THOUGHT
LEADERSHIP
SERIES

Manufacturing Momentum

PART 1 OF 3

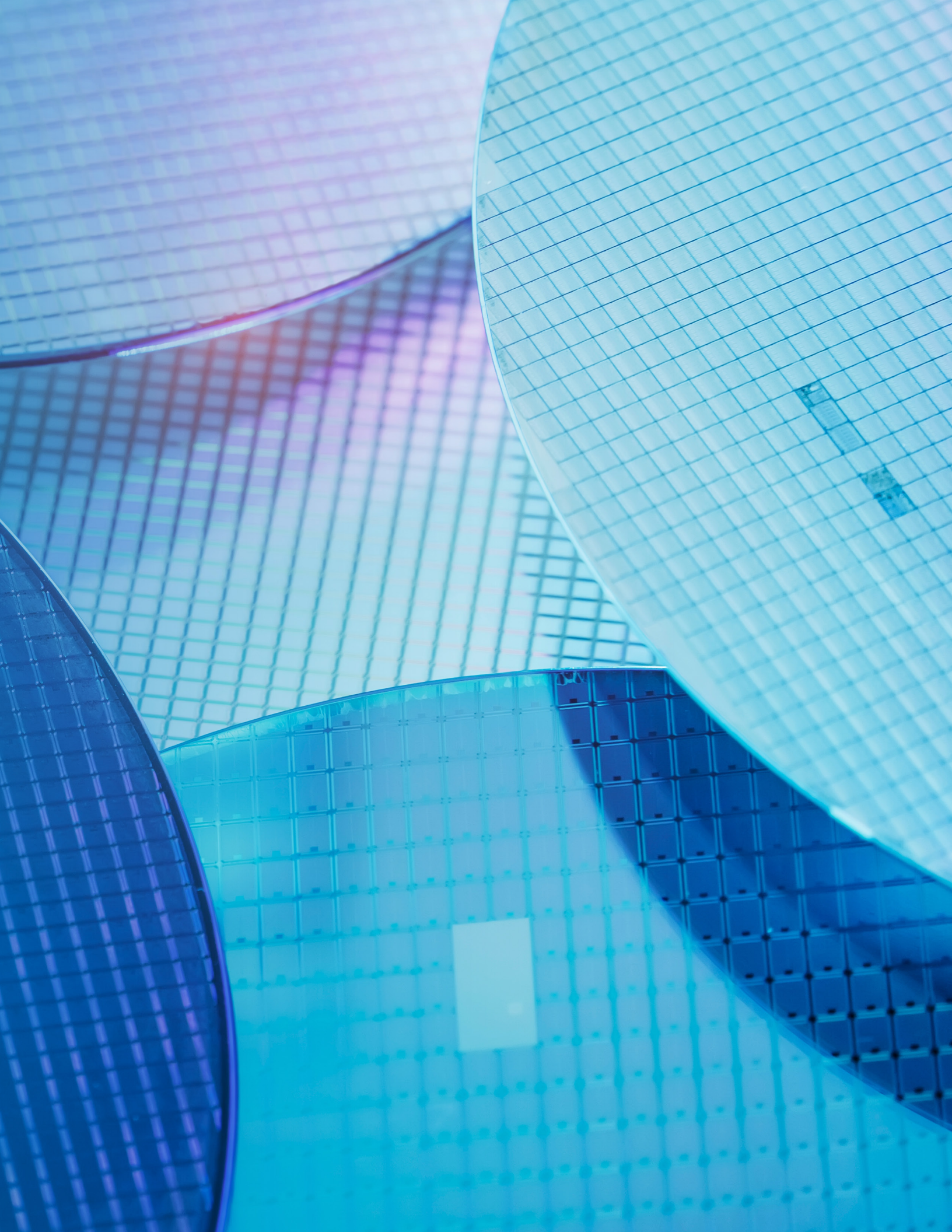
Advanced Manufacturing Ascendancy in North America

NEWMARK

Foreword

This report is the first of a three-part Newmark Industrial Research series exploring advanced manufacturing growth in North America since 2020.

Over these three installments, we will outline growth drivers, analyze the demand and development landscape, identify sector-specific needs and trends and delve into short- and long-term challenges, opportunities and implications for industrial and logistics real estate.



Monumental Growth in North American Manufacturing is Underway

Since 2020, hundreds of major new advanced manufacturing facility announcements have been made across North America, and with each comes investment, development, jobs and another step towards solidifying and expanding critical supply chains.

A snapshot of initial investments totaling a minimum of $100 million since 2020 reveals approximately $400 billion in advanced manufacturing investments pledged, 210,000+ new jobs and a minimum of 250 million square feet of new industrial projects – all to come between now and 2030.

