



Delivering on the Promise of New York State

A Strategy for Economic Growth & Revitalization

Prepared for:

Empire State Development

ATKEARNEY

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Executive Summary

Viewed as a whole, New York State's economy has staggered for over three decades, listing between the prosperity of New York City and the increasingly dire economic plight of upstate communities. While net job growth in the state has been positive, not all jobs are created equal. Older, higher-paying private sector jobs – frequently found in the manufacturing sector – have been increasingly replaced by lower-paying positions, many of which depend on public funding. In his first State of the State address, New York Governor Eliot Spitzer called for a revolution in how New York approaches business attraction, retention and growth, a revolution led by Empire State Development (ESD), the state's primary agent for economic development.

The Governor's timing is perfect and his issues are right, but the question remains, "Can his goals be achieved?" Statewide, New York has historically been a very expensive place to do business. If the cost of doing business in New York State was reduced merely to the national average, an aggregate \$35 billion a year would fall to the bottom line of the state, its businesses and its residents. To achieve Governor Spitzer's goals of revitalizing the upstate economy and accelerating economic growth in every region, the state will need to reform its current policies and regulations and dramatically restructure its economic development efforts.

The Innovation Economy

This report examines the relationship among several economic drivers. We focus significant attention on the "Innovation Economy" – commercial sectors competing globally in markets defined or enabled by technology. We also take an in-depth look at New York State's historical and current governmental economic development efforts, especially those associated with ESD. Finally we look at the state itself – its assets, its liabilities, its competitive positioning, and, most importantly, its citizens.

The report was produced by A.T. Kearney, a broad-based, general management consultancy,

which was commissioned to provide fresh, objective and strategic business perspectives. Much of what it contains synthesizes the thinking of the more than 200 business leaders, academics, state officials, and local development leaders interviewed between January and April 2007. The study was also informed by economic analysis and primary and secondary research into ESD's operations.

This report describes a future in which both upstate and downstate New York are united into "One New York" – a unified statewide economic growth engine fueled by the development of a high-technology infrastructure. Such an infrastructure can be created through the combined efforts of the state, ESD, businesses, investors, and the academic and research communities.

The report suggests a strategy for capitalizing on New York's rich and diverse assets to encourage the growth of the Innovation Economy, statewide and within every region. It proposes that the best way to execute this strategy is to focus on the distinctive assets of each region – educational and research institutions, established and prospective employers, natural and human resources – and connect them together into a statewide, high-technology enabled commercial infrastructure.

There is a practical reason for this approach. Each job outside the Innovation Economy pays about \$30,000 annually and creates approximately one additional job. Each position in the technology-enabled industries, on the other hand, pays an average of \$65,000 and creates 3.5 additional jobs.

If New York is to enjoy a long-term economic renaissance – one that benefits every region – it must look toward the Innovation Economy. As the state's primary engine of economic change, ESD faces significant challenges of its own in making this directional shift. New York is lagging many other states and countries in the competition for business investment. It has some unique assets that can help it catch up to and even surpass the market leaders, but these are not enough to guarantee success. New York needs a strong vision, strong

leadership and a refocus of state economic development products. Restrictions to new business, especially Innovation Economy businesses, must be eliminated and the cost of doing business must drop. As Governor Spitzer said, New York State needs a revolution in its entire approach to economic development.

Strategies for Growth

ESD must focus on managing both short and long-term strategic issues influencing statewide private sector investment and economic growth. More immediate initiatives – like those associated with retaining a major employer, or preserving or encouraging other critical local activities – will need to be evaluated on a case by case basis. The criteria for funding near-term initiatives should include an analysis of their viability over time, and the projected impact of their contribution to other, longer-range objectives. Ideally, funded near-term initiatives would also preserve one or more critical assets and facilitate the path to economic development rather than attempting to reinvent or reroute it. Longer-term strategic initiatives should focus on sectors that meet three criteria. They must be technologically centered or enabled, compete globally and be capable of building competitive advantage utilizing New York State's assets.

ESD must realize that New York State's economic future will be shaped by its ability to attract, retain and strategically align with Innovation Economy sectors. The state's strategic initiatives should also embrace mature sectors that meet the strategic criteria, such as financial services, insurance, media, arts and entertainment. These sectors have been the linchpin of New York's economy in recent years, but with profitability topping the corporate agenda, lower-cost locations become increasingly difficult to resist for these mostly downstate firms.

The theme of Governor Spitzer's inaugural address was the need to bring New Yorkers together, to overcome the balkanization that has split upstate from downstate, cities from rural and suburban communities, affluent from poor. The Governor called for "One New York". On

a practical level this also means keeping New York-based jobs in the state.

Governor Spitzer believes the "One New York" model will appeal to mature sector companies – including certain manufacturing businesses – headquartered in New York City that need to locate their corporate operations, contact centers or other activities in lower-cost upstate regions. There is evidence to support this belief. For example, many large employers including HSBC, AXA, Bank of New York, Citigroup, GEICO, Sodhexo Marriott Services, IBM, Sikorsky Helicopter and Time Warner Cable are already enthusiastic about their experience with operations in Western and Central New York.

New York's best hope for the future is to focus both statewide and regional investments on emerging sectors – especially nanotechnology, bioscience and cleantech – which have the potential to create up to 330,000 new jobs by 2014, doubling the rate of job growth the state experienced between 2002 and 2006. The fact that none of these sectors even existed 35 years ago is a testament to the power of technology companies to positively – and dramatically – impact economic development and commercial growth.

With respect to some of these sectors, New York is already late to the game and needs to play catch-up with other states and countries also focused on attracting high technology industries. Moving forward, one of ESD's greatest challenges will be to monitor the next emerging technology sectors and try to gain prime mover advantage in terms of attracting and developing them. By building connections within and across these sectors, ESD can become the catalyst for economic growth in New York State.

Economic development is as much art as science. Balancing the needs of established commercial forces against those of companies or industries that currently do not exist, or those whose potential impact dwarfs their current operations, is not easy work, especially when resources are limited.

Economic Development Programs

Private sector investment, facilitated by a business-oriented state economic development agency, is New York State's best hope for becoming a competitive force in the Innovation Economy. Continued support of public sector programs alone will not in itself create the desired outcome and, in fact, will make New York less competitive over time.

ESD also needs to provide customized solutions. The agency should have authority to fund operations – capital or basic research – depending on the most pressing needs of strategically targeted sectors or businesses, and draw on the most appropriate economic development tools available.

Any new approach to program development needs to be accompanied by new metrics. Traditional metrics such as net job creation are not necessarily appropriate measures of programs supporting Innovation Economy businesses and industries. ESD needs metrics better aligned to its overall strategy, such as average total compensation per job, percentage of workforce employed in the Innovation Economy, and inflows of private investment.

This report contains detailed summaries of several current economic development programs and recommendations for their improvement. The fact that economic development is often funded by legislative appropriation rather than through products administered by ESD is a strong reminder that the state has lost confidence in the agency's ability to carry out its key mission. The programs reviewed in this report would strongly benefit from a revised approach. In some cases, such as International Trade and Investment and Travel and Tourism, flawed execution and lack of professional leadership threaten to overshadow any possibility of success.

Other programs such as Empire Zones were found to be significantly compromised. In other cases such as the New York State Office of Science, Technology and Academic Research (NYSTAR), the underlying problems were found to be structural and organizational. The analysis showed that, over time, NYSTAR's best programs should be preserved – but ought to operate inside ESD.

Organizing for Growth

That said, almost everything about the historical ESD needs to change, beginning with its name, which fails to leverage the state's most recognizable asset, the words "New York." As the business of luring private investment into a state becomes increasingly competitive, ESD's representatives should not be handicapped by first having to explain the name "Empire State." A new name is, in some ways, the smallest change ESD needs to make.

Beyond this, ESD essentially needs a complete overhaul of its operating and organizational model. The agency should act as the nucleus for the state's economic development activities, becoming a "Business Concierge" providing end-to-end solutions for business. Whatever it is eventually called, the new ESD needs a new operating model characterized by strong, central leadership coordinating five key planks: Relationship Management, Strategy and Analytics, Product Management, Marketing and Operations and Support.

As the integrator of all economic development programs and policies, a renamed ESD should be given control of the economic development funding functions of many existing New York State agencies – in some cases, completely absorbing what are currently free-standing programs or agencies. In turn, it should leave the social development aspect of its work to programs with community rehabilitation as their central focus.

Finally, through strong, energized professional leadership, ESD also needs to become a seamless integration of Empire State Development Corporation (ESDC) and Department of Economic Development (DED).

Conclusion

The road ahead is clear. Some significant challenges must be addressed on the way to fulfilling Governor Spitzer's vision of "One New York" – in which integrated regions would benefit from technologically-inspired economic growth. Through a renewed ESD, enabled by the ongoing support, confidence and vision of Governor Spitzer, strong regional and industry relationships, and support from the Legislature, New York State can once again leverage its significant assets and achieve a future more glorious than its fabled past.

Preface: From the Industrial Age to the Innovation Economy

Today, New York State remains one of the world's largest economies. Its workforce of 9.5 million produces an annual Gross State Product of \$960 billion, ranking it ahead of all but 11 national economies.¹ In his first State of the State address, New York Governor Eliot Spitzer declared that the state's economic policy as executed by Empire State Development (ESD) – nominally the state's chief agency for leading-edge economic development – had failed.² Without significant change, he warned, the pattern of the past would become a template for future failure. Governor Spitzer proposed an alternative: a radically reoriented ESD capable of effectively representing both parts of what he called "One New York" (the downstate New York City metropolitan region and the upstate counties). To implement his ESD change strategy, Governor Spitzer hired key executives with experience in both economic development and business, charging them with changing ESD's culture and providing the state with new vision and leadership in economic development.

A.T. Kearney, Inc., a broad-based, general management consultancy, was commissioned to provide fresh, objective and strategic business perspectives. This report is a product of that effort. Much of what follows here synthesizes the thinking of the over 200 business leaders, academics, state officials, and local development leaders interviewed between early January and late April 2007. The study is also informed by economic analysis and primary and secondary research into ESD's operations.

The results of this report will not shock any serious student of New York State's economic history. The state must revise its strategy in order to build long-term economic competitiveness and develop a model for translating strategy into action. This requires a move away from New York's past dependence on public sector job creation in favor of encouraging and facilitating broad-based private sector investment and business development. Putting such a plan into practice requires a statewide effort that is sensitive to regional differentiation, led

by a reinvigorated ESD, to facilitate and integrate connections between the private and public sector forces shaping business growth in New York.

Chapter 1: Current Situation and Vision

Summary

Viewed as a whole, New York State's economy has faltered over the last three decades. While net job totals in the state have been positive, older well-paying private sector jobs have been increasingly replaced by lower paying, publicly-funded positions. If New York is to enjoy a long-term economic renaissance – one that benefits every region of the state – it needs to look toward the Innovation Economy – jobs centering on, or significantly enabled by, high technology. New York has some unique assets that make growth in this sector possible, but it needs a shift in thinking. Restrictions to new business must be eliminated and the cost of doing business must be lowered. Governor Spitzer has called for a revolution in the state's approach to economic development, a revolution led by ESD, the state's primary economic development engine. In order to be successful, ESD faces significant challenges and must reposition its efforts.

Captive to a Glorious Past

Thanks to its ports, vast natural resources and the emergence of New York City as one of the world's most important urban centers, New York State was almost perfectly positioned for its past commercial glory. Unfortunately, in large measure, it still is. Like other centers of 19th and 20th century industrial prosperity, New York State knows the pain of being a former pacesetter all too well.

Sidelined by more agile, entrepreneurial and scientifically-trained competition, the state has been desperately trying to get back into the economic competitiveness race for over a decade. But the hurdles are high. Figure 1.1 shows how, from 1990 to 2005, private sector job growth throughout the state lagged the national average.

During these same years, manufacturing employment decreased from 960,000 jobs to 580,000, a rate of decline greater than the

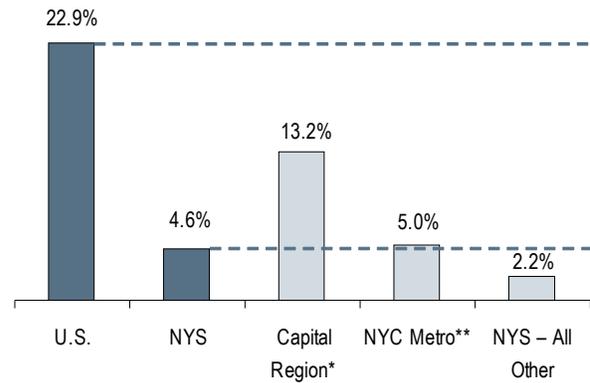
national average.³ As Figure 1.2 illustrates, New York managed to replace these 380,000 lost jobs.⁴

But all jobs are not created equal. Higher-paid manufacturing jobs were primarily replaced by lower wage positions mainly in the public and publicly-subsidized private sectors. This has proved a poor trade-off. Not only did past economic policy fail to turn the state's fortunes around, it has done little to make New York State attractive to new businesses.

About 30 years ago, both upstate and downstate New York counties began to experience economic declines. Over the past 15 years, fueled by globalization and led by New York City with its critical mass of global business headquarters, financial services companies and cultural institutions, the downstate counties successfully rebounded. The situation is much different in upstate counties, which followed

Figure 1.1

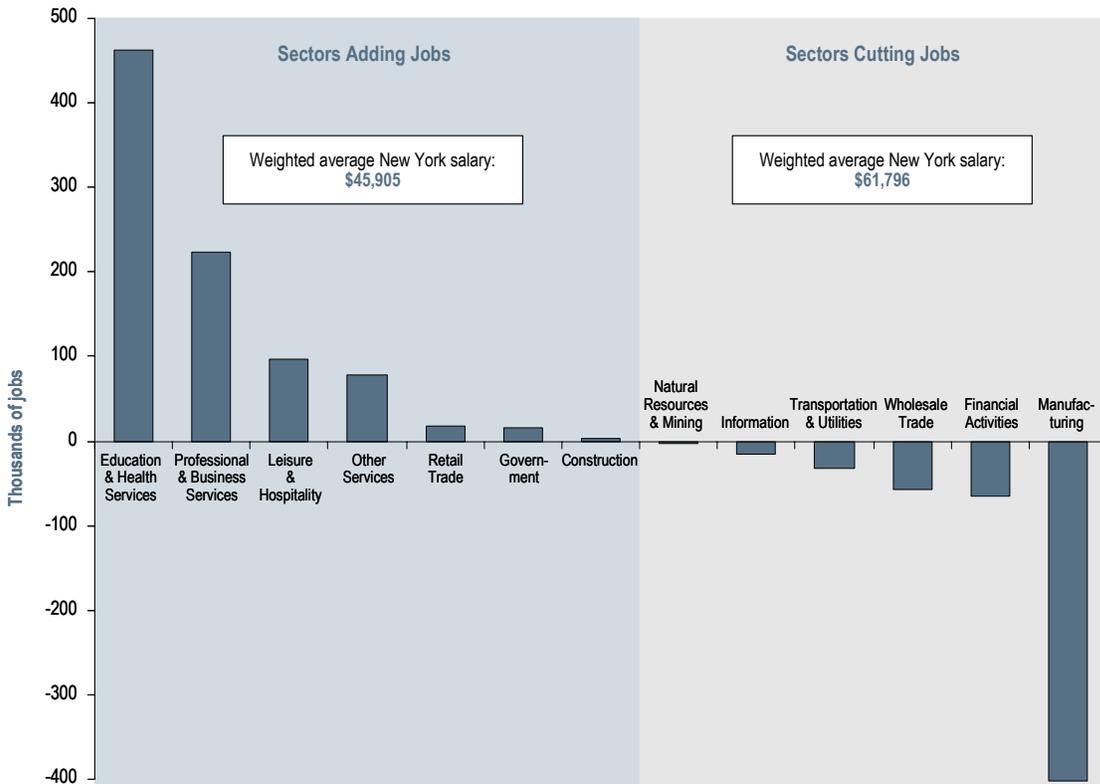
Private Sector Job Growth, New York State Versus U.S. (1990 – 2005)



* Capital Region was defined as the following counties: Albany, Columbia, Greene, Rensselaer, Saratoga, Schenectady, Warren, Washington.
 ** NYC Metro includes the following counties: Bronx, Kings, New York, Queens, Richmond, Nassau, Suffolk, Rockland, Westchester.
 Sources: U.S. Census Bureau; A.T. Kearney analysis

Figure 1.2

Change in Number of Jobs Statewide, by Sector (1990 – 2005)



Note: "Sector" refers to BLS "super-sectors." All super-sectors are included in the analysis above, collectively accounting for the entire New York State economy.
 Source: A.T. Kearney analysis of Bureau of Labor Statistics (BLS)

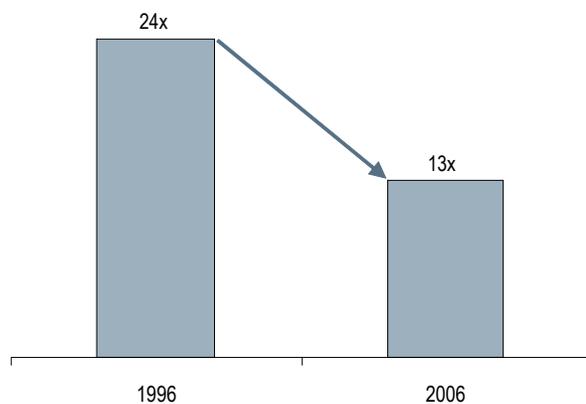
the pattern of America's Rust Belt states. These communities experienced an outflow of young-adult residents (25 – 34 years old), a decline well in excess of the national average. Between 1990 and 2005, New York State as a whole lost more than 500,000 citizens from this vital cohort.⁵

New York State ranked 39th out of 50 in terms of private employment growth between 1995 and 2005.⁶ Without the subsidy provided by metropolitan New York City, its rank would have plummeted to 47th. Over time, this unequal pattern of increasing downstate prosperity and declining upstate fortunes created a split between New York State's two regions.

Historically, large-scale individual projects were ESD's preferred vehicle for stimulating economic growth. It measured success with industrial age metrics, including job creation and decreases in unemployment.⁷ ESD has increased its funding to businesses, but its investments have not led to corresponding increases in private investment, as illustrated in Figure 1.3.

Compared to other states, New York has devoted little effort to helping its businesses attract federal or philanthropic funds. In 2004, Massachusetts, with less than half New York's population, captured almost three times as much funding (nearly \$200 million more than New York received) from the federal government's Small Business Innovation Research (SBIR) program.⁸

Figure 1.3
ESD's "Leverage Ratio"
(1996 versus 2006)



Note: Leverage Ratio is calculated as the total value of projects ESD invested in, divided by ESD's contributions to those projects.
Sources: ESD's Project Tracking System; A.T. Kearney analysis

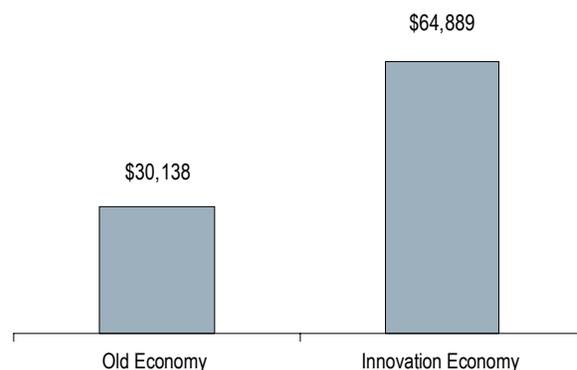
New Vision: Innovation Economy, Higher-Value Jobs

All Jobs Are Not Created Equal

"Innovation Economy" jobs – those enabled by technology and competing in the global marketplace – build greater long-term economic value than jobs in traditional industries or the public sector.

Figure 1.4 shows that U.S. average wages of jobs found in the A.T. Kearney Innovation Economy Index are double those found in "Old Economy" industries.⁹

Figure 1.4
Average U.S. Wages, Innovation Economy Versus Old Economy (U.S. Dollars; 2005)



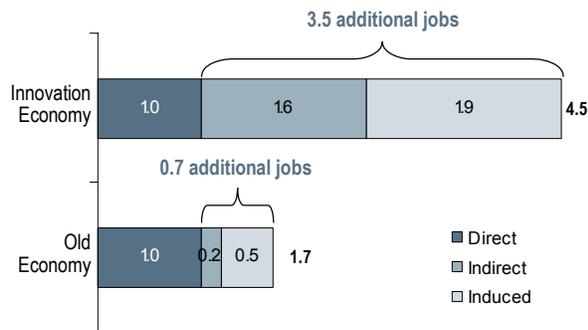
Source: A.T. Kearney analysis of Bureau of Labor Statistics' 22 major occupational groups (May 2005)

This Index is a representative sample of pure high-technology jobs with ties to older traditional industries such as biotechnology; jobs in sectors whose products emerge from pure high-technology; research such as nanotechnology and jobs in mature sectors such as media, entertainment and financial services whose products and services simply could not be offered – at least not in their current forms – without significant reliance on information and communication technologies.

