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Micron Technology, Inc. (MU) CEO Sanjay Mehrotra on Q4 2019 Results - Earnings Call Transcript

Sep. 26, 2019 11:00 PM ET99 comments | 8 Likes

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FQ4: 09-26-19 Earnings Summary

Press Release *10-K* *Slides*

EPS of $0.56 beats by $0.07 | Revenue of $4.87B (-42.30% Y/Y) beats by $310.32M

Earning Call Audio

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Micron Technology, Inc. (NASDAQ:MU) Q4 2019 Earnings Conference Call September 26, 2019 4:30 PM ET

Company Participants

Farhan Ahmad - Head of Investor Relations

Sanjay Mehrotra - President and Chief Executive Officer

David Zinsner - Senior Vice President and Chief Financial Officer

Conference Call Participants

Mark Delaney - Goldman Sachs & Co. LLC.

John Pitzer - Credit Suisse

Mitchell Steves - RBC Capital Markets, LLC

Harlan Sur - JPMorgan Chase & Co.

Mark Newman - Sanford C. Bernstein & Co., LLC

C.J. Muse - Evercore ISI

Rajvindra Gill - Needham & Company, LLC

Aaron Rakers - Wells Fargo Securities, LLC

Vijay Rakesh - Mizuho Securities USA, Inc.

Mehdi Hosseini - Susquehanna International Group, LLP

Ambrish Srivastava - BMO Capital Markets

Joseph Moore - Morgan Stanley & Co. LLC

Operator

Good afternoon. My name is Sherry, and I will be your conference facilitator today. At this time, I would like to welcome everyone to Micron's Fourth Quarter 2019 Financial Release Conference Call. All lines have been placed on mute to prevent any background noise. After the speakers' remarks, there will be a question-and-answer period. [Operator Instructions]

It is now my pleasure to turn the floor over to your host, Mr. Farhan Ahmad, Head of Investor Relations. You may begin your conference.

Farhan Ahmad

Thank you, and welcome to Micron Technology's fourth fiscal quarter 2019 financial conference call. On the call with me today are Sanjay Mehrotra, President and CEO, and Dave Zinsner, Chief Financial Officer.

Today's call will be approximately 60 minutes in length. This call, including the audio and slides, is also being webcast from our Investor Relations website at investors.micron.com. In addition, our website contains the earnings press release and the prepared remarks filed a short while ago.

Today's discussion of financial results will be presented on a non-GAAP financial basis unless otherwise specified. A reconciliation of GAAP to non-GAAP financial measures can be found on our website, along with a convertible debt and capped call dilution table. As a reminder, a webcast replay will be available on our website later today.

We encourage you to monitor our website at Micron.com throughout the quarter for the most current information on the Company, including information on the various financial conferences that we will be attending. You can follow us on Twitter at MicronTech.

As a reminder, the matters we will be discussing today include forward-looking statements. These forward-looking statements are subject to risks and uncertainties that may cause actual results to differ materially from statements made today. We refer you to the documents we file with the SEC, specifically our most recent Form 10-K and 10-Q, for a discussion of the risks that may affect our future results. Although we believe that the expectations reflected in the forward-looking statements are reasonable, we cannot guarantee future results, levels of activity, performance, or achievements. We are under no duty to update any of the forward-looking statements after today's date to conform these statements to actual results.

I'll now turn the call over to Sanjay.

Sanjay Mehrotra

Thank you, Farhan. Good afternoon. Fiscal 2019 was another solid year of execution as we continue to transform the new Micron. Despite the challenging industry environment, we achieved the second-best year in our history for revenue, free cash flow and earnings, which underscores the strength of the new Micron.

We improved structural profitability by further reducing the technology gap with competitors and by strengthening our product portfolio. We also made progress on our $10 billion share repurchase program by returning $2.7 billion to our shareholders.

In the fiscal fourth quarter, the Micron team's strong execution resulted in financial performance exceeding our guidance ranges. Market trends were broadly consistent with our expectations discussed on the last earnings call.

DRAM demand bounced back as the factors that impacted calendar first half demand largely dissipated. NAND elasticity is driving robust demand growth, causing industry inventories to improve rapidly. While the demand recovery in DRAM and NAND is encouraging, we remain mindful of ongoing macroeconomic and trade uncertainties. I will provide more color on our view of the market after a review of progress on our key strategic objectives.

Since 2016, the actions we have taken to reduce our cost structure, increase our mix of high-value solutions, and enhance our customer engagement and go-to-market strategy have significantly improved our profitability relative to our peers.

In fiscal 2019, our DRAM cost per bit declines led the industry and exceeded our internal plans, despite the headwinds from our announced reduction in wafer starts. In the fiscal fourth quarter, we began mass production and volume shipments of the industry's first 1Z products, giving Micron feature size leadership for DRAM.