A Note on "Advanced Manufacturing"

A panorama of definitions and perspectives exist on what constitutes "advanced manufacturing", with the recurring focus on the use of modern technologies to improve manufacturing processes, enabling more competitive products.

While most manufacturing output in the U.S. falls under the "advanced manufacturing" rubric[1], and growth is manifesting in a diversity of industries, certain advanced manufacturing sectors emerge as particularly innovative, future-oriented and, crucially, incentivized through recent legislation to develop a presence in the U.S. and partner countries.

Four key advanced manufacturing sectors—high-tech/digitalization, automotive/transportation, energy, biomanufacturing—are driving the greatest volumes of investment and development, capturing over 90% of the major investments pledged since 2020.

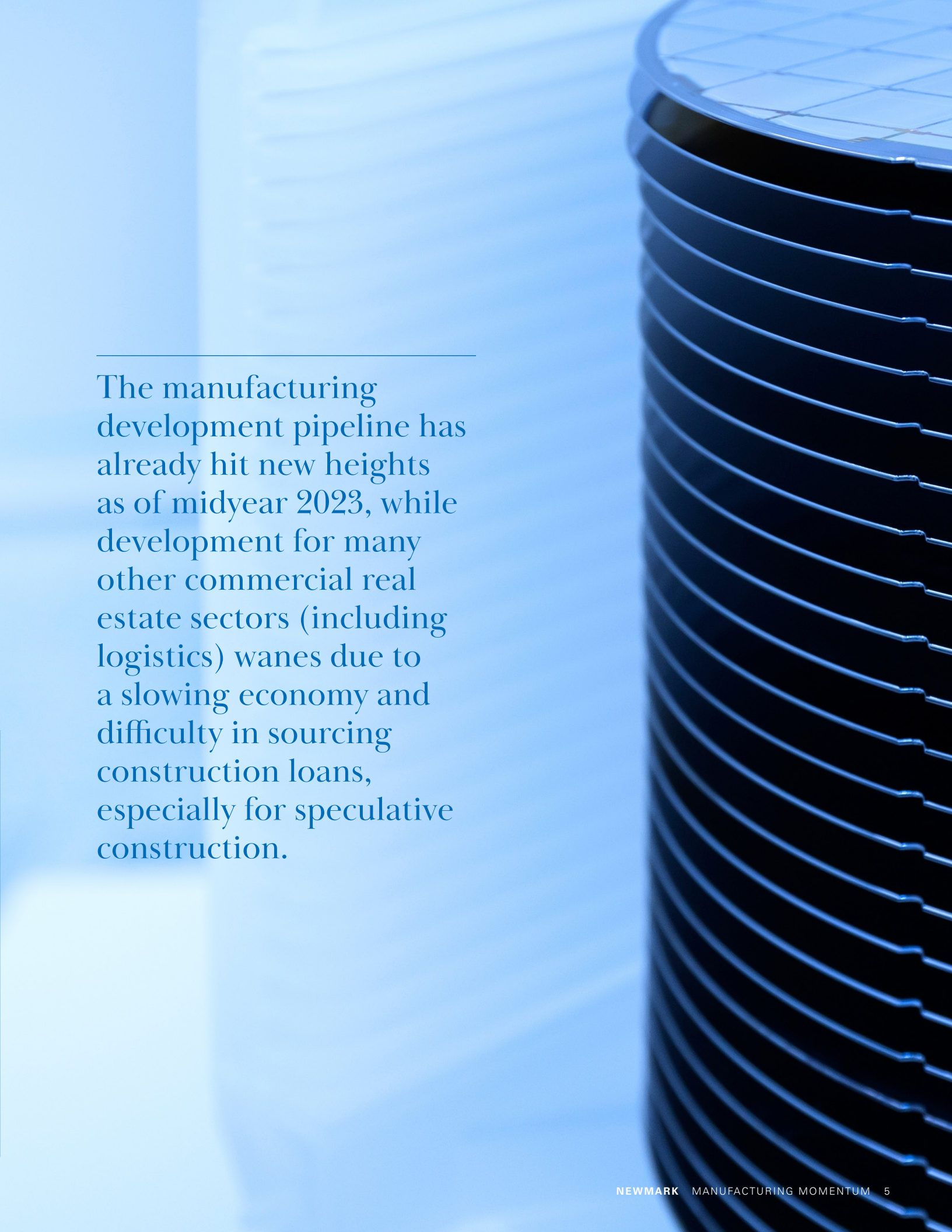
[1] Federal Reserve Bank of St. Louis

HIGH-TECH/DIGITALIZATION
Think: Semiconductors

AUTOMOTIVE/TRANSPORTATION
Think: Electric Vehicles

ENERGY
Think: Solar Panels

BIOMANUFACTURING
Think: Pharmaceuticals



The manufacturing development pipeline has already hit new heights as of midyear 2023, while development for many other commercial real estate sectors (including logistics) wanes due to a slowing economy and difficulty in sourcing construction loans, especially for speculative construction.