If broad-based economic development in New York State is the goal, Innovation Economy jobs deserve increased attention, since they will have a demonstrable and sustainable, positive impact on the economy. Figure 1.5 shows that, in New York State, each new Innovation Economy job generated 3.5 addi-

tional jobs, while jobs created in the Old Economy typically create only one additional position.¹⁰

Figure 1.5
Employment Multipliers, Innovation Economy Versus Old Economy (2003)



Employment Multipliers
<ul style="list-style-type: none"> • Employment multipliers are estimates of the “ripple effect” that a given business type has on its local economy. There are two components to employment multipliers. <ul style="list-style-type: none"> – Indirect / supply-side effects. All firms need suppliers to provide products and services necessary to run the business. In turn, these supplier firms hire employees to run their operations. The indirect multiplier estimates the number of supplier jobs created for every employee at a firm. – Induced / demand-side effects. When firms and their suppliers hire and pay employees, much of their income is spent on goods and services produced in the local and regional economy. This spending creates jobs in the sectors benefiting from these employees disposable income. The induced multiplier estimates the number of jobs created due to the consumption of a firm’s new and incrementally wealthy employees. • These multiplier effects are used to estimate the economic impact of any new public or private sector investment. • The value of multipliers varies by the sector and region in which a firm operates. • A.T. Kearney analysis estimates that 1 direct innovation economy job in New York State generates an additional 3.5 jobs for the economy (specifically, 1.6 indirect jobs and 1.9 induced jobs).

Sources: 2003 input-output data for New York State from Impact Analysis for Planning (IMPLAN); A.T. Kearney analysis

Traditional industries such as retail and other service sectors tend to follow growth rather than fuel it. Innovation Economy industries enjoy a higher “multiplier effect” since they typically require interactions with a broader network of suppliers, partners and customers. United Technologies Corporation (UTC), a \$47 billion global conglomerate successfully navigating the transition from the Old Economy to the Innovation Economy, offers a good case in point.

UTC manufactures Sikorsky helicopters in Elmira, New York. Until it recently ceased

manufacturing operations, UTC also produced Carrier air conditioners in Syracuse. When CEO George David was asked why he maintained one manufacturing operation in Central New York while closing the other, he replied, “Simple. We sell air conditioners for \$5 a pound and helicopters for \$500 a pound.”¹¹

The Sikorsky helicopter operation competes globally on the basis of advanced technology and draws from a rich labor pool of trained avionics workers in the Binghamton-Elmira corridor. It has in all respects become an Innovation Economy business. Carrier, on the other hand, operates in a regional marketplace, faces significant competition, has fewer opportunities for product differentiation and employs a more traditional manufacturing-oriented labor force.

New York’s Key Innovation Economy Assets

Significant pieces of the infrastructure needed to support the Innovation Economy are already in place across the state.

New York City

New York City is arguably the state’s most valuable asset. In addition to its preeminent status among the world’s cultural centers, in 2006 it was home to 24 of the Fortune Global 500 companies and 44 of the Fortune 500. New York City is a global hub for many industries, including financial services, medicine, advertising and marketing, and media and entertainment. Many of these industries tend to be early technology adopters in order to drive and improve their offerings, making the city a ready-made market for technology providers.

New York City’s mature Innovation Economy sectors regularly spawn entrepreneurial ventures. For example, DataSynapse, a New York City software business, helps banks, securities firms, asset managers and insurers optimize their computing infrastructure capacity. In 2000, the business was launched by Peter Lee (an investment banker from JP Morgan) and Jamie Bernardin (an IT professional from Barclays Global Investors). Since

then, DataSynapse has attracted over \$30 million in private venture investment and created approximately 70 jobs in the New York City metro area.

Capable and Loyal Workforce

New York State's workforce is recognized by national employers as a key asset. Most employers contacted for this report praised the competence, loyalty and work ethic of their New York employees. More than 27 percent of New York State's resident population over the age of 25 has received at least a bachelor's degree, five percent more than some of New York's key competitor states, including Texas, North Carolina and Florida.¹²

One example of workforce loyalty comes from the corporate operations and contact centers sector. Contact center managers said that their Western New York workforces demonstrated high loyalty and a strong work ethic compared to workers in other locations.¹³

"Our workers in Syracuse have delivered productivity numbers as high or higher than all our other offices," said Mary Beth Farrell, Executive Vice President, Service Delivery, for AXA Equitable Life Insurance Company. "We couldn't be happier with the level of talent and dedication to AXA that our Syracuse employees provide us."

"We have had tremendous success in building banking operations centers in Syracuse and Utica and these locations continue to be part of our strategy to deploy operations in that part of the state," said Chip Logan, Managing Director for Corporate Real Estate and Facilities for The Bank of New York.

Research and Higher Education

New York State is home to a number of leading universities and research institutions that, in addition to graduates, produce a significant number of patents and publications. In 2005, New York State ranked second in the nation in terms of educational resources and degrees conferred.¹⁴ The state's 271 colleges and universities conferred more than 250,000 degrees.¹⁵ Six New York universities rank in the top 50 nationwide for quality of undergraduate

education.¹⁶ According to a Milken Institute report, three of New York's universities are ranked in the top 30 for Biotech Patents and Publications worldwide.¹⁷ Finally, four New York graduate engineering programs are ranked among the nation's top 50.¹⁸ Columbia University and Cornell University are on all of these lists.

Beyond academia, New York State boasts a number of top research syndicates, including International SEMATECH North (the global consortium of top semiconductor companies) and the Center of Excellence at the University at Albany's (UAlbany) College of Nanoscale Science and Engineering, which is home to scientists from 250 companies.

Also, Memorial Sloan-Kettering Cancer Center has devoted more than a century to innovative research for the treatment of cancer patients. Buffalo-based Roswell Park Cancer Institute (RPCI), founded in 1898, was America's first cancer center. RPCI was ranked 13th among the nation's 118 independent academic hospitals for NIH funding in 2005.

Making It Happen – Overcoming Obstacles to Growth

The Past as Prologue

For over 40 years, futurists and other social commentators have argued that a "new society" was emerging out of the decaying smokestacks of Industrial America and Western Europe – a society where high technology would redefine literally every aspect of life on earth. The move from an Industrial present to a Post-Industrial future – like the move from the Agricultural Age to the Industrial Age that preceded it – is generally described in revolutionary rather than evolutionary terms. The changes associated with this move are nearly always exponential and almost never incremental.¹⁹

Social and technological revolutions require us to think boldly or risk getting lost in the shuffle. As with any revolution, traditional institutions and power relationships are subject to review and rejection. This kind of thinking birthed and nurtured California's Silicon Valley,

Massachusetts's Route 128 and North Carolina's Research Triangle Park. Unfortunately, it has been in rather short supply in New York State.

New York: Not the Innovator's Friend

Many New Yorkers have already heard the rumble of revolution. Two years ago, New York State Assemblymember Joseph D. Morelle [D-Irondequoit] issued a report he titled, "Creating a State of Innovation: Unleashing the Power of New York's Entrepreneurial Economy."²⁰

"New York needs a new approach to spurring economic development," Morelle wrote, "one that does not rely on the traditional (and largely unsuccessful) methods of the past." Morelle called his vision the Entrepreneurial Economy. "The Entrepreneurial Economy is technology-driven, knowledge-based and entrepreneurial," he continued. "Entrepreneurship involves product and service innovations that are achieved through creativity and technology. Successful entrepreneurs create high-growth businesses that may become the industry giants of tomorrow."

As noted earlier, New York has many of the foundation stones of Morelle's Entrepreneurial Economy – a well educated workforce, leading research institutions and access to capital and global markets. But, for all that, it somehow has not been able to compete with states like California, Massachusetts, and North Carolina.

Throughout its history New York has been home to many large, established businesses, a reflection of the dominant role that industries such as transportation and manufacturing once played in the development of the state's economy. Little wonder, then, that New York's small, new and entrepreneurial businesses have struggled so hard to get noticed in the shadows of big business.

A Legacy of Neglect

Until now, New York State has viewed its business community as a short-term revenue generator rather than a long-term growth engine. The state needs to focus on profiting with and not from New York businesses. Reducing the exorbitant cost of doing business

in the state would be a good – and mandatory – first step toward this goal.

New York's various state and local tax burdens are 53 percent higher and its energy costs are 58 percent higher than national averages.^{21,22} New York ranks 48 (for commercial power) and 49 (for industrial power) in the U.S. in terms of cost of electricity per kilowatt-hour.²³

A study by the Milken Institute found that New York has the second highest business costs in the U.S.²⁴ Only Hawaii has the dubious distinction of being more expensive. The Public Policy Institute (PPI) went a step further and quantified this drag on New York's economy, reporting that if New York were "priced" at the national average rate, the state, its businesses and residents would save \$35 billion annually or \$1,800 per state resident.²⁵

The regulatory environment is also stifling. In a study ranking states' economies using such elements as taxation and regulation, the Pacific Research Institute (PRI) gave New York the lowest overall rating in the country.²⁶ There are a number of examples of what New York did – and does – to deserve this ranking.

For instance, consider the New York State Insurance Department's Regulation 60 (also known as the "Wet Signature" rule) which requires, among other things, that life insurance policies be signed manually, on paper, by all parties. This rule effectively bans all electronic and Internet insurance applications. Regulation 60 routinely adds almost three weeks to the application process, resulting in additional costs for insurers, agents and consumers. It thereby cripples one of New York's largest industries, effectively preventing it from using the Internet for business-to-consumer transactions and moving fully into the Innovation Economy.

Aging Physical Infrastructure

Much of the state's essential physical infrastructure is aging and utilized beyond its capacity. The energy infrastructure across the state is old, decaying, and struggling to serve an ever-growing demand. Efforts to modernize and expand this infrastructure will prove expensive, as newer, "greener" power generation technologies demanded by many consumers (and

required by many municipalities) will prove far more costly than current technologies.

The long-term sustainability of the state's roads is threatened by an ineffective rail infrastructure unable to keep up with escalating shipping demands and increased car and truck traffic. Badly congested roadways contribute to the already high costs of doing business in the state. New York City's three major gateway airports currently operate at full capacity. But air traffic continues to grow every year, causing many travelers to complain about frequent delays and aging facilities in need of substantial upgrades.

Stewart Airport, located in the Hudson Valley, is a long underutilized asset. With a capacity of 1.5 million passengers per year, Stewart currently serves only 300,000 flyers.²⁷ Addressing this chronic underutilization will go a long way toward relieving New York City's air traffic congestion, while stimulating economic growth in the Mid-Hudson region.²⁸ According to William DeCota, Aviation Director of the Port Authority of New York and New Jersey, Stewart Airport could be expanded to accommodate 10 million passengers.²⁹ In January 2007, the Port Authority took over Stewart's operating lease and announced significant improvements to passenger areas, taxiways and other airport infrastructures.

New York's Economy at a Crossroads

No revolution succeeds without a strong leader. In the case of New York's Innovation Economy revolution, that leader must be ESD.

In his 2007 State of the State address Governor Spitzer said, "ESDC will focus and leverage the broad array of economic development efforts, which right now are balkanized across 28 agencies, creating inefficiencies and fragmented policy."³⁰ Today ESD is actively changing both its focus and approach and stands prepared to begin aggressively executing the mandate to coordinate economic development activities handed down by the Governor.

Several state legislators have underscored Governor Spitzer's position that something must change within ESD. Senator James S. Alesi [R-Perinton] said that, "going forward, branding and promotion are critical for ESD.

The agency needs to lose the widely-held perception of patronage."

"Constituents have complained in the past that ESD does not offer one-stop-shopping and that it is difficult to navigate the bureaucracy," noted Assemblymember Sam Hoyt [D-Buffalo].

ESD cannot drive every aspect of economic development by itself, no matter how decisive a mandate it has received or how much it is willing to reposition itself. While ESD can become the primary point organization coordinating the work of many New York State agencies charged – to a greater or lesser extent – with promoting economic growth, New York State faces significant challenges that fall well outside ESD's responsibilities. Where it cannot affect direct change, ESD should bring together representatives of business with those agencies and legislators responsible for determining the future of power costs, taxation rates and the rebuilding of infrastructure.

ESD must change, and change dramatically, if it hopes to fulfill the spirit of Governor Spitzer's mandate. It must develop a strategy to grow and revitalize the economy. It must take a hard look at the major economic development "products" currently available to implement its growth strategy. And it must restructure its operations to better serve its constituents. The balance of this report discusses these challenges.

Chapter 2: Strategies for Growth

Summary

New York's economic future will be shaped by its ability to attract and develop Innovation Economy sectors. These sectors will share three characteristics: they will be technology enabled, compete globally, and be able to build competitive advantage from New York State's assets. Financial services and media and entertainment are among the established sectors already making the transition to the Innovation Economy. Bioscience, nanotechnology and cleantech are three of the most promising emerging Innovation Economy sectors. By building regional and statewide connections within and across these sectors, ESD can become the catalyst for economic growth in New York State.

The Challenge of Economic Diversity

There is no such thing as a “one size fits all” model for statewide economic development. Few would argue that the Innovation Economy introduced in Chapter 1 could – or should – be treated as though it exists in a commercial vacuum. New York's economy is the sum total of the complex interactions of all the State's businesses – rural and urban, large and small, upstate and downstate. Each of these businesses makes a unique contribution to the state's overall economic health. Understanding that a supermarket is both a follower of population growth and a prerequisite for it, or that small entrepreneurial Innovation Economy companies generally only evolve in the shadow of larger technology businesses, is critical to both building long-term economic growth and successful community development. ESD, as New York's leading economic growth agency, must address and effectively manage this commercial diversity.

First Things First

It is critical to remember that strategy is always deployed in a specific context. The most elegant strategy in the world will not make New York, as a whole, prosperous until something is done about the factors that inhibit private investment – stifling regula-

tion, excessive taxation, and the general high cost of doing business. ESD cannot hope to be a catalyst for creating Innovation Economy jobs in a regulatory environment that is generally hostile to business. Removing the existing impediments to business development summarized in Chapter 1 is more critical to the long-term prospects for sustainable economic growth than any of the strategies outlined in this chapter. While ESD may be the state agency tasked with stimulating economic recovery, it is only one piece of the whole solution. No matter what other avenues it may pursue, creating a better general business climate in New York is a prerequisite for economic growth.

Recent signs are encouraging. In May, Governor Spitzer named a blue ribbon panel of experts to recommend actions to help New York retain its status as the world's financial capital. The New York State Commission to Modernize the Regulation of Financial Services includes CEOs, industry experts and state government officials. But more needs to be done.

Defining “Strategy”

At its heart, strategy is an exercise in the informed allocation of finite and often scarce resources. In the world of economic development, strategy presents a framework for evaluating which projects ought to be funded and why. The more solid the strategy, the higher the likelihood the investment will prove successful. Before ESD can act as a catalyst in the development of New York State's Innovation Economy, it must first decide which commercial sectors constitute true “strategic targets.” These targeted sectors must be viable and have the inherent potential to have a significant impact on the growth of New York's Innovation Economy.

What is Strategic?

Analysis suggests that sectors need to meet three criteria before they can be seen as strategic to the development of New York State's Innovation Economy. They must be:

- **Technologically enabled:** This criterion includes sectors such as financial services

whose constituent companies cannot perform their core functions, or offer essential goods and/or services, without high technology. It excludes sectors whose members use technology in limited ways to automate a few functions, such as a small dress shop operating a website or using a card reader to process credit card transactions.

- **Global competitors:** Being global does not necessarily mean having a physical presence across the planet. In order to meet this criterion, sectors – and the companies that comprise them – must compete in the world market and offer products and/or services that face direct international competition.
- **Able to build competitive advantage from New York State’s assets:** New York State’s strategic sectors must take advantage of the state’s unique combination of assets. These assets range from human capital (a loyal workforce with specialized skill sets) to physical technological infrastructure (research and development facilities) to public policy (state-initiated relief from onerous utility costs). Under no circumstances should ESD, or any other New York State agency, allocate resources to any business unable to present a plan that makes critical use of existing state assets.

New York’s Strategic Target Sectors – A View From 2007

Mature Target Sectors

Strategic sectors exhibit a variety of characteristics, not the least of which is longevity. Mature commercial sectors such as financial services, insurance, media, arts and entertainment have been the linchpin of New York’s economy for decades and may prove the most reliable bridge between the Old and the Innovation Economies. These sectors currently account for 900,000 jobs, or over 10% of the state’s employment.³¹ Even more striking, they create 26% of New York State’s \$960 billion Gross State Product.³² Each of these mature sectors meets all three strategic requirements; they are

technologically enabled, compete globally, and leverage existing New York State assets.

New York must view companies in mature industries as partially at risk of defection. Having moved past the point where success was defined by exponential gains in top-line growth, these companies have entered a period in their corporate life cycles where many are focused on bottom-line profitability. As a result, they can easily be tempted by offers from neighboring states and offshore outsourcing proposals which promise lower operating costs. On a tactical level, ESD needs to help ensure that potential “at risk” firms – and the employment and tax dollars they represent – remain in New York State.

Corporate Operations and Contact Centers

Ideally, Governor Spitzer’s “One New York” approach will be particularly attractive to mature sector companies, headquartered in Metropolitan New York City, that opt to relocate administrative or ancillary functions to a lower-cost, upstate venue. It is reasonable to assume that bottom-line focused downstate businesses will continue to outsource their lowest value-added and/or non-core operations to the lowest cost locations – often overseas. In fact, much of this movement has already taken place.

On the other hand, upstate New York continues to be a viable destination for some mid-range back office jobs, such as administrative processing centers and contact centers performing client management duties. Several large employers including HSBC, Citibank, Bank of New York, GEICO, Sodhexo Marriott Services, and Time Warner Cable have found their way to Buffalo, Syracuse and Utica/Rome, three centers for captive and third-party back office operations.³³

As of 2006, HSBC, a global financial service organization, has been doing business in Western New York for over 150 years, employing over 5,500 people in that part of the state. In 2006, HSBC announced a plan to expand its existing data center and construct a new technology center in Western New York. This investment of approximately \$1.7 billion over 15 years illustrates the desirability of the

Western New York Region for mission-critical, technology based operations.

New York is home to an estimated 60,000 back office jobs housed in dedicated centers across the state, but is still relatively unknown compared to leaders in this space, Florida and North Carolina.³⁴ To help gain share in this sector, ESD should focus on large downstate firms seeking ways to reduce operating costs, especially in the financial services and insurance sectors. Offering financial incentives to businesses establishing or expanding operations in the state is one way ESD can begin to ensure New York remains competitive in this arena. Partnering with education stakeholders across the state, especially NYSED and New York's community colleges, which are in the front lines of making sure local workforces remain competitive, is another critical step.

Figure 2.1 summarizes the opportunity and recommendations for New York in this sector.

Emerging Target Sectors

Emerging sectors have dramatically different needs than their mature counterparts. They tend to be characterized by an abundance of promising research and ideas, a paucity of capitalization and varying levels of commercial viability. Payoff in these sectors is often a decade or more away. On a more positive note, emerging sectors attract “the best and brightest,” the kind of people who gentrify neighborhoods,

renew communities and often launch their own entrepreneurial ventures.

None of these sectors can be taken for granted. Even where success exists, it is often sporadic and fragile. As an example, nanotechnology is the essential science underpinning the \$250 billion worldwide semiconductor industry.³⁵ In the not too distant future, however, the current generation of “CMOS-based” chips will be obsolete.³⁶ As a result, the semiconductor industry is currently investing heavily in technologies that may ultimately replace today's semiconductors. Since other commercial applications of nanotechnology remain in their infancy, the long-term promise of the sector for New York will depend in large part on the results of this research.

Emerging target sectors are always subject to rapid change, which is not surprising in industries driven by leading-edge research. ESD's challenge is to find ways to continuously monitor and evaluate the commercial potential of these volatile industries. Volatile or not, these sectors cannot be ignored.

As of 2007, nanotechnology, bioscience and cleantech appear to be the most attractive emerging target sectors. While many other states' economic development agencies are also interested in attracting businesses in these fields, New York has an advantage – it already has many core capabilities in place to support the growth of these Innovation Economy sectors.

