

Empire State Development

New York's Nanotechnology Model: Building the Innovation Economy

Economic Impact of the Albany Cluster

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U.S. Semiconductor Industry

- In 2010, industry shipped over \$110 billion of product and employed about 182,000 people.
- #1 net exporter in the manufacturing economy outside of aircraft over the last 5 years.
- According to the Semiconductor Industry Association (SIA), the semiconductor industry invested approximately \$17 billion in research and development in the previous year. (2010)
- According to U.S. Bureau of Labor Statistics, the U.S. semiconductor industry's workforce grew by 3.7 percent over the previous year. In comparison, jobs throughout the broader U.S. economy increased by 1.2 percent over the same time period. (2012)

New York State's Role

We have an increasingly important role in strengthening our high technology competitiveness.

Factors for state consideration in the Innovation Economy:

- ✓ Skilled workforce
- ✓ State-of-the-art infrastructure
- ✓ Business support and incentives





Nanotechnology in NYS

NYS Investment = \$1.3 billion

- \$150 million “Center of Excellence” grant to expand and create the Albany NanoTech Complex;
- \$100 million to assist major semiconductor equipment supplier, Tokyo Electron Limited (TEL) establish a \$300 million R&D program at the CENN;
- \$75 million for the expansion of the state-of-the-art 300mm wafer, Class 1 capable cleanroom and purchase of new cleanroom possessing and support equipment;
- \$20 million investment to relocate International SEMATECH’s headquarters from Austin, Texas to Albany in 2011 bringing with it more than 100 high tech jobs.



Nanotechnology in NYS

NYS is Globally Competitive Over \$20 Billion Invested

- Major players have invested more than \$20 billion across New York State in the last decade:
 - TSMC
 - Intel
 - GlobalFoundries
 - IBM
 - TEL
 - LAN
 - Vistec

Nanotechnology in NYS

- Today, over 20% of the State's nanotechnology workforce, or approximately **12,000 jobs**, are associated with Albany's programs and partnerships.



IBM's **\$2.5 billion** 300mm fab in East Fishkill



GlobalFoundries **\$6.6 billion** fab in Malta

Recent Success

G450C – Unprecedented Private Investment

Governor Cuomo announced the Global 450 Consortium in September 2011.

- IBM, Intel, Samsung, TSMC, and GLOBALFOUNDRIES investing \$4.4 billion.
- Will create and secure approximately 6,900 jobs.
- The total NYS commitment to G450C is \$400M.



Recent Success

GLOBALFOUNDRIES – Exceeding Job Targets

- In just the last year GLOBALFOUNDRIES:

- Announced its intention to move forward with the build-out of 90,000 square foot clean room shell;
- Announced a \$2B R&D center, the Technology Development Center (TDC), and 1000 new jobs; (No new incentives from the State.)
- These two projects will bring total employment to 3,000.