Mega Deals in Key Sectors, 2020-2023

1

NEW ALBANY, OHIO

Intel

Deal Value: $20.0 B

Deal Size: 2.5 MSF

Jobs Created: 3,000

2

PHOENIX, ARIZONA

TSMC

Deal Value: $40.0 B

Deal Size: 5.0 MSF

Jobs Created: 4,500

3

CLAY, NEW YORK

Micron

Deal Value: $20.0 B

Deal Size: 2.4 MSF

Jobs Created: 9,000

4

HARDIN, KY & STANTON, TN

Ford Motor Co. & SK Innovation

Deal Value: $11.4 B

Deal Size: 3.4 MSF

Jobs Created: 11,000

5

BLACK CREEK, GEORGIA

Hyundai

Deal Value: $5.5 B

Deal Size: 17.0 MSF

Jobs Created: 8,100

6

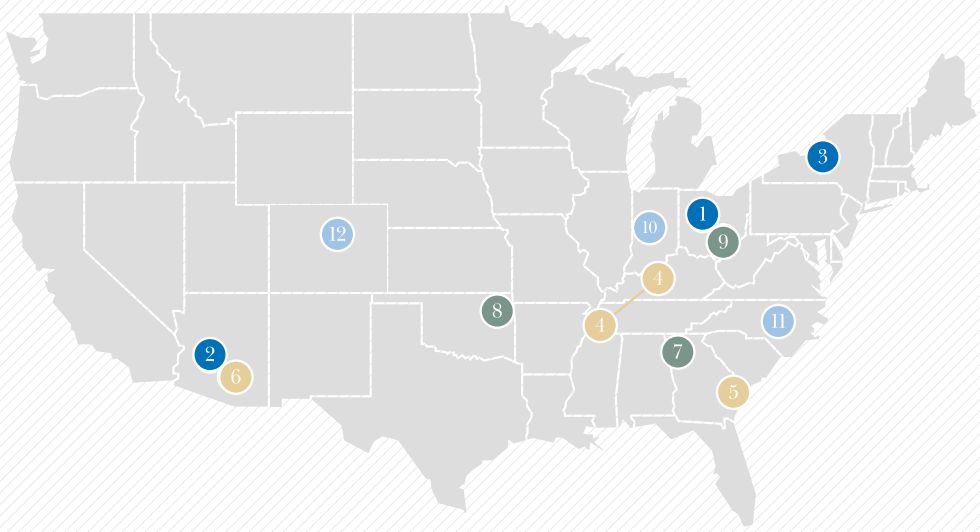
QUEEN CREEK, ARIZONA

LG Energy Solution

Deal Value: $5.5 B

Deal Size: 4.0 MSF

Jobs Created: 5,600



LEGEND

- High-Tech/ Digitalization
- Automotive / Transportation
- Energy
- Biomanufacturing

7

CARTERSVILLE, GEORGIA

Qcells

Deal Value: $2.4 B

Deal Size: 600K SF

Jobs Created: 2,030

8

INOLA, OKLAHOMA

Enel

Deal Value: $1.0 B

Deal Size: 2.0 MSF

Jobs Created: 1,400

9

PATASKALA, OHIO

Invenergy & LONGi

Deal Value: $600 M

Deal Size: 1.1 MSF

Jobs Created: 850

10

LEBANON, INDIANA

Eli Lilly

Deal Value: $3.7B

Deal Size: 1.0 MSF+

Jobs Created: 700

11

HOLLY SPRINGS, NORTH CAROLINA

Fujifilm Dyosynth

Deal Value: $2.0 B

Deal Size: 800K SF

Jobs Created: 725

12

DENVER, COLORADO

Agilent

Deal Value: $725 M

Deal Size: 200K SF

Jobs Created: 160

Sources: Newmark Research, press and media coverage

1 Intel NEW ALBANY, OH

Intel could invest up to $100B in Ohio to build the world's largest chip-making complex. The initial $20B investment—the largest in Ohio's history—is in addition to another $20B project in Arizona and a $3.5B project in New Mexico, as well as a recently opened $3B expansion in Oregon.

2 TSMC PHOENIX, AZ

TSMC is building two fabrication plants to manufacture 3-nanometer chips, the most advanced currently in production.

3 Micron CLAY, NY

Micron will manufacture memory chips for digital electronics at this plant, following a $15B investment into a fab plant in Boise, ID.

4 Ford & SK HARDIN KY / STANTON, TN

The joint venture between **Ford Motor Company and SK Innovation** will produce the largest EV battery production complex in the U.S., with annual production capacity at 129 GWh. Ford has also announced major investments in Michigan and Ontario, Canada.

