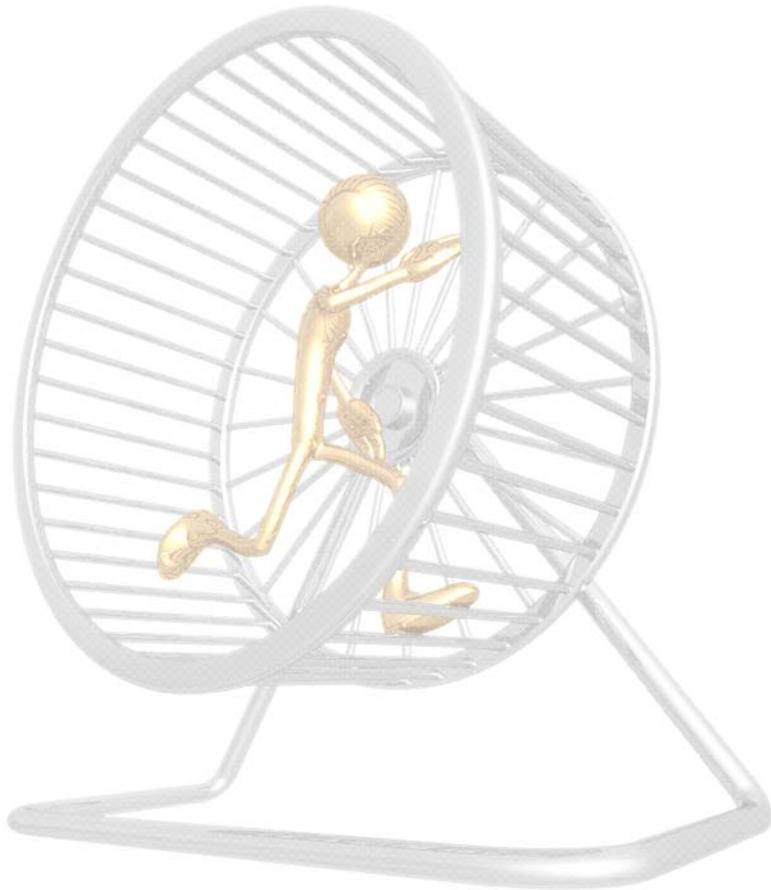
Second, students in both the high-school and college years need more and better guidance about the career choices ahead of them — and about the educational requirements that fit with those choices. All interested stakeholders should work with the state Education Department to develop an information program to that end.

Third, to encourage our students to pursue critical skills after high school, the State should adopt a personal income tax credit for individuals that graduate with a baccalaureate degree from a New York State college or university with a major in a physical or biological science, engineering or mathematics. The credit should equal the tuition level at the State University to gain the degree in four years payable over four taxable years.



Students in both the high-school and college years need more and better guidance about the career choices ahead of them...

Transcending the Hamster Cage.



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PUBLIC POLICY INSTITUTE

Transcending the Hamster Cage Unfettering New York's Static Innovation Economy

Business Climate

In no aspect of a thriving innovation culture does New York place as low as in its overall business climate. The mournful list holding back the state's private sector is long and all-too-well known. New York State consistently ranks at the very bottom of rankings of a favorable business climate and where to start or expand a business.

Overall, New York businesses are the highest taxed in the nation. Income taxes, sales and use taxes, real estate transfer taxes, property taxes, commercial rent taxes, utility taxes, other energy taxes, insurance and workers' compensation fees, assessments and rates; the list of taxes and fees goes on and on. In just one egregious example, the world's combined federal, state and local highest rate of corporate business income taxation is imposed on firms operating in New York City.

...the State's transportation infrastructure is woefully ill prepared.

New York State firms pay 39 percent of all the property tax levies in the State, while holding roughly a quarter of the fair-market assessed value or real property. Overall, New Yorkers pay the second highest amounts of property taxes per assessed lot in the nation after New Jersey and New York businesses pay the highest amounts of ad valorem duties.

New York's energy costs are the third highest in the nation (after Hawaii and Connecticut), and New York businesses pay the second highest rates for energy behind Hawaii.

In addition, the State's transportation and other infrastructures are woefully not prepared to meet the challenges of the fight for the forefront of the global economy. In particular, the State's transportation infrastructure is woefully ill prepared to meet the challenges of the fight for the forefront of the global economy. Site selectors repeatedly point out the difficulty in placing new large-scale industrial complexes Upstate when it takes so long and is so expensive for global leaders to get these proposed facilities from New York City, and it is so relatively costly to move materials into and finished products out of the state.

The state's energy transmission, communications, and vehicle and mass-transit infrastructure systems are in horrendous shape. Bridges fail safety inspections,

New York has the dubious distinction of leading the nation with net out-migration of 20 to 35 year olds. Most of these individuals are college educated and are seeking better opportunities elsewhere.

and roads are pot-hole ridden to the point that there is an entire sub-economy based on replacing shredded tires. In many parts of the State broad ban access is pitiful, especially in regards to the mass high speed networks global firms need to rapidly, reliably, efficiently and economically transmit massive amounts of data on second by second bases. Passenger rail outside the New York metropolitan area is expensive and slow.

New York businesses also face an inordinate number, levels, duplication, and degrees of complexity of governmental regulations emanating from myriad local and State agencies, departments, public benefit corporations and authorities. Each one of these requirements adds to the cost of business and reduces the efforts that entrepreneurs and more established innovation firms put into developing, producing and successfully marketing products.

The legacies of our generous defined benefit plans and extremely generous (in terms of benefits provided and amounts of employee contributions required) medical plans, especially in our sectors with high union representation, make the average total labor costs in our public, health-care, education, and traditional old-style, heavy manufacturing sectors uncompetitive with the rest of the nation. These relative high sector costs have given the State as a whole a reputation for a labor force that is over-compensated, under-motivated and impervious to change.

New York has the dubious distinction of leading the nation with net out-migration of 20 to 35 year olds. Most of these individuals are college educated and are seeking better opportunities elsewhere. This migration pattern use to be primarily an Upstate phenomenon. However, recently the net drain has actually been worse Downstate.

The real problem is that there are relatively few young professionals moving to New York. Young professionals leave North Carolina (a state that ranks near the top of where out-of-state and foreign students come to do their college and university work, New York, to our credit, is at the top of that list) after finishing high-tech degrees, or moving on from their first job, at about the same rate that New York's innovation talent pool leave the Empire State. The difference is that the Tar Heel state attracts many more members of this crucial talent pool than it loses. The exact reverse of the "brain-drain" New York has been dealing with for the last forty years.

Our upstate cities are held to be drab, filled with hazardous contamination, culturally barren, and nearly devoid of entrepreneurial opportunities. Buffalo is now seen as the second poorest major city in the country behind Detroit, and Rochester, Syracuse, Utica and Binghamton consistently rank towards the bottom in rankings of personal income growth and local economic product.

New York's private sector capital providers, especially Upstate, are extremely risk adverse. In general, no new venture in this State gets funded unless the public sector provides "first-in" financing first. This is the exact opposite of where this relationship should be. This is an area for future research, but it may be one of the main reasons that new public funding measures providing direct seed capital for nascent innovative firms, in contrast to refundable tax credits that only provide public support after a promised activity occurs, seem to have had so little impact.

The situation in New York has become so bad that the Cost of Living Project, due to this State's high tax and regulation environments, ranks New Yorkers, on average, as the poorest citizens in the country when measured by the buy-



ing power and cost opportunities of their wealth and income; behind all of our competitors, behind Mississippi.

There is one myth about New York State's workforce and the effort its entrepreneurs are willing to put out that is still widely held. Except for certain economic sectors Downstate – not including most of the innovative high-tech fields this report is focusing on – New York is not a high labor cost State.

In fact, compared to the rest of the nation, New Yorkers are over-educated for, under-compensated and overworked for the jobs they obtain, when they are lucky enough to find one.

The fundamental problem is not that our workforce lacks high-tech training, or that we are not doing enough to connect those that want to work with positions that are just waiting for them. The problem is that the jobs, compared with the rest of the nation, are just not there. This lack of an employed position base means that there is over-fierce competition amongst potential employees for the jobs that are there, and this competition drives down compensation levels and drives up skills requirements compared to elsewhere in the country.

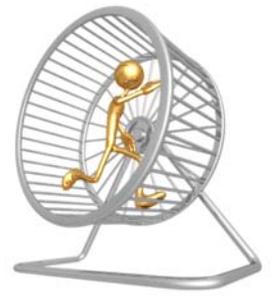
We do lack enough very highly trained individuals in high-tech fields looking to start-up firms to create the cadre of entrepreneurs that can create the jobs that will attract and retain the young professionals to reverse the brain-drain mentioned above.

Here again the primary problem is a lack of identifiable clusters, firms of all sizes that could occupy these clusters, and world-class space and employees for these potential firms.

- ◆ New York needs to cap property taxes at no more than current levels.
- ◆ The State should seriously consider eliminating tax liabilities on manufacturers and high-technology firms.
- ◆ The State should do everything within reason to make itself attractive as the place to locate global headquarters.
- ◆ The State's congressional delegation should be urged to support the Business Activity Tax Simplification Act and work for its adoption.
- ◆ The State should eliminate all barriers to the inflow and outflow of capital and labor regardless of short-term job creation and retention.
- ◆ The State should commit itself to encouraging the immigration of foreign and alien firms and highly educated and motivated workers.
- ◆ The State should adopt policies and programs to encourage the sustainable private redevelopment of its urban and other large-scale industrial properties through the use of refundable tax credits.