We are also making good progress migrating more of our production to leading-edge nodes. While we entered fiscal 2019 with more than half of our bit production on 20 nanometer or older nodes, we ended the fiscal year with approximately three-quarters on 1X and beyond, with a meaningful portion on 1Y.

As previously announced, we are expanding cleanroom space in our Taichung, Taiwan, site to support future node transitions of our existing wafer capacity, and we expect output from this facility in calendar 2021.

In NAND, we continued to outpace industry cost declines during fiscal 2019. 96-layer 3D NAND is continuing to increase as a portion of our mix. Meanwhile, we achieved our first yielding dies using replacement gate or RG for short. This milestone further reduces the risk for our RG transition.

As a reminder, our first RG node will be 128 layers and will be used for a select set of products. We don't expect RG to deliver meaningful cost reductions until fiscal 2021 when our second-generation RG node is broadly deployed. Consequently, we are expecting minimal cost reductions in NAND in fiscal 2020.

Our RG production deployment approach will optimize the ROI of our NAND capital investments. In addition, we announced the grand opening of our Singapore cleanroom expansion in August, which will enable the transition of our existing NAND wafer capacity to future generations of 3D NAND technology. We are continuing to make solid progress with our 3D XPoint product development and remain on track to launch our initial products in calendar 2019.

Now turning to highlights by markets. In SSDs, the industry transition from SATA to NVMe in fiscal 2019 continued at a rapid rate. While we have been late to the NVMe market, our progress positions us to gain share starting in fiscal 2020. For OEMs, building on strong growth last quarter, we more than tripled revenue shipments of our NVMe client SSD sequentially with sales penetration in multiple Tier 1 PC OEMs.

Our QLC-based NVMe consumer SSD was a best-selling SSD on Amazon Prime Day in North America. Our consumer SSD segment achieved record revenue and unit shipments with bits posting triple-digit percentage growth year-over-year, driven by our strategy to pursue channel expansion that extends our geographical and customer reach.

Price elasticity is driving an increase in attach rates and capacities, leading to solid demand growth across client and consumer SSDs. We are also making solid progress on advancing our roadmap of NVMe SSDs for the enterprise and cloud markets.

In fiscal 2019, we introduced the high-performance 9300 line of NVMe products, targeting high-end data center applications, and are looking forward to increasing adoption of this product.

In mobile, our portfolio featuring the industry's lowest-power and highest-density products is enabling our customers to bring differentiated capabilities to the market and helping us deliver outstanding financial performance in a challenging industry environment.

In fiscal 2019, we delivered mobile revenue that was down only 3% from 2018's record performance, despite a significant drop in market pricing and the impact from the addition of Huawei to the Entity List. Our mobile margins were resilient, and our managed NAND bit shipments in fiscal 2019 more than tripled year-on-year, driven by growth of MCP and discrete NAND eMMC and UFS products.

In the fiscal fourth quarter, we started volume shipments of a new leading-edge UFS-based MCP that uses our 1Z LPDRAM. This new UFS MCP will bring flagship-like performance and densities to mid and high-end smartphones. We are also leading the industry in power-efficient, high-bandwidth LP5 DRAM, which positions us well as 5G begins to accelerate in 2020.

In data center, customer inventories for DRAM have reduced significantly, driving solid sequential demand growth for server solutions in both cloud and enterprise markets. New processor platforms are also creating an uptick in demand for higher-density and higher-performance DRAM modules.

In graphics, we saw strong sequential bit growth, with increases for graphics cards and gaming consoles, as normal buying resumed following inventory reductions in DRAM. In the PC market, DRAM module and SSD shipments continued the growth trend from last quarter, as CPU shortages further subsided.

In automotive, we continued to increase revenue year-over-year, despite weak auto industry unit sales and a challenging DRAM industry environment. Our growth was supported by secular content increases, our superior quality, and well-established customer relationships. LP4 shipments in the fiscal fourth quarter were over 5x higher year-over-year, as lower-power DRAM becomes increasingly important for new Infotainment and ADAS systems. We continue to have leading industry share in automotive.

Before talking about the market outlook, I want to provide an update on our business with Huawei and the ongoing impact of trade uncertainties. As we noted last quarter, we started shipping some products to Huawei that are not subject to Export Administration Regulations and Entity List restrictions.

In the fiscal fourth quarter, sales to Huawei declined sequentially and were down meaningfully from the levels we anticipated prior to the addition of Huawei to the Entity List.

We have applied for licenses with the Department of Commerce that would allow us to ship additional products, but there have been no decisions on licenses to date. We see ongoing uncertainty surrounding U.S. China trade negotiations. If the Entity List restrictions against Huawei continue and we are unable to get licenses, we could see a worsening decline in our sales to Huawei over the coming quarters.