5 Hyundai BLACK CREEK, GA

This will be **Hyundai's** first EV plant in the U.S., producing both EVs and batteries. The plant is a critical part of Hyundai's effort to launch 11 new electric models by 2030.

6 LG Energy QUEEN CREEK, AZ

The investment by **LG Energy Solution** will create two battery facilities, one to manufacture EV batteries and another to produce lithium iron phosphate (LFP) batteries for energy storage systems.

7 Qcells CARTERSVILLE, GA

Qcells is expanding its solar module manufacturing operations in Georgia, building a new facility in Cartersville and adding a third facility to its Dalton location.

8 Enel INOLA, OK

The Italian green energy company **Enel** will manufacture solar cells and panels at the planned plant, which is the largest economic development project in Oklahoma history.

9 Invenergy & LONGi PATASKALA, OH

Invenergy and LONGi's planned solar panel production facility will produce up to five gigawatts (GW) of solar module capacity per year, capable of powering nearly one million American homes.

10 Eli Lilly LEBANON, IN

Multiple facilities planned in this investment by **Eli Lilly** will expand manufacturing capacity for active ingredients and new therapeutic modalities, like genetic medicines.

11 Fujifilm Dyosynth HOLLY SPRINGS, NC

Fujifilm Dyosynth's new facility will be the largest cell culture biopharmaceutical CDMO facility in the U.S. and will offer manufacturing of bulk drug substance production.

12 Agilent DENVER, CO

This investment by **Agilent** will double manufacturing capacity of therapeutic nucleic acids through expanding an existing manufacturing facility in Colorado.

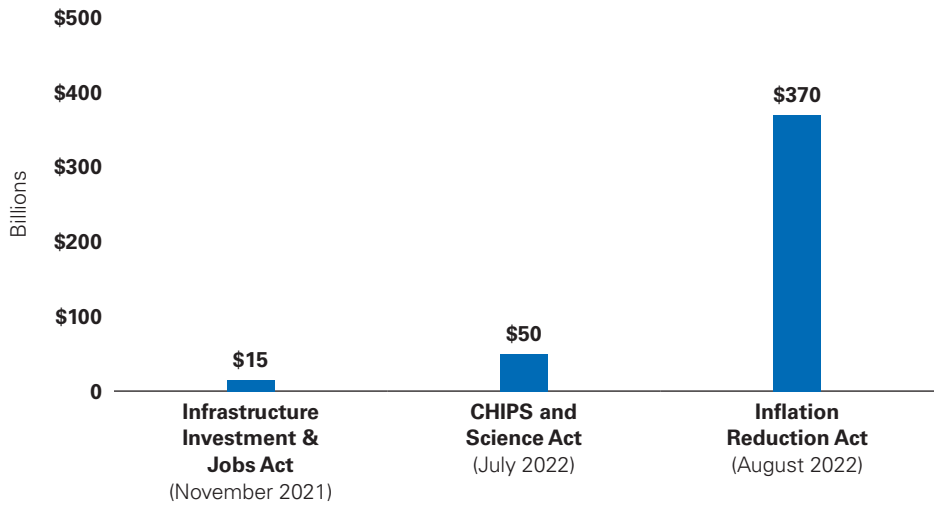
What is driving the momentum?

Trade tensions between the U.S. and China and the rising costs of Chinese labor were already established headwinds to the global supply chain status-quo at the onset of the pandemic in 2020. The ensuing two years of turbulence revealed the fragility of the global supply chain. Geopolitical tensions, natural disasters and a general increase in economic instability have had heightened impacts for consumers, markets and governments – intertwining economic aims with security goals. The shifting landscape has led to a resurgence of government-led industrial policy and an effort to diversify and strengthen supply chains. Many firms are acting to bring production closer to consumption through reshoring, nearshoring, foreign direct investment and domestic expansion.

Recently passed federal legislation is targeted at rebuilding infrastructure, hastening the transition to a green economy and boosting domestic manufacturing in critical sectors, which is galvanizing massive investment in advanced manufacturing facilities. Via the Infrastructure Investment and Jobs Act (IIJA) signed in November 2021, the Inflation Reduction Act (IRA) and the CHIPS and Science Act signed in August 2022, an initial total of half a trillion dollars is available through federal funding and incentives for advanced manufacturing and follow-on upstream and downstream suppliers. Significant provisions have been made within this legislation for a portion of materials sourcing and production to be in the U.S. and partner countries to achieve full financial benefit.