The Empire State Development Corporation and NYSTAR should collaborate on a "one-stop shopping" initiative to market to, and assist the development of, start-up and mezzanine level firms and encourage entrepreneurs through networking, mentoring and business support.

The State's passenger rail system should be upgraded to enable an average of 100 MPH (161 KPH) between first New York City and Albany, and



New Yorkers are over-educated for, under-compensated and overworked for the jobs they obtain, when they are lucky enough to find one.

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New York has unparalleled human capital, but every day, more and more skilled New Yorkers find themselves looking for work in an ever-shrinking job market.

then Albany to Buffalo and points in-between (not bullet trains, but achievable at a reasonable cost).

Pilot light rail projects should be funded and explored for the Capital District, Syracuse, Rochester, and Buffalo areas.

Creative Destruction and the Opportunity for Enhancing the Innovation Culture.

By Alex Brownstein, Esq., Integrated Tissue Dynamics, LLC

The “creative destruction” wrought by the economic fallout of 2008-9 has caused misery for thousands of jobless New Yorkers and has created an urgent need for a business culture that better embraces entrepreneurs and makes existing business more competitive. Following is a menu of actionable ideas that New York policymakers may wish to consider to help our economy move forward:

1. Put Displaced Talent to Work in a New Innovation Economy.

New York has unparalleled human capital, but every day, more and more skilled New Yorkers find themselves looking for work in an ever-shrinking job market. Many are world-class thinkers, accustomed to big ideas, good jobs and big projects. They have the talent, need and desire to create new ventures of their own, but if they do, the State will cut their unemployment benefits. New York should harness this talent, not suppress it. Change the antiquated employment laws that currently bar would-be entrepreneurs from starting new businesses while collecting benefits.

Training should be offered as well. NY City's Jump Start program turns displaced financial workers into entrepreneurs, and it is a great model that should be adapted and expanded to other workers throughout New York State. Both training and monitoring of a start-up's progress towards milestones in the formation of a business could be done through NY's existing business incubators. This is particularly important since incubated companies are far more likely to succeed than those that aren't, and right now, we needed every success we can get.

Place all interested job seekers in a NY State-backed social network for entrepreneurs, enabling start-ups to rapidly assemble a management team of displaced New Yorkers that can hit the ground running and get a company started. With the pending termination of unemployment facing them in 10-12 months, the system would actually help incentivize the team to get moving fast and efficiently, and give them a deadline to make it happen.





2. Make it Easy to Hire Interns – the Best Investment in a New Economy.

If we're serious about helping entrepreneurs grow new ventures, allocating funds for interns is one of the most affordable, helpful, and practical means of doing so. Interns can tackle everything from business plan development to computer programming to marketing, finances, and operations. They cost very little to hire, and in the end, gain invaluable real-world experience and contacts. The problem is that start-ups rarely have the funds to spare for even a summer intern, let alone someone working during the academic year. But if they could re-coup an investment in an intern, the story might be different.

With that in mind, New York State should explore amending of existing R&D Qualified Emerging Technology Company training tax credits to facilitate allowing small companies to recover up to \$4,000 for interns during each of the company's first few years. In this way, everybody wins, and everybody gains something of value if the business grows—even us taxpayers.

3. Create a Culture of Entrepreneurship.

Reward Success to Beget Success New York needs to attract and retain a large pool of talented, entrepreneurial executives who can manage a fast-growing company, no matter what type of technology is involved. Such executives, by virtue of their direct involvement, business acumen and entrepreneurial zeal, can dramatically accelerate the growth of the economy and pull it forward.

NY should create a class of home-grown “Certified Entrepreneurs” (those who have been successful start-up executives in the past and wish to do it again) and empower them to repeat their prior successes. To make life in New York State attractive and retain this talent, CE's might be eligible for certain personal income tax breaks. They might also be given access to unsecured, low-interest business loans so they could easily be the founding “angel” for a business, and start that business at minimal personal risk. So long as they started and stayed with a company every few years and achieved certain milestones, they would maintain their certification.

Between business ventures, this C-level class should be employed by the State as technology match-makers, criss-crossing the state and bringing together researchers, entrepreneurs and the resources they need to start new businesses. And, unlike current economic development efforts that focus on building up specific regions of the State, these match-making activities should focus on bundling resources across the State. We should offer incentives with bonuses for success, ensuring that top performers are compensated for their efforts.

NY should create a class of home-grown “Certified Entrepreneurs”...

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Imagine what New York might look like if we created a culture in which serial entrepreneurs were given the full support of NY State.

Imagine what New York might look like if we created a culture in which serial entrepreneurs were given the full support of New York State:

- ◆ We would have experts (supported by New York State's science community) brainstorming with our Universities, research centers and institutes, mandated to "cherry pick" new technologies and/or strategically combine them to create new commercial opportunities. The convergence of nano and biotech is an obvious example.
- ◆ Once a certain technology is identified, our CE's could use any of the several in-State resources available (e.g., Centers for Advanced Technologies) to inexpensively develop it to a point where it has true commercial value. At that point, we'd have C-level executives who are both familiar with the technology, and capable of building a business around it. Or to say in another way, you'd have empowered C-level execs doing what they do best, with access to the tools they need to do it as efficiently as possible. A small discretionary technology matching fund (e.g., up to \$25,000 per match) overseen by NYSTAR could fund preliminary research, enabling researchers to generate pilot data or prototypes useful in securing larger grants, intellectual property protection, and/or private investments.
- ◆ Without a group of motivated and experienced executives catalyzing the commercialization of technology, it simply won't happen to the extent that's needed to for New York to be competitive in the future.

4. Hit 'em Where it Helps.

Every company doing business in New York State registers with the Department of State and renews thereafter. This is a golden "point of sale" opportunity to do a check-in with new and existing companies to ensure they're taking full advantage of State and local business supports.

New York should even consider ensuring that each company doing business in New York automatically undergo computerized assessments to determine if there are existing resources, tax credits, or advisors (e.g., offering relocation guidance) that might help reduce a company's overhead or make it more competitive. A follow-up letter would then be sent to the company's board, CEO and other identified leaders to ensure that they are aware of these options.

Right now, ESDC and other State and municipal authorities provide this kind of advice, but it is up to businesses to seek it out, and not enough actually do. In my own experience working with biotech start-ups, it was not uncommon to cut research budgets by 60-80 percent simply by connecting the company with state-funded resources, such as facilities housing high-end instrumentation. In one case, a biotech start-up reduced a \$3 million equipment budget to \$300,000, just by tapping existing technological resources around the State. Other entities, such as the Center for Economic Growth in Albany, offer lean management and other services, saving existing



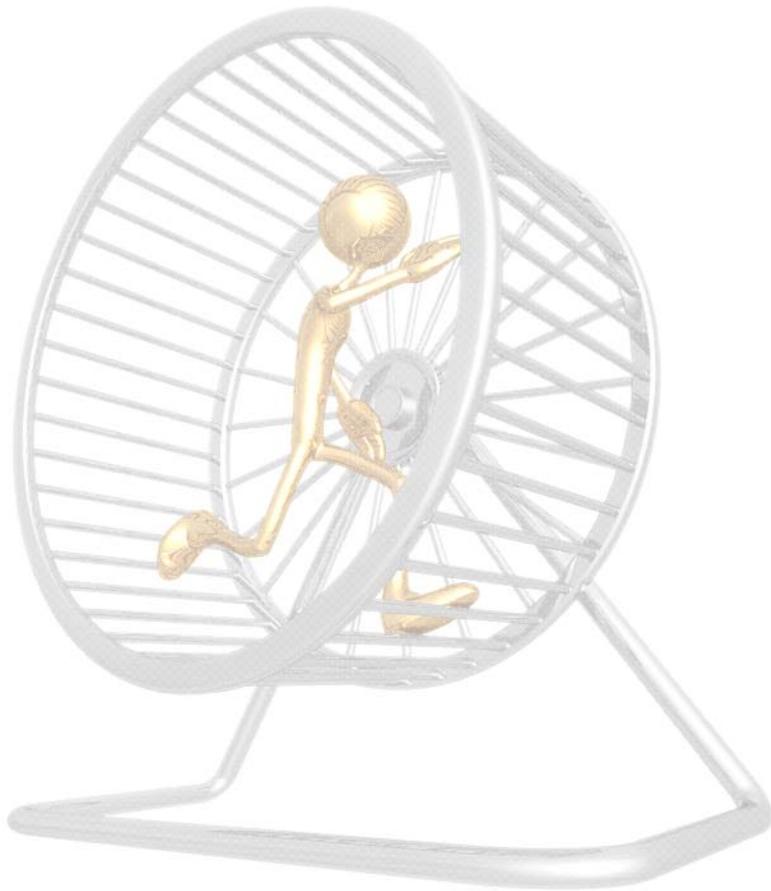
manufacturing companies hundreds of thousands of dollars. Referrals to these and other resources should be automatic and custom-tailored to each particular business based on a business' size, industry, and other relevant factors. A metric-driven assessment tool should be used to determine effectiveness of the outreach and improve outcomes.

In conclusion, New York can no longer ignore its greatest asset: its workforce. Implementation of laws and policies that unleash this talent is the only way to ensure that the State will be a leader in the new post-crash high-tech economy.