Figure 2.1

New York State's Corporate Operations & Contact Centers Sector

Description	New York State assets	Key Recommendations
<ul style="list-style-type: none"> • Many large firms – especially in the financial services sector – run CO&CC in dedicated centers outside their main offices: e.g., contact centers (customer service, sales) • An estimated 60,000 workers are employed in CO&CC throughout New York State • Opportunity exists to increase back office employment in New York State, especially considering all the large firms downstate that can find the right assets upstate 	<ul style="list-style-type: none"> • A number of companies have successfully set up CO&CC in Upstate New York (especially in the Buffalo and Utica/Rome areas) • The Buffalo Niagara area attracted big names (such as Citigroup, Geico, HSBC, Washington Mutual, Bank of America) and now employs more than 16,000 CO&CC employees • Key assets in the Buffalo Niagara area include: <ul style="list-style-type: none"> – Large, loyal and qualified labor force – Competitive operating costs – Good infrastructure (roads, data networks) – Strategic location • Buffalo Niagara Enterprise, an economic development organization in the Buffalo area, played an important role marketing the region's assets 	<ul style="list-style-type: none"> • Create tax advantages, grants, and/or operating subsidies for businesses establishing or growing existing corporate operations/contact centers • Establish regional partnerships to support and coordinate the efforts of local and regional development organizations that are marketing CO&CC capabilities • Continue to “right-skill” the local workforce for these types of jobs • Provide “end-to-end” solutions for prospective businesses making a CO&CC location decision • Market attractive upstate regions to downstate firms with potential to make relocation decisions

Source: A.T. Kearney analysis

Nanotechnology

Background: Nanotechnology is the science of managing and manipulating matter at the atomic level. Many experts believe that nanotechnology research will result in advances in fields as diverse as electronics, materials, energy and pharmaceuticals. In this case at least, money is chasing promise.

Thirty five years ago this report would not have considered nanotechnology a viable engine for economic growth. Indeed, the word nanotechnology was not defined until 1974 when Tokyo Science University Professor Norio Taniguchi released his paper on the topic.³⁷ The field of nanotechnology did not gain momentum until the 1980s when several technological breakthroughs coincided with the emergence of nanotechnology's most articulate populist spokesman, Dr. K. Eric Drexler, author of *Engines of Creation: The Coming Era of Nanotechnology and Nanosystems: Molecular Machinery, Manufacturing and Computation*.

The Opportunity: In 2000, recognizing that "nanotechnology will be the primary enabler for discovery, innovation and education in science and engineering in the 21st century," the U.S. government created the multi-billion National Nanotechnology Initiative (NNI). In 2005, governments, venture capitalists and corporations collectively invested about \$10 billion in nanotechnology worldwide.³⁸ The sector's commercial potential is so great that the National Science Foundation and Lux Research estimate the worldwide market for nanotechnology-enabled products will exceed \$1 trillion by 2015.³⁹

These investments are already beginning to bear fruit. In May 2007, IBM announced the development of a highly efficient semiconductor chip manufactured using nanotechnology. The nano-scale holes on the chip – only a few atoms wide – insulate the chip's minute electrical wires and lead to energy savings of 35% over today's technology. IBM expects to introduce these chips in 2009.

Nanotechnology in New York: New York State jumped on the nanotechnology bandwagon early. In 2001, The University at Albany (UAlbany) established the School of Nanoscale Science and Engineering, building on existing research activities in this space. Also in 2001,

the state created its own high-technology initiative – the Center of Excellence (CoE) program – aligned with the federal NNI program. The program created five CoEs throughout the state, each focused on a specific scientific arena. One was devoted to nanotechnology – The Center of Excellence in Nanoelectronics and Nanotechnology (CENN), affiliated with UAlbany's nanoscience program.

CENN offered public funding for laboratory space and equipment, but stipulated that the state's investments be matched with private funds at a three-to-one ratio. Leading corporations with research and development efforts dedicated to nanotechnology – most notably IBM – played a critical role in CENN's success.

Since its inception, CENN has built one of the most advanced nanotechnology research complexes in the world. It owes much of its success to approximately \$3 billion in investments, mostly from private sources. New York has contributed \$342 million to CENN.⁴⁰ Two hundred and fifty corporations are currently taking advantage of CENN, frequently working together through research consortia. One such collaborative research initiative – the Center for Semiconductor Research (CSR) – involves IBM, Toshiba, Tokyo Electron, Applied Materials, Sony and AMD and focuses on the very important challenge of developing future computer chip technology.

"New York State's nanotechnology cluster is recognized in the field as number one in the nation," noted Eric Garfunkel, Professor of Advanced Materials, Devices and Nanotechnology at Rutgers University. "This happened in just five years, thanks to a huge state investment and leadership by IBM, one of the most prominent commercial players in the field. The Capital District has achieved a critical mass of more than 250 companies, drawn to the area by excellent facilities at UAlbany and partnering opportunities with IBM, SEMATECH, GE, RPI and others."

Small Times, the nanotechnology industry's trade magazine, annually ranks college and university nanotechnology programs. Last year two New York schools – The College of Nanoscale Science & Engineering (CNSE) at

UAlbany and Cornell University – topped the magazine’s list.⁴¹

New York State’s commitment to nanotechnology extends beyond the Capital District. Three of the six National Science Foundation Nanoscale Science & Engineering Centers (Columbia, Cornell and RPI) are located in the state. IBM is also a key contributor to statewide nanotechnology efforts through its \$5 billion research and manufacturing facilities in Fishkill. Not surprisingly, industry experts view New York State’s nanotechnology sector – along with IMEC in Belgium and SELETE in Japan – to be among the top three in the world.

Recommendations: While this sector has come a long way since 2001 much more remains to be done. Marketing the state’s preeminence in nanotechnology both inside and outside the state would greatly improve New York’s image as a major technology hub. It could attract investors, talented entrepreneurs and high technology ventures in this and other Innovation Economy sectors. ESD should take a leading role in forging and administering strong partnerships among key nanotechnology players throughout the state (e.g., the CoE at UAlbany and New York’s three federally designated Nanoscale Science and & Engineering Centers). ESD should also establish better coordination across all five CoEs, fostering the

benefits of innovation from an interdisciplinary approach. This is particularly important for nanotechnology, which has potential applications in biosciences, clean technology, photonics, and other areas of research within the state’s Centers of Excellence. Finally, given the capital-intensive nature of nanotechnology research, ESD should work to attract the capital necessary to maintain New York’s leadership in this field.

Figure 2.2 summarizes the opportunity and recommendations for New York in the nanotechnology sector.

Bioscience

Background: Bioscience comprises a number of sub-sectors including biotechnology, pharmaceuticals, medical devices and bio-agriculture. Biotechnology can be defined as the use of cellular and biomolecular processes to solve problems and make useful products. Like nanotechnology, biotechnology is less than 35 years old. Many view biotechnology as the growth engine for the whole bioscience sector. Based on the recombinant DNA technique pioneered by Stanford University’s Stanley Cohen and University of California-San Francisco’s Herbert Boyer, biotechnology has been the source of more than 200 therapies and vaccines for cancer, diabetes, HIV and other

Figure 2.2
New York State’s Nanotechnology Sector

Description	New York State Assets	Key Recommendations
<ul style="list-style-type: none"> Nanotechnology is the science of managing and manipulating matter at the atomic level – it has the potential to impact virtually every industry: electronics, energy, bioscience, etc. Nanotechnology has been recognized as “the most enabling technology of the 21st century” by the U.S. federal government The world market for nanotechnology is expected to exceed \$1 trillion by 2015 In 2005, governments, corporations and venture capitalists invested \$10 billion in nanotechnology 	<ul style="list-style-type: none"> New York State- and IBM-funded Center of Excellence (CoE) in Nanoelectronics & Nanotechnology at UAlbany CNSE (College of Nanoscale Science & Engineering at UAlbany), home to CoE <ul style="list-style-type: none"> The world’s first college specializing in nanoscience Recognized as the nation’s best program in nanotechnology by <i>Small Times</i> (2006) Over 250 private sector partners, including: global chip makers consortium SEMATECH, IBM, AMD, Applied Materials, Toshiba, etc. New York State is home to 3 out of 6 Nanoscale Science & Engineering Centers (NSEC) recognized by the National Science Federation. These are Columbia, Cornell, Rensselaer Polytechnic Institute (RPI) IBM research and manufacturing facilities in Fishkill 	<ul style="list-style-type: none"> Market success far and wide: New York State as a significant technology hub rivaling such brands as Silicon Valley, Austin TX or Route 128 Corridor Promote the interdisciplinary nature of nanotechnology and administer strong partnerships, especially between: CoEs, CNSE and NSECs Maintain leadership in this capital intensive field. This requires New York to: <ul style="list-style-type: none"> Optimize the amount of funding New York State institutions receive from <i>all</i> available sources (federal, corporate, etc.) Make necessary capital investments to keep leadership in facilities/equipment (this includes attracting chip fabs)

Source: A.T. Kearney analysis

autoimmune disorders.⁴² As with nanotechnology, most observers feel that we have only seen the tip of bioscience's commercial iceberg.

The Opportunity: The U.S. biotechnology sector is projected to increase from \$50 billion in 2007 to \$120 billion in 2015.⁴³ Biotechnology will be a key contributor to the growth of the larger bioscience industry, especially the pharmaceutical industry. Venture capitalists are betting big on the promise of biotechnology, investing \$4.5 billion in U.S. biotechnology firms in 2006.⁴⁴ As in the case of nanotechnology, New York State is an aggressive player in the bioscience arena.

Bioscience in New York: In 2005, the Milken Institute ranked New York City's bioscience cluster fourth in the U.S., behind Boston, San Francisco and San Diego.⁴⁵ In 11 of New York City's renowned academic medical research institutions – including Memorial Sloan-Kettering Cancer Center, Columbia University and Rockefeller University – 128 Nobel Laureates have studied, worked or taught.⁴⁶ More bioscience-related degrees are conferred in New York City than any other city in the United States.⁴⁷ The city's research institutions produce an average of 30 startups per year. New York City is also the nation's leading hub for bioscience-related patent activity. In the 1990s, 6,800 bioscience patents with ties to metropolitan New York City were filed, more than any other metro area.⁴⁸

New York City is a good location for bioscientists seeking to fund their research. The metro area ranks second in National Institutes of Health funding (\$1.3 billion in 2004). Since 2000, New York has consistently ranked among the top four metropolitan areas for bioscience and medical device venture capital funding.⁴⁹

In March 2007, construction began on the \$400 million East River Science Park, which when completed, will give New York City additional, affordable laboratory space. Tenants are expected to move in by 2009. The project will complement existing bioscience incubators such as the Audubon Biomedical Science and Technology Park at Columbia University.

Additionally, the broader New York City metropolitan area is a global hub of activity; 60% of the entire U.S. pharmaceutical industry

is located in the area. Major publicly traded biopharma companies headquartered in New York City include Bristol Myers Squibb, EyeTech Pharmaceuticals, ImClone Systems, OSI Pharmaceuticals, Pfizer and Regeneron.

Executives from these companies have noted the importance of their New York locations. For example, Greg Vahle, Vice President of Human Resources and Services at Pfizer commented, "We attract a high quality workforce in New York City...it is advantageous [for us] to be in the country's business and financial capital."⁵⁰ This point is further underscored by David R. Guyer, CEO of EyeTech Pharmaceuticals – a company focused on the discovery of treatment for eye disease that went public in 2004, raising \$157 million, the largest U.S. bioscience IPO in that year: "We are delighted to be in New York City. We are able to meet regularly with our partners at Pfizer, work with top experts in the field and have efficient access to the markets and our investors."⁵¹

Beyond the New York City area, there are pockets of bioscience activity scattered across the state. Long Island is home to Cold Spring Harbor Laboratory – established more than a century ago and one of eight basic research centers designated by the National Cancer Institute. Westchester's Landmark at Eastview is a major multi-tenant biotechnology, medical and pharmaceutical laboratory and office facility, anchored by Regeneron Pharmaceuticals, offering over 750,000 square feet of space. Bristol-Myers Squibb's worldwide medicines division is located on a 90-acre site in East Syracuse. This operation plays a vital role in the company's global network, and relies on the region's biotechnology expertise to support its drug development and manufacturing functions. Buffalo's Roswell Park Cancer Institute (RCPI) – founded in 1898 – America's first cancer research, treatment and education center – ranked 13th in 2005 among the nation's 118 independent academic hospitals for NIH funding.

Finally, grants from a statewide stem cell research fund launched in 2007 are likely to attract more scientists to the state. This effort needs to be closely integrated with ESD's strategy for the bioscience sector to ensure New

York State's capabilities and commitment to this research are widely known.

Recommendations: ESD should form a statewide bioscience council, coordinating all stakeholders statewide and facilitate interactions among scientists, entrepreneurs and venture capitalists. This will help commercialize current bioscience research. While the state has recently been helping increase lab space for emerging bioscience ventures (such as the East River Science Park), ESD needs to make sure that future capacity constraints or affordability issues do not chase businesses out of New York.

Figure 2.3 summarizes the opportunity and recommendations for New York in bioscience.

Cleantech

Background: Cleantech is an emerging strategic sector – defined more by market needs than by any single technology – that produces goods and services which preserve natural resources as well as lower end-user costs. Major industry segments include: alternative energy and power, materials and green building, transportation and logistics and air and water technologies.

Clean energy, especially the manufacturing of wind and solar power generation equipment, and the generation/distribution of the resulting clean energy, is the largest and most visible industry component. Water filtration, energy efficient HVAC systems, recycling systems and hybrid vehicle technology are also significant components.

The Opportunity: In 2005, cleantech attracted \$1.6 billion from venture capital firms and generated global revenues estimated at \$150 billion.⁵² Continuing concerns over resource sustainability, fear of global warming, media scrutiny and government policies are expected to drive cleantech's growth for the foreseeable future. This growth will also be driven by high energy prices, projected water shortages in some areas and expected increases in the world's urban population, which will aggravate air pollution and public health problems. Revenues from the clean energy subsector alone are expected to grow from \$40 billion in 2005 to \$160 billion in 2015.⁵³

Cleantech in New York: The New York City Investment Fund (NYCIF) published a study

Figure 2.3

New York State's Bioscience Sector

Description	New York State Assets	Key Recommendations
<ul style="list-style-type: none"> • Growth in bioscience largely fueled by biotechnology, which can be defined as the use of cellular and biomolecular processes to solve problems or make useful products • U.S. biotechnology market will grow from \$50 billion in 2005 to \$120 billion in 2015 • U.S. biopharma R&D expenditures increased from \$15 billion in 2001 to \$55 billion in 2006 • \$4.5 billion of VC funding invested in U.S. biotechnology firms in 2006 	<ul style="list-style-type: none"> • New York City was ranked the fourth bioscience cluster in the United States by the Milken Institute • Key bioscience assets include: <ul style="list-style-type: none"> – Funding: \$1.3B NIH funding in 2004, 2nd highest in the United States; venture capital funding consistently in the top 4 in the United States – Research: 128 Nobel Laureates; 72 hospitals; 6,800 patents in the 1990s, more than any other metro – Commercial activity: 30 startups generated by New York City institutions each year; headquarters for large biopharma firms (Pfizer, Bristol Meyers Squibb, etc.) – Incubators: Audubon at Columbia; Advanced Biotech Park in Brooklyn – Tech parks: new East River Science Park to open in 2009 • Other key bioscience nodes in New York State: <ul style="list-style-type: none"> – Roswell Park Cancer Institute and CoE in Bioinformatics & Life Sciences in Buffalo – Center for Biotechnology at SUNY Stony Brook – Cold Spring Harbor Laboratory – Broad Hollow Bioscience Park 	<ul style="list-style-type: none"> • Form and manage a statewide bioscience council, involving and coordinating all stakeholders throughout the state • Create a function that connects venture capitalists, entrepreneurs and scientists • Ensure appropriate infrastructure: <ul style="list-style-type: none"> – Lab space – Biomanufacturing (facilities and skills) • Manage the allocation of funds associated with Stem Cell research coming out of future New York State legislation to ensure New York State's capabilities and commitment to this research are widely known by leading scientists

Source: A.T. Kearney analysis

earlier this year called “Cleantech: A New Engine of Economic Growth for New York State.”⁵⁴ Among other findings, the study noted that California and Massachusetts – America’s twin hubs of entrepreneurial tech-sector activity – are significantly ahead of New York State in terms of attracting cleantech investment. It is not too late. New York has made promising strides to grow cleantech, including taking a leadership role with respect to “green” policies and providing business and consumer incentives to energy savings and clean environment programs.

The issue here is focus. New York’s efforts have centered on individual, community and municipal adoption of cleantech technologies. Before cleantech can emerge as a viable sector, more attention needs to be paid to stimulating the creation of new cleantech companies and research. There are some promising signs that New York’s cleantech industry may finally get what it needs to grow as a commercial sector.

Upstate New York has an established inventory of clean technology assets supporting the sector’s supply side: abundant natural resources, unutilized manufacturing facilities and a network of 18 cleantech-focused R&D centers including General Electric’s (GE) Global Research Center in Niskayuna, and UAlbany’s Energy and Environmental Technology Applications Center.

General Electric has publicly committed to doubling its annual research investment in cleaner technologies to \$1.5 billion by 2010, forecasting cleantech revenues of at least \$20 billion in that same year.⁵⁵ Additionally, General Motors (GM) located its Fuel Cell R&D Center, one of only four such sites in the world, in Honeoye Falls, just outside Rochester. Approximately 300 researchers out of GM’s 600 fuel cell experts worldwide currently work in this facility. A leader in fuel cell technology, GM has already invested \$1 billion in its fuel-cell program. Its goal is to be the first automaker with one million fuel-cell cars on the road.⁵⁶

Another major effort is underway on Long Island, where KeySpan Corporation, Brookhaven National Laboratory and Stony Brook University are leading a public-private effort to

develop renewable energy sources in hydrogen and fuel cells, with a parallel objective of making today’s fuels more efficient. The Advanced Energy Research and Technology Center has received \$35 million of state funds and plans to open in 2009.

Complementing these supply-side assets, New York also has a strong demand-side story. New York has the most aggressive Renewable Portfolio Standard in the nation, mandating that 25% of the state’s energy come from renewable sources by 2013. New York State also participates in the Regional Greenhouse Initiative. In a recent survey, 91% of venture capitalists with investments in this sector agreed that favorable public policies can drive investments in a state’s cleantech companies.⁵⁷

Recent city and state efforts will also lead to more demand for clean technologies. In April 2007, both Mayor Bloomberg and Governor Spitzer each unveiled plans for addressing energy and environmental challenges across the state. Mayor Bloomberg’s “PlaNYC” plan comprised more than 100 initiatives, including a number focused on expanding the city’s reliance on a cleaner power supply. Governor Spitzer’s plan, while also focused on increasing the state’s reliance on clean energy, is highlighted by an investment of almost \$300 million specifically targeting renewable energy projects throughout the state.⁵⁸

Recommendations: Translating these cleantech assets into economic growth is precisely the kind of challenge the repositioned ESD is expected to address. The agency should work with the Syracuse Center of Excellence – currently focused on environmental concerns – to more directly address cleantech. Drawing leading corporations, such as General Electric, that are focused on cleantech, to the CoE would make it easier for the Syracuse facility to focus on this report’s proposed mission and attract complementary cleantech ventures. Regulators also need to be engaged to ensure that favorable public cleantech policy – a key factor driving venture capital targeting cleantech to a state – advances. Encouraging investments in early stage cleantech firms is crucial. ESD should also work with the Comptroller reinforcing his commitment to

devote a portion of the state's pension fund to cleantech investments.

Figure 2.4 summarizes the opportunity and recommendations for New York in cleantech.

Interests Converge – Mature and Emerging Sectors

Both mature and emerging sectors benefit from the development of an educated, technology-savvy workforce. As various technologies become more important in all areas of life, what benefits the technology-centered sectors will also benefit the entire economy and general population.

As noted previously, 35 years ago none of the three emerging sectors (nanotechnology, bioscience and cleantech) existed – at least as formal disciplines. It is all but impossible to say what sectors will emerge in the future. The central premise of the strategy advanced in this report is that the kind of infrastructure needed to support these three technology sectors will also help other technologies evolve in the future. Put another way, the higher the percentage of New York's workforce employed in the Innovation Economy,

the easier it will be to achieve a competitive advantage in future target sectors.

Catalyzing the Innovation Economy

Strategic success requires not only selecting the right sectors to support, but also supporting them in the right way. In addition to supporting each sector's unique needs, New York State, through ESD, should foster critical Innovation Economy connections that will support all sectors. North Carolina's best-practice approach to developing these connections is profiled in Figure 2.5. There are four key connections that ESD should strive to catalyze:

Connect businesses to funding. The vision of a prospering Innovation Economy infrastructure in New York is dependent on the ability of the state to attract private investment. It simply cannot be built with the very limited existing public sector funding. Even if sufficient public monies were available, private sector investment has proved far more effective at jump-starting sustainable economic growth.