While estimates vary, tax credits and direct federal spending from these

Federal Financial Incentives/Tax Credits for Advanced Manufacturing



Sources: Newmark Research, White House

Reshoring & Nearshoring

Transferring production of goods to country or nearby country of end-consumer

IMPACT

13.1 MSF+ absorption in 2022—**directly attributed to nearshoring in Mexico.**

Foreign Direct Investment (FDI)

Investment in production facilities within a foreign country

IMPACT

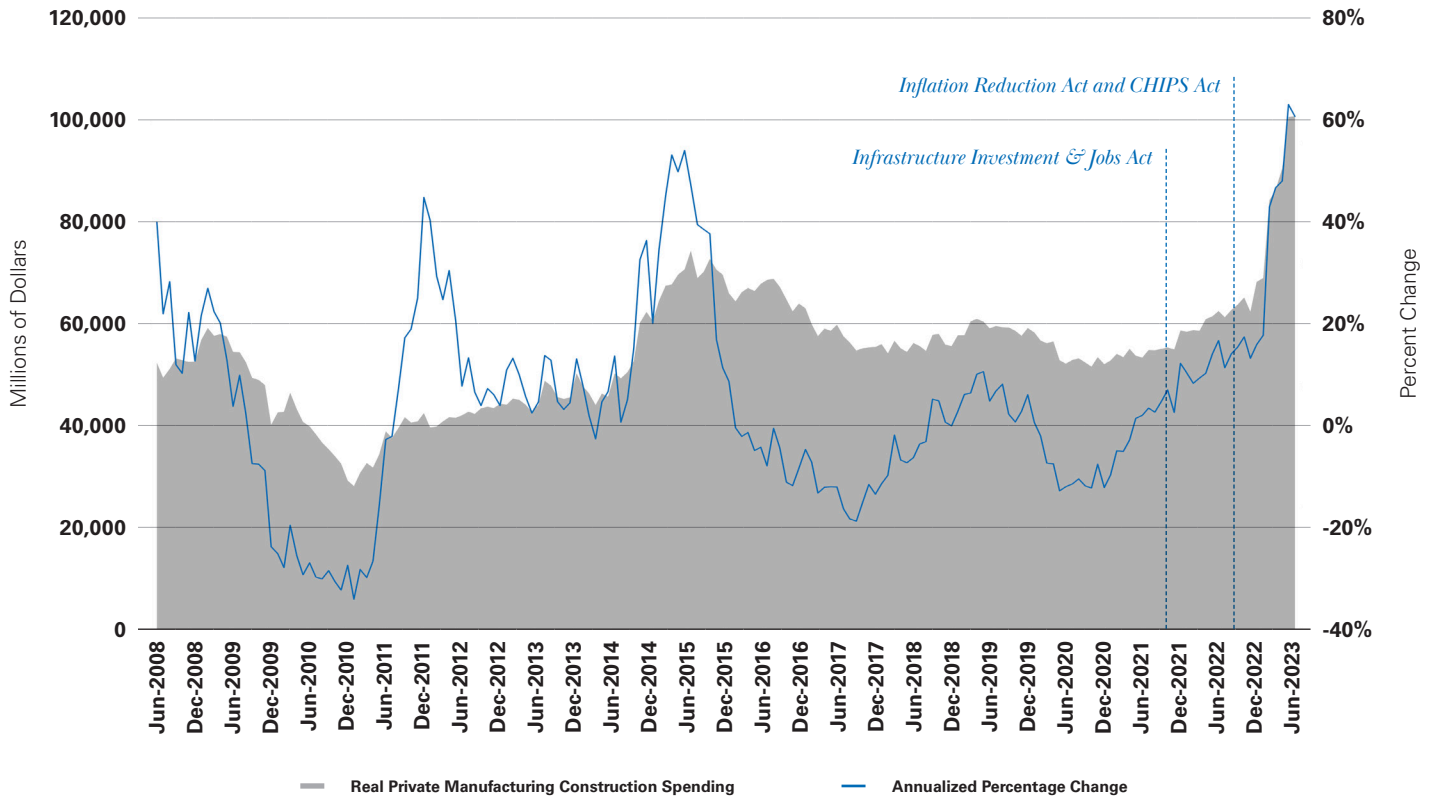
$5.3 billion FDI in manufacturing greenfield projects in 2022—**more than double pre-pandemic levels.**

Sources: Newmark Research, US Bureau of Economic Analysis

three federal funding programs are predicted to furnish around anywhere from 15% to 50% of costs for some manufacturing projects[2]. In addition to federal financial support, billions of dollars of state and local-level incentives have been awarded to major manufacturing projects, as compiled by Newmark Research. Numerous manufacturing mega-investments have been bolstered by record state-level incentive packages: Hyundai Motor Group received $1.8 billion in benefits from the State of Georgia; South Carolina awarded Volkswagen-backed Scout Motors $1.3 billion; and North Carolina awarded VinFast $1.2 billion – all for EV manufacturing, and all the largest incentive packages ever awarded by their respective states. Among the largest state incentive packages disclosed was $5.5 billion awarded to Micron for its $20 billion semiconductor facility in New York, which helped Micron choose New York over Texas for the project. And in Texas, Samsung's $17 billion semiconductor factory announcement is the largest foreign direct investment in the state's history. The amount of state and local incentives awarded also broke records.

