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Here’s why Micron is running behind in New York, and what it means to historic project

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More than two years after Micron Technology announced it would build a large semiconductor factory complex on Route 31 in Clay, the only visible evidence are a few signs along the road. Rick Moriarty | rmoriarty@syracuse.com Rick Moriarty | rmoriarty@syracuse.com

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Just over two years ago, Micron Technology announced it would build, with substantial help from taxpayers, the nation's largest chipmaking complex in the northern suburbs of Syracuse.

Construction was scheduled to start in June 2024. That was pushed back to early 2025. And now, groundbreaking won't start until at least November 2025, nearly a year and half behind the original schedule.

At the same time, all of the other major chipmakers that have won big awards from the federal CHIPS Act are putting up factories and installing equipment across the country. Even Micron is pouring 30,000 tons of concrete a week at a chip plant it's building — in Idaho.

In the town of Clay, however, the 1,400-acre site where Micron proposes to build four massive factories remains heavily forested and brimming with wetlands. Micron's only presence there are several plywood signs.

The main reason for the holdup? Micron hasn't finished the massive environmental impact report required by the state and federal governments to move the project forward.

It's a complicated task. The draft environmental impact statement will be thousands of pages long and must analyze in detail the project's effects on everything from air pollution and traffic to its impact on the housing market to details about its construction timelines.

And even after it submits that document to federal and local governments, that will jumpstart a series of public hearings and reviews likely to take many more months.

Most of the other big chipmakers don't have to submit that big report thanks to a new law signed by President Biden last month. Micron didn't qualify for that break in New York. Even if it had, the state's environmental review is just as time-consuming.

It's not unusual for timelines to be pushed back on construction projects, and it's likely rescheduling will continue for this one, which promises to be the biggest single manufacturing project in New York state history. A Micron official conceded last year that the initial timeline had been "aggressive."

But in Arizona, Ohio and Texas, dozens of cranes are in the air. Companies facing the same economic and political forces as Micron are further along, some by a year or more. And those projects are likely to move more quickly after getting relief from the federal environmental review process, but Micron won't get the same break for the Clay project.

So is Micron behind itself and its competitors?

In some ways, yes. The construction start date is now more than a year later than forecast.

But in other ways, no. A Micron official noted last year that the Clay project could take 20 years, so a delay of months or even a year isn't worrying. And Onondaga County Executive Ryan McMahon noted that Micron has actually moved up the date by which the second of four planned fabrication plants, or fabs, is likely to start producing chips.

Top officials in the agencies leading the review of the project say they're unconcerned about Micron's changing timelines.

"Delays in these huge projects aren't unusual, and I'm totally confident it's going to go forward," U.S. Secretary of Commerce Gina Raimondo told Syracuse.com | The Post-Standard last month during a visit to Cicero.

The Commerce Department is handing out billions of CHIPS dollars to semiconductor companies, including Micron.

"We're working hard with them, so I'm not concerned," the secretary said.

But the delays feed the skepticism that often pervades big projects in Upstate New York: The unrealized dreams of Destiny USA boasting a scaled-down version of the Erie Canal; a film hub near Syracuse that was supposed to create a mini-Hollywood; the $90 million factory in DeWitt that state taxpayers bought for a high-tech California company that never used it.

Leaders remain optimistic. And it's worth noting that Micron won't cash in on any government incentives until it actually builds something and puts people to work.

There are explanations – local and international – for why the land in Clay remains untouched. The extensive environmental report is the big one. The market for artificial intelligence chips is also not taking off as quickly as hoped. And the presence of an endangered species of bats on the Clay site limits when Micron can cut trees, the first step in construction.

Unique challenges in Clay

Micron faces some hurdles in Clay that its competitors don't in other parts of the county.

Those include bats, green spaces and New York's environmental regulations.

Bob Petrovich, executive director of the county Industrial Development Agency, noted that the other projects, including Micron's own in Boise, aren't as big and don't require as much environmental review as the Clay project.

"This is a large, unprecedented project in terms of scope and scale, not only for Micron, but for New York, even for the country," Petrovich said. "I don't compare this project to any other project, because it's a project that's unique unto itself."

The Clay site is replete with wetlands, which can't be filled in without special permission from the federal government. Also on the site are two species of endangered bats, which requires another level of federal review and limits when Micron can fell trees.

Micron did not directly address why it hadn't met the original timeline but hinted that the extensive environmental review is partly to blame.

"Micron is working diligently to prepare for construction, which will begin as soon as the local, state, and federal regulatory and permitting processes are complete," the company said in a statement to syracuse.com | The Post-Standard.

Micron's CEO, Sanjay Mehrotra, last week dodged the question from CNBC host Jim Cramer about when the company would break ground in New York.

“We are in the process of environmental permitting approvals,” Mehrotra said.

Micron also did not say when it would file the draft environmental impact statement, the next required step in the environmental review. Petrovich has said he expects that report by mid-December.

AI, world pressures

But there may be more to Micron’s delays than environmental issues, experts in the chip industry say. The highly cyclical chip industry is still rebounding from a big downturn, and chipmakers are wary of spending too much money in case another downturn hits, said Jim Handy, a semiconductor analyst with Objective Analysis in Silicon Valley.

In addition, Handy said, the artificial intelligence boom that companies like Micron are counting on is moving more slowly than initially forecast.

“Companies like Facebook, Google, Amazon and Microsoft are investing very heavily in some very expensive AI equipment, and the payoff hasn’t materialized yet,” Handy said. “Are they suddenly going to come to a realization that maybe they’re spending too much, and turn off the spending?”