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Transcending the Hamster Cage Unfettering New York's Static Innovation Economy

Economic Development

The State's Highest Economic Development Priority must be the launching and growth of innovative technologies and the companies that spin out of these technologies. This priority must take preeminence over other State development objectives unless those other objectives foster the innovation economy.

Although the dollars spent each year on entrepreneurship and other innovation programs, though not insignificant, pale compare to what New York spends on public education below the college level and health care delivery, the reward for properly fostering innovation is many degrees of magnitude more than what State expended resources would normally produce. This impact also gains in saliency the longer the time frame. The significance of the innovation culture must be the vital focus of our efforts for New York's future prosperity.

...results on the job front usually occur from encouraging investments in plants and equipment.

The bottom line of such development is jobs, jobs, jobs; especially the high-value, usually high-income positions that come out of innovative industries. However, good jobs appear to be a by-product of well-designed policies, not the direct result of policies tying incentives to job creation. Thus, better results on

the job front usually occur from encouraging investments in plants and equipment rather than people. Liquid capital is extremely fluid and can flow across borders in a nano-second. Jobs, as we have learned all-too-well, can be lost or out-sourced by the tens of thousands in this State every month.

Yet, a large investment in plants, equipment or research commitments are not so easily transferable or fungible. Therefore, if you want to create and retain jobs, incentivize plants and research.

What else have we learned? Capital grants to private firms for private projects generally result in bad, overpriced and non-sustainable projects.

For every successful use of State debt to spur entrepreneurial activity, there have been dozens of failed efforts, wasting hundreds of millions in New York State taxpayer dollars.

Capital grants for private development inevitably usually lead to bad projects and poorly designed and constructed buildings. It's all in the logic of the typical capital grant. Once a developer receives a grant and starts work on a project,

...given the current economic crisis, it is very clear that additional State resources for economic development incentives must be matched from corresponding redirections of existing resources.

their rational desire is to maximize the spending of the grant for the lowest return; or worse, get halfway through the project, claim the public funds are insufficient, and threaten to bolt unless government provides a bigger incentive. Capital grants have all-too-often become a source of legalized extortion, and no amount of good intentions by government bureaucrats or unbelievably complex oversight rules and performance standards can ultimately change the corrupting logic of the system.

New York State, beginning with the Brownfield Cleanup Program (BCP) in 2003, led the nation in the use of refundable tax credits. The advantage is obvious. The incentive only is delivered when something is actually built. This use of the tax code to provide innovation incentives should be our primary tool and should be expanded to as great a degree as possible.

We have also learned that the best programs are transparent, market driven and as-of-right. Instead of Empire State Development, the Division of Budget and the Governor's office involved with negotiating hidden deals with potential companies willing to invest in New York State, the State should, to as great an extent as possible, have policies that publicly, and as-of-right-, promise and guarantee that if you invest x, you receive y.

Empire State Development's primary role should be to market the State's strengths and propel the one overriding key for growing the State's innovative economy, clustering. For every one successful announcement that occurs after months of often hidden negotiations and back-room deals providing ad hoc incentives resulting in the successful attraction or retention of innovation economy jobs, ten times as many jobs are lost or do not come to New York State.

All that being taken, given the current economic crisis, it is very clear that additional State resources for economic development incentives must be matched from corresponding redirections of existing resources.

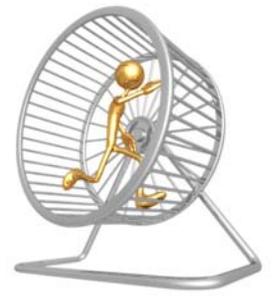
We have identified over \$750 million in such proposed redirections that we are urging to be utilized for innovation incentives.

We are specifically recommending the following policies (some of these receive greater explanation in the business climate and tax policy section):

- ◆ Phase-out and reform of the State's Empire Zone program and replacing it with a statewide, as-of-right, and fully refundable tax credit at a level of 12 percent for tangible property investments and 15 percent for R&D activities.
- ◆ Elimination of capital grants for private, for-profit projects. Capital should be used for the creation of State or not-for-profit health or academic facilities. Incentives for private firms and facilities should come from the awarding of as-of-right and market driven fully refundable tax incentives.
- ◆ Rolling back the tax changes started in 2006 that discourage the placement of companies' main and subsidiary headquarters in New York State and discourage a focus on export driven industries. Some of these measures include expanding the definition of economic nexus, increased requirements for combined reporting, the elimination of favorable treatment of "Article 9-A" Real Estate Investment Trusts, higher capital base taxes. These enacted policies flatly state that New York no longer strives to be the world's corporate headquarters and radically stifle investment and innovation.



- ◆ Across the board lower tax rates should be a goal, but innovative industries require targeted preferences and credits. The State has enacted many tax policies that foster innovation, including single sales factor allocation, making some investment tax credits fully refundable and lower rates for high-technology and manufacturing firms, but more can and should be done.
- ◆ Incentives for reducing costs related with academic incubators and encouragement of large-scale leading edge industries collaboration with academic incubators and their resident firms.
- ◆ Refundable tax credits should not be seen as “tax expenditures” in the traditional sense. The awarding and utilization of such credits (which in many ways function more as grants than tax credits) are not related to the tax code’s revenue raising function, but the credits should be the State’s primary economic development tool.
- ◆ Real property tax incentives should be granted primarily at the local, and especially at the Industrial Development Agency, levels. State level real property incentives distort valuations and overly politicize the process.
- ◆ The creation and global marketing on viable and vibrant clusters should be the primary goal of the Empire State Development Corporation. The State must utilize its historical advantages and try not to do all things in all areas.
- ◆ A Center of Excellence placed at a major research university administered by NYSTAR for each of the designated State regions.
- ◆ The State must devise an economic development energy program for new high-tech startup companies. The existing Power for Jobs program offers no benefits for new or expanding companies that do not currently receive benefits.
- ◆ A one-stop-shopping site should be established for entrepreneurs where such innovators can learn about State and local supports, State filing fees and taxes, and incentives.
- ◆ New York’s Congressional delegation should be urged to exempt State refundable credits from federal taxation. It makes little sense for State taxpayer dollars to pad federal coffers.
- ◆ The State should encourage the global competitive position of its firms. Barriers restricting the free movement of capital and labor should be eliminated. The State should also urge the Federal government to adopt policies that enhance the position of U.S. headquartered multi-national corporations in the worldwide struggle for investments and growth. In particular, the State should oppose any changes to the present tax deferral status of foreign income.
- ◆ Every effort should be made to maximize utilization of ARRA funds as quickly as possible, especially in the areas of transportation infrastructure and academic research facilities.
- ◆ Our state universities, both public and private, must be allowed and encouraged to create affiliated research parks with campuses granted the



The creation and global marketing of viable and vibrant clusters should be the primary goal of the Empire State Development Corporation.

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If we simply reduce the cost of doing business in New York State it follows that more businesses will start and/or relocate here.

- ◆ Our state universities, both public and private, must be allowed and encouraged to create affiliated research parks with campuses granted the ability to lease and encumber properties to and for commercial entities.

What Will It Really Take to Have New York Claim the Global Leadership Position in the Innovation Economy?

By Thomas R. Ulbrich, University at Buffalo

I would be remiss to make any new recommendations on how New York can claim a global leadership position in the innovation economy without first acknowledging the reality that fundamental change needs to occur within current public policy in order to level the playing field for all New York State businesses in regards to being able to compete on a national and global scale. The underlying solution is reducing the cost of doing business in NYS. Period. This is not innovative, just common sense.

If we simply reduce the cost of doing business in New York State it follows that more businesses will start and/or relocate here; they will create jobs for our students; students will be able to stay here due to the many assets the region has; and, the state will in turn thrive as it is able to collect adequate tax revenue from a growing rather than declining population.

Report after report recognizes the fact that New York State based businesses conduct their daily operations at a competitive disadvantage with some of the highest costs of doing business anywhere in the U.S. We need a 180 degree shift in the state political climate that recognizes the onerous burden and unnecessary bureaucracy that current state government places on business.

A realization by and acclamation from our elected officials that it is not their function to directly create jobs would be a great start. Government cannot create the jobs we need to be a thriving State, but it can and should provide an environment of opportunity for entrepreneurs in the private sector by enacting public policy that would level the playing field for New York State businesses so that the cost of doing business here is on par with other states.

Implementing broad reaching policies that would balance the state budget, eliminate deficit spending, cap state spending growth to the rate of inflation, reduce property tax rates, reduce income tax rates, minimize regulation, invest in infrastructure, and implement significant worker's compensation and tort reform would all go a long way to strengthening New York State's business community.

We have an incredibly vibrant and diverse group of businesses in New York State that can and will rise to any challenge if only they were given an arena to operate within that is fair and level with their competitors. Everything else becomes relatively difficult to implement and perhaps even meaningless if we don't first work to correct the underlying issues that negatively impact the fundamental ability of our state's businesses to compete in the first place.