This paradigm-shaking volume of industrial-policy-driven public spending is already catalyzing private investment. Real private manufacturing construction spending grew at an annualized rate of 64.7% in June 2023, after having eclipsed $100 billion for the first time ever in April 2023. To contextualize the soaring growth, international data crunched by the U.S. Treasury Department in 2023 revealed no similar sustained growth pattern in manufacturing construction spending visible in countries ranging from Japan, Germany, Australia and the UK.

Total Real Private Manufacturing Construction Spending in the U.S.



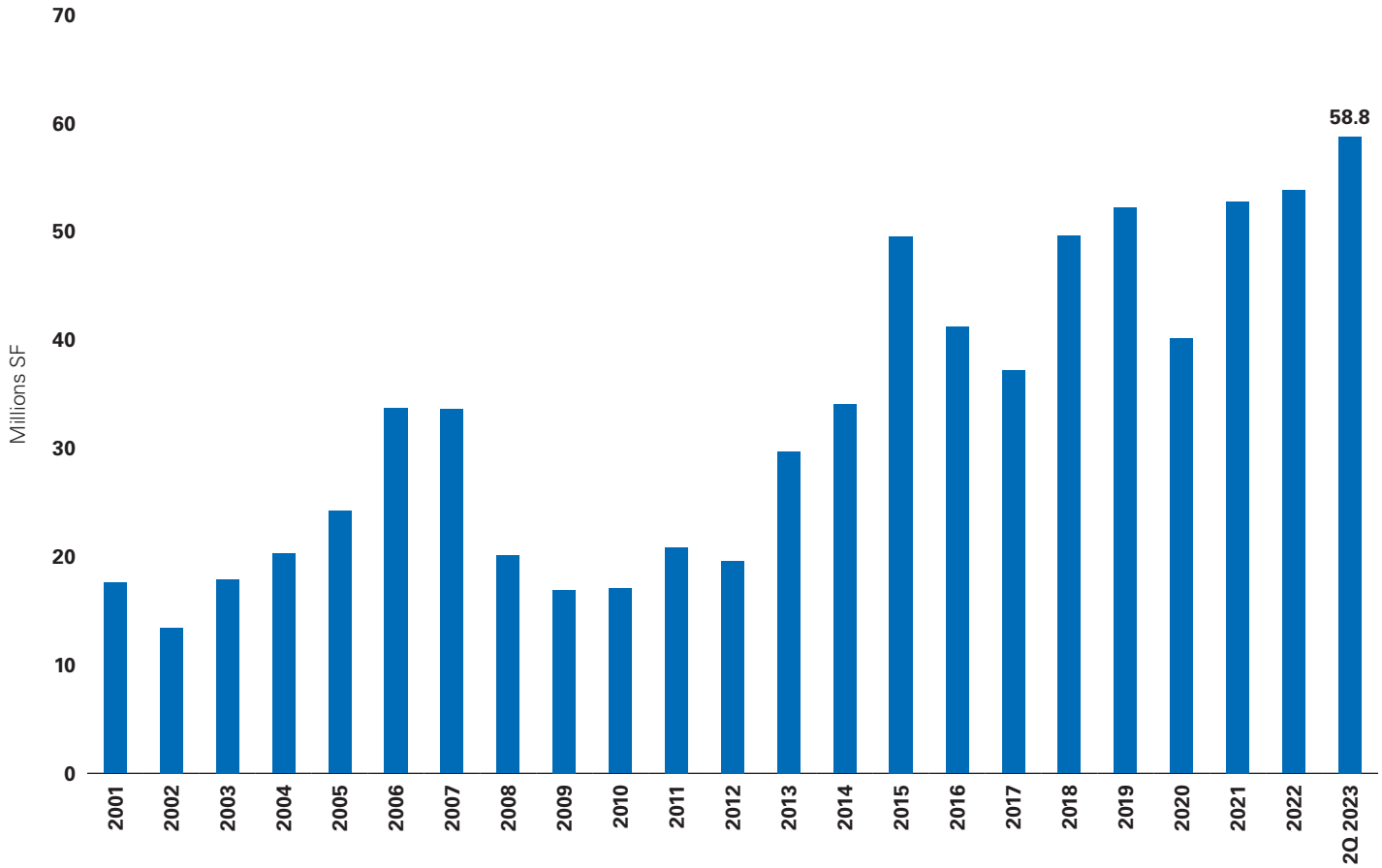
Note: Seasonally adjusted annualized rate of construction spending deflated by New Industrial Building Construction PPI
Sources: Newmark Research, FRED, U.S. Census Bureau, U.S. BLS