Fab8 Campus with TDC Rendering, Aerial View



Recent Success

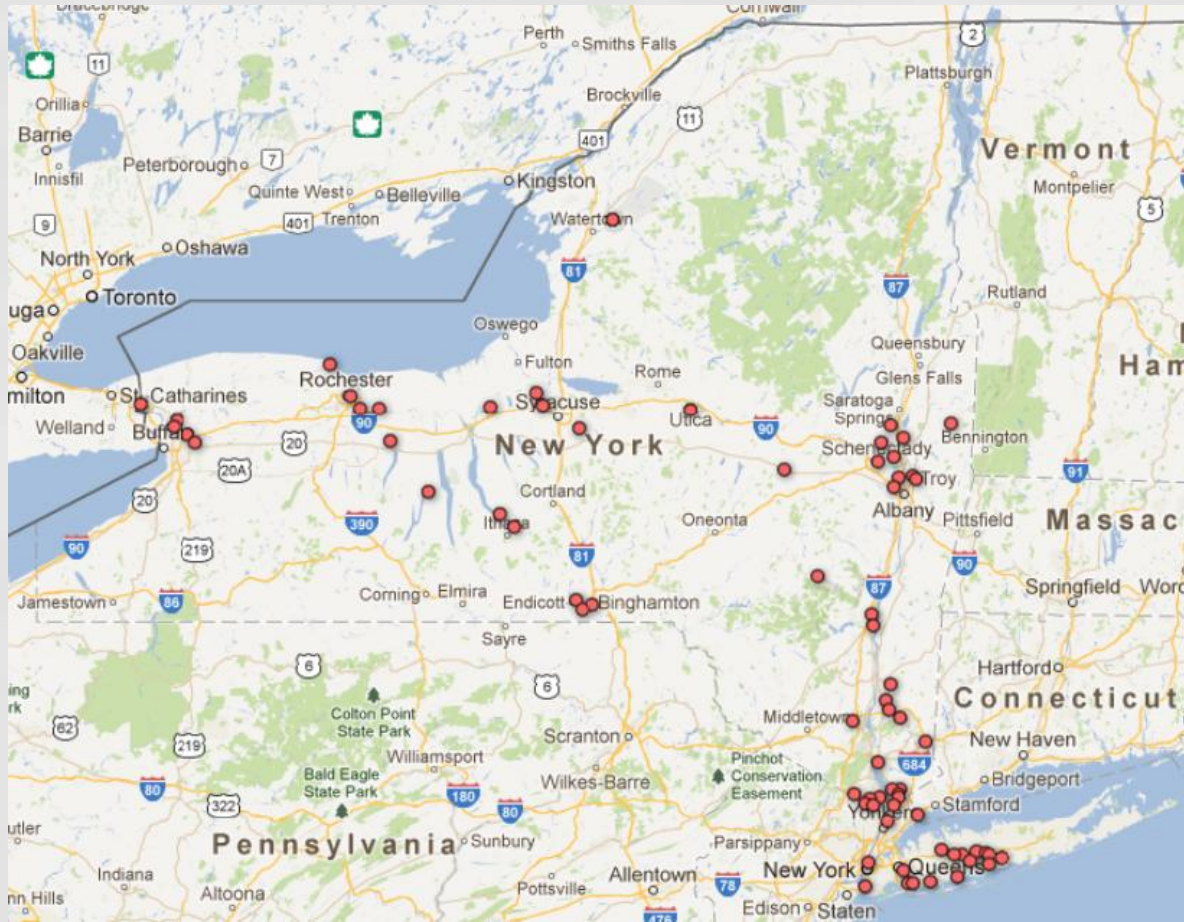
GLOBALFOUNDRIES

\$10 economic benefits/ \$1 NYS benefits

- GLOBALFOUNDRIES' TDC project will generate over \$10 of wages and investments for every \$1 New York State provides in Empire Zone benefits over the next 10 years.



Thruway Corridor Impact





Why this Strategy is Building a Better and Stronger New York

- 50,000 direct jobs in NYS are electronics-related; about 12-13,000 specifically in nanotechnology.
- In the semiconductor industry alone, the impacts are very significant:
 - Number one exporting industry in US
 - Average wage is >\$100K
 - Highly transferable skills at all levels – technician, engineer, scientist
 - The supplier vendor ecosystem that grows around these facilities has a huge economic impact on a region



Why this Strategy is Building a Better and Stronger New York

- The state's investment to date has created this unique, world-class ecosystem that positions NYS for:
 - Immediate job and investment opportunities in all areas of advanced manufacturing, such as defense, medical, energy and consumer products.
 - “Hosting” Federal government and corporate partners of all sizes wishing to solve their electronics problems in NYS.
 - Favorable location decisions for public and private consortia to consolidate (i.e. move assets and move people) thus placing New York at the center of many different emerging industries.



Competitiveness

- From almost any technology benchmark, NYS is either at the top or close to it:
 - 3rd in the nation in high technology employment (301,500);
 - 3rd in high-tech payroll (\$24.4 billion); and
 - 4th in the number of high-tech establishments (17,700).

Source: TechAmerica Foundation (2011)



Competitiveness, continued

- To continue leading the charge, the State must stay focused on the three essential ingredients for innovation and technology deployment:
 - A quality talent pool;
 - Public and private institutions working collaboratively to take risks, especially for long-term investment;
 - Development of infrastructure that anticipates future innovation; and
 - Availability of investment capital.

Closing

- Governor Cuomo has proposed a number of bold new initiatives to make it easier to move innovative ideas from concept to commercialization:
 - Innovation Hot Spots
 - \$50 million Innovation Venture Capital Fund
 - Innovation NY Network