Engage NY State's Leading Universities as an Entrepreneurial Resource

The SUNY system is an integral link in the entrepreneurial economy as universities are the source of much of the intellectual property that has the potential to birth new ideas and new technologies. We should look to:

- ◆ Capitalize on SUNY's leading research universities' cutting edge research by making technology licensing policies and processes more user friendly in an effort to commercialize research, bring potential new products to market faster and ultimately create jobs.
- ◆ Invest in University Commercialization Matching Program – encourage SUNY research universities to allocate some of their licensing revenues to further support technology commercialization by using matching State funds to create enhanced product development funds (EPDFs) at the university level. Imagine if New York State matched \$100,000 EPDFs at Buffalo, Stony Brook, Albany and Binghamton. That would create \$800,000 in EPDF funding. If on average \$25,000 was invested per project, 32 projects would be funded. If 25 percent of those projects resulting in a start-up, eight companies would be formed. If they each generate 10 jobs (80 total) and the economic impact of each job is \$100k (arbitrary number), then \$8M of economic impact is created. That is just the early stage of these companies. Some will grow much larger; generate capital investment in NYS, additional research, and ongoing revenues.
- ◆ The SUNY system is the main engine of innovation in New York State yet it is constrained more than any other State system. UB 2020 should be passed and extended to other research universities.
- ◆ Capitalize on the large number of graduates coming out of New York State universities. Implement programs to encourage our intellectual capital to remain in New York State and use this asset to fill the need for jobs that will be created in the "new economy" through other entrepreneurial efforts. Creating opportunities for entrepreneurs creates jobs which in turn creates opportunities to keep our young innovative graduates right here in New York State.
- ◆ Invest dollars into research, best business practices and implementation of cutting edge industry innovation in New York's agriculture sector through programs at SUNY Agricultural and Technical Colleges. This is an asset that is often overlooked as it is not conventionally viewed as "new economy", yet it is a huge asset that many other states do not have. It needs to be preserved and moved to the forefront using research and innovation from our Agricultural and Technical Colleges. We need to invest heavily in this asset.



The SUNY system is the main engine of innovation in New York State yet it is constrained more than any other State system.

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We have all of the necessary assets here in New York State to be a leading force in advanced manufacturing.

- ◆ **Invest in existing SUNY housed entrepreneurial based** programs that currently work directly with the business community (e.g. University at Buffalo School of Management's Center for Entrepreneurial Leadership):
 - ◆ Take the existing success of the UB Center for Entrepreneurial Leadership (CEL) Programs and expand on them to create a model **SUNY Center for Entrepreneurial Excellence** which can then be used to:
 - ◆ Systemize and replicate the successful CEL Core mentor based model across the SUNY system creating a resource for existing businesses and entrepreneurial startups on a regional basis; and
 - ◆ Systemize and replicate the Hi-Tech CEL program for early stage Life Sciences companies across the SUNY system.
- ◆ Develop a **Virtual Center for Entrepreneurial Leadership** that identifies, organizes, and classifies the myriad of resources that are available to businesses in an easy to use web based searchable resource. New York State has no lack of resources for aspiring business owners. Unfortunately, these resources are fractured, often with little or no connectivity and can be difficult to find. The ability to locate and access these resources from a central location will make it easier for businesses to tap into the knowledge base they need to launch new ventures, locate to NY from out of state, and grow existing businesses. This "one stop" on-line searchable data base will make it easier for businesses to locate and access resources in their industry sector and geographic area via the internet. It would not attempt to eliminate or replace any existing resources, but rather be a "center of connectivity" where existing resource providers could be linked in a collaborative effort that keeps individual organization's identity yet allows each to be easily located and accessed by entrepreneurs.

What assets can be brought to bear to make the State, and especially Upstate, the world leader in advance, value added manufacturing?

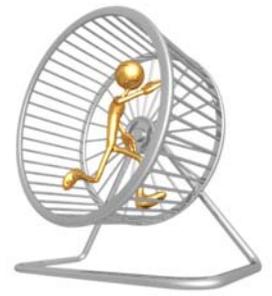
We have all of the necessary assets here in New York State to be a leading force in advanced manufacturing. New York State is rich with small to medium sized companies with a strong manufacturing history that have seriously slipped in competitiveness over the past decade and may soon be out of business. We have a small window of time to reinvigorate them for competition in the 21st century.

These firms will need to make investments in infrastructure and management that returns them to a strategic growth mindset rather than one where they profitably but inexorably decline. This can be done by investing in these companies with tax incentives, consulting services, innovation boot camps, etc. We should place an emphasis on financial and technical assistance to existing New York State manufacturing base to implement advanced manufacturing technologies with an emphasis on helping them to grow through innovation rather than spending money trying to attract out of state manufacturers to relocate here through large financial incentives.



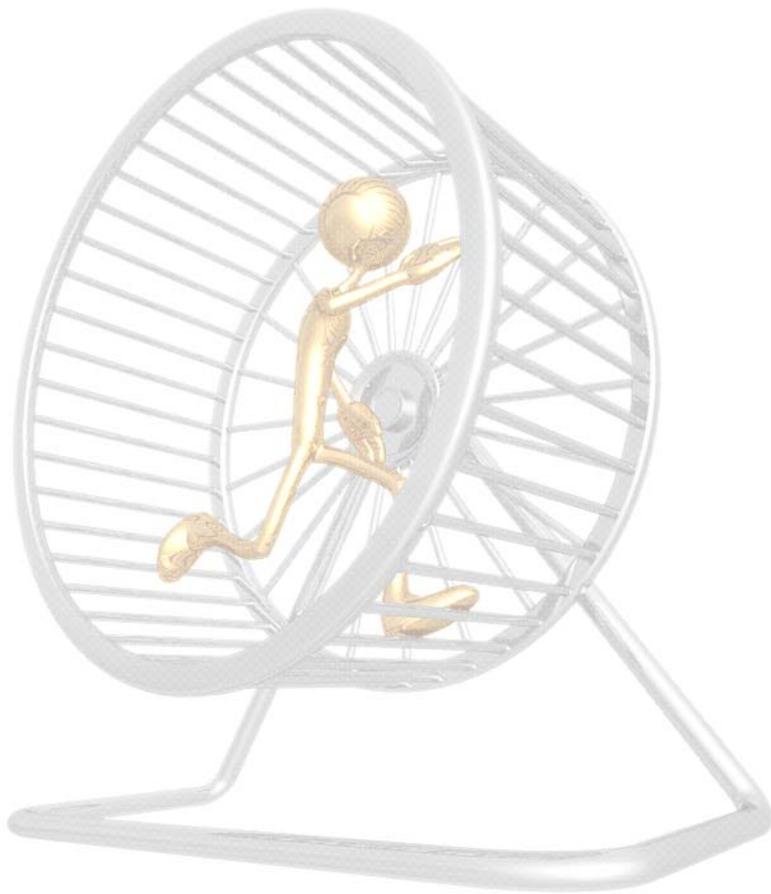
The State needs to do a coordinated, comprehensive review of economic development policy and announce an economic development agenda that propels, rather than directs, the private economy.

- ◆ We must be more aware of how much business leaves the State and the resulting loss in tax revenue and the burden it puts on those businesses that remain. Economic growth must be a priority.
- ◆ You can't make any new recommendations without **metrics**. We need to do an exhaustive inventory of our current economic development programs, calculate their reach, and identify overlaps, duplications and inefficiencies. Once we've completed this study we can recreate the entire package. Only when we have a clear picture of what currently exists in an organized format will we be able to move forward. The study should also include a comparative analysis of other states programs.
- ◆ We need a single state department or agency for economic development rather than multiple state agencies that are not coordinated or even worse competing with each other. This agency should be developed and run by professionals with business and economic experience, not by politicians and political appointees with little or no appropriate experience and skills.
- ◆ We need **additional New York State seed funding programs** (such as JumpStart in NE Ohio) to accelerate high potential early stage ventures. Not many investors will invest in technologies coming directly out of the lab. Having a New York State fund to complete early due diligence and make that first small investment will move the companies that get funding to the next level, prepare them for growth and instill additional confidence in the next round of investing coming from angel and venture capitalists.
- ◆ New York State needs to take a deeper look at identifying and developing **business cluster initiative** programs in various parts of the states. State funding should be used to identify potential geographic clusters across the state with special emphasis put on economically depressed Upstate New York. There is a large body of research on the subject regarding the abilities cluster initiatives have to increase competitiveness and reinvigorate regional based economies. This would be a subject worth investing State dollars into a project to create recommendations across New York State.



New York State needs to take a deeper look at identifying and developing business cluster initiative programs in various parts of the states.

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Tax Policy

One of the strange ironies of economic development policy discussions is that experts on the right and left of the American political spectrum generally agree that the ideal business tax structure should be centered on horizontal equity and providing a level playing field.

The common belief by these two sides is that the tax code should mainly be limited to providing stable and competitive revenue streams for government. In addition, they argue that a simple code with limited preferences eases administration and minimizes economic distortions.

The strategic use of the tax code is our best hope to attract global companies that wish to expand and headquarter in this State...

The goal is laudable. One of the tax code's essential purposes is to raise the revenues necessary to fund government's proper operations (although clearly there is great discrepancy on what the proper scope of those operations should be), and to avoid having the tax structure hamper the efficient distribution of scarce resources.

We are stressing a different paradigm; one tied to using incentives to spur the development of new goods and services that would not normally arise just from the functioning of existing markets. The tax code is the preferred and most effective method to push through New York's considerable competitive disadvantages and leverage our considerable strengths. Market forces alone will not produce the productivity enhancements and investment decisions this State desperately needs to combat its decades long relative economic stagnation.

The strategic use of the tax code is our best hope to attract global companies that wish to expand and headquarter in this State, and it is also the best method yet devised to aid nascent firms find a proper balance between having sufficient funds to operate and losing focus on the overriding need to produce products and services the market wants.