Figure 2.4
New York State's Cleantech Sector

Description	New York State Assets	Key Recommendations
<ul style="list-style-type: none"> • Cleantech is defined as products and services that promote conservation of natural resources • The world market will grow from \$40 billion in 2005 to \$160 billion in 2015 for clean energy alone • Strong growth of venture capital investments in the U.S. (\$1.5 billion in 2005) 	<ul style="list-style-type: none"> • Energy Supply (upstate): <ul style="list-style-type: none"> – Abundant natural resources – Unutilized manufacturing capacity – Network of 18 cleantech-focused R&D centers, especially in Central New York – for example: <ul style="list-style-type: none"> • Syracuse CoE in environmental and energy systems • GE Global Research Center headquarters at Niskayuna, a key location for GE's cleantech research (\$1.5 billion annual budget by 2010) • Energy use (downstate): <ul style="list-style-type: none"> – Large and dense metro areas – Early adopters of emerging technologies – Growing electricity usage and rising costs • Favorable public policy: New York State is a leader in incentives supporting the demand side: <ul style="list-style-type: none"> – Aggressive Renewable Portfolio Standard – Regional Greenhouse Gas Initiative – Alternative vehicle purchase requirements • In a survey, 91% of venture capitalists attest that a favorable public policy can drive investments to a state 	<ul style="list-style-type: none"> • Transition the Syracuse CoE's mission to cleantech to provide clearer direction and better focus, ultimately allowing this center to deliver more tangible results • Ensure that favorable regulations directed at energy users are maintained in the future (Renewable Portfolio Standard and Regional Greenhouse Gas Initiative) • Influence regulators to develop cutting-edge regulations directed at energy providers that will attract private cleantech investments to New York State • Encourage investments in early stage cleantech firms: <ul style="list-style-type: none"> – Work with the state comptroller with respect to his announced intention to devote a portion of the state pension fund to cleantech investments – Establish a preference for in-state provision of clean energy fulfilling the Renewable Portfolio Standard

Source: A.T. Kearney analysis

Figure 2.5

Biotech Public-Private Connections in North Carolina

<p>North Carolina's Biotechnology Center (NCBC) – best practice in making connections: North Carolina is widely considered to have a “best-practice” model for attracting Innovation Economy businesses. The North Carolina Biotechnology Center (NCBC) has been instrumental in this effort. Initially, NCBC was a unique government-sponsored approach to accelerating economic development. Today, it remains a vital participant in the state’s biotechnology sector.</p>	
<p>Connect to Funding</p>	<ul style="list-style-type: none"> • Manages a number of programs that use legislative appropriations to provide funding through grants and loans to researchers • Connects businesses to external sources of funding, including federal philanthropic, angel and venture capital <ul style="list-style-type: none"> – E.g., Partners with North Carolina's Center for Entrepreneurial Development (CED) to connect entrepreneurs to appropriate funding sources
<p>Connect Ideas with Action</p>	<ul style="list-style-type: none"> • Facilitates intellectual exchange between academic and corporate professionals <ul style="list-style-type: none"> – E.g., the North Carolina Plant Molecular Biology Consortium is a membership of professors, graduate and post-doctorate students and industrial researchers • Partners with CED to connect scientists and entrepreneurs with each other and with needed resources, including funding, laboratory space and workforce development
<p>Connect Youth to the Economy</p>	<ul style="list-style-type: none"> • Operates education and workforce training programs ranging from course work for high-school teachers to community college programs <ul style="list-style-type: none"> – E.g., NCBC's training and development staff, in concert with industry partners, created a “Biowork Course” that is now offered at community colleges throughout the state. The objective of this course is to ensure that the state’s workforce is suitable for the state’s bio-manufacturing firms
<p>Connect the Brand Image to Global Technology and Business Communities</p>	<ul style="list-style-type: none"> • Publishes newsletters about the biotechnology sector in North Carolina and globally • Writes reports outlining the state’s advantages as a place to start, grow or move an existing biotechnology business • Industrial recruiters scout out opportunities to present these materials around the world

Source: A.T. Kearney analysis

To this end, ESD should establish a network of in-state and out-of-state scientists and business experts to help assess the commercial viability of technologies and guide the allocation of public funding to the most promising sectors. As part of this exercise, ESD should consider the lifecycle of each target sector, as shown in Figure 2.6.

At different stages of the industry lifecycle, sectors (or businesses within a sector) require different types of funding. An emerging technology like cleantech is likely to need financial support for basic research and development and seed capital to commercialize specific applications. A growth-stage company that has been spun out of a university research laboratory might need venture capital to fund expansion. Mature businesses with a bottom-line focus may need help from the state to lower operating costs.

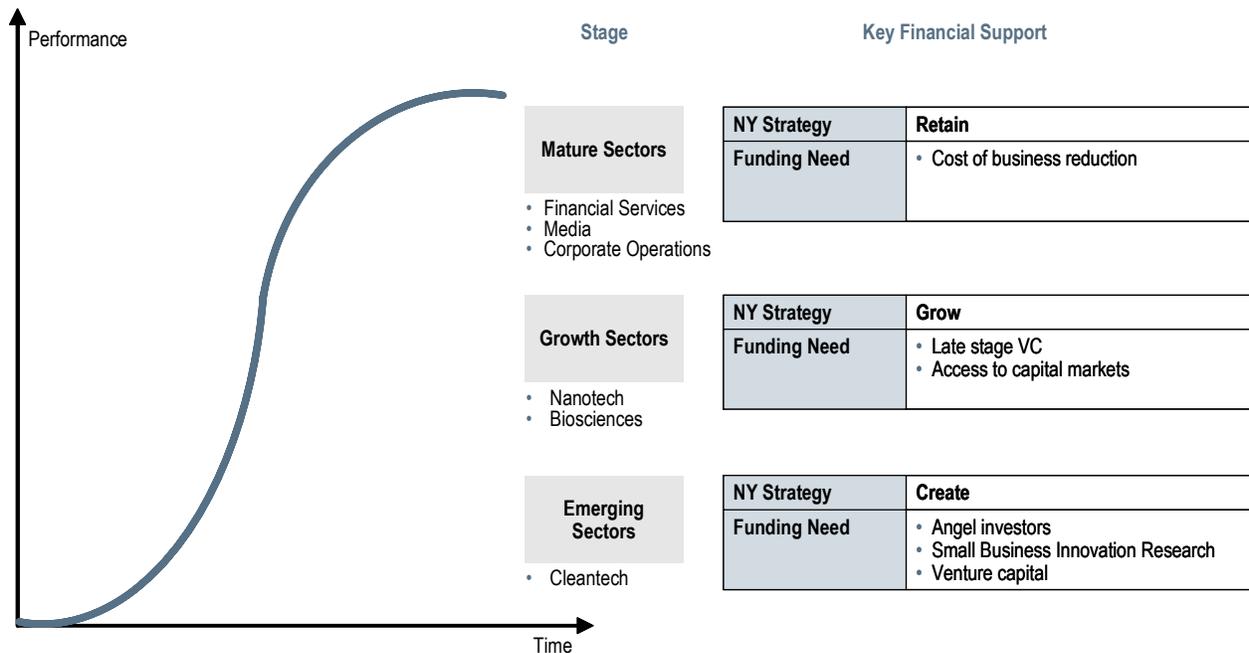
ESD has to become more adept at attracting global capital. It is a lesson New York City learned during its own economic growth and revitalization campaign in the 1980s. Foreign investment is now seen as the most critical contributor to the City’s economic recovery. New York City employed a variety of tactics to attract these investments, none more effective

than mayoral outreach to private sector CEOs and other key decision-makers.

Connect upstate to downstate. Ironically New York City, one of the central hubs of the world’s capital markets, could not be more disconnected from Upstate New York. As an extension of Governor Spitzer’s “One New York” doctrine, ESD needs to build upstate-downstate connectivity. This could mean connecting upstate businesses to downstate customers for their products. It could also mean connecting upstate scientists and entrepreneurs with downstate sources of advice and funding.

Connect New York’s youth to the economy. As Governor Spitzer said in his “State of the State” speech, “innovation requires more than a high school education.” ESD should connect major technology employers with two- and four-year colleges and universities. This approach works well in other states like California, whose university system is directly linked to the needs of the business community; businesses routinely inform and contribute to California schools’ science curricula. Texas provides another example. The University of Texas-Austin, in order to fuel the economy, expanded from its liberal arts roots into a high-tech research

Figure 2.6
Sector Life Cycle Stages



Source: A.T. Kearney analysis

center, with the stated intention of creating a culture of entrepreneurialism.

You don't necessarily need a Ph.D. to get a good job in the Innovation Economy. High-tech firms also require people with community college and vocational school training. After two years of study and armed with an Associate's Degree or similar credential, a 20-year-old can hope to start in some sectors at around \$50,000. Monroe County Community College, for example, offers a two-year Optical Systems Technology certificate program training photonics technicians to meet the needs of area businesses.

Connect the brand image to the global community. New York State is well-positioned to launch a business-to-business marketing campaign to put its technology hub where it rightfully belongs: on the list with California's Silicon Valley, Austin, Texas, Massachusetts' Route 128 Corridor and North Carolina's Research Triangle. Gubernatorial support has been the driver behind other states' efforts and Governor Spitzer's continued direct involvement will prove essential.

A Question of Balance

No one would seriously argue that the Innovation Economy will completely replace the old economy. New York State cannot afford to overlook the needs of its current commercial base or the citizens it employs. Potentially at least, retaining existing manufacturing jobs, facilitating the flow of New York's agricultural goods to market, or refurbishing a harbor's physical infrastructure might all be viable short term development goals.

Giving to one economic development project effectively means withholding from another. On a practical level all existing funding commitments have to be honored, at least until they are scheduled for review. Balancing existing and potential programs requires the ability to prioritize the allocation of ESD's limited funds, staff, attention and influence.

ESD should focus its primary attention on developing the strategic sectors identified in the previous section, namely nanotechnology, bioscience and cleantech. However, it must manage existing funded plans and be open to the necessity of heading off a localized challenge

such as the relocation of a plant employing 300 to 400 workers. In this light, any short-term funding request should be judged by the scope of its impact, its viability over time, whether or not it enhances or preserves a critical asset and whether it is facilitating real change or merely reinventing the wheel.

Much of the work ESD might consider doing is already being done by other agencies. In an old economy sector such as agriculture, ESD would be well served to support the efforts of regional experts including the Cornell Cooperative Extension – a statewide educational system supporting research in agriculture and sciences. Similarly, ESD should work more closely with Local Economic Development Partners, which may have a better understanding of specific regional conditions and economic priorities.

What Will Success Look Like?

ESD should strive to ensure that New York tops the list of potential destinations for Innovation Economy businesses. By supporting a blend of both strategically important mature and emerging sectors, ESD can have a profound and visible impact on the state’s economy. Most notably, by offering appropriate levels of support for the sectors profiled above, ESD has the potential to double the historical rate of job growth, which was 0.5% per year between 2002 and 2006, to 1.0% per year over the next seven years.⁵⁹

Each of the 900,000 jobs tied up in the state’s target mature sectors (financial services, insurance, media and communications) produces on average \$275,000 of Gross State Product (GSP) annually (in contrast, a job in retail which produces \$60,000 on average).⁶⁰ Success in retaining jobs in these sectors should be measured in wealth preserved, not just jobs retained.

If nurtured effectively, emerging technology sectors create jobs and wealth. If ESD remains as flexible as its private partners in nurturing these sectors, the results will be dramatic. A conservative estimate compiled through A.T. Kearney’s research, and corroborated by U.S. Census data and other sources on Innovation Economy jobs and multipliers, suggests the

potential exists to create between 190,000 to 330,000 new jobs over the next seven years. The majority of these jobs would be Innovation Economy jobs, likely to pay, on average, over \$60,000 per year, well in excess of the current average New York pay rate. Figure 2.7 summarizes the most likely regions of the state that will benefit from the creation of these jobs.

Figure 2.7

Regions Impacted, by Strategic Sector

Strategic Sectors	Regions Most Likely Impacted
Financial Services, Insurance, Media & Entertainment	New York City Metro
Corporate Operations & Contact Centers (CO&CC)	Western New York (Buffalo Niagara), Utica-Rome, Rochester, Syracuse
Nanotechnology	Capital Region (Albany), Mid-Hudson, Ithaca
Bioscience	New York City Metro, Long Island, Westchester, Buffalo, Syracuse
Cleantech	Central New York (Syracuse), Rochester, Capital Region (Niskayuna)

Source: A.T. Kearney analysis

Chapter 3: Funding Economic Growth

Summary

Private sector investment, facilitated by a business oriented economic development agency, represents New York State's best hope for becoming a competitive force in the Innovation Economy. Continued funding for existing programs and stand-alone projects will not produce desired results and, in fact, may make New York less competitive over time. This chapter looks at seven economic development agencies and programs and their effectiveness – or lack of it.

Economic Development Programs and Agencies

Any effective review of an activity must take into consideration the full context in which that activity takes place. This chapter looks at seven New York State economic development programs and agencies. Some of these agencies like the New York State Office of Science, Technology and Academic Research (NYSTAR) are roughly aligned to the strategy suggested by this report. Others like the Centers of Excellence (CoE) program are broadly aligned, but – depending on the center in question – vary wildly in terms of execution and performance. Still others like the Empire Zone program demonstrate a single-minded fixation on job creation and retention at any cost, defining success with metrics more appropriate to the Industrial Age.

Regardless of their relative merits or deficiencies, the larger programs and agencies (Empire Zones, NYSTAR and the Centers of Excellence) share several characteristics. Most importantly, their existence as entities operating outside the full administrative control of ESD stands in direct opposition to Governor Spitzer's vision of a single, integrated, seamless economic development agency driving commercial growth in New York. Next, the services of these programs and agencies overlap – to a greater or lesser extent – with existing or projected ESD efforts. This overlap leads us to the third common ele-

ment. Funding these overlapping efforts significantly reduces the aggregate monies available to drive economic growth and development in New York State. Some of this funding is lost in duplicative or worse multiple administrative costs. Economies of scale are eroded by the demands of various budgets and agendas. Beyond the seven programs and agencies evaluated here, there are many other state programs involved to a greater or lesser degree with retaining, driving and recruiting commercial development.

The assumption that private sector investment – not public funding or economic support programs – is the key to sustainable economic growth lies at the heart of this analysis, and indeed, this report. In his 2007 State of the State address, Governor Spitzer made it clear that he saw ESD as the agency best positioned to centralize the state's development efforts. The challenge then, to a reorganized and repositioned ESD, is how to meld a broad array of tools, some its own and others borrowed from other state agencies, into a functional, flexible portfolio of services. Being in position to correctly match the right products – programs, loans and grants, projects run by subsidiaries, and federal and philanthropic funding sources – to the right investors is crucial.

In order to understand what ought to be done in the future, it is important to examine past efforts with an eye toward what did and did not work. In this light, A.T. Kearney evaluated seven current programs and agencies: Empire Zones, the Centers of Excellence (CoE), the New York State Office of Science, Technology and Academic Research (NYSTAR), International Trade and Investment, Small Business, DEC Brownfields, and Travel and Tourism.

Economic Development Product Evaluations

This report used three criteria to assess agencies and programs: alignment with the proposed strategic focus on growing Innovation Economy businesses, effectiveness of execution, and financial performance. The analysis includes program summaries,

evaluation against the criteria, and recommendations to improve effectiveness.

Empire Zones

Of all of the programs examined here New York's Empire Zones program provides perhaps the best example of good economic development intentions gone wrong. Its original mission has been morphed by political patronage, legislative revision and commercial manipulation, effectively repositioning it from a program primarily helping distressed communities to one routinely offering tax relief for ongoing businesses.

Empire Zones were originally established to address pockets of extreme poverty in New York State. The original statutory language put it this way:

*"It is hereby found and declared that there exist within the state certain areas characterized by persistent and pervasive poverty, high unemployment, limited new job creation, a dependence on public assistance income, dilapidated and abandoned industrial and commercial facilities, and shrinking tax bases. These severe conditions require state government to target for these areas extraordinary economic development programs in order to stimulate private investment, private business development and job creation. It is the public policy of the state to offer incentives that will promote the development of new businesses and the expansion of existing businesses within these economically impoverished areas and to do so without inducing the relocation of business investment from other areas of the state."*⁶¹

The program has been characterized by both successes and abuse and has created diehard supporters and rabid detractors. In the face of evidence that the program has drifted from its initial core mission, many critics have argued that the program is a good idea gone bad. At the very least, it can be said that Empire Zones may have done some good, but has failed to create the depth and breadth of solution needed

to eradicate poverty and replace it with a more viable, more sustainable model of economic development.⁶² The program also isn't aligned with the strategic vision developed in this report.

Empire Zones fails to meet our first strategic criteria, alignment with a focus on growing Innovation Economy businesses. The program treats all job creation as equal, not recognizing the difference between jobs which promote high-impact growth and those that don't. While Empire Zone's proponents can – and do – successfully argue the program has both maintained and created jobs, analysis and anecdotal evidence suggests that at least some companies are being rewarded for a number of jobs they would have created in any event. Empire Zones is also expensive to operate. Tax credits associated with the program cost the state more than a half-billion dollars a year.⁶³ Finally, its "successes" are measured with arcane metrics established by legislative fiat which distort the program's true impact and effectiveness again suggesting that, at the very least, there has been insufficient oversight of the program over time.

Purpose and Context

The Empire Zone program was created in 1986.⁶⁴ As noted, its original mission was, "to stimulate economic growth through a variety of state tax incentives designed to attract new businesses to New York State and to enable existing businesses to expand and create jobs," in economically distressed communities.

Ten zones were established during the program's first year.⁶⁵ In 1993, the legislature expanded the criteria for assigning zones, allowing counties to create Empire Zones in areas threatened by "sudden and severe job loss." While its "Statement of Legislative Findings and Intent" continued to refer to Empire Zones as a program to revitalize economically distressed areas, the addition of language allowing Empire Zones to be established to prevent sudden and severe job loss opened the door to a broader, revisionist interpretation of the statute.⁶⁶ The revised statutory language was vague – by accident or design – about how jobs should be counted in

order to determine whether or not a county met the job loss eligibility criteria.

By the end of 1995, the number of zones had increased to 40.⁶⁷ In 2000, requirements were dropped from the bill (the so-called three sub-zone rule) through consensus rulemaking. Removal of the requirement turned the Empire Zone program from a laser aimed at economically distressed communities into a shotgun blast of opportunity for businesses across New York State. Under the new statutory language, zones could be moved to a business – regardless of the surrounding economic conditions – rather than requiring the business to relocate within an Empire Zone. The legislature has repeatedly acknowledged and tried to address the program’s problems. In 2002, the Empire Zones legislation was revised to close what became known as “shirt changing” loopholes. These loopholes allowed native New York businesses to appear as new-to-New York firms, thereby qualifying them for some of the program’s most generous benefits, benefits intended to attract genuinely new businesses to the state.⁶⁸

Reform was long overdue, but not necessarily effective. By 2002, counties were using a form of political “new math” that allowed them to calculate “net job loss” by adding up job losses by employers from 1999 – 2002 with any announced or “expected” job losses for 2003 - 2005. It was a formula virtually guaranteed to ensure that any county could get Empire Zone designation. In 2002 alone, six upstate counties received Empire Zone designation they might not have been eligible for prior to 1999.

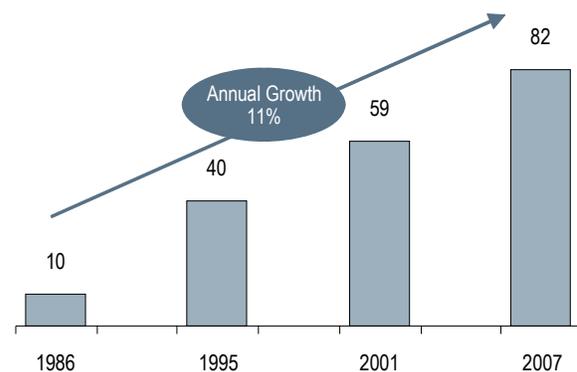
Three years later, in 2005, lawmakers were once again back at work trying to “fix” the program. This time, the issues were lax and insufficient reporting requirements and the spread of “discontinuous zone areas” – a form of gerrymandering where multiple zones could be established around specific businesses. In addition, since 2005, businesses currently operating in, or considering moving to, New York State could qualify as “Regionally Significant Projects” (RSPs) entitling them to Empire Zone tax abatement.⁶⁹ An

estimated 90 businesses have already achieved or are awaiting RSP certification.

Given the relaxed standards, the number of zones has continued to proliferate, as illustrated in Figure 3.1. Today, there are 82 zones with over 9,800 certified businesses.⁷⁰ At this writing only three counties in the state – Hamilton, Putnam and Yates – do not contain at least one Empire Zone.

Figure 3.1

Empire Zones: Proliferation Over Time, 1986 – 2007 (Number of Zones)



Source: Zone growth over time document provided by Empire Zones program administration office within ESD

Evaluation

As a program, Empire Zones has several endemic problems. As evidenced by the proliferation of zones, the program has been allowed to wander away from its original purpose, a clear signal it faces significant administrative reform issues.