Micron was hit hard by the downturn: Its revenues dropped by half, from $30 billion to $15 billion, from the 2022 to 2023 fiscal years.

In the most recent fiscal year, which ended in August, Micron’s revenues bounced back to $25 billion. The company also hired 5,000 employees, according to its annual report.

McMahon noted that while the Micron’s construction date is now later, the scheduled start of chip production is now earlier than originally predicted.

“Initially, that second fab was going to be 2032, and now it will probably be completed by the end of 2029,” McMahon said.

Micron isn’t under an immediate time crunch to get the Clay project going. The grant money it’s been promised from the state and federal government comes only after the company meets construction and employment benchmarks. There’s no penalty for starting later.

The biggest slice of the subsidy pie, however, does come with a deadline. Micron must start construction by the end of 2026 to qualify for a tax credit that could be worth $11.5 billion on the first two fabs. That’s more than half of the estimated $20 billion in taxpayer subsidies that Micron is counting on for those two fabs.

Yet delays in construction in Clay could put Micron behind one of its biggest competitors in the memory chip market, Samsung. The South Korean company has been promised $6.4 billion in CHIPS act funding to build two fabs and a packaging facility in Texas. The first fab is under construction.

A new challenge

Micron has built big fabs before — but mostly overseas, in Taiwan and Singapore. The last fab the company built in the U.S. was in Utah in the 1990s, although it was smaller than the ones it will build in Clay. Micron sold the Utah fab to Texas Instruments in 2021 for $900 million.

Micron's only production fab in the U.S. is in Manassas, Virginia. Micron bought that fab from Toshiba Corp. in 2002.

That means the Clay project is new ground for the 46-year-old company.

On Oct. 4, 2022, Micron announced it planned to spend up to $100 billion to build four fabrication plants, or fabs, at Route 31 and Caughdenoy Road. The company was spurred by the federal CHIPS and Science Act, designed to bring chipmaking back to the U.S. The vast majority of chips are made overseas, especially in Taiwan.

Micron specializes in memory chips, tiny devices that temporarily store information on everything from cell phones to cars to artificial intelligence servers. Micron is the only U.S.-based maker of memory chips and produces nearly all of them in Asia.

Building the fabs to produce those tiny chips is among the most challenging construction projects on the planet. Each fab is 180 feet high, sprawls across 28 acres of land, and contains hundreds of miles of pipes that convey toxic chemicals used in the chipmaking process. Thick floors dampen vibration for the hundreds of highly calibrated machines that imprint minuscule patterns on the 12-inch discs of silicon. Those discs are eventually diced into chips, each no bigger across than a pinkie fingernail and as thick as a human hair.

Micron could churn out more than 700 million chips a year in the first two fabs in Clay. Volume is critical in the business of memory chips, which are interchangeable with those made by competitors. Users of Micron chips can swap them out for another brand like photographers swap SD cards into their cameras, Micron said.

The competition's construction

Under the 2022 CHIPS and Science Act, four of the world's biggest chipmakers, including Micron, have been promised $27.6 billion in grants to build chips in the U.S. While all four have faced delays of some kind, the others have all started construction, some before the CHIPS money was finalized:

- Intel broke ground in 2020 on a chipmaking complex near Columbus, Ohio, that could rival Micron's plans in Clay. The project has hit some snags, but Intel has already poured 63,000 cubic yards of concrete and installed more than 45 miles of underground pipes, according to the state of Ohio.
- Samsung plans to build two memory chip fabs near Dallas. The first began construction in 2022 and is expected to produce chips by 2026.
- Taiwan Semiconductor Manufacturing Co., the world's biggest chipmaker, started construction of a fab near Phoenix in 2020 and has announced plans for two more nearby. The company is already installing equipment inside the first fab and plans to start producing chips next year, ahead of schedule. The company has also broken ground on a second fab, which was announced two months after Micron's Clay plans.
- Micron is pouring a foundation for a fab, as big as each of the Clay fabs, next to its headquarters and research facility in Boise. That project was expected to start before the one in Clay because Micron will new prototype chips in Boise and then produce them in mass quantities in Clay.

Those projects got a boost earlier this month when President Joe Biden signed a new law that would exempt chip plants from extensive environmental review. Proponents of the law said the reviews under the National Environmental Policy Act could be so time-consuming that it threatened the projects.

The law won't help Micron in Clay, though. Because of extensive wetlands on the site, Micron is still subject to federal review. And Micron must still complete New York state's separate environmental review process, which is just as stringent as the federal one.

In May 2023, Micron filed a detailed application with New York state and federal agencies for permission to fill in wetlands on the Clay site. The company laid out a detailed timeline in that filing, including when the environmental reports would be completed and what kind of heavy equipment would arrive on site in which month (bulldozers in June 2024, tower cranes in April 2025).

That timeline projected that the draft environmental impact statement, required by state and federal law, would be ready for public comment by the end of 2023. The estimate is now early 2025. Micron plans to submits the report in mid-December, and then federal and county regulators review it before it's publicly available.

Construction was scheduled to start in June 2024; that's now fall 2025, assuming the lengthy review process is done and Micron has obtained a lengthy list of approvals and permits.

While the environmental report is being compiled, Micron has moved forward on many other fronts in Central New York. The company has already hired at least 20 people for the Clay site, primarily in construction planning. Micron announced it will open offices in downtown Syracuse's sixth-tallest building and has hired the world's largest design firm to draw detailed plans of the fabs.

"It's complicated and it's involved, but it doesn't mean it's not going to happen," said Petrovich, the county's industrial development agency director. "We're making progress."

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