Further, in the long run, targeted tax incentives actually best serve to correlate with hoped-for market outcomes. Tax credits are more transparent, and the code provides enforcement provisions against fraud that is much beyond other government oversight functions.

The State must do all it can to encourage export focused, cutting-edge technology companies to come to, invest in, grow and remain in New York..

It is one thing to generally agree that tax incentives should be the State's primary tool to foster growth in the innovation economy. The discussion should be focused on what general policy and specific recommendations should we look to fashion.

The New York State business income tax code can be neither simple nor neutral. It must explicitly spur innovation and productivity with a focus on investment and science backed activities. Jobs are the overriding goal of this innovation and productivity, but these jobs arise better as a consequence of increased investment rather than incentives directly tied to job creation.

The State must do all it can to encourage export focused, cutting-edge technology companies to come to, invest in, grow and remain in New York. The best tool it has for businesses is the refundable investment and research and development credits targeted to manufacturers and specific high technology industries.

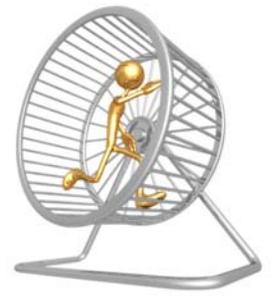
However, like the economy we are attempting to foster, our tax policy must truly be innovative. Seeking to copy other states' or nations' credits or grants will serve merely to make us the last in the nation of states to invest in with a couple of new bullets in our holster that our competitors already hold.

Here are some specific tax proposals that we believe could provide a comprehensive and effective innovation arsenal.

- ◆ Empire Zones and Brownfield Program. We urge that the current Empire Zone program be converted and transitioned from a location based incentive program tied mainly to job creation numbers to a Statewide fully refundable Investment and Research and Development Tax Credit limited to manufacturers and high-tech firms. Credits should be at a level of 12 percent for capital investments in standard plants and equipment and 15 percent for qualifying research and development activities. Credit caps in the Brownfield Cleanup Program should be eliminated for redeveloped sites primarily occupied by manufacturers and high-tech firms. State credits for real property taxes in the Empire Zone and Brownfield programs should, at a maximum, be for increased ad valorem values provided by investments. These reforms would provide much more than the estimated \$500 million a year needed to fund our new proposed programs that would place New York State at the forefront of effective global hubs in the race for high-tech industries.
- ◆ The existing Qualified Emerging Technology Credit for Facilities, Operations and Training should be expanded and modified to incorporate the changes suggested by Governor David Paterson in the SFY 2009-10 Executive Budget. The State's most effective existing tool for fostering and retaining high-tech firms should be enhanced to double the size of eligible firms, the employee count for foreign operations should not count against the personnel cap, the maximum per year benefit should be raised to \$500,000 a year including \$100,000 dedicated to the training program and the credit levels should be increased by two-thirds to 30 percent for research and development capital, and direct research related expenses and to 15 percent for expenses such as marketing and intellectual property protection. These measures would provide an additional estimated \$15 million a year in benefits to New York's approximately 300 eligible start-up and mezzanine level firms that are at the vanguard of the commercial application of our cutting-edge technologies.



- ◆ Human Pharmacological Credit. In order to provide a major spur to the growth of the biotechnology sector in New York State, we are proposing that the State adopt a targeted human pharmacological project fee credit which would fully reimburse New York taxpayers that conduct research and produces the results of such research in the State for the costs of approval and licensing of such products by the Food and Drug Administration. We estimate that this credit would provide \$10 million a year in incentives to the State's biotechnology sector.
- ◆ Facilities, Operations and Training Credit for each Regional Cluster Credit. The State should adopt a fully refundable credit for large technology firms that make a qualifying investment that would permanently employ at least 100 full-time positions in a regional cluster. The credit structure would be roughly based on the existing Qualified Emerging Technology Facilities, Operations and Training Credit and would be set at a level of 20 percent for capital and research and development activities and ten percent for marketing and intellectual property protection. Under this program an eligible firm could receive up to a total of \$200 million in refundable credits for a qualifying investment.
- ◆ Cellulosic Production Credit. The State should provide twenty-five cents for each gallon of bio-fuels produced in the State from non-feedstock sources such as grasses and woody fibers. Adoption of this measure would provide firm's producing fuels in this avant-garde sector up to \$10 million a year in State support to have New York take the leading place in an industry that is perfect for our geography, eco-system and transportation legacies.
- ◆ Alternative Energy Storage and Distribution Credit. Incentives should be put in place for the creation of alternative fuel storage and distribution facilities in the State to cover new sources such as electricity, bio-fuels and hydrogen for our transportation sector. This measure would provide an estimate \$10 million a year boost to creating this vitally needed infrastructure in New York.
- ◆ Commercial Alternative Energy Credit. Business should be granted incentives for the placement of wind, solar, fuel-cell and geothermal energy systems on their New York State physical plants. This measure, if adopted, would give an incentive of an estimated \$20 million a year to the alternative energy industry in New York and help reduce uncompetitive energy costs for New York State firms.
- ◆ Sales Tax Exemption for Academic Incubators. All activities occurring within and primarily for firm located within college and university affiliated and supported business incubators should be exempt from all State and local use taxes. An estimated \$5 million in support for these "best practices" job-creation engines would be provided by this measure.
- ◆ Personal Income Tax credit for graduates with a STEM degree obtained from a NYS institution of higher learning. Any graduate of a New York State college and university who receives a degree with a major in a physical or biological science, engineering or mathematics should be eligible for a non-refundable personal income tax credit at a level of full-time State University of New York tuition for up to four years during the taxpayer's attendance payable over a period of four taxable years.



The New York State business income tax code can be neither simple nor neutral. It must explicitly spur innovation and productivity with a focus on investment and science backed activities.

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Transcending the Hamster Cage

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- ◆ The State should, as soon as possible, roll back the series of business “loophole closers” that have been adopted in the last three years such as combined reporting, the increased capital base, expanded nexus definitions, and taxation of Article 9-A REITS that actually serve primarily as development entities. In addition, the State should firmly reject any and all attempts to provide “water’s edge” tests for combination and subsidiary income, to eliminate tax exemptions for nearly all subsidiary income, and eradicate rate preferences for manufacturers and high-technology firms. These adopted and proposed measures, justified on the basis of equity, simplicity, efficiency, and ease of compliance have created an absolutely horrendous message in our attempts to attract and retain high-technology firms and global headquarters to the State, and we firmly believe that these measures will cost the State business derived revenue in the longer term. It is also essential that the State retain the move to Single Sales Factor allocation and look to provide other preferences to encourage activities in export and high technology intensive industries such as further reducing income and entity level taxes on manufacturers and research intensive firms as much as possible.
- ◆ Cap property taxes and create balanced playing field for ad valorem taxation of commercial properties. Sky high property taxes on commercial properties in this State are the single greatest business cost burden in competitiveness rankings with our competing states in the fight for the leadership in the innovation economy.
- ◆ The Governor and the Legislature should urge the New York Congressional Delegation to eliminate the federal taxation of New York State economic development refundable tax credits and grants. It makes no sense for State taxpayers to provide benefits, either through tax credits or grants to a company just to see up to 39 percent of those funds be transferred out of property investments and job creation to the Federal Treasury. Providing certainty in this aspect of federal taxation would allow the State to limit the offers needed to bring major firms and other investments to the State.
- ◆ The New York Congressional Delegation should also be urged to oppose proposed federal corporate tax “loophole” closers, especially the treatment of deferred income, and have them push for a more globally competitive corporate tax structure (the combined State, local and Federal taxation of corporate income is currently the highest in the world although some Federal tax preferences ameliorate some of the harmful effects of these high rates.



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Transcending the Hamster Cage Unfettering New York's Static Innovation Economy

Energy

Yes, high prices encourage energy conservation, and there is no denying that this nation overall is still very energy inefficient. However, trying to force less energy usage through high prices forced through fees, taxes and regulatory burdens, diverts these resources from areas essential to our long-term societal well-being, no matter how worthy the goals and programs that benefit from these taxes and fees. Our energy infrastructure, generation, diversification and utilization needs are too vast and imposing not to use every available resource to meet these needs.

A similar concern arises in the way the State has been utilizing the resources and expertise of the New York Power Authority (NYPA). The State has repeatedly used NYPA as an energy "piggy bank", most recently sweeping hundreds of millions in the Authority's resources for budget relief. NYPA should be allowed to focus its talents and resources on the clean and economical production and transmission of energy.

The State has repeatedly been using NYPA as an energy "piggy bank", most recently sweeping hundreds of millions in the Authority's resources for budget relief.

Economic development power programs are needed for successful development of our manufacturing and high-technology firms. They need to be targeted to such companies and should as much as possible, be market driven and as-of-right. At this time, there is no substantial program for new and emerging firms entering or expanding in the State. Programs such as Power for Jobs need to be restructured to provide these innovation economy firms with competitive

prices and stability.

Connecting the energy field with other recommendations in the report, we are calling for two concentrated clusters; one for bio-fuels and the other for solar technologies. We believe that the State's natural and human capital resources give us a strong chance to successfully compete in these two nascent manufacturing areas, but we need to focus, concentrate and cluster.