As an important note of clarification, the problem of localized poverty in New York State is real and must be addressed. However, the root causes of that poverty are complex, and no legislative “magic wand” can be waved to make them disappear. Subsidizing employment can, in some circumstances, provide effective short-term relief from one of the more superficial symptoms of poverty – unemployment. But these underwritten jobs may not survive long term, plunging workers back into poverty. The real cures for poverty involve ensuring that every New York resident receives a high-quality education, regardless of their zip code; that their streets are crime and drug free; and that effective social counseling is available to help people

make the sometimes difficult personal transition from a culture of poverty to a culture of promise. Whatever else you may or may not believe about Empire Zones, they aren't positioned to deliver against those objectives.

The recommendation to fold Empire Zones – and in particular the tools it employs that have a demonstrable positive impact on economic growth such as tax abatements – into a centralized statewide economic development authority recognizes the ongoing need to continue to address the problems of localized poverty. It also recognizes that the program has grown too complex and lost its focus.

Complexity

As the Empire Zones program evolved, it has become extremely complex to deal with both for businesses attempting to earn its benefits and for the various state entities responsible for administering those benefits.

As currently structured, the program requires businesses to make sense of seven different types of tax incentives (briefly explained in Figure 3.2). Before a business can realize any benefits, it must navigate a lengthy certification process ranging from two to four months. As a result, the program has spawned a cottage industry of lawyers and consultants specializing in helping businesses optimize benefits. Even though potential benefits are lucrative, the complexity

can act as an effective deterrent to businesses considering locating in New York.

On the administrative side, zone proliferation, the variety of tax credits available, and the complex certification and reporting process keeps an army of ESD and municipal employees occupied. Each of the state's 82 zones has a zone coordinator and a zone certification officer. Each zone also has a zone administrative board with approximately six members, and there is a single zone Designation Board with approximately nine members. Finally, 13 professionals within ESD are fully dedicated to administering the program.⁷¹

Lack of Alignment

Even if the program were simple to administer, it would remain misaligned against this report's proposed strategic targets. The program pays benefits to businesses based on quantity and location of jobs, rather than on job quality. The relatively new ability for businesses outside zones to earn benefits (Regionally Significant Projects) is an acknowledgment of this shortcoming. Instead of replacing location-based benefits, Regionally Significant Projects are additive. Far from solving the problem, they just increase the complexity.

One example of a problem with this program is that a large portion of benefits have accrued to “non-traded” businesses that follow

Figure 3.2
Taxonomy of Empire Zone Credits

Credit Name	Credit Description
Wage Tax Credit	• A credit against corporate income taxes equivalent to as much as \$3,000 per job created
Investment Tax Credit	• A credit against corporate income taxes up to 19 percent of applicable investments in property, plant and equipment, businesses must be creating jobs as well as making investments to qualify
Zone Capital Credit	• A credit against corporate or personal income taxes equivalent to 25 percent of the value of direct equity investments into certified zone businesses or contributions to approved community development projects in Empire Zones
New York State Sales Tax Refund	• A refund or credit of New York State sales tax incurred on building materials used for commercial or industrial real property located in an Empire Zone
Qualified Empire Zone Enterprise (QEZE)	<ul style="list-style-type: none"> • A series of tax exemptions and credits in addition to those outlined above for businesses creating jobs within Empire Zones: <ul style="list-style-type: none"> – QEZE Sales Tax Exemption: An exemption from paying four percent State sales tax on purchases of goods and services used predominantly in an Empire Zone – QEZE Real Property Tax Credit: A refundable credit against business or income tax equal to a percentage of real property taxes paid in the zone – QEZE Tax Reduction Credit: A credit against business or income tax equal to a percentage of taxes attributable to the zone enterprise

Sources: “New Zone Coordinator Training” document provided by ESD program administration; A.T. Kearney analysis

growth rather than stimulate it (e.g., retail and construction). There is no reason to spend limited economic development funds against these businesses. An analysis of incentives provided in 2005 by New York's Empire Zones program revealed that of the estimated \$465 million in tax abatement provided, \$170 million (37%) went to companies operating in these "non-traded" sectors.⁷²

The Way Forward

No one questions the sincerity of the original Empire Zone supporters. Nor is it fair to level a blanket criticism at previous legislative attempts to reform the program. Whatever else can be said about Empire Zones one thing is clear: the programs did help to create and retain some jobs even if the exact number of those jobs is difficult – if not functionally impossible – to pin down. Despite the problems with Empire Zones, ESD's leadership has emphasized that the agency will honor bona fide Empire Zone commitments.

Whether or not Empire Zones is allowed to continue as an autonomous program, there is real power in continuing the rational use of tax abatements to stimulate economic growth. That said, that power should be one option in a portfolio of options all under the control of a single New York State development agency, not a license to randomly distribute hundreds of millions across the state in a series of "one-off" funding initiatives that don't necessarily make the state as a whole more economically competitive.

Centers of Excellence

The Centers of Excellence (CoE) program is a microcosm for much of what is been historically wrong with New York State's approach to economic development. The lesson here is clear. It does not matter how pure your intentions are, or how solid a case there is for a development program. If the process is allowed to be subject to social and/or political pressures the end product will be compromised.

Purpose and Context

Established in 2001, the CoE program was designed to create and facilitate a series of university, private and public sector partner-

ships supporting the development of promising technologies with scalable commercial applications. The first five CoEs were designated by gubernatorial action to mirror what was seen at the time as best-in-class federal-level thinking. The charter CoEs are: Nanoelectronics and Nanotechnology (Albany); Bioinformatics and Life Sciences (Buffalo); Photonics and Optoelectronics (Rochester); Wireless and Information Technology (Stony Brook); and Environmental and Energy Systems (Syracuse).

The funding of the five initial centers created some apparent discontent at other academic institutions across the state who felt they had been denied their "fair share" of this new funding pool. Their complaints led the Legislature to amend the enabling CoE legislation, (Chapter 84 of the Laws of 2002) as part of the 2006-2007 budget, and authorize the designation of two additional CoEs: the CoE in Small Scale Systems Integration and Packaging at Binghamton; and a Bioscience CoE in New York City.

Ironically, while the lawmakers created the Binghamton CoE, they failed to fund the center. Binghamton is up and running, and eligible to receive part of the \$7 million earmarked for CoEs in the 2007-08 ESD budget. No centers have drawn down funds yet, so it's unclear who will get state funding this year. The Binghamton CoE has been excluded from ESD's activities with the initial five centers and was not subject to the ESD program performance management reports issued in 2006.

Evaluation

At first blush, the CoE program appears to align well with both this report's proposed strategic direction for economic development and Governor Spitzer's vision of a technologically enabled future for New York State. However, there are at least two significant problems with the current CoE program.

First, only one of the centers, the CoE in Nanoelectronics at UAlbany, has really lived up to its potential. Others like the Rochester CoE in Photonics and Optoelectronics have, for a number of reasons, underperformed against even their own metrics. The sixth center, the Binghamton CoE in Small Scale Systems Integration and Packaging, has yet to be

funded. A seventh (at this writing virtual) Center of Bioscience in New York City still has no academic home and no commercial sponsor.

Secondly – and this will become a recurring theme by the end of this chapter – the CoE program could be much more effective if it was administratively integrated into a suite of potential offerings under a centralized administration. This problem is being addressed.

In 2007, ESD assumed a position of authority over the CoEs when it was given control of their operating budgets. Control of the aggregate \$7 million in annual CoE funding has allowed ESD to impose a series of management requirements on the centers, including a requirement to take a structured and uniform approach to estimating job creation. The CoE program had previously been managed by legislative appropriation. ESD had no role with the program beyond acting as a funding conduit. The CoEs also had no job creation requirements. As a result, it is impossible to accurately determine the number of jobs that may have created. Based on existing data, it is not even clear whether or not center staff and on-site consortia participants would have been employed by organizations associated with the CoEs if the facilities did not exist. Moreover, some of the CoEs count employees related to work at the centers who are, in fact, employed out of state.

There are other problems with the program. Few of the CoEs were subject to an objective review by qualified scientists and/or private sector experts on the commercialization of science and technology. Because the administrative structure and leadership quality varies so widely from CoE to CoE, the quality of financial reporting and economic development is equally uneven. Some CoEs are administered by a single administrator who plays a key role at the academic institution associated with the center. Others are administered by committee.

The program is not a total loss. To its credit – like the tax abatements that form the core of the Empire Zones – there are some good ideas in the CoE program. The research facilities and partnerships CoE sponsors can provide the bedrock for building the infrastructure of New York State’s Innovation Economy. Simply put,

CoEs provide dedicated lab facilities. Those labs are the preconditions for attracting researchers. Those researchers can create the products which can be commercialized and could, in time, attract private sector attention and investment. It should also be noted that, unlike Empire Zones, the program is new enough and small enough to be easily repositioned.

As we’ve noted, some academic institutions seem to have received CoE designations without a full, objective review of either the quality of their research activity or its commercial potential. As a result, much of the \$586 million New York State has given the centers since 2001 has yielded wildly varying returns. Going forward, by repositioning some CoEs and better supporting others, New York can align the program with the strategy of creating a state-wide technological infrastructure. This shouldn’t require much additional funding since the major capital investment for facilities and equipment has already been deployed.

Figure 3.3

Centers of Excellence: Funding Commitments Through June 2006 (\$ Millions)

Center of Excellence	NY State Funding	Private Investment	Federal and Other Investment
Nanoelectronics and Nanotechnology (Albany)	\$342	\$1,200	\$162
All other CoEs	\$244	\$135	\$638
Total	\$586	\$1,335	\$800

Source: “New York State Centers of Excellence Progress Review.” *Public Financial Management, 2006*

In exchange for \$586 million in public capital investment funding, New York’s seven CoEs have attracted \$2.135 billion in private and federal funding.⁷³ Private investment alone, however, is not enough to qualify these centers as a success, given the disparity of the performance between the CoE at Albany (which accounted for \$1.362 billion of the total) and the remaining six centers.

The true metric of success is each CoE’s competitive advantage in its particular field –

measured by the strength of academic/industry partnerships and the degree to which those partnerships lead to commercial activity.

Why the difference in performance? The Center for Excellence in Nanoelectronics and Nanotechnology (CENN) at UAlbany is aligned to a sector that began with strong competitive advantage. At the time it was chartered, New York already hosted a number of academic and commercial studies within nanotechnology. Additionally, the state provided a needed capital infusion at a critical point in time, encouraging existing businesses that were working toward developing the next generation of computer chips.

Syracuse's Center of Excellence in Environmental and Energy Systems, on the other hand, suffers from mission evolution. The Syracuse CoE was initially focused on Indoor Air Quality and Built Systems, a field in which the university is recognized as a global leader. Recently, the center decided to broaden its focus, at least nominally. Its new official mission includes Indoor environmental quality; human health and performance; healthy buildings; water resources; and clean and renewable energy.

This new mission statement aligns with Governor Spitzer's mandate to use clean energy sources to reduce consumption of electricity by 2015. The change in mission isn't bad, in and of itself, but it does require the CoE to actively explore new corporate partnerships – with GE for instance – and research venues.

At their worst, CoEs have become state-of-the-art but underutilized laboratories, lacking effective industry-academic partnerships and far removed from the world of commercial applications. Although it still is doing interesting work with Bausch and Lomb and others, Rochester's Photonics and Optoelectronics CoE was founded based on planned research collaboration between Kodak, Xerox and Corning. Since the center was founded, the companies have all experienced cuts in their research and development budgets, making their partnership with the center far less important to them than it once was.

The Way Forward

CoEs should attract industry investment to the state, and only be rewarded when they establish commercial and academic partnerships. It is too early to tell for certain, but linking oversight control to ESD's historical funding function, and applying more stringent performance metrics, seems like a positive step toward repositioning the program. There is no reason why that oversight role shouldn't be expanded to give ESD a more active role in supporting and monitoring existing CoEs to determine how the program will be handled in the future. Other suggestions for improving the CoE program include:

- Urging Governor Spitzer to appoint an advisory board of scientists from industry and academia to evaluate the scientific potential at existing CoEs and future resource allocation.
- Ensuring ESD controls CoE operating funds.
- Denying state funding to any CoEs without a strong industry partner.
- Mandating best practices for center operations, and leveraging operating funds to influence CoE leaders to adopt these practices. This may include requiring that the director of the CoE is also a dean of the associated university, a practice that in Albany has ensured that faculty members hired by the university are actively involved with the CoE.
- Publicizing the state's science and technology assets including – but not limited to – those bolstered by CoEs.
- Facilitating interactions between the CoEs and complementary research and development initiatives in the state. For example, Columbia, Cornell and RPI all have very strong nanotechnology programs. The Albany CoE should collaborate with, and facilitate partnerships between, its partners and its in-state peers.
- Creating a role for CoE management in the process of courting businesses considering locating in New York.

New York State Office of Science, Technology and Academic Research (NYSTAR)

Purpose and Context

NYSTAR was created as part of the Jobs 2000 Legislation and enacted into law in 1999, but similar state programs can be traced back to 1963.⁷⁴ By using a variety of programs and other strategic initiatives, NYSTAR seeks to strengthen the formation of university-business partnerships to develop and market the most promising technologies. Commercialization of these technologies, it is hoped, will create new companies and, as a result provide a new source of high-quality, high-value jobs. Intended recipients of NYSTAR funding include university faculty, researchers, private sector companies and emerging commercial ventures focused on technology. In 2005, New York State invested \$53 million in the NYSTAR program.

In 2006, the legislature underscored its view of NYSTAR as a tool for economic development by creating Regional Partnerships (RP's). While not yet operational, RP's are intended to act as independent not-for-profit economic development organizations helping emerging companies find technical, financial and business development resources. This essentially duplicates existing ESD responsibilities and functions, especially its network of regional offices. Given ESD's past shortcomings, documented in this report and other sources, it is no surprise that the legislature felt compelled to empower another agency to focus on economic development in the important science and technology space.

Evaluation

As outlined in this report, support for academic and industrial research with commercial promise is integral to growing New York's Innovation Economy. In this respect, the aims of NYSTAR fit perfectly.

NYSTAR tracks many metrics to measure the success of its investments, including patents awarded, additional research grants received, and, of course, jobs created. However, it is difficult to isolate the specific impact of NYSTAR funding on its recipients, since most NYSTAR recipients receive many sources of funding.

Despite these admirable attributes, NYSTAR has not become an engine for large-scale economic development. There have been some notable

successes, but there is a perception among many business, government and academic leaders that NYSTAR (and its spiritual ancestors dating back to the 1960's), have seen very few big commercial wins.

This is not to say that NYSTAR has not achieved anything. A number of management techniques have been established that align well with the recommendations outlined in this report. For example, NYSTAR's Centers for Advanced Technology (CATs) program is designed to spur technology-based, applied research and encourage collaboration with industry. The program has \$15 million in annual funding, distributed to faculty support and asset acquisition. Two attributes of CATs execution that stand out as particularly effective are its mechanism for prioritizing investment and its approach to measuring program impact.⁷⁵

■ *Investment Prioritization Mechanism*

During the CATs designation process, NYSTAR assembles a review panel made up of unbiased scientists and business leaders. The panel evaluates the strength of the proposed university and industry partnerships as well as the merit of underlying science. Because this panel is necessary, its efforts need to be more strategically purposed to identify projects with commercial promise.

■ *Measuring Impact*

CATs performance is measured annually on two dimensions: economic and academic return. Economic return includes jobs created, wages of those jobs, capital improvements, royalty and licensing revenues. Academic return includes papers published, patents applied for, patents received, invention disclosures, licensing agreements and number of grants applied for and received.⁷⁶ NYSTAR has tracked these and other metrics since 2001, and applies this rigorous approach to all its programs, not just CATs. This measurement approach goes well beyond the traditional economic development metric of number of jobs created and accounts for the importance of early-phase scientific output.

The Way Forward

If New York State hopes to grow in the Innovation Economy, it must present “one face” – a single point of contact – to potential high technology investors. There are no doubt dozens of potential examples of how, working in unison, a CoE, ESD and NYSTAR could work together to develop a technology, create a business plan around that technology, solicit private sector partners for the plan, and commercialize it. This “linked asset” approach is far more likely to result in success than three independent efforts and would take far less time, money and energy to administer and facilitate.

The best attributes of NYSTAR’s management techniques and its programs should be rolled into a new program coordinated by ESD. This will enable New York to offer a suite of complementary programs to prospective technology investors. For example, ESD’s CoE program provides large-scale capital for facilities and equipment, while most NYSTAR programs provide smaller-scale funding for faculty attraction and technology transfer. If managed together, these programs could offer a powerful suite of support for science-based Innovation Economy businesses.

As recommended in an earlier draft of this report, the ESD chairmen have now been appointed to NYSTAR’s Board of Directors. An independent panel of experts (as recommended in the Centers of Excellence section above) should also be formed to review the quality of the science being funded by NYSTAR and recommend any policy changes as needed. No new funding should be granted until there is a full integration of all of New York’s technology-focused economic development programs.

Assuming that new leadership, new management, new strategy and a new Governor can turn ESD around – the historical reasons for keeping NYSTAR independent will make less and less sense over time.

International Trade and Investment

Though its aims are ambitious, ESD’s International Trade and Investment Division is not

equipped to succeed. ESD’s efforts to stimulate international investment and provide access to international markets for New York products must be completely rethought.

Purpose and Context

The International Division has two primary functions: to provide technical assistance, programs and services to expand exporting by small and mid-sized businesses in New York; and to attract foreign direct investment (FDI) into the state. Attracting FDI can reap substantial dividends. Figure 3.4 illustrates how the state of Pennsylvania’s Team PA Foundation targets strategic foreign investors.

ESD’s International Division’s primary vehicles are:⁷⁷

- **International Offices:** ESD maintains ten international offices to support its efforts to attract FDI and access global markets for New York businesses. Six of these are managed independently by ESD: Canada (Toronto and Montreal), United Kingdom (London), Japan (Tokyo), Israel (Jerusalem) and Mexico (Mexico City). Three additional offices are managed in partnership with the Council of Great Lakes Governors Association: Brazil (Sao Paulo), Chile (Santiago), and South Africa (Johannesburg). An office in China (Sichuan Province) is managed by the Eastern Trade Council.
- **FDI Attraction:** During 2006, ESD generated approximately 170 new leads, resulting in 45 active cases and 16 successfully concluded projects which attracted \$2 billion in FDI. However, 97% of that \$2 billion was concentrated in three projects, all located in New York City.
- **Export Market Assistance Service (EMAS)** improves market access and export results by providing New York manufacturers with technical assistance in identifying foreign sales agents and distributors. During 2006, DED provided country reports and qualified sales leads to 34 companies in the

Figure 3.4

Approach to International Economic Development – Pennsylvania

International Economic Development Approach – Pennsylvania
<ul style="list-style-type: none"> • The Team Pennsylvania Foundation, a public-private partnership founded to support economic development, partnered with IBM for its Global Competitiveness Initiative. This initiative was based on the premise that economic development officials should examine a state's capabilities through the lens of prospective investors, especially business decision-makers. The two major components of the initiative were identifying strategic sectors and developing strategies for attracting business investment. <ul style="list-style-type: none"> – Identifying strategic sectors. Pennsylvania determined its competitive sectors by evaluating factors such as the likelihood to attract domestic and international investment, availability of skilled workers, and strength of existing technologies. – Developing strategies for attracting business investment. The initiative team generated profiles of project types that aligned with each region's specific assets (e.g., proximity to research resources, good interstate infrastructure, etc.). IBM then applied a proprietary site-selection tool to identify attractive locations for each project type. These sites were also benchmarks against competitive alternatives around the world. The result of this exercise was a database indicating the competitive position of specific sites throughout Pennsylvania, and recommendations for improving each site's competitive positioning. • From the above analyses, the Team Pennsylvania Foundation devised and implemented several FDI and marketing strategies that were well positioned to maximize the return on attraction efforts. <ul style="list-style-type: none"> – The Team PA Foundation matched the strategic sites in its database with a list of target companies, domestically and internationally. Representatives from the Team PA Foundation were responsible for developing relationships with decision makers at those companies in advance of any specific site selection project. Over time, Foundation relationship managers used their relationships to generate specific project opportunities. – The foundation also invited the writers of foreign trade journals to review the state's offerings, and as a result, articles describing Pennsylvania's assets appeared in these publications. – In order to create accountability among the foundation's representatives, the Team PA Foundation would set project and site visit targets so that representatives would concentrate their efforts on obtaining investments that were aligned to the state's priorities. • As a result of Team PA Foundation's efforts, state assisted trade sales increased by 156 percent from 2002 to 2005. Additionally, Pennsylvania was the fastest growing state for exports compared to its competitive set of states.

Sources: Interview with economic development officials; IBM's Summary Report on "Identifying Opportunities for Pennsylvania to Compete in the Global Economy," 2005; Team Pennsylvania Foundation presentation on its Global Competitive Initiative 2006; A. T. Kearney analysis

markets covered by eight of the Division's international offices.

- Global Export Marketing Service (GEMS) provides grants ranging from \$25,000 to \$50,000 to help small and mid-sized businesses create and implement export marketing projects. These grants are designed to promote industry cluster trade development and to assist regional projects for expanding export activity. Seven grants totaling a paltry \$139,000 were approved by ESD in 2006.
- Export NY is a training program that helps company participants learn how to develop and implement an export strategy.

