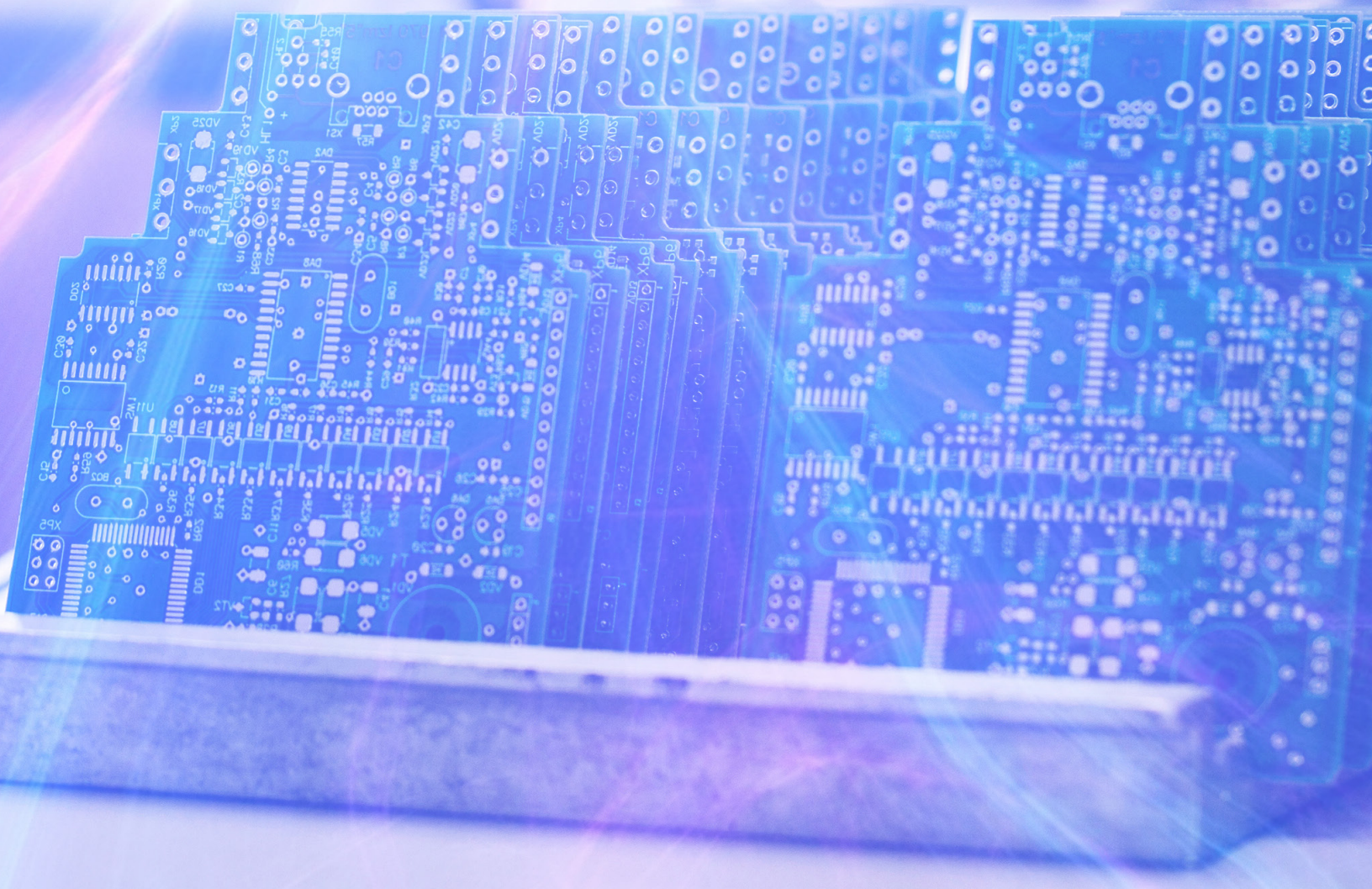


Tech Valley:

Lessons from
the New York
Nano-Cluster
Success Story



New York has overcome numerous obstacles to create a large and growing cluster of nanotechnology-based research, manufacturing, and supply chain enterprises and educational institutions in what has come to be known as “Tech Valley.”

In their new book from Georgetown University, “Partnering to Grow the New York Nano-Cluster,” Dr. Charles W. Wessner and Thomas R. Howell describe in detail how Tech Valley was built, the cooperation and investments it required, and its strategic value through the manufacturing of cutting edge semiconductors within the U.S. Today, this is an essential capability if the U.S. is to retain its current competitiveness and national security advantages.