Let us once again stress that, although the State has many structural barriers inhibiting its energy policy, it has taken many positive steps in the alternative energy and clean tech fields. We are proposing the "SixD's for innovative E" to

give a blueprint to enhance the positive objectives of the energy plan and the “45 by 15” and other strategic plans the State already has adopted. We are also hoping that adoption of these recommendations will further enhance our world-class research activities. Much has been proposed and enacted, but much more needs to be done.

Encourage as many innovative energy systems as feasible including wind, solar, tidal, geo-thermal, bio-fuels, biomass, waste-to-energy, enclosed tri-generation and fuel cells.

The Six D’s for Innovative E

1. **Decentralize:** The State’s generation, transmission and delivery system should move away from primary reliance on large base plants and extended grids. Roughly thirty percent of all power is lost in every 100 miles of transmission. Clean and renewable power, to as great as an extent as possible, should be generated and used locally. The State must provide leadership so that existing barriers restraining the local generation of alternative power are lessened. Efforts should be made to site large scale wind and solar generating projects on brownfields and landfills wherever practical. This contaminated site reuse must become one of Empire State Development’s, Environmental Conservation’s and the Energy and Development Authority’s highest priorities. The State and local governments should provide significant incentives aiding the generation of alternative power to the grid on small scales and for internal commercial use.
2. **Decouple:** Revenues for power generators and providers should not be based on amount of power used, but on the maximum efficiency for the purpose employed. “Bright” energy provisions such as smart meters, high efficiency transmission lines, and “peak hour” pricing would encourage energy innovations at an astounding pace. The development of an economical and reliable smart-grid metering network is one essential component of this aim.
3. **Diversify:** Encourage as many innovative energy systems as feasible including wind, solar, tidal, geo-thermal, bio-fuels, biomass, waste-to-energy, enclosed tri-generation and fuel cells. Incentives should be put in place, in terms of substantial, as-of-right and certain tax credits, and removal of potential regulatory barriers to encourage the siting and production of these alternative sources.
4. **De-carbonize:** In addition to alternative energy generation move toward an infrastructure system providing “on the go” recharging and bio-fuel refilling capabilities. What will be required are rapid charge batteries, hydrogen and bio-fuel refilling pumps. These cutting edge delivery points should become the new service stations for this century.
5. **Duplicate:** Redundancy and local generation are the keys to a sustainable and reliable power system that does not strangle economic growth. All large, energy intensive research universities in the State should generate their own power through alternative and small scale (< 100 megawatts), extremely efficient co-generation plants supplementing new non-carbon producing generation systems. The reliance on a massive, statewide, interconnected grid should be employed as last, rather than first, resort for the power needed to propel the innovation economy in New York.
6. **Deconstruct:** The energy system of the innovation age will move away from the massive base load, large-scale transmission models of the present. A local collaborative model is needed that generates clean



power where it is needed. The more micro we place the location of generation, then the better the result for sustainability, reliability and efficiency of our homes and small businesses. Home fuel cells, enclosed tri-generators, small-scale wind turbines and solar generation make the entire power structure more secure and less vulnerable to large outages and terrorist measures.



Synergy Between Innovative Technologies and Green Energy Development on New York's Industrial Brownfields.

By Linda R. Shaw, Esq., Future Energy Development

It may at first seem unusual that the topic of "brownfields" - the remediation and redevelopment of former industrial real estate contaminated by petroleum, chemicals or other hazardous materials would appear in an innovation technology report. The connection between new technology development and brownfields is as follows: it is good to site new industrial facilities on industrially zoned land. All new development, whether it is a biotechnology R&D facility or a new solar panel manufacturing facility, needs a home, and New York has an abundance of well located, inexpensive, industrially zoned real estate just waiting for such development. Here is a brief history of the State's brownfields policy and an illustration of the potential of this law to jumpstart New York's innovation energy economy.

Among state environmental agencies, the Department of Environmental Conservation (DEC) was particularly good at commencing enforcement actions against current property owners when environmental site investigations, which began to be required by banks in the late 1980's, revealed such contamination. This was particularly true in former industrial upstate cities such as Buffalo, Rochester, Syracuse and Binghamton, where the facilities were larger and land values lower, even for clean real estate. Due to the fear of liability associated with contamination, and the potential to own "upside down" real estate where the cleanup cost exceeds the land value, the brownfields dilemma began. This is a primary reason why Upstate New York has not been on the top of site selectors' radar screens for quite some time.

Old factories, defunct gas stations, manufactured gas plant sites, and other similar brownfield sites are in every part of the state, including Manhattan, and in each instance in which they exist, the surrounding land is impacted, and property values in the overall neighborhood are diminished. New, innovative technology companies understandably have found it hard to see the value in taking these old sites and bringing them back to life. However, since 2003, the State has had a fully refundable tax credit program which has made many of these sites, with other favorable market conditions, ripe for redevelopment. Our urban cores at last had at least a glimmer of hope that an innovation climate could take hold and lead to a sustainable rejuvenation of the contaminated and adjacent sites with a corresponding increase in property values.

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All new development, whether it is a biotechnology R&D facility or a new solar panel manufacturing facility, needs a home, and New York has an abundance of well located real estate.

The advent of an innovative Brownfield Cleanup Program (BCP) Law in October, 2003 has given New York at least a chance to compete in the global innovation struggle.

Reports prepared by think tank organizations such as the Northeast Midwest Institute have shown area-wide reinvestment occurs even when one brownfield is redeveloped in a given area. This has been demonstrated here in cities such as Yonkers and Rochester when these municipalities took it upon themselves to buy and remediate a single brownfield site. In Yonkers, remediation of the Otis Elevator Factory complex (now being marketed as a bio-tech center and a public library) has sparked new downtown development on every side of this building. In Rochester, the renovation of an art-deco Hallman's Chevrolet Car Dealership into a coffee shop and adjacent town-house residential development project, began a new trend of downtown living in the area that has proved attractive to the talent class innovation requires.

The advent of an innovative Brownfield Cleanup Program (BCP) Law in October, 2003 has given New York at least a chance to compete in the global innovation struggle. While New York was one of the last industrialized states in the country to pass such a law, the advantage in being one of the last states was that New York was able to evaluate the mistakes made in other state programs. The refundable tax credits were at a sufficient level and seemed transparent and certain enough to make urban development justified.

It unfortunately took New York almost ten years to pass the BCP after numerous debate and collaborative sessions between the private sector, NYSDEC, municipalities and community groups, but when it did, New York for once got it right. The program included all the necessary elements including the refundable tax credit financial incentives for developers to take notice of the program by early 2004. Developers, who would have never before purchased contaminated real estate, because they frankly did not have to, began purchasing such real estate throughout the state.

However, the program quickly became a victim of its own success. The developers did all they promised to do under the law. Projects were reclaimed at the highest standards in the nation and were redeveloped to their highest and best use – a first in the nation's brownfield history. In addition, the jobs created by the program have come in at a lower job per credit amount ration than any of the State's other programs including capital grants and the Empire Zone program. However, the "bill" for the State credits starting coming due in 2007 at the advent of the new executive administration. Subsequently, DEC began restricting eligibility for the program.

So instead of the BCP becoming a beacon of what New York can do right in fostering innovative policies, it has become a poster child of what New York does wrong – over regulation, broken promises, and extreme and adverse politicization of what should be market driven programs.

However, given the massive global economic downturn combined with the threat of global warming, the need for a reemergence of the BCP for the development of new industrial green energy solar and wind production facilities, bio-fuels manufacturing and storage locations, and associated research and development incubators for the green energy industry began to emerge. The BCP Law has already effectively been used by a wind developer who took advantage of the program and redeveloped a portion of the former Bethlehem Steel brownfield site in Lackawanna, New York. This portion of the site, just south of the City of Buffalo, is now home to ten new wind turbines solely due to the State's innovative BCP Law.

Other green energy developers and clean-tech companies were just beginning to take advantage of the BCP when NYSDEC suddenly ceased its enthusiasm the first year the tax credits became due. The State desperately needs the



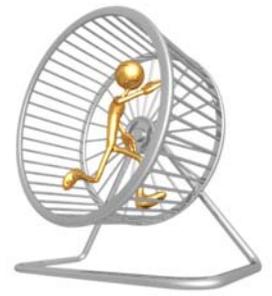
jobs, urban reclamation, tax revenues and the boost to the alternative energy sector the BCP promises.

The tax credits prior to June, 2008, were applicable to all Site Preparation costs (costs associated with demolition, investigation, remediation and otherwise to prepare the site for the project) and tangible property costs (capital costs for construction), and ranged between 10-22 cents on the dollar and were uncapped. These credits were capped after the 2008 effective date providing another hurdle to the flowering of our alternative energy industry. It is essential that these caps be removed for clean-tech projects, and that the program be aggressively marketed to the rest of the country.

If the significant BCP tax credits are combined with other incentive program, such as the new 30% federal grant in lieu of tax credit program for green energy facilities, a green tech company could save 48 cents on the dollar on development costs. Such savings should attract financing necessary to do the project and makes New York the best state in the country to build these projects since no other State has an equivalent program providing the levels of incentives ideally with the certainty that developers need.