Evaluation

ESD has not made a serious effort to develop international trade and investment. The programs described above have been managed in isolation, with no clear tie to an overall strategy for economic development. Marketing efforts have been limited at best, and no systematic process exists for identifying and

processing international leads or measuring performance. Finally, there is only limited and ad hoc interaction between the International Division and other ESD divisions that could provide useful advice for pursuits or other strategic activities.

The Way Forward

To shore up its international development efforts, ESD leadership should:

- Staff organization with individuals experienced in export and international business
- Establish strong, consistent leadership with explicit gubernatorial support
- Identify regions of focus based on opportunities consistent with its strategic industry sectors, including China and India
- Establish clear performance expectations, including number and quality of leads and transactions generated, as well as alignment to ESD's specific agenda for that region

- Partner with New York City and the Port Authority of New York and New Jersey to avoid redundancy and ensure complementary activities

Small Business

ESD's efforts to support small businesses would benefit from a thorough restructuring including better coordination with Regional Offices, a centralized program repository, formal operating procedures and broader communication with all stakeholders.

Purpose and Context

More than 3.6 million New Yorkers are employed in approximately 490,000 small businesses.⁷⁸ To support the growth and competitiveness of these small businesses, ESD's Small Business Division offers a suite of programs; two of the biggest are the Linked Deposit Program and the Industrial Effectiveness Program.

The Linked Deposit Program offers subsidized interest rate loans to small businesses seeking funding for projects to improve their competitiveness. In 2006, a total of \$140 million was deployed against 500 projects, which are expected to create over 2,000 new jobs, retain 1,200 jobs, and generate \$300 million in private sector capital investment.⁷⁹ The cost to New York of this program was \$8.3 million in 2006. The Industrial Effectiveness Program encourages New York State manufacturing firms to improve their competitiveness and productivity by offering grants that subsidize independent consultants who provide technical assistance. In 2005-06, \$1.3 million in program funds leveraged \$5 million of private sector funds and impacted 40 companies and over 2,300 jobs.

The Small Business Division also offers a number of small, relatively unknown and unused technical assistance programs including the Business Assistance Hotline, Contract Reporter, and the www.NYlovesmallbiz.com website.

Evaluation

These programs are well aligned to the diverse needs of small businesses. The Linked Deposit Program is a good case in point; it is flexible in

its qualification criteria for small business seeking assistance, under the general theme of improving competitiveness. However, ESD lacks the staff to effectively manage its small business programs. There is also poor coordination between Small Business program managers and ESD's Regional Offices, the face of support to local small businesses. Because they do not know the full range and functionalities of the programs, the Regional Offices cannot fully support them. Regional Offices and ESD also do not actively market small business programs to local communities.

The Way Forward

ESD should:

- Maintain a central repository of information regarding all programs that address small businesses, easily navigated by both ESD and constituent stakeholders.
- Improve current tools supporting small businesses' access to government procurement bids such as New York Contract Reporter.
- Improve coordination between managers of Small Business Programs and the Regional Offices to better market the programs
- Establish standard operating procedures and best practices manuals to ensure continuity and effective administration of small business programs across administrations and other workforce changes.

DEC Brownfields

ESD's economic focus could help the Brownfield Cleanup Program bridge the gap between developers and the Department of Environmental Conservation (DEC) by prioritizing sites, directing benefits and facilitating development.

Purpose and Context

Initiated in 2003, the Brownfield Cleanup Program, managed by the DEC, seeks to encourage private sector cleanup of brownfields (environmentally contaminated land). The

program has as its secondary objective reducing the need for further development of pristine “greenfields” (uncontaminated and undeveloped land). The program provides tax credits for the costs of remediation and redevelopment of brownfield sites in New York State. To date, the program has received 328 applications, 241 of which have been accepted. Twenty one have received their DEC Certificates of Completion and are awaiting the program’s first tax credits.⁸⁰

Evaluation

Since the program is managed by DEC, ESD has no decision making role. That said, ESD could have a role defining eligibility and strategically ranking sites according to potential economic impact. Because DEC’s focus is on the environment, it tends to ignore economic opportunity, so carving out a role for ESD would better encourage private investment.

Unlike peer agencies in other states, DEC does not formally promote New York’s brownfield sites or the economic incentives of the program to real estate development companies, the primary demand channel for redeveloping these sites.

Additionally, because the tax credit structure does not accurately reflect the intrinsic value of the location versus the cost of redevelopment, sites that would have been redeveloped regardless of their brownfield status could collect lucrative payouts.

The Way Forward

- ESD should manage economic development related decisions such as site eligibility criteria and prioritization
- ESD should expedite the application and certification process for developers, by providing the expertise required to navigate the process.
- DEC and Department of State should continue to focus on issuing and managing clean-up regulations and standards.
- The legislature should revise the current tax credit structure to ensure that benefits are given solely to “tip the scale” in favor of developing sites that might otherwise remain untouched. This will prevent benefits

being paid to developers who would profit from sites requiring brownfield clean-up even without a tax credit program. This can be done by accurately reflecting the weight of the location’s intrinsic value versus the cost of redevelopment.

The administration is currently working to implement ESD-proposed changes to reform the Brownfield Cleanup Program, consistent with these recommendations.

Travel and Tourism

Travel and Tourism is a large industry in New York State, accounting for more than 343,000 jobs and \$41 billion of visitor spending in 2005.⁸¹ With an exceptionally strong product to market, Travel and Tourism needs to adopt a more strategic, targeted focus for its investments and pursue potential partnerships in collaboration with industry, New York City and local development corporations.

Purpose and Context

In 2005, New York was the fourth most popular state destination for domestic travelers and the leading state destination for overseas travelers.

The Marketing, Advertising and Tourism Division (MAT) of ESD is responsible for developing advertising campaigns and comprehensive marketing and tourism programs to encourage tourist activity, serve the business community, and attract new businesses to New York. It also coordinates a statewide centralized marketing program around the “I Love NY” brand, supervises advertising services on behalf of other state agencies, and coordinates the strategic marketing and advertising planning process with advertising agencies, consultants, and ESD staff.

Evaluation

Program funds are fragmented and not allocated to attractions that generate the highest return. The Matching Grants program, for example, intentionally dispenses funds evenly across all of New York State’s counties instead of concentrating economic dollars to select attractions.

Unlike other states such as California or cities such as New York City, New York State is largely unsuccessful in attracting private sector funding for tourism. Additionally, New York State should look to partner with the NYC & Co. – New York City’s Travel and Tourism Economic Development group – to coordinate efforts and messaging both domestically and abroad. A change of metrics might also prove useful. ESD currently tracks “heads on beds” (regional hotel guest volume) and “iloveny.com” website hits. A better way may be to allocate state funding based on the growth potential for each tourist region, and the private sector investment that region attracts.

The Way Forward

ESD has several opportunities to help grow tourism. It should place stewardship of the state’s iconic brand in the hands of a seasoned Chief Marketing Officer (CMO) who would be charged with focusing “I Love NY” funding on a select set of New York’s best attractions, and celebrate the 30th anniversary of the branding campaign. This CMO should also establish improved metrics to measure the return on ESD’s advertising spend. It should also promote public and private partnerships -- following the model set by NYC & Co. – that can jointly contribute funds for NYS tourism. ESD also needs to collaborate with other tourism agencies throughout the state.

Finally, a primary objective of its initiatives should be to improve existing campaigns

designed to draw New York City visitors and residents to other parts of the state. This could include programs such as connecting downstate wine connoisseurs with upstate wineries, or connecting Manhattan tourists to the wonders of Niagara Falls. Targeted advertising, combined with affordable air travel promotions could be an answer.

Chapter 4: Organizing for Growth

Form Follows Function: Organizing for the Task

The analysis of the seven programs presented in Chapter 3 only begins to illustrate the futility and expense associated with what has been called New York State’s “balkanized” approach to economic development. It is important to remember that at least 28 New York State agencies are charged – in part or full – with some aspect of stimulating commercial growth. The argument for centralized, statewide coordination of development efforts is a simple one. Each of the programs and agencies we looked at earlier in this report controls a piece of the successful development puzzle. Somehow, the whole of their effort not only never equals the sum of its parts, each part is diminished and sub-optimized through missed opportunity, uneven leadership, questionable metrics and limited accountability.

History is not ESD’s friend. The agency lost the full confidence of the legislature years ago, largely for good reason. That said, given the broadness of its structure and mandate and the depth of its funding pool, a renewed and repositioned ESD is still the only logical choice to carry out Governor Spitzer’s vision of a single economic development engine, pulling New York State quickly into the 21st Century. Laudable intentions aside, it will take a good deal of hard work for ESD to live up to its second chance. ESD faces a long uphill road before it can re-establish public and legislative confidence.

The first step on the journey requires ESD to reject its legacy of regional patronage, a pattern of funding one-off solutions, and a

Summary

The repositioned ESD introduced in Chapter 2 needs strong leadership and improved internal and external communications if it hopes to fulfill its mandate as the lead New York State agency spearheading economic development, particularly in the Innovation Economy. As the integrator of all economic development programs and policies, a renamed ESD should be given control of the economic development funding functions of at least 28 existing New York State agencies – in some cases completely absorbing what are currently free-standing programs and agencies. In turn, it should leave the social development aspect of its work to programs with community rehabilitation as their central focus. Accomplishing these goals requires a dramatic new organizational restructuring.

perceived preference for practicing the economics of political convenience. ESD must stop underwriting the past if it ever hopes to become a successful architect of New York State's future.

In this chapter, we review ESD's key functions – including its critical shortcomings – and propose new guiding principles for the agency, along with a new operating model and performance evaluation metrics. The next step will be for ESD to develop a specific organizational design that meets all these functional requirements.

What's Broken?

“On the Sidelines”

Executives of large multinational firms are routinely deluged with calls offering compelling reasons to locate new operations or relocate existing operations in the caller's state or country. Rarely is there anyone from New York State on the other end of the line. Thanks to the passive attitude of prior ESD leaders and an inability or unwillingness to communicate what the state has to offer, New York seems perpetually condemned to occupy a seat on the commercial sidelines, watching as other states and nations close deals it could have had. The communication problem is not just external. ESD suffers from significant internal communication problems.

Lack of Thought Leadership

Inside New York State – whether you are speaking with other state agencies or operatives in the legislative or executive branches of government – it is difficult to find anyone who considers ESD a credible thought leader on economic development issues. This lack of credibility is evidenced by the legislature's de facto “no confidence” votes in ESD – the creation of programs like the Centers of Excellence and NYSTAR, focused on economic development yet managed outside ESD's control.

Complex Web of Economic Development Efforts

As Governor Spitzer noted in his State of the State address, at least 28 state agencies have some form of economic development within their mandates (see Appendix 4.1). Collectively, these agencies – directly and indirectly – significantly impact the direction of New York State's current and future commercial development. The current lack of coordination between agencies results in a patchwork approach to economic problem solving – partially successful in some places and nonexistent or a failure in far too many others. No single department inside ESD can knowledgeably present the full array of economic development products the agency administers.

The New York State Education Department (NYSED), for example, has a mandate quite different from, but critical to, economic development – the delivery of high-quality primary and secondary education. ESD is currently not even an advisor to DoE curriculum development, a critical disconnect when it comes to ensuring that today's New York students are prepared to be employees of tomorrow's Innovation Economy. By the same token, ESD could partner with the Department of Transportation to communicate infrastructure requirements that might enhance Travel and Tourism capabilities for the state.

Consider the statutory and administrative lines separating ESD from NYSTAR, which houses a series of programs that invest state funds in projects aligned with New York's target, technology-enabled sectors. ESD has funding resources and an international “sales force,” and the Centers of Excellence which could provide a physical home for the technologies funded by ESD and identified by NYSTAR.

ESD should develop partnerships with agencies offering economic development products targeting sectors that it may not prioritize. The agency needs to be more forward – looking, identifying emerging sectors, tracking the strategic assets statewide and working with other agencies to further

New York’s overall economic development agenda. ESD also needs to partner with the other agencies to ensure that all economic development products are administered with a more disciplined approach to measurement.

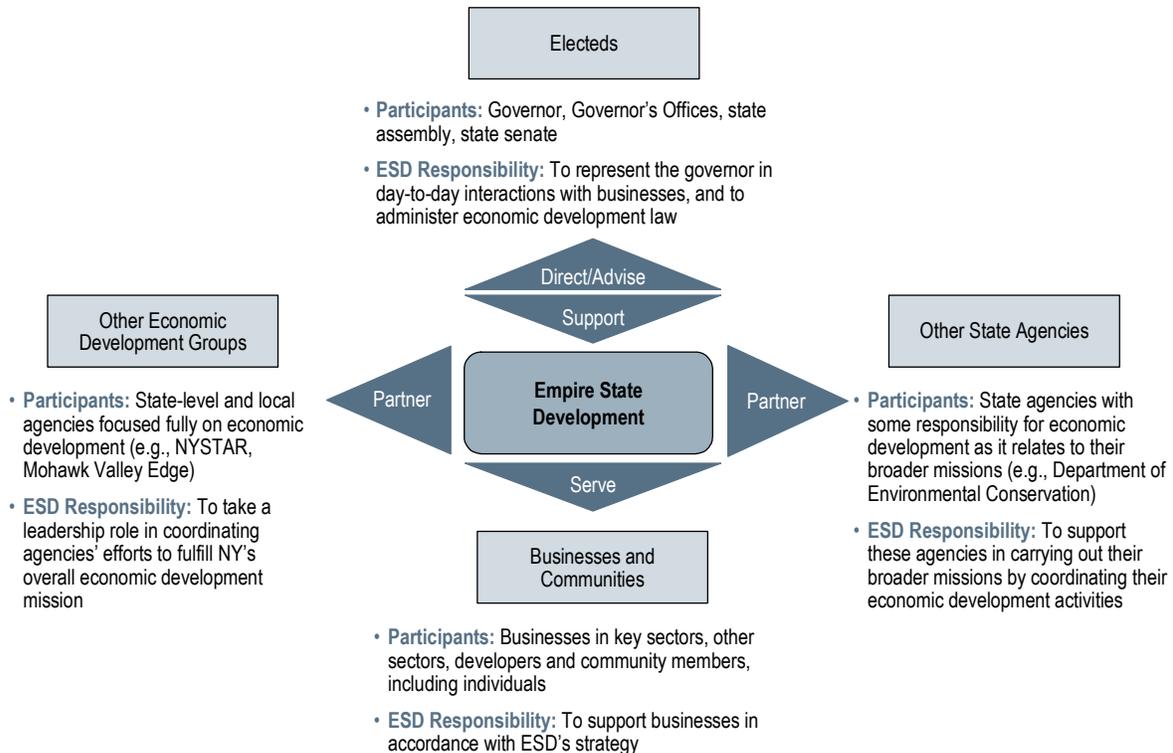
Mission Too Broad

ESD must recognize its current portfolio of products, developed over time under several administrations, may not be well suited for its new strategic mandate. There may be programs, subsidiaries and other products under ESD’s umbrella that fundamentally do not support economic development. Part of ESD’s intra-agency partnering should ensure that every state program is housed in the most appropriate agency. This includes moving programs with limited economic implications that focus primarily on social development out of ESD.

Branding Ineffective

The Empire State Development Corporation’s current name fails to leverage one of New York State’s most recognizable assets – its name. With New York City globally recognized as one of the world’s great cities, and with the “I Love NY” brand registering 89% awareness, “New York” is a world class brand. “The Empire State” is all but unrecognized globally. In a recent A.T. Kearney survey of Asian and European executives, only 40% correctly linked “The Empire State” with “New York State.” As the business of luring private investment into a state becomes increasingly competitive, why force ESD’s representatives abroad to start with a lesson about the origins of the name Empire State? The bottom line: ESD should change its name, and the new name should shout “New York” front and center.

Figure 4.1
ESD as Nucleus for Economic Development



Source: A.T. Kearney analysis

What the “New ESD” Organization Should Be

Looking forward, what should the new ESD look like? The following list provides selected guiding principles for an improved agency operating model.

ESD as the Nucleus for the State’s Economic Development Activities

As illustrated in Figure 4.1, ESD needs to develop productive working relationships with its key Entities fully focused on economic development (e.g., local development corporations)

- State agencies with some responsibility for economic development (e.g., Department of Taxation and Finance)
- “Customers” (e.g., businesses and the communities that surround them)
- Elected officials (e.g., Governor Spitzer and the legislature)

In all interactions with these four critical groups, ESD must demonstrate economic thought leadership. It must also understand that recognition as a thought leader will not come overnight.

ESD as a “Concierge” for Business

The new ESD should include teams of highly-skilled and specialized professionals, capable of serving the full spectrum of needs of both large and small businesses, by providing an “end-to-end” solution. There are other state best- practice models to draw on. North Carolina’s approach to providing end-to-end support is profiled as an example in Figure 4.2.

ESD as a Seamless Integration of ESDC and DED

ESD has another organizational challenge. As explained in Chapter 1, ESD is the umbrella under which both DED and ESDC reside. DED and ESDC were founded at different times to serve distinct purposes. Over time the lines between them have blurred and their leadership has merged. Not surprisingly, a

substantial duplication of function has evolved. ESD’s redesign needs to functionally integrate ESDC and DED, allowing ESD to become a lean, effective organization capable of executing the state’s complex economic growth and revitalization mission.

Figure 4.2

North Carolina – A Seamless Model for End-to-End Support

- North Carolina’s Department of Commerce partners with the North Carolina Biotechnology Center (NCBC) to fulfill the needs of businesses operating in this sector. NCBC takes the lead in identifying projects to retain, expand and attract biotech businesses.
- It relies on a staff of biotechnology specialists to develop relationships with target businesses, demonstrate North Carolina’s relevant assets (high performance, low cost and high quality of life), and provide success stories from other companies. Once businesses are ready to launch the site-selection process, NCBC connects them to a Chamber of Commerce representative.
- From this point forward, the Chamber of Commerce takes the lead, helping the business navigate the state tax policy, permitting and regulations. The Chamber of Commerce also develops a package of incentives and is responsible for closing the deal. The two entities work together in a seamless partnership where NCBC’s role is to “bait and hook,” while the Chamber of Commerce “reels them in.”

Note: NCBC is a private, not-for profit entity that was created by the legislature and is funded annually by legislative appropriation.
Source: A.T. Kearney analysis

ESD as Energized by Strong Leadership

ESD also needs strong leadership to accomplish change of this magnitude, not only at the top but all the way down the organization. ESDC must develop empowered senior leaders and effective managers within each function. Together, these leaders need to forge a new view of economic development in New York State, one that connects the upstate and downstate economies under Governor Spitzer’s “One New York” vision.

How The “New ESD” Might Look

Recommended Operating Model

Based on discussions with over 200 private and public leaders in New York State and elsewhere, and after researching the structures of economic development organizations of high-performing states, an ESD operating model reflecting best practices has been developed. The principles embodied in this

model can be realized through any number of organizational structures. The operating model's major components are illustrated in Figure 4.3.

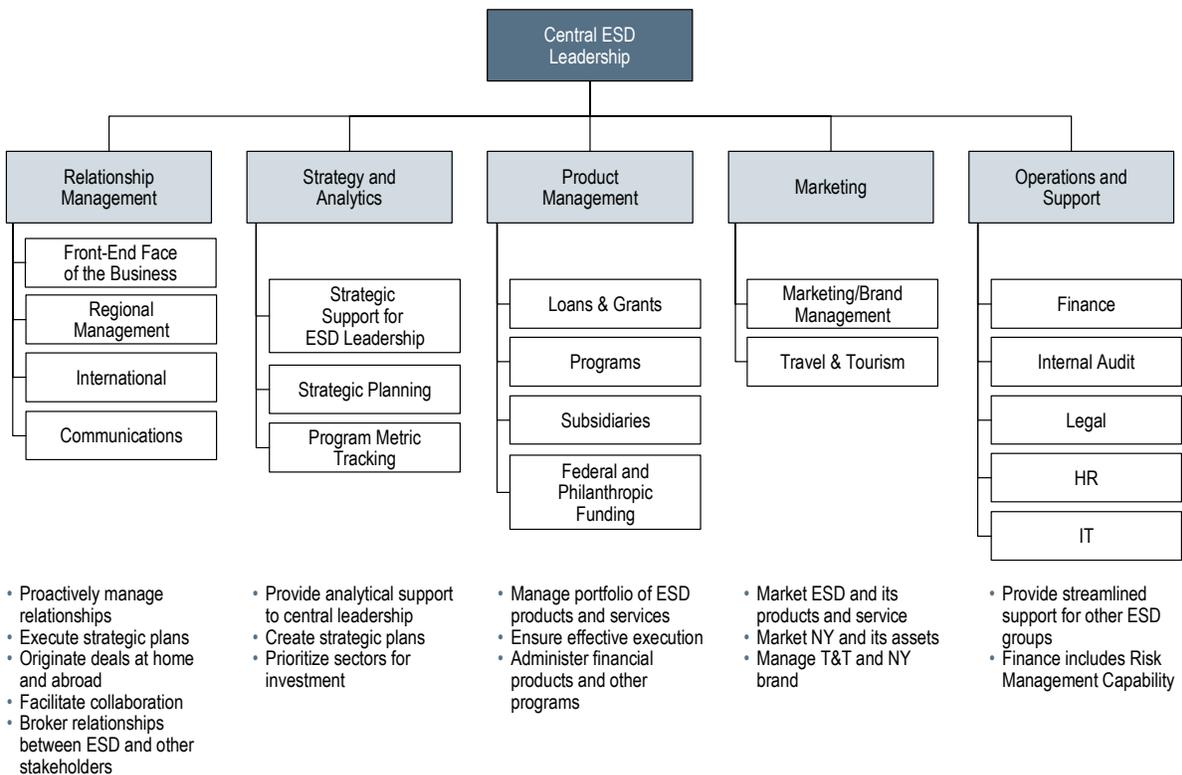
Relationship Management

As New York's face to the business community, the Relationship Management group should be responsible for developing and managing relationships with ESD's many constituents including: businesses, municipalities, economic development-focused NGOs, educational institutions, the legislature and other state agencies. This group, staffed by professionals with backgrounds in economic development, should provide end-to-end solutions that make the prospect of locating in New York more attractive and convenient.