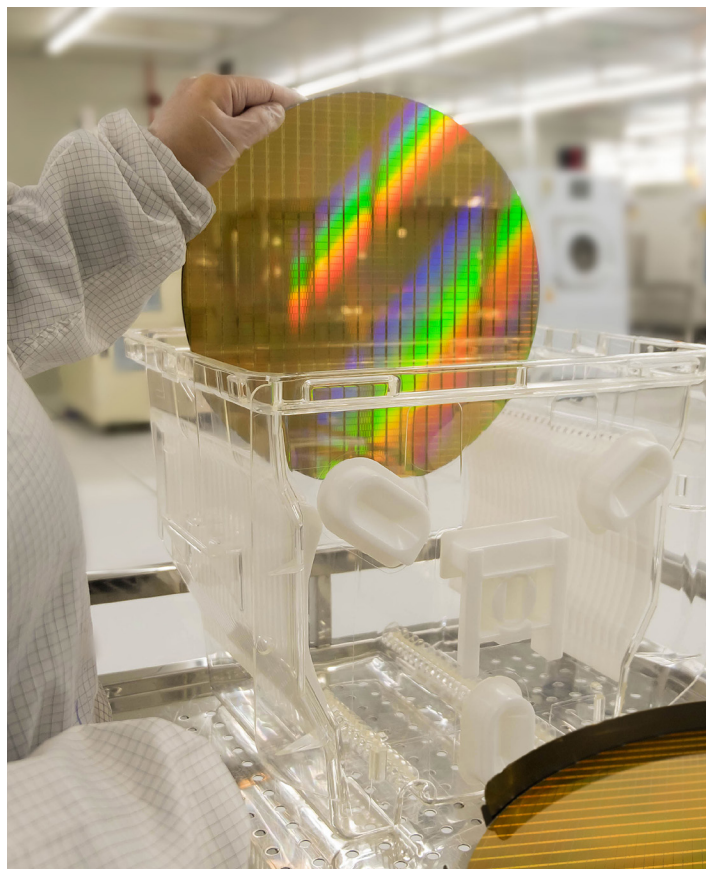
Reversing Economic Decline

The Capital Region of New York State has been transformed by sustained, bipartisan efforts to develop and grow in what is now called Tech Valley. Tech Valley is a corridor running along the Middle Hudson Valley from East Fishkill through Albany, Schenectady, and Troy to Saratoga Springs. Decades-long investments in university nanotechnology programs, public-private partnerships, and collaborative efforts to attract high-tech manufacturing have succeeded beyond expectations.

The sustained investments in education, innovative partnerships and infrastructure have enabled the region to attract and retain cutting edge semiconductor manufacturing. There are now almost 10,000 semiconductor manufacturing jobs in Tech Valley, with average pay of \$92,000 a year, plus thousands of indirect jobs generated in the GlobalFoundries supply chain. These high-paying jobs have helped create tens of thousands of other jobs in the hospitality industry, health care, banking and retail sales of products such as automobiles and household goods. In addition, the sustained construction jobs associated with the build out of GlobalFoundries eased the impact of the deepest recession the U.S. has experienced since the Great Depression and continue to drive the regional economy.

The Value of Partnerships and a Long-Term Strategic Goal

The history of public-private investment by New York State and other local players in semiconductor research and manufacturing is one of vision, hard-work and immense return. The bipartisan policies that enabled these investments are especially relevant in an era in which Americans are seeking ways to revive U.S.



onshore manufacturing and to create viable long-term, well-paid career pathways for young people.

The foundation of New York's successful development effort has been the expansion and improvement of its educational system and research infrastructure. For more than three decades, leaders in the state have made large and sustained investments in nanotechnology research facilities and equipment at universities in the Capital Region, most notably at State University of New York (SUNY) Albany and Rensselaer Polytechnic Institute (RPI). These are among more than 20 colleges and universities in the Capital Region offering a broad range of curricula and helping sustain a workforce of engineers and managers, as well as the community colleges that train technicians and operators in an array of specialized high-tech manufacturing skills. Such technicians comprise roughly two-thirds of a wafer fabrication plant's work force and are, as one former state senator put it, the "blue collar workers of the future."