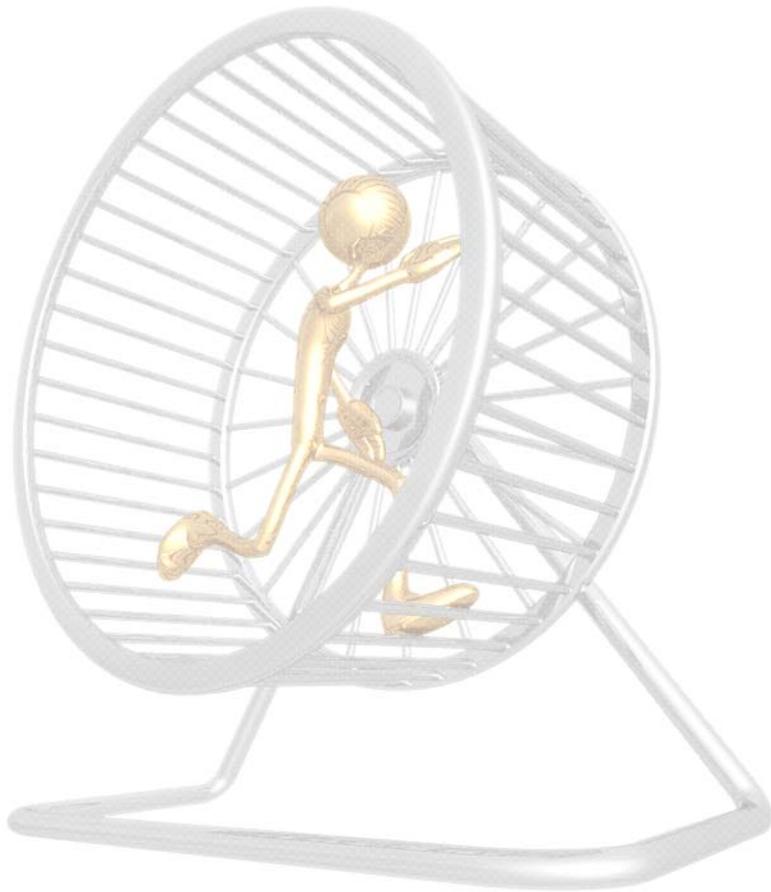
Since the upfront costs for siting new industrial and energy facilities are so staggering, the BCP tax credits, particularly when coupled with new federal tax incentives, can more than offset any risks of siting the facilities in New York. The BCP is the one tool New York has to put us at the front of the pack in the attempt to site bio-fuel refineries, solar energy manufacturing centers, advanced battery production plants and large solar and wind power arrays.

In sum, the new brownfield tax credit program was designed with a goal of assisting New York attract large new job creating projects to its otherwise undesirable old industrial real estate. The faster green energy firms are educated about the immediate opportunity to take advantage of this program, the more green energy research, products, firms and jobs will be made in New York.



The State desperately needs the jobs, urban reclamation, tax revenues and the boost to the alternative energy sector the BCP promises.

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Transcending the Hamster Cage Unfettering New York's Static Innovation Economy

Biotechnology and Biopharmaceuticals

In the global struggle for the future growth of the biotechnology and cutting edge genomic based pharmaceutical industries, New York State's life science commercialization may be facing eventual extinction. The battle is not yet irretrievably lost, but time is running short, and radical changes in how we have approached this industry must be made.

Despite the world's largest concentration of leading life-science research universities, pockets of brilliance such as Center of Excellence in Bioinformatics at the University at Buffalo and the Center for Advanced Technology in Medical Technology at SUNY Stony Brook, New York lacks the cluster concentrations, risk promoting environment, high quality and affordable commercial space, and respect for its existing pharmaceutical and medical device industries to allow it to thrive in the world's most hyper-competitive industry.

The battle is not yet irretrievably lost, but time is running short, and radical changes in how we have approached this industry must be made.

Some of these issues are not unique to New York, but may be infecting the entire nation. China is constructing a \$10 billion biotechnology commercial park outside Beijing to go along with its \$20 billion effort in traditional pharmaceuticals outside Shanghai. Singapore's \$7 billion biotech park is the largest per capita effort in the world. South Korea recently announced a \$4 billion effort that will specifically target bio-science promising fields that they feel they can poach from

the United States and Japan. India, Australia, Germany and England have all recently announced major new biotechnology commercialization initiatives. No place in this nation, certainly not New York, has any proposed strategic initiatives on the horizon to compete with these ventures.

The bottom line is that this country is facing the danger that another industrial sector where we long have held a nearly hegemonic dominance is facing a drastic and possibly irreversible decline due to antiquated industrial plants, lack of strategic vision, complacency, and ideological blinders.

New York has made repeated and expensive efforts to jump-start its position in the national and global struggle. However, these efforts have often been too scattered, unspecific, platitude ridden, overly focused on research rather

New York's number of public biotech firms has declined in half in the last decade, and it has lost 14 percent of its count in the last year.

than commercialization, and do not get at the fundamental problems inhibiting the development of a successful innovation culture that this report has been highlighting. There are forty other states that have ongoing or emerging biotechnology initiatives, and a lot of them are doing better than New York.

In terms of the private sector, New York is not in this mêlée from a current strong position, and our overall standing is rapidly shrinking. In 2008, no state with a major life-science presence demonstrated a greater loss of market capitalization of its biotechnology firms. New York has seen a fifty-three percent drop in its market capitalization compared with a seven percent drop nationwide. New York's number of public biotech firms has declined in half in the last decade, and it has lost fourteen percent of its companies in the last year.

This decline has take place while major competitors such as California, Georgia, Massachusetts and Maryland have remained stable, or, as in the case of North Carolina, have shown actual growth. New Jersey has now passed New York in its biotech footprint, a drastic reversal in positions from four years ago.

Of the 41 largest pharmaceutical and biotechnology companies operating in the United States, only two, (Pfizer and Bristol Meyers Squibb) are currently headquartered in New York. This in itself would not be overly alarming, except that the ability to attract and retain headquarters is one of the overriding keys to New York leaping to the forefront in the innovation economy. The assets we have for drawing company central offices should be one of the main strengths of this State. Clearly, in this industry at least, we are doing something very wrong.

Actually, New York's results in this field are very disappointing. One of the key drivers to the creation of a vibrant and growing private sector life-science commercialization sector is federal research dollars. This research is a key driver in every state except for New York.

Federal Research Dollars by New York State Region Academic Year 2007-08		
Region	N.I.H. + other H.&H.S.	Total for Region
New York City	\$1,319,747,913	\$1,431,926,485
Capital District	257,234,227	320,907,305
Western New York	270,381,345	287,407,110
Long Island	156,669,925	176,018,660
Central New York	100,436,097	120,673,971
<u>Lower Hudson</u>	<u>72,430,782</u>	<u>81,933,701</u>
Total New York State	\$2,176,900,289	\$2,418,867,232



New York State ranks third after California and Texas in total federal life-science dollars with roughly 15 percent of the total research pie. Unfortunately, we are so far below every other State for private sector biotechnology jobs per research dollar that we fall off the map. As of 2007, of the roughly 1.2 million individuals employed in the private life-science and biotechnology sectors in the United States, only 80,000 or 6.5 percent are in New York, and most of these New Yorkers actually work in private universities or hospitals. What in some ways is even more distressing, the average compensation for these positions is about \$20,000 less per year than our peer states, but the education levels attained by the New York workers are substantially higher.

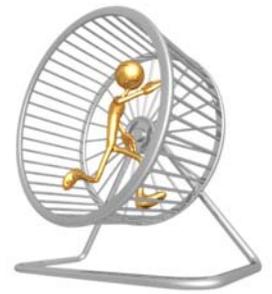
We must realize, and our policy and academic research leaders must immediately act on this realization, that this industry is the most sought after and value adding segment of all sectors in the economy. These firms, large and small, can basically choose to locate, and will be given massive incentives to make such a choice, anywhere in the world. New York must compete for this sector on a truly global scale. We are not just competing with site selectors looking at New Jersey and Massachusetts, but also India and Switzerland.

In no other area is the necessity for a brand-able and tightly located commercial more apparent. However, the formation of this cluster, wherever it is most desirable to place, cannot in any way diminish the research accomplishments at Stony Brook, Cold Spring Harbor, NYU, Columbia, RPI, the University at Albany, Syracuse, Clarkson, Cornell, the University of Rochester, the University at Buffalo – the list goes on and on. However, to compete on this global scale, we must have a targeted and world recognized regional concentration, with a large-scale anchor industrial tenant, vertically integrated community college education, world-class commercial space and a globally recognized, multi-institutional research institute. For no other innovation economy sector is the right mix and type of incentives, which we argue include as-of-right Investment Tax and Research and Development credits, an expanded Qualified Emerging Technology Company (QETC) credit program, a regional anchor “super credit” and support for academic incubators more important.

The State must end the “cross-purposing” of its desire to foster this most vital sector with a general attitude that punish our major pharmaceutical firms. We have placed too many regulatory barriers, limitations on the development and access to therapies, reimbursement restrictions, and price controls utilized to use this sector. These restrictions in the State’s public health program are vastly disproportionate in cost. New York needs to be doing all it can to nurture its bio-pharmaceutical sector, not to create the appearance that the Empire State is the very last place these firms want to invest.

The State should limit the use of approved formularies to prove disparities between the use of research based and generic treatments. Such choices should be between a patient and their physician.

In 2006, the State enacted legislation authorizing the creation of a designated Center of Excellence in life sciences in New York City. The Center of Excellence award places a location at the top of State choices for funding, research initiatives and marketing. The State should move to fully implement the Center and tie it to the emerging East River Science Park and Brooklyn Army Terminal facilities which will hopefully provide a source for sorely needed first class commercial biotech space in the State.