There should be three relationship management teams:

1. **International Relationship Managers.** These managers will concentrate on attracting international investment to New York, consistent with ESD's strategic plan. They will offer end-to-end solutions that both expedite the process and demonstrate the competitive advantage of locating in New York.
2. **Regional Relationship Managers.** Located within ESD's regions, these managers will work collaboratively with local economic development partners and other regional business leaders, as well as with local assembly members and senators. Additionally, they will inpromote region-specific issues. Regional Managers will execute region-specific plans that are aligned with ESD's broader strategic plan. Recognizing the important role that small businesses play in the economy,

Figure 4.3
Recommended "New" ESD Operating Model



Source: A.T. Kearney analysis

Regional Managers must develop relationships with small entrepreneurial businesses and understand how technology enables businesses to succeed. A collaborative relationship between ESD and regional development organizations has already begun to emerge. Irwin Davis, President and CEO of the Metropolitan Development Association of Syracuse and Central New York, said: “It has been refreshing to see how regionally focused the new ESD leadership has become. I think that all of the upstate LDCs are very excited about the potential for new, more collaborative relationships with ESD. The LDC community is ready to work together with ESD to execute plans for economic growth and revitalization throughout the state.” These teams will draw from ESD’s arsenal of economic development products – programs, loans, grants, operating subsidies, etc. – to support business investment in New York.

3. **Communications.** This group will be responsible for managing media and other high-profile external relationships. Their activities will include communicating ongoing activities of ESD to the public, executing a promotion plan for the overall mission and brand of ESD, organizing events advancing the overall strategy, generating and/or editing internal and external publications including press releases, and coordinating website management.

Strategy and Analytics

The Strategy and Analytics group should support the central leadership’s decision-making processes. This group will be ESD’s central “brain trust” responsible for economic and global business analysis. They should assemble and maintain an inventory of New York’ State’s strategic assets, develop five-to-ten year strategic plans for each New York region and key sector of the state’s Innovation Rconomy, evaluate the ROI for each product and measure customer satisfaction for ESD as a whole.

Product Management

A group of individuals with detailed knowledge of the full range of the agency’s offerings should manage ESD’s product portfolio – programs, loans and grants, federal and philanthropic funding and projects run by subsidiaries.

Product Managers: The product managers should have extensive responsibilities. They must understand their target customers, train and support relationship managers, manage product specific web sites and other forms of collateral to explain the programs publicly, and manage many other administrative processes such as developing contracts and delivering products and ensuring customer compliance. They should also be responsible for tailoring offerings based on clients’ needs and the portfolio of products in their inventory. Leaders in these positions need to be knowledgeable and experienced in the technologies they are funding in order to understand the best approach for each unique opportunity.

Product managers’ performance should be tracked based on well-defined financial metrics, such as value of private investment associated with deals they have supported or programs they have administered.

Subsidiaries: One of ESD’s products that is most visible to New Yorkers is its network of subsidiaries. This portfolio of large deals targets development in urban areas and economically challenged communities.

Subsidiaries include such projects such as

Figure 4.4
Managing Subsidiaries

- ESD has responsibility for the New York Convention Center Corp. This subsidiary’s initial design for the Jacob Javits Center expansion emphasized impressive views and appealing architecture. However, end-user research indicates that convention hall users value function over form. An accessible, single-level layout is more important than costly, stylistic features. Based on that research, a new phase of planning has been initiated where users are more actively involved in defining the requirements allowing “function to trump form.” ESD’s oversight of this and other subsidiaries should ensure that best-practice approaches – such as alignment between design characteristics and end-user requirements – are consistently applied to large and costly development projects

Source: A.T. Kearney analysis

Lower Manhattan Development Corporation, the Queens West Development Corporation and Moynihan Station Development Corporation. New York can scarcely afford to squander any opportunity to improve its infrastructure. To date, delay and design flaws have characterized much of the work done under these subsidiary organizations. In most cases the problems have stemmed from ESD's practice of favoring political over economic criteria in making major project decisions. ESD has also, for the most part, failed to develop a well structured working relationship with other public agencies like the MTA, Port Authority and private advisors.

In order to correct this, ESD will need to tighten its management control over the subsidiaries and ensure that each entity's operations are publicly transparent and financially responsible. Figure 4.4 describes the Jacob Javits Convention Center refurbishment, an ESD subsidiary project that had a number of false starts associated with poor planning.

Product Management must work closely with Relationship Management and Strategy and Analytics. Product managers should partner with relationship managers to assist businesses applying for loans, grants and other types of funding as part of the end-to-end solution.

Marketing

This group will market New York's key assets including travel and tourism destinations, Innovation Economy assets such as the state's technology and infrastructural assets and brand management, and advertising associated with I Love New York®. The group should be run by a seasoned marketing professional and invest funds allocated to travel and tourism to promote New York's most attractive destinations.

Operations Support

Support functions, including finance, human resources and information technology, enable the rest of the organization to run smoothly. The finance group must have an improved risk management capability in order to provide the underwriting and other analysis required to execute loans.

Metrics

Economic Development Metrics: Though not a plank in the model, well-designed and rigorously applied metrics are critical to the new ESD's success. ESD must instill a culture of measurement throughout the agency in order to determine whether it is fulfilling its mandate. Internally, the agency must embrace performance metrics such as ROI on ESD-led investments, private investment associated with ESD's activities, deal pipeline performance and customer service levels. Externally, the agency should rigorously evaluate New York's economic performance relative to the past and to that of other states. In this effort, ESD should use metrics such as the percentage of New York workforce in Innovation Economy jobs, average salary per job and overall private investment flowing into the state.

ESD Personnel Performance Metrics: ESD must also measure the performance of its own workforce. Since ESD staff will work primarily with businesses in the Innovation Economy, its staff must be familiar with the targeted sectors and able to effectively communicate in the language of that sector. The performance appraisal process should be comprehensive, including satisfaction surveys by "client" businesses, partners of ESD like Local Development Corporations, agencies partnering with ESD, and New York's legislative and executive branches.

Conclusion

New York State finds itself at a turning point. Despite Governor Spitzer's vision of "One New York" – a state whose integrated economy benefits all its regions – New York today is really an economic amalgam: a vibrant metropolitan New York City enjoying unprecedented prosperity, subsidizing an upstate region trying desperately to move from the Industrial Economy to the Innovation Age.

The question before the Governor, the Legislature and all of the state agencies is a simple one – can New York State be turned around, or is the state fated to follow other rust belt states down an inescapable road to economic devolution? The answer, it turns out, is far more complicated than the question.

New York – as a whole – is uniquely positioned for success, provided that those in charge of its future have the collective will to take some very specific actions. The first step is to accept the magnitude of the problem and to admit that past economic development programs have failed to live up to their hopes. The next step is to accept that success can only be achieved through wholesale rather than incremental change. The final step is action.

New York State's leaders must understand that the existing mechanisms for stimulating a statewide economic renaissance are broken and unfixable. ESD, nominally the state's lead agency for economic development, needs a complete renewal before it can begin to think about fulfilling its mandate to facilitate new business growth, particularly in the Innovation Economy. Almost everything about ESD must change, beginning with its name, its objectives, its programs, and its operating model.

Before Innovation Economy businesses can flourish in New York State, it must become more attractive to all businesses. Existing impediments, whether stifling regulation, high taxation and costs, or poor communication with economic development agencies, need to be eliminated.

Once these barriers are removed, New York State must then concentrate on a thoughtful approach to partnering with academic institutions and private sector firms to build up

activity with and among Innovation Economy businesses. The economic development products currently offered by New York State agencies need to be realigned under a repurposed ESD and customized to meet the needs of companies operating in targeted Innovation Economy sectors. Change is already underway.

On March 13, Governor Spitzer signed a bill into law to reform New York State's workers compensation system. According to the Business Review, it is estimated the legislation will reduce the cost to New York State businesses by 10 to 15%. It was a critical step down a very long road. Much more needs to be done – and soon.

Sometimes the best way to visualize the future is to close one's eyes and dream about the past.

In 1824 Stephen Van Rensselaer established The Rensselaer School, now Rensselaer Polytechnic Institute (RPI) in Troy, NY. It was, according to Palmer C. Ricketts, "...the first school of science and school of civil engineering, which has a continuous existence, to be established in any English-speaking country."⁸²

"I am inclined to believe that competent instructors may be produced in the school at Troy, who will be highly useful to the community in the diffusion of a very useful kind of knowledge, with its application to the business of living," Stephen Rensselaer once wrote.⁸³

Think of it. Nearly 183 years ago a New York State educational institution embodied and defined technological education in the English-speaking world. When RPI completes the \$100 million supercomputing center it is currently building in conjunction with New York State and IBM, it will be home to the world's most powerful university-based supercomputing center and one of the ten largest supercomputing centers in the world.

Stephen Van Rensselaer built his school, "for the purpose of instructing persons...in the application of science to the common purposes of life." The "common purposes of life" include establishing a home, building a community, perhaps founding a business, providing a place where your children and your children's children and their children can grow and prosper.⁸⁴

It is not clear what Stephen Van Rensselaer might make of the 21st Century, but we must believe he'd be amazed to see how prescient he was when he spoke about the necessity of tying cutting-edge scientific and technological research to the growth of the community at large. He might also be amazed at how little progress we've made toward his goal.

The dream of a technologically enabled future for New York State is as old as Stephen Van Rensselaer's musings and as new as the next idea popping into the mind of an Albany-based nanotechnologist tomorrow morning. New York has always been a state for technology's dreamers. With a revitalized ESD's help, perhaps more of those dreams will become realities.

Appendix

Appendix 4.1

Area	State Entity	Description
Sector-Specific Economic Development	NYS Office of Science, Technology and Academic Research (NYSTAR)	<ul style="list-style-type: none"> • Furthers nascent high-technology academic research and economic development in New York State.
	Dept of Agriculture and Markets	<ul style="list-style-type: none"> • Fosters a competitive food and agriculture industry that benefits producers and consumers alike.
Human Capital	New York State Education Department (NYSED)	<ul style="list-style-type: none"> • Raises the knowledge, skill, and opportunity available to all the people in New York.
	State University of New York (SUNY)	<ul style="list-style-type: none"> • Serves as the central resource for the nation's largest comprehensive system of public higher education, offering programs at 64 geographically dispersed campuses.
	Dept of Labor (NYSDOL)	<ul style="list-style-type: none"> • Promotes job creation and economic growth by striving to create and maintain a world-class workforce system through workforce development and other services.
	Dept of Health	<ul style="list-style-type: none"> • Ensures the health, safety, and quality of life of New Yorkers.
Power	New York Power Authority (NYPA)	<ul style="list-style-type: none"> • Provides some of the lowest-cost electricity in New York State, operating 18 generating facilities and more than 1,400 circuit-miles of transmission lines.
	NYS Energy Research and Development Authority (NYSERDA)	<ul style="list-style-type: none"> • Develops innovative solutions to energy and environmental problems via research and development and energy efficiency projects.
	Long Island Power Authority (LIPA)	<ul style="list-style-type: none"> • Operates as a non-profit entity, serving Long Island's growing population with a consistent commitment to power cost containment, efficiency and service reliability.
Transportation	NYS Dept of Transportation (NYSDOT)	<ul style="list-style-type: none"> • Ensures that those who live, work and travel in New York State have a safe, efficient, balanced and environmentally sound transportation system.
	Port Authority of New York and New Jersey (PANYNJ)	<ul style="list-style-type: none"> • Manages and maintains the bridges, tunnels, bus terminals, airports, rail and seaports that are critical to the bi-state region's trade and transportation capabilities.
Housing	Housing and Community Renewal	<ul style="list-style-type: none"> • Strives to make New York State a better place to live by supporting community efforts to preserve and expand affordable housing, home ownership and economic opportunities, and by providing equal access to safe, decent and affordable housing.
	Housing Finance Agency (HFA) and State of New York Mortgage Agency (SONYMA)	<ul style="list-style-type: none"> • Finances low-income housing by raising funds through the issuance of housing revenue bonds and the making of mortgage loans to eligible borrowers.

Area	State Entity	Description
	Dormitory Authority	<ul style="list-style-type: none"> Provides financing and construction services to public and private universities, non-profit healthcare facilities and other institutions that serve the public good.
	State University Construction Fund (SUCF)	<ul style="list-style-type: none"> Provides academic buildings, dormitories and other facilities for the state-operated institutions and contract and statutory colleges under jurisdiction of the State University, to reduce the time lag between determination of need for such facilities and actual occupancy thereof, to expedite the construction, acquisition, reconstruction and rehabilitation or improvement of such facilities and to assure that the same are ready for the purposes intended when needed and when scheduled under the approved master plan of State University.
Operations	Office of the State Comptroller (OSC)	<ul style="list-style-type: none"> Monitors, reports on, and coaches other public entities, and works to ensure that governments at all levels are discharging their responsibilities in an efficient, effective, and timely manner. The Comptroller is charged with auditing government operations and operating the Statewide Retirement Systems.
	Dept of Taxation and Finance	<ul style="list-style-type: none"> Collects tax revenues and provides associated services in support of government services in New York State.
	Governor's Office on Regulatory Reform	<ul style="list-style-type: none"> Provides permitting assistance to and accepts feedback regarding New York State regulations from businesses.
	NYS Office of General Services (OGS)	<ul style="list-style-type: none"> Manages and leases real property, designs and builds facilities, establishes contracts for goods, services and technology, and provides government and non-profit agencies with innovative solutions and integrated service enabling the State of New York to function optimally.
Environment	Dept of Environmental Conservation (DEC)	<ul style="list-style-type: none"> Conserves, improves, and protects New York State's natural resources and environment in order to enhance the health, safety and welfare of the people of the state and their overall economic and social well-being.
	Environmental Facilities Corporation (EFC)	<ul style="list-style-type: none"> Promotes environmental quality by providing low-cost capital and technical assistance to municipalities, businesses and state agencies for environmental projects in New York State. Its purpose is to help public and private entities comply with federal and state environmental requirements.
Distressed Communities	The Governor's Office for Small Cities	<ul style="list-style-type: none"> Administers the Community Development Block Grant Program for the State of New York. The program provides grants to eligible cities, towns, and villages with a population under 50,000 and counties with an area population under 200,000 to revitalize neighborhoods, expand affordable housing and economic opportunities and or improve community facilities and services.
	Office of Real Property Services (ORPS)	<ul style="list-style-type: none"> Supports local governments in their pursuit of real property tax equity. Through consultative relationships with local and county governments, ORPS provides a wide range of services designed to ensure that property taxpayers pay no more or less than their fair share of property taxes.
Tourism	Office of Parks, Recreation and Historic Preservation	<ul style="list-style-type: none"> Oversees 175 state parks and 35 state historic sites.
	Olympic Regional Development Authority (ORDA)	<ul style="list-style-type: none"> Manages the facilities used during the 1980 Olympic Winter Games at Lake Placid. ORDA operates Whiteface Mountain and Gore Mountain ski areas; the Olympic Sports Complex, located five miles from Lake Placid at Mt. Van Hoevenberg; and the Olympic ice and jumping complexes.
	Hudson River Park Trust	<ul style="list-style-type: none"> Manages the design, construction and operation of the five-mile Hudson River Park (a five-mile park from Battery Park to 59th Street).
Security	NYS Office of Cyber Security and Critical Infrastructure Coordination (CSCIC)	<ul style="list-style-type: none"> Addresses New York State's cyber security readiness and critical infrastructure coordination.
	NYS Emergency Management Office (SEMO)	<ul style="list-style-type: none"> Protects the lives and property of the citizens of New York State from threats posed by natural or man-made events.
	NYS Office of Homeland Security	<ul style="list-style-type: none"> Directs and coordinates a comprehensive counter terrorism prevention, preparedness and response strategy to protect the people of the State of New York

Area	State Entity	Description
	New York Division of Military and Naval Affairs (DMNA)	<ul style="list-style-type: none">• Serves as the headquarters for New York's militia forces (the Army National Guard, the Air National Guard, the New York Guard and the New York Naval Militia).

Acknowledgements

The project team would like to thank the following individuals for their thought partnership:

- Maria Gotsch, Co-President and Co-CEO, **New York City Investment Fund**
- Patty Noonan, Senior Vice President, Policy & Economic Development, **Partnership for New York City**
- Amber Seely, Candidate for Masters of Community Development Finance, **The New School For Management and Urban Policy**
- Kathryn Wylde, President & CEO, **Partnership for New York City**

Our work was informed by a series of sector-specific roundtable discussions held in February and March 2007. More than 74 New York State-based executives from 65 companies participated in these meetings. Their contributions were of immeasurable importance in shaping this report. A list of executives and companies that participated, by sector follows:

Financial Services:

- L. Thomas Block, Senior Vice President, **JP Morgan Chase & Co.**
- Andrew Federbusch, Managing Director and Head, Corporate Real Estate and Services for the Americas, **Credit Suisse**
- Alan H. Fishman, CEO, **Meridian Capital Group LLC**
- James E. Fitzgerald, Jr., Regional President - NY/Connecticut, **Wachovia Bank, N.A.**
- Barry M. Gosin, CEO, **Newmark Knight Frank**
- Chip Logan, Managing Director for Corporate Real Estate & Facilities, **The Bank of New York Company, Inc.**
- Timothy G. Lyons, Global Head of Strategy for the Americas Region, **Lehman Brothers**
- Alan D. Schwartz, President & Co-COO, **The Bear Stearns Companies, Inc.**
- Thomas Santiago, Northeast Region Head, Global Realty Services, **Citigroup**
- Judah C. Sommer, Managing Director, Investment Banking, **Goldman Sachs**
- Robert Stillman, Executive Vice President, **CB Richard Ellis**
- Timothy Willis, Managing Director & Head of Corporate Real Estate, **UBS Americas**
- Jason H. Wright, Senior Vice President, Communications & Public Affairs, **Merrill Lynch & Co.**

Health & Education:

- Arthur J. Byrd, Vice President, Treasurer & Investor Relations, **HIP**
- Luyen Chou, Senior Vice President, Global Networks, **SchoolNet, Inc.**
- Jeffrey L. Elie, Vice President Global Real Estate and Facilities, **Kaplan Inc.**
- Charlotte Frank, Senior Vice President, Research & Development, **McGraw-Hill Education**
- Connie Hildesley, **Alexandria Real Estate Equities, Inc.**
- James D. Kuhn, President, **Newmark Knight Frank**
- Josh Kuriloff, Executive Vice President, **Cushman & Wakefield, Inc.**
- Joseph M. Lemaire, Partner, **Accenture**
- Martin Lipton, Senior Partner, **Wachtell, Lipton, Rosen & Katz**
- John T. Reilly, Director of U.S. Real Estate Operations, **IBM Corporation**
- Wayne Spinei, Program Manager for Economic Development, **IBM Corporation**
- David Thielens, Director of Corporate Real Estate, **Pfizer, Inc.**
- Mark L. Wagar, President, **Empire Blue Cross Blue Shield**

Insurance:

- Michael Brown, Senior Partner, **Ohrenstein & Brown, LLP**
- Sheila K. Davidson, Executive Vice President, Law & Corporate Administration, **New York Life Insurance Company**
- Roger Ferguson, Chairman, **Swiss Re American Holding Corp.**
- Manfred Ohrenstein, Senior Partner, **Ohrenstein & Brown, LLP**
- Cosette R. Simon, SVP, Federal Affairs, **Swiss Re American Holding Corp.**
- James S. Tisch, President & CEO, **Loews Corporation**
- David Walsh, Executive Vice President, **SBLI USA**
- David Wasserman, CEO, Zurich Alternative Asset Management, LLC, **Zurich Financial Services**
- Michael Zarcone, Senior Vice President, Government & Industry Relations, **MetLife, Inc.**