Now, turning to our market outlook, which assumes that the macroeconomic environment doesn't materially deteriorate from current levels. I'll begin with our industry outlook, and then turn to Micron's outlook for DRAM and NAND.

The DRAM and NAND industry demand growth in the second half of calendar 2019, compared to the first half, is primarily being driven by a normalization of inventories at most customers, and secular growth trends in various end markets.

In recent months, we have seen increased demand from customers headquartered in mainland China, some of whom could be making strategic decisions to build higher levels of inventory in the face of increased trade tensions between the U.S. and China, as well as Japan and Korea.

Our view of calendar 2019 DRAM industry bit demand growth remains unchanged at mid-teens, with supply exceeding demand due to previously discussed factors that impacted first half calendar 2019 demand.

Based on our early view of calendar 2020, we expect the industry to see bit demand growth of high-teens to 20%, above supply growth of only mid-teens, which should help normalize supplier inventories and enable a healthy industry environment. We expect the long-term DRAM bit demand growth CAGR to be mid to high-teens.

Turning to NAND industry outlook, demand elasticity and industry supply reductions are resulting in improving market conditions and declining industry inventory. On the supply side, CapEx and wafer start cuts across the industry are leading to supply reductions. A power outage at a competitor's fab also reduced industry supply and inventory.

We now expect calendar 2019 industry bit demand growth in the low to mid-40% range, which will exceed industry bit supply growth of approximately 30%. Based on our view of calendar 2020, we estimate industry bit demand growth of high 20s to low-30% range, with supply growing somewhat below demand.

We believe that NAND industry margins, which are at the lowest levels in the last 10 years, should start increasing for the rest of the year. We expect the long-term NAND bit demand growth CAGR to be in the low-30% range.

Specific to Micron's DRAM outlook, we are seeing solid demand from customers across multiple segments. This is improving our inventory, and we have started to see pockets of tight supply, particularly in leading-edge nodes. However, we still have elevated inventory levels on older nodes. As a result, we are continuing with the previously disclosed DRAM wafer start reductions of 5%.

We expect Micron's calendar 2019 bit supply growth to be slightly below industry demand growth of mid-teens, and expect our calendar 2020 DRAM bit supply growth to be close to the market demand growth. We also expect our DRAM cost reductions to moderate in fiscal 2020 to high-single digits. As we have said before, the increasing complexity of more advanced DRAM nodes is resulting in a slower pace of cost declines for the industry.

As our DRAM inventory improves, we are committed to maintaining price discipline. While we are having to respond to some aggressive market pricing, we have started walking away from some transactions, as we look to optimize our profitability.

Turning to Micron's NAND outlook, we expect our calendar 2019 bit growth to be slightly above industry supply growth, and in calendar 2020, we expect Micron's bit supply growth to be significantly below the industry demand growth as we transition a limited portion of our wafer starts to our first-generation replacement gate node and use inventory to support customer demand. Supply growth will also be impacted by our previously announced wafer start reductions of approximately 10%.

We are seeing some capacity tightness in our back-end manufacturing operations due to significant increases in demand for high-capacity NAND products. This is another data point of elasticity kicking in on high-value NAND solutions.

While NAND and DRAM market conditions are showing some promising signs, in order to bring our supply in line with the market demand, we are targeting our fiscal 2020 front-end equipment CapEx to be reduced by more than 30% from fiscal 2019. Our CapEx decision is also influenced by macroeconomic uncertainty and low industry profitability.

Our front-end CapEx outlook reflects our strategy for limited ramp of our first RG node. While we are reducing front-end equipment CapEx, we are spending significantly more on shell space to enable future node transition, and also investing in a new SSD packaging facility in Penang, Malaysia. As always, we will maintain flexibility and discipline while investing appropriately for Micron's long-term success.

I want to emphasize that our goal is to manage our DRAM and NAND bit supply growth CAGR in line with industry demand. As we catch up on the technology and cost gaps to best-in-class competitors in DRAM and transition to RG technology in NAND, our supply growth may fluctuate, but we expect the medium-to-long-term growth rate of our supply to approximately equal the rate of demand growth across both NAND and DRAM markets.

We are also focused on maximizing the ROI of our CapEx investments. And for this reason, we are not emphasizing wafer capacity growth, but instead focusing on bit growth driven by technology transitions. In addition, some of our CapEx is dedicated to increasing our internal capacity for assembly, packaging and test, which help us drive cost reductions without adding any bit growth and has good ROI.

I'll now turn it over to Dave to provide our financial results and guidance.

David Zinsner

Thanks Sanjay. As Sanjay mentioned, Micron delivered resilient performance throughout a challenging year for the industry, highlighted by fiscal Q4 results that exceeded our guided ranges for revenue and earnings.