[2] Rhodium Group, Financial Times

Within U.S. manufacturing construction spending, the computer/electronic/electrical subsector, encompassing "High Tech/Digitalization" and elements of Automotive/Transportation such as EV batteries, has emerged as the dominant player, boasting the largest investment of any sector on a per-project basis. The subsector's share of overall manufacturing construction spending surged to an average of 41% for the period from 2022 to 2023, a remarkable increase from the 9% average share observed between 2006 and 2021. Notably, since 2020 and especially since the enactment of the CHIPS Act, over 50 new or expansionary semiconductor projects have been announced, with 18 currently underway. The Automotive/Transportation sector has seen approximately double the number of announcements over the same period.

Translating spending to square feet underlines the growth surge. While only a fraction of the hundreds of announced projects have already broken ground, the manufacturing development pipeline has already hit new heights as of midyear 2023. This comes as development for many other commercial real estate sectors (including logistics) wanes due to the slowing economy and difficulty in sourcing construction loans, especially for speculative construction.

U.S. Manufacturing Active Construction Pipeline



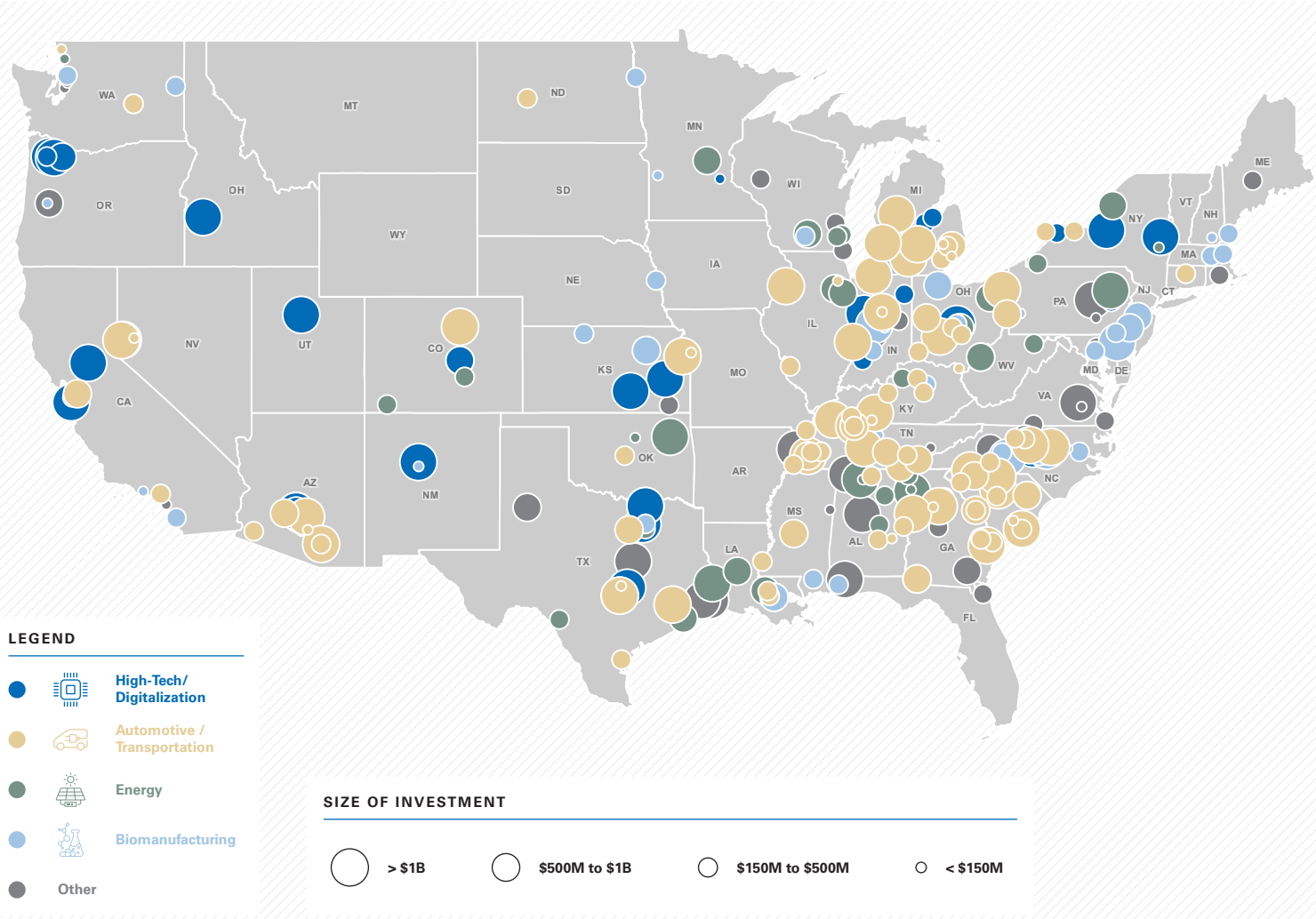
Sources: Newmark Research, CoStar

Where is this growth happening?