Manufacturing:

- David A. Armour, Director, Business Development, **Siemens One**
- Alain J. P. Belda, Chairman & CEO, **Alcoa, Inc.**
- Stephen R. Bokser, President & CEO, **White Rose Food**
- John Cavalier, Vice Chairman, Investment Banking, **Credit Suisse**
- Robert Fani, President & COO, **Keyspan**
- Robert E. Furniss, Vice President, Business Development, **Bombardier Transportation**
- John Reese, Vice President, Government Affairs, **US Power Generating Company, LLC**
- Drew Semon, Vice President, Manufacturing, **The Estee Lauder Companies, Inc.**
- Richard L. Siewert, Jr., Vice President, Environment, Health & Safety & Public Strategy, **Alcoa, Inc.**
- Brendan Sullivan, Director, Facilities Services, **The Estee Lauder Companies, Inc.**

Media:

- Ellen Albert, Senior Vice President, **Viacom/MTV Networks**
- Salli Frattini, Senior Vice President, **Viacom/MTV Networks**
- Christian French, Chief Operating Officer, WRNN-TV, **Regional News Network**
- Jill Kaplan, Publisher, **Crain's New York Business**
- Michael Schwerdtman, Senior Vice President, Controller & Chief Accounting Officer, **IAC/InterActiveCorp.**
- Stuart Match Suna, President, **Silvercup Studios**
- Joe Tucker, Senior Vice President of Administration, Disney Corporate Operations, **Walt Disney Company**
- Strauss Zelnick, CEO, **ZelnickMedia Corp.**

Technology:

- Cristobal I. Conde, President & CEO, **SunGuard Data Systems, Inc.**
- David P. DiCristofaro, NE Region Leader, Information Technology Advisory Services, **KPMG LLP**
- Mike Ebbs, Managing Director, CIO, **HSBC USA, Inc.**
- Erik W. Kahn, Partner, **Bryan Cave LLP**
- Kevin Kessinger, Citigroup Chief Operations & Technology Officer, **Citigroup**
- Katherine Lapp, Former Executive Director, **Metropolitan Transportation Authority**
- Peter Y. Lee, CEO, **DataSynapse, Inc.**
- Carole Holmes McCarthy, Executive Director, **Morgan Stanley**

- Ed Moran, Director of Product Innovation & NE Convergence Practice Technology, Media & Telecommunications Group, **Deloitte Services, LP**
- Eileen K. Murray, Managing Director, Head of Global Operations & Technology, Morgan Stanley
- Kevin Ryan, CEO, **ShopWiki**
- R. Keith Solomon, Community Affairs Director, New York City Region, **Microsoft Corporation**
- Lloyd Trufelman, President & CEO, **Trylon SMR**
- Christopher A. Wearing, Managing Partner, New York Office, **Accenture**

Travel & Tourism:

- Patty Clark, Senior Advisor, External Affairs, **The Port Authority of NY & NJ**
- Jeffrey Horwitz, Co-Head, Lodging & Gaming Practice, **Proskauer Rose LP**
- Barbara Janowitz, Director, Government Affairs, **The League of American Theatres & Producers**
- Sharon Joyce, Project Manager, **Muss Development**
- Cristyne L. Nicholas, CEO, **Nicholas & Lence Communications**
- Michael P. Printup, Director of Corporate Development, **International Speedway Corporation**
- Thomas P. Schuler, Manager, Government Affairs, **The Metropolitan Museum of Art**
- Harvey W. Schultz, Senior Vice President, **Muss Development Company**
- Frederic C. Rich, Partner, **Sullivan & Cromwell**
- Tim Zagat, Co-Chairman, **Zagat Survey, LLC**

We also conducted a roundtable discussion in February 2007 with executives from the following upstate, private and non-profit regional economic development organizations:

- Nancy Cantor, Chancellor, **Syracuse University**
- George Connors, Vice Chairman, **Three Rivers Development Corporation**
- Mary Cotter, President, Syracuse Division, Time Warner Cable and Secretary, **Metropolitan Development Association of Syracuse and Central New York**
- Irwin L. Davis, President & CEO, **Metropolitan Development Association of Syracuse and Central New York**
- Jim DiMascio, Executive Director, **Greater Binghamton Coalition**
- Steven J. DiMeo, President, **Mohawk Valley EDGE**
- Brian Hannafin, Vice President, Business Development & Marketing, **Center for Economic Growth**
- Robert Juravich, Executive Director, **Development Authority of the North Country**
- Thomas Kucharski, President & CEO, **Buffalo-Niagara Enterprise**
- Jeff Lawrence, Executive Vice President, **Center for Economic Growth**
- Margaret McGovern, Regional Director, **HSBC Bank USA**
- Mark Peterson, Managing Director, Investor Relations, **Greater Rochester Enterprise**
- Kenneth M. Tompkins, Vice President, Business Services, Mohawk Valley/Northern Region, National Grid and Chairman, **Mohawk Valley EDGE**
- Ann Weiland, Vice President, **Three Rivers Development Corporation**

Interviews with the following executives, legislators, economic development professionals, professors and other subject matter experts guided our work:

- James S. Alesi, **Senator of the 55th Senate District**

- Ernie Amabile, **Principle Legislative Coordinator**
- Dr. Edward Bogucz, Executive Director, **Center of Excellence in Environmental and Energy Systems**
- Richard L. Brodsky, **Assemblymember of the 92nd Assembly District**
- Kevin Burke, Chairman, President and CEO, **Consolidated Edison Inc.**
- Gary DeYoung, Director of Tourism, **1000 Islands International Tourism Council**
- Bill Fair, Managing Director, Bioscience, **New York City Economic Development Corporation**
- Michael M. Fancher, Director of Economic Outreach, Associate Professor of Nanoeconomics, **College of Nanoscale Science and Engineering**
- Mary Beth Farrell, Executive Vice President, Service Delivery & AXA Way, **AXA Equitable Life Insurance Co.**
- Christopher Finn, Research Specialist, **Buffalo Niagara Enterprise**
- Victor Ganzi, President & CEO, **Hearst Corporation**
- Matthew Gokey, **Department of Taxation and Finance**
- Josh Grotstein, Partner & Cofounder, **SAS Investors**
- Ed Hamilton, Director of Finance & Administration, **New York State Office of Science, Technology and Academic Research**
- Donald A. Hicks, Professor of Political Economy and Public Policy, **University of Texas at Dallas**
- Dr. Bruce Holm, CEO, NYS CoE Buffalo Hauptman Woodward Medical Research Institute, **University at Buffalo, The State University of New York**
- Sam Hoyt, **Assemblymember of the 144th Assembly District**
- Stephen R. Janack, Director of Communications, **College of Nanoscale Science and Engineering**
- Richard Jarman, Director of Advanced Manufacturing Affairs and Technology Outreach, **Kodak**
- Dr. Alain E. Kaloyeros, VP and Chief Administrative Officer, **College of Nanoscale Science and Engineering**
- Steve Lemson, Vice President, State Government Affairs, **American Express**
- Dr. Robert A. Lindberg, Ph.D., R.A.C., Technology Development Director, **North Carolina Biotechnology Center**
- Jim Lockett, Director of Planning and Program Development, **Center of Excellence in Environmental and Energy Systems**
- Terry Lundgren, Chairman, President & CEO, **Federated Department Stores**
- Joseph D. Morelle, **Assemblymember of the 132nd Assembly District**
- Heather Mowat, **Senior Analyst for Senate Finance**
- Crystal D. Peoples, **Assemblymember of the 141st Assembly District**
- Michael Polcari, President and CEO, **SEMATECH**
- Michael Relyea, Executive Director, **New York State Office of Science, Technology and Academic Research**
- Dr. Ann-Marie Scheidt, Director of Economic Development, **Stony Brook University, The State University of New York**
- Thomas Schick, Executive Vice President, **American Express**
- Robin Schimminger, **Assemblymember of the 140th Assembly District**
- Yacov Shamash, Vice President for Economic Development and Dean of Engineering, **Stony Brook University, The State University of New York**
- David Smith, CEO of the Infotonics Technology Center Inc, **Center of Excellence in Photonics and Optoelectronics**

- Paul S. Speranza Jr., Vice Chairman, General Counsel & Secretary, **Wegmans**
- Jerry Speyer, President & CEO, **Tishman Speyer**
- Dr. Harold Varmus, Chairman, President & CEO, **Memorial Sloan Kettering**
- Robert Wilmers, Chairman, **M&T Bank**
- Ronald Zarella, CEO, **Bausch & Lomb**

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Notes

¹ The World Bank. U.S. Bureau of Economic Analysis, 2006.

Workforce of 9.5 million includes currently working and non-working members of the labor pool. The eleven economies larger than New York are, in descending order: United States, Japan, Germany, China, United Kingdom, France, Italy, California, Spain, Canada and Texas.

² For the purpose of this report, ESD refers to the umbrella under which the organizations currently known as DED and UDC reside. ESDC, in turn, is the primary vehicle through which UDC operates.

³ U.S. Bureau of Labor Statistics.

The decline of manufacturing jobs in New York State between 1990 and 2005 was 40.9%, more than double that of the US during the same time period (19.6 percent).

⁴ U.S. Bureau of Labor Statistics.

⁵ U.S. Census Bureau; A. T. Kearney analysis.

⁶ U.S. Bureau of Labor Statistics. Public Policy Institute of New York State analysis.

Adjusted private employment represents all non-farm employment except government, health care and social services.

⁷ For a sample of alternative economic development metrics, please see Chapter 3.

⁸ U.S. Small Business Administration, 2004.

The federal SBIR program is reputed to be the world's largest seed capital fund for development of new products and processes, and often provides the initial source of financing for start-up companies. It provides competitive grants to entrepreneurs seeking to conduct "Phase I" proof-of concept research on the technical merit and feasibility of their ideas, and "Phase II" prototype development to build on these findings.

⁹ U.S. Bureau of Labor Statistics: National Occupational Employment and Wage Estimates; May 2005. A.T. Kearney analysis.

The 22 major occupations defined by the Bureau of Labor Statistics were grouped as follows:

- Innovation Economy Occupations: computer & mathematical; architecture & engineering; life, physical, social sciences; management; legal; healthcare practitioners & technical; business & financial operations; education, training, library.

- Non Innovation Economy Occupations: arts, design, entertainment, sports & media; construction & extraction; installation, maintenance & repair; community & social services; protective service; sales; production; office and administrative support; transportation & material moving; healthcare support; personal care & service; building & grounds cleaning & maintenance; farming, fishing & forestry; food preparation & serving.

¹⁰ Impact Analysis for Planning (IMPLAN) multiplier data for New York State; 2003. A.T. Kearney analysis. Sectors grouped as follows:

- Innovation Economy sectors included: electronic computer manufacturing, semiconductors and related device manufacturing, computer storage device manufacturing, pharmaceutical and medicine manufacturing, analytical laboratory instrument manufacturing, irradiation apparatus manufacturing, information (including media & telecom).

- Non Innovation Economy sectors included: retail trade, educational services, health care & social assistance, arts & entertainment, accommodation/food services, construction, professional/business services.

¹¹ Interview with United Technologies CEO George David, April 10, 2007.

¹² U.S. Census Bureau: 2000 Census.

¹³ Survey performed by business location consultant Moran, Stahl & Boyer LLC; cited in "Locating Customer Contact Centers and Back Office Operations in Western New York State." Buffalo Niagara Enterprise, 2002.

¹⁴ "A Review of Higher Education." New York State Department of Education, September 2006.

¹⁵ National Center for Education Statistics; 2005 A.T. Kearney analysis.

Only degree-granting institutions were considered.

¹⁶ "America's Best Colleges 2007." *US News*; 2006.

¹⁷ "Global Analysis of University Biotechnology Transfer & Commercialization." The Milken Institute. September 2006.

¹⁸ "America's Best Graduate Schools 2008." *US News*, 2007.

¹⁹ Toffler, Alvin. *Future Shock*. Random House, 1970.

²⁰ Morelle, Joseph. "Creating a State of Innovation: Unleashing the Power of New York's Entrepreneurial Economy;" April 2005.

²¹ U.S. Census Bureau. Public Policy Institute of New York State analysis, 2004.

²² Energy Information Administration, 2006.

²³ "Annual Directory & Statistical Report." American Public Power Association, 2007-2008.

²⁴ "2005 cost-of-doing-business index." The Milken Institute, 2005.

The Index measures wage costs, taxes, electricity costs and real estate costs for industrial and office space.

²⁵ "Benchmark New York State." Public Policy Institute of New York State, 2007.

Key government-related cost factors include: state and local taxes, energy, health care and workers' compensation.

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- ²⁶ Huang, Ying, McCormick, Robert E and McQuillan, Lawrence J. "U.S. Economic Freedom Index 2004." The Pacific Research Institute for Public Policy, 2004.
- ²⁷ Bureau of Transportation Statistics. Federal Aviation Administration, 2006.
- ²⁸ The Port Authority of New York and New Jersey, 2006.
- ²⁹ Peters, Patricia and Radl, Maureen. "Expanding Stewart Will Increase Noise and Pollution." *Times Herald-Record*. January 24, 2007.
- ³⁰ While Governor Spitzer quoted 28 agencies in his State of the State address, in writing this report, two others were considered as well.
- ³¹ U.S. Bureau of Labor Statistics, 2005.
- ³² U.S. Bureau of Economic Analysis, 2005.
- ³³ Buffalo Niagara Enterprise.
- ³⁴ ESDC; Buffalo Niagara Enterprise; A.T. Kearney analysis.
- ³⁵ 2006 Annual Report of the Semiconductor Industry Association, 2006
- ³⁶ CMOS - Complementary Metal-Oxide Semiconductor - is a major class of integrated circuits. Advances in the industry have been driven by Moore's Law that stipulates that the number of transistors on a chip doubles every 18 months. Most experts believe that the limits of CMOS will be reached in 2015-2020 due to a number of physical problems at the nanoscale, including quantum effects. New materials, new device structures and new manufacturing processes will be needed. Finding a new device to replace transistors has become the "Holy Grail" of the semiconductor industry.
- ³⁷ Taniguchi, Norio. "On the Basic Concept of 'Nano-Technology'." Proc. Intl. Conf. Prod. Eng. Tokyo, Part II, Japan Society of Precision Engineering, 1974.
- ³⁸ Lux Research, 2005.
- ³⁹ Specifically, the National Science Foundation expects the global market for nanotechnology-enabled products to reach \$1.1 trillion by 2015 while Lux Research, a well-regarded market research firm in nanotechnology, anticipates the market to reach \$2.6 trillion by 2014.
- ⁴⁰ "New York State Centers of Excellence Progress Review." Public Financial Management, 2006.
- ⁴¹ "Small Times University Rankings 2006." *Small Times*. May/June 2006 vol 6 no 3: 10-24
CNSE was ranked number one for infrastructure, education and industrial outreach. It was ranked number eight for basic research.
- ⁴² Recombinant DNA is a method of making proteins—such as human insulin and other therapies—in cultured cells under controlled manufacturing conditions. In 1982, recombinant human insulin became the first biotech therapy to earn FDA approval. The product was developed by Genentech and Eli Lilly and Co.
- ⁴³ "Guide to Biotechnology 2007." Biotechnology Industry Organization.
- ⁴⁴ "MoneyTree™ Report 2006." PricewaterhouseCoopers/National Venture Capital Association.
- ⁴⁵ Overall Composite Index for Life Sciences. "The Greater Philadelphia Life Sciences Cluster: An Economic and Comparative Assessment." The Milken Institute, June 2005.
- ⁴⁶ New York City Economic Development Corporation. *Biosciences in New York City* <<http://www.nycedc.com/NR/rdonlyres/57286A43-800D-4E10-8873-6766FDA14E99/0/BIOBrochure.pdf>> (accessed on April 16, 2007).
- ⁴⁷ Ibid. In particular, NYC produces approximately 535 biomedical engineering graduates per year.
- ⁴⁸ New York City Economic Development Corporation.
- ⁴⁹ "MoneyTree™ Report." PricewaterhouseCoopers/National Venture Capital Association; 2000-2006.
- ⁵⁰ Messina, Judith. "Reverse Commute." *Crain's New York Business*, June 23, 2003.
- ⁵¹ New York City Economic Development Corporation <http://www.nycedc.com/Web/Search/Click.aspx?cgi-bin/MsmGo.exe?grab_id=0&page_id=158&query=eyetech&hiword=eyetech%20> (accessed on April 16, 2007).
- ⁵² "Cleantech: A New Engine of Economic Growth for New York State." New York City Investment Fund, January 2007.
- ⁵³ "Clean Energy Trends 2006." Clean Edge, 2006.
- ⁵⁴ The New York City Investment Fund is the investment and economic development arm of the Partnership for New York City, a nonprofit membership organization comprised of a select group of two hundred CEOs from New York City's top corporate, investment and entrepreneurial firms. The Investment Fund has raised over \$100 million to mobilize the city's world financial and business leaders to help build a stronger and more diversified local economy.
- ⁵⁵ General Electric's *Ecomagination* initiative, <<http://ge.ecomagination.com>> (accessed on April 20, 2007).
- ⁵⁶ Greater Rochester Enterprise. Case study for General Motors. <<http://www.rochesterbiz.com/Data/FileManager/General%20Motors%20case%20study%20APPROVED.pdf>> (accessed on April 20, 2007).
- ⁵⁷ Cited in "Cleantech: A New Engine of Economic Growth for New York State." New York City Investment Fund; January 2007.
- ⁵⁸ Governor Spitzer press release, April 19, 2007 <<http://www.ny.gov/governor/press/0419071.html>>

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- ⁵⁹ U.S. Bureau of Labor Statistics, A.T. Kearney analysis.
- ⁶⁰ U.S. Bureau of Labor Statistics, U.S. Bureau of Economic Analysis; A.T. Kearney analysis.
- ⁶¹ Chapter 686, Laws of 1986, New York State ---- General Municipal Law § 955, et seq.
- ⁶² The problems in the Empire Zone program are explored in greater depth in several reports including An Inquiry into Empire Zone Amendments and Benefits in Monroe County (Interim Report) by Richard L. Brodsky, Chairman, New York State Assembly Committee on Corporations, Authorities and Commissions (March 24, 2004); and Creating a State of Innovation: Unleashing the Power of New York's Entrepreneurial Economy by New York State Assemblyman Joseph L. Morelle (April, 2005).
- ⁶³ "2005 Empire Zones Highlights" document provided by ESD program administration
- ⁶⁴ Chapter 686, Laws of 1986, New York State — General Municipal Law § 955, et seq.
- ⁶⁵ Administration of Empire Zones Program Audit Report. Office of the State Comptroller, 2003
- ⁶⁶ Chapter 708, Laws of 1993 — General Municipal Law § 956.
- ⁶⁷ "Zone growth over time document provided by program administration" document provided by ESD program administration.
- ⁶⁸ Administration of Empire Zones Program Audit Report. Office of the State Comptroller. 2003
- ⁶⁹ Chapter 63, Laws of 2005 — General Municipal Law § 958.
- ⁷⁰ Empire State Development. "Empire Zones,." 2002.
http://www.empire.state.ny.us/Tax_and_Financial_Incentives/Empire_Zones/default.asp.
- ⁷¹ "ESD Organization chart" document provided by ESD program administration.
- ⁷² "2005 Empire Zone Tax Credits by Company" database provided by ESD program administration and A.T. Kearney analysis. The tax abatement amount is based on pre-audited company estimates of the value of tax credits they would realize.
- ⁷³ "New York State Centers of Excellence Progress Review." Public Financial Management, 2006.
- ⁷⁴ From 1963 to 2001, the State had a Science and Technology Foundation, a public benefit corporation engaged in supporting technology development in the state, primarily through funding technology transfer (commercialization) efforts in academic institutions throughout the state. The foundation was renamed NYSTAR and became part of the Executive Department in 2001.
- ⁷⁵ "NYSTAR Program Summary" document provided by NYSTAR program administration.
- ⁷⁶ "NYSTAR Draft Annual Report 2006" document provided by NYSTAR program administration.
- ⁷⁷ "International Division Programs, Budget and Results" document provided by ESD program administration.
- ⁷⁸ "Small Business Division Ombudsman" document provided by ESD program administration.
- ⁷⁹ Data provided by Empire State Development Corporation program managers during March 2007.
- ⁸⁰ "Brownfield Cleanup Program Sites" document provided by ESD program administration.
- ⁸¹ "2007 Budget Brief" document provided by ESD administration.
- ⁸² Ricketts, Palmer C. History of Rensselaer Polytechnic Institute; 1914.
- ⁸³ Ibid.
- ⁸⁴ Ibid.