A Global Presence

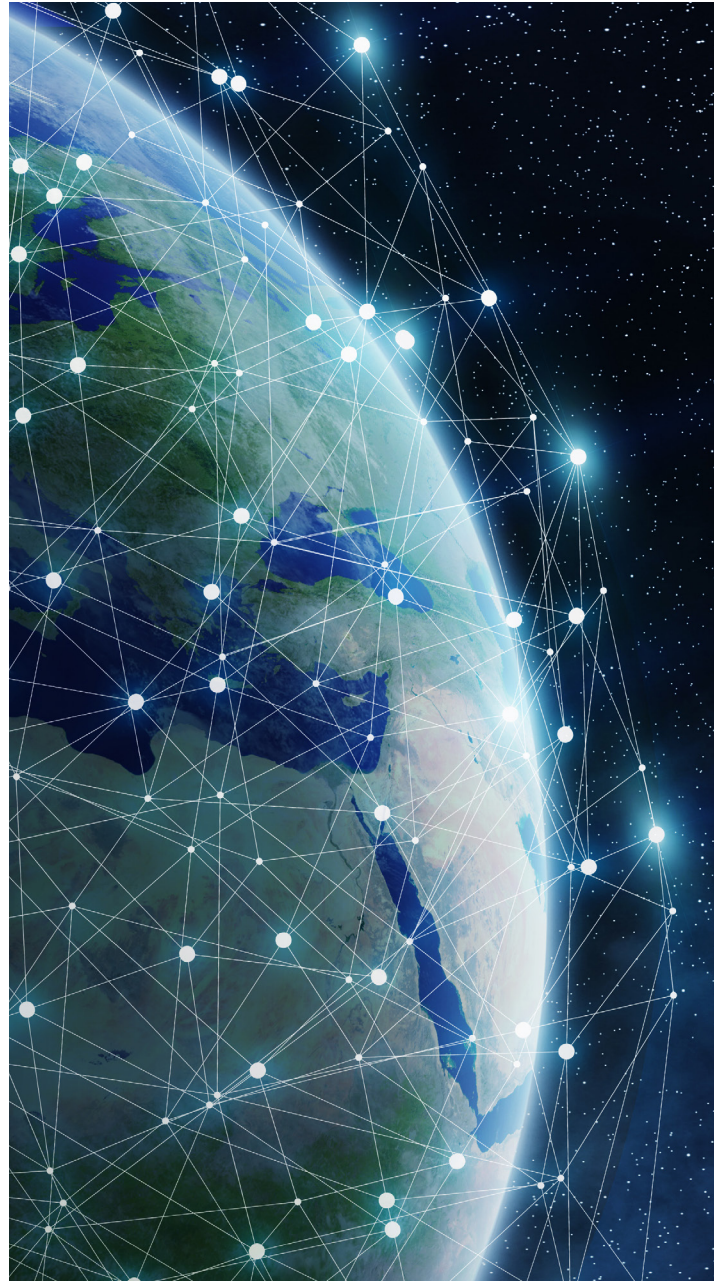
Sustained and substantial investments in education and infrastructure, spurred by a cast of bipartisan regional and state leaders, enabled the Albany area to emerge as the leading center of applied nanotechnology research in the world. The existence of research facilities and expertise that were literally available nowhere else proved a powerful draw for major semi-conductor firms to establish a local presence. Regional business and economic development organizations, including the Center for Economic Growth and the Saratoga Economic Development Corporation, played key roles in envisioning and then executing this long-term strategy of high-tech manufacturing growth, successfully sidestepping local rivalries and the political gridlock that hampered previous efforts.

Global Competition and the National Security Dimension

New York's investments have resulted in major additions to U.S. domestic semiconductor manufacturing, a capability that is essential for the U.S. to maintain its competitive edge in both manufacturing and research, capabilities essential to our national security.

Even with these accomplishments, fierce global competition and accelerating technological change constitute major, ongoing challenges for regions benefiting from this unique, enabling industry. Given that many countries view the industry as strategic and some, most notably China, are committing unparalleled resources to enhance the competitive position of their national producers, there can be no grounds for complacency. The location of future semiconductor research and manufacturing facilities is likely to be determined by the level of commitment in terms of workforce development, industry incentives, and infrastructure offered by competing national and regional governments.

The implications for national security are substantial. Semiconductors now are the foundation of all major U.S. defense platforms, from satellites and aircraft to naval vessels, communications systems, and support vehicles. For a number of years, U.S. defense planners have been concerned that the globalization of semiconductor research and production poses a fundamental threat to the security of U.S. defense systems. The Pentagon established a program pursuant to which certain critical devices are fabricated by "trusted" companies at secure sites physically located in the U.S. One such "trusted" site is the former IBM semiconductor plant in East Fishkill, New York, now owned and operated by GlobalFoundries, which is engaged in a variety of projects supporting critical U.S. defense needs. The New York



Nano-Cluster is now an important part of the industrial foundation of U.S. national security.

At its core, the Tech Valley success story underscores the possibilities for other U.S. cities and regions to attract and retain high-tech manufacturing. At the same time, the New York Capital Region's continued success is not guaranteed. As this book describes, the semiconductor industry's unique needs and fierce global competition raise serious challenges, underscoring the need for ongoing political and financial commitment, institutional teamwork, and sustained effort from the region's leadership.