A wide survey of major manufacturing announcements over the past three years reveals nearly every U.S. state has been a beneficiary of this growth, with the strongest concentration of projects spanning the Midwest down into the Southeastern states. Arizona and Texas lead in investment, boasting a combined $120 billion, and Texas, Georgia and North Carolina all lead the country in sheer numbers of major manufacturing announcements, with 20+ investments of $100M or more pledged since 2020. Important factors driving geographical growth trends include availability of land, lower-cost power, logistics infrastructure, a favorable business environment and a supportive ecosystem from a labor perspective. In particular, access to skilled labor is an increasing concern for manufacturers.

U.S. Major Advanced Manufacturing Announcements

2020-2023 YTD



Note: Investments of at least $100 million. Investment dollars may include allocations to real estate and equipment, infrastructure, intellectual property, and other outlays.
Sources: Newmark Research, Newmark Global Strategy & Consulting, various press releases and articles.

A Note on Nearshoring

This report has predominantly focused on manufacturing growth in the U.S., but Canada and Mexico are integral partners in the holistic North American manufacturing story and are experiencing dynamic nearshoring activity and foreign direct investment in manufacturing projects, especially to benefit from the United States-Mexico-Canada Agreement (USMCA), which was ratified in 2020.

USMCA supports the trilateral goal of a more integrated North American supply chain by incentivizing greater sourcing and production in North America (and maintaining duty-free flows), updating logistics and customs procedures to facilitate cross border trade and improving intellectual property flows.

Already, the impacts of nearshoring are visible and measurable. Advanced manufacturing imports[3] from Canada and Mexico into the U.S. have accelerated since 2020. In the first half of 2023, Mexico outpaced China to become the top advanced manufacturing exporter to the U.S., with imports from China declining 23% from the first half of 2022.

$20B

Value of Advanced Manufacturing imports into the U.S. from **Canada** in 1H2023 (up 16% from 1H 2022)

$75B

Value of Advanced Manufacturing imports into the U.S. from **Mexico** in 1H2023 (up 3% from 1H 2022)

An analysis conducted by Newmark Mexico Research determined that nearshoring directly drove more than 13.0 MSF in Mexican industrial markets—a significant portion of overall annual industrial absorption. This figure is expected to rise even further, on the heels of announcements made thus far in 2023, such as Tesla's $10B USD gigafactory in Monterrey. Export and industrial production growth are likely to accelerate further starting in 2025 due to the time required to establish operations and ramp up production in the market[4]. Nearshoring demand is driving interest in locations beyond Mexico as well; Costa Rica, as one example, is parlaying a robust medical device manufacturing sector into other advanced manufacturing avenues, including semiconductors.

[3] As defined by HTC codes for the Automotive Industry and Advanced Technology Products
[4] Newmark, "The Emerging Role of Latin America in Nearshoring"

Select Impacts of Nearshoring in North America

FDI GROWTH IN CANADA

$72.9B in Q123

(4-quarter rolling average)

36%

HIGHER THAN ANNUAL AVERAGE 2012-2019

TRUE NEARSHORING ABSORPTION IN KEY MEXICAN MARKETS, 2022

Source: Newmark Research, Invest in Canada, U.S. Census Bureau

Up next:

In the next installment of Newmark's Advanced Manufacturing Ascendancy in North America series, we delve deeper into the key sectors, unique trends catalyzing their growth and their panorama of specific requirements, further illustrating why some geographies are proving more advantageous for manufacturers looking to grow their U.S. footprint – while addressing potential risks and limitations associated with the surge in advanced manufacturing.

For more information:

New York Headquarters
125 Park Ave.
New York, NY 10017
t 212-372-2000

nmrk.com

Report Authors:

Lisa DeNight
Managing Director,
National Industrial Research
lisa.denight@nmrk.com

Jared Morzinski
Senior Research Analyst
jared.morzinski@nmrk.com

Research Leadership:

David Bitner
Executive Managing Director,
Global Head of Research
david.bitner@nmrk.com

Jonathan Mazur
Executive Managing Director,
National Research
jonathan.mazur@nmrk.com

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Design:

Justin Choy
Senior Graphic Designer
justin.choy@nmrk.com

Newmark has implemented a proprietary database and our tracking methodology has been revised. With this expansion and refinement in our data, there may be adjustments in historical statistics including availability, asking rents, absorption and effective rents. Newmark Research Reports are available at nmrk.com/insights

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