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The State must end the “cross-purposing” of its desire to foster this most vital sector with a general attitude that punish major pharmaceutical firms.

The State should make concerted efforts to provide, to as great an extent as possible, a legislative and regulatory environment that will support a market driven environment to support adequate intellectual property protections and provide adequate potential returns for financially risky state-of-the-art treatments and technologies. Specifically, we hope that a University will internally devise a licensing structure that will encourage technology transfer. If successful, this structure would serve as a best practice for broader and more liberal university technology commercialization, intellectual property and licensing policies rather than the State imposing a one-size-fits-all dictum in these crucial areas.

New York State should seek to assist firms to transcend the funding valley of death and aid them with the high cost and risks associated with therapy developments through the expansion of the QETC Facilities, Operations and Training program and enactment of the proposed human pharmacological fees credits. Again, let us stress that the use of such refundable tax credits will produce better results for the State and its firms than grants or loans, especially if such grant or loan programs are financed through debt.

New York should adopt a requirement that any proposed regulations on the pharmaceutical and biotechnology industries first conduct an assessment on the potential impact of such regulations on the economic viability and global competitive positions of these vital commercial sectors in New York. If such an assessment determines major deleterious effects on a sector, the regulation should not be adopted unless the State can demonstrate an overriding risk to public health and welfare.

The State should reform existing incentive programs administered by Empire State Development and the New York State Technology and Academic Research Authority so that they provide more effective supports to emerging biotechnology firms. Many State programs require that firms have a marketable product before these companies can receive State grants or other incentives. Clearly, such requirements do not “work” for biotechnology or genomic firms who have concepts years away from market.

Our New York State congressional delegation must be strongly urged by the Governor and the State Legislature to not further restrict intellectual property protections, not act to discourage investments and the location of global headquarters in this State, and to forcefully oppose the use of dedicated taxes on the pharmaceutical and medical device industries to pay for expanded governmental provided healthcare.



The Biopharmaceutical Industry in New York State

By Brian McMahon, New York State Economic Development Council



Below is a list of general principles that will foster a stronger and more vital biopharmaceutical industry in New York State. These principles are a guide we believe the State can use in its effort to create the leading, state-of-the-art environment for the biopharmaceutical industry in the United States. The principles are designed to bolster the entirety of the industry including smaller start-up companies as well as the larger established companies. A healthy industry will foster enhanced collaborations with academia and will ultimately benefit patients. In New York State extensive synergies exist in higher education and industry that have the potential to expand and multiply to generate further job creation and economic opportunities.

1. Create a legislative and regulatory environment that promotes access and eliminates regulatory barriers to state-of-the-art treatments/technologies for all patients in a manner that contributes to optimal health outcomes and is in alignment with initiatives to retain and grow the life science sector in New York State.
2. Create a legislative and regulatory environment that supports intellectual property protection and reimbursement for state-of-the-art treatments/technologies developed by research-based manufacturers and healthcare organizations, in a manner that supports the costs and risks of research and development, contributes to optimal health outcomes, and aligns with the initiatives to retain and grow the bioscience sector in New York State.
3. Eliminate regulatory barriers to the marketing of state-of-the-art treatment/technologies developed by research-based manufacturers and healthcare organizations, in a manner that contributes to optimal health outcomes, and is in alignment with initiatives to retain and grow the bioscience sector in New York State.
4. Continuously benchmark New York State with other states and countries in the areas of tax, regulation, commercialization of technology, economic development, and business marketing policies. Only through awareness of what states are doing can New York State become truly competitive in the innovation economy.

Potential Priorities

- ◆ Reject proposals that create new regulatory barriers or access restrictions on research-based, state-of-the-art treatments developed by the life science sector.
- ◆ Reject proposals that would impose new reimbursement restrictions or additional price controls on research-based, state-of-the-art treatments developed by the life science sector that would not support the costs

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Our New York State congressional delegation must be strongly urged by the Governor and the legislature to not further restrict intellectual property protections...

In New York State extensive synergies exist in higher education and industry that have the potential to expand and multiply to generate further job creation and economic opportunities.

- ◆ Reject proposals which would impose unnecessary and/or duplicative regulatory barriers surrounding education and marketing of research-based treatments.
- ◆ Reject proposals which would impose unnecessary and/or duplicative regulatory barriers on clinical research or that would discourage clinical research in New York State.
- ◆ Support proposals that seek to achieve parity between rebates assessed on research-based brand-name manufactures and generic manufacturers. There is currently not equity in rebate policies for research-based brand name manufacturers and generic manufacturers.
- ◆ Support proposals to broaden the Research and Development (R&D) tax credit to create incentives for contracted R&D and to recognize large companies engaged in R&D in New York State. New York State's QETC credit currently benefits small companies (with less than 100 employees and \$20 million in sales), rather than large companies (whose R&D is symbiotic and inextricably linked to smaller companies) and currently does not recognize contracted R&D in the State. Georgia and Maryland are examples of states that have broad based R&D credits that encourage larger companies to increase R&D spending in their states. All R&D tax credit bases should include R&D that is contracted in the State.
- ◆ Support proposals that would create a tax incentive program for the life sciences industry in the State, in particular the proposals should focus on supporting and growing the manufacturing of biopharmaceutical products in the State. Such a program should provide incentives for companies that stimulate economic activity in the State and for the retention, support and creation of high technology, quality jobs and should focus on lowering the state and local tax burden on such companies.
- ◆ Require that any new regulations on the life sciences industry be assessed in terms of potential impact on patient outcomes, overall healthcare spending and economic impact on the biopharmaceutical sector.
- ◆ Support New York State initiatives that help raise public awareness of the Partnership for Prescription Assistance (PPA), a service sponsored by America's pharmaceutical research companies to help patients in need gain access to prescription medicines. New York State currently has a consumer website to help New Yorkers find the least expensive prescription drugs at the retail pharmacy. This consumer website and other government agency websites, should be enhanced to link to the Partnership for Prescription Assistance. The PPA provides a single point of access to more than 475 public and private patient assistance programs that could provide help with more than 2,500 brand-name medicines, including a wide range of generics. More than six million Americans have been helped by this program to date.



- ◆ Encourage New York officials to support policies at the federal level that promote emerging technologies such as a pathway for bio-similars that protects patient safety while continuing to preserve the incentives that support future innovation in biotechnology and biological medicines.



Economic Impact of the Biopharmaceutical Industry in New York State

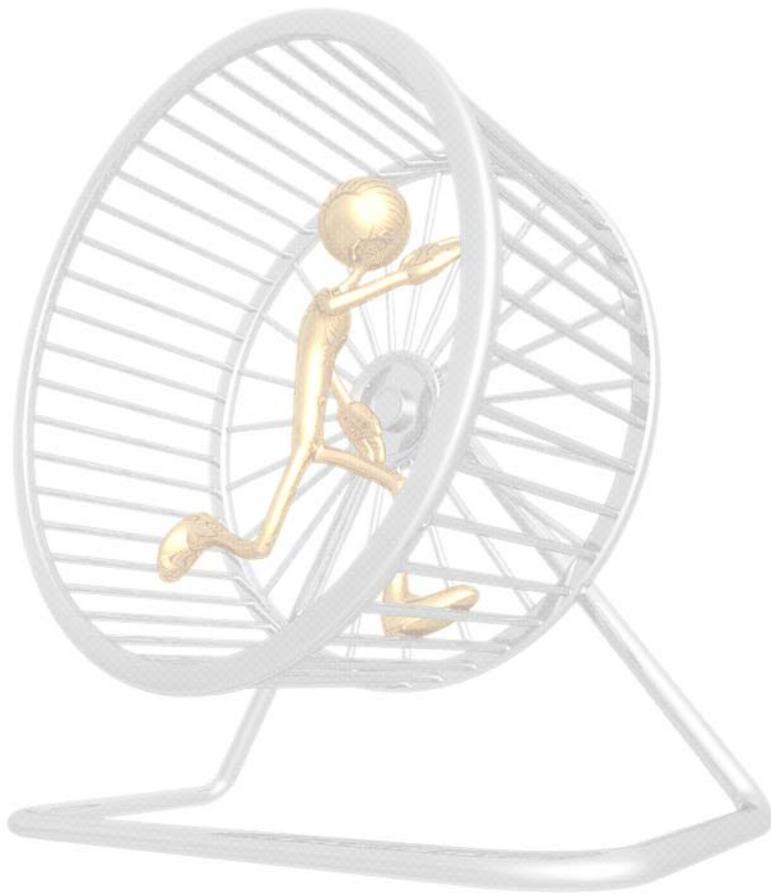
The biopharmaceutical industry directly employs 55,446 people and is responsible for 160,283 jobs in other sectors, for a total of more than 215,000 jobs in New York. The industry is responsible for \$845.6 million in federal and social security taxes and \$121 million in state taxes. In 2008, New York was second in the nation with 5,053 clinical trials targeting cancers, rare diseases and other important conditions. Currently, the State has more than 10,000 clinical trials underway.

R&D Spending

It takes 10 to 15 years to develop a drug at the cost of approximately \$1.3 billion. Biopharmaceutical spending (\$50.3 billion in 2008) is more than twice of all other National Institutes of Health spending combined (\$29.5 billion). Biopharmaceutical companies develop 92 percent of all drugs in the market.

Reject proposals which would impose unnecessary and/or duplicative regulatory barriers on clinical research or that would discourage clinical research in New York State.

Transcending the Hamster Cage



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