As market conditions evolved during the year, we curtailed our planned operating expenses and capital expenditures, allowing us to preserve margins and generate healthy free cash flow.

We achieved our first corporate investment grade rating, strengthened our balance sheet, and meaningfully reduced our share count. All-in-all, fiscal 2019 was a year of stellar progress that sets Micron up for attractive growth as industry conditions recover.

Turning to our recent financial results. Total fiscal Q4 revenue was approximately $4.9 billion. Revenue was up 2% sequentially and down 42% year-over-year. Revenue exceeded our guidance range largely due to better-than-expected demand. Full fiscal 2019 revenue totaled $23.4 billion, down 23% year-over-year.

Fiscal Q4 DRAM revenue was $3.1 billion, representing 63% of total revenue. DRAM revenue increased 1% sequentially and declined 48% year-on-year. Bit shipments grew approximately 30% sequentially and in the mid-teens percent range year-on-year, as customer inventories improved significantly.

ASP declined approximately 20% sequentially. For full fiscal 2019, DRAM revenue was $15.2 billion, down 28% from fiscal 2018 as bits grew in the low single-digit percent range and ASP declined approximately 30%.

Fiscal Q4 NAND revenue was approximately $1.5 billion, or 31% of total revenue. Revenue was up 5% sequentially, but declined 32% year-on-year. Bit shipments grew in the low-to-mid-teens percent range sequentially. ASP declined in the upper single-digit percent range. We are starting to see supply tightness in portions of the NAND market, and prices are beginning to increase.

Full fiscal 2019 NAND revenue was $6.9 billion, down 12% from fiscal 2018, as ASP declines of mid-40% range more than offset strong bit shipment growth.

Now turning to our revenue trends by business unit. Revenue for the Compute and Networking Business Unit was $1.9 billion in fiscal Q4, a decline of 8% sequentially and down 56% year-over-year. ASP declines across most segments continued to be the leading cause of lower revenue. For the fiscal year, revenue was $10 billion, down 35% year-over-year.

Revenue for the Mobile Business Unit in fiscal Q4 was $1.4 billion, up 20% sequentially and down 26% year-over-year. Both DRAM and NAND bits had strong growth driven by seasonality and continued content growth in smartphones. Our mobile business gained share in the year, driven by a stronger product portfolio. For the full fiscal year, MBU revenue was $6.4 billion, down only 3% from fiscal 2018.

Revenue for the Storage Business Unit in fiscal Q4 was $848 million, an increase of 4% from fiscal Q3 and down 32% year-over-year. For the fiscal year, SBU revenue was $3.8 billion, down 24% from fiscal 2018.

And finally, revenue for the Embedded Business Unit was $705 million in fiscal Q4, up 1% from fiscal Q3 and down 24% from the prior year. For the fiscal year, EBU revenue was $3.1 billion, down 10% from fiscal 2018.

The consolidated gross margin for fiscal Q4 was 30.6%, above our guidance range due to our strong execution, improving demand and slightly better pricing. Q4 gross margins included approximately 200 basis point negative impact or approximately $100 million due to the underutilization charges at IMFT.

Starting in fiscal Q1 and continuing for the foreseeable future, we expect to incur an underutilization impact of approximately $150 million per quarter, with about half of the impact consisting of non-cash items.

Over time, as our 3D XPoint business ramps, this underutilization impact will be mitigated, but as you can expect, it takes time to commercialize a new breakthrough technology. Meanwhile, we will continue to look for ways to optimize our costs and will provide updates on material progress over time.

With respect to U.S. tariffs on imports from China, with continued mitigation, we were able to contain their impact on our consolidated gross margin in fiscal Q4 to less than 20 basis points.

Operating expenses were $797 million, and included some one-time expenses. We continue to control our expenses tightly, and our SG&A as a percent of revenue is meaningfully lower than our competitors.

Fiscal Q4 operating income was $694 million, representing 14% of revenue. Operating margin was down 38 percentage points year-over-year and down 9 percentage points from fiscal Q3. Our full fiscal 2019 operating income was $7.8 billion or 33% of our fiscal year revenue.

Our fiscal Q4 effective tax rate was 8.8%. For the fiscal year, our effective tax rate was approximately 7.3%, which included the tax benefit we recorded in fiscal Q3. Going forward, we expect our tax rate to be mid-to-high single digits.

Non-GAAP earnings per share in fiscal Q4 were $0.56, down from $1.05 in fiscal Q3 and $3.53 in the year-ago quarter. For full fiscal 2019, our non-GAAP earnings per share was $6.35, down from $11.95 in fiscal 2018.

Turning to cash flows and capital spending, we generated $2.2 billion in cash from operations in fiscal Q4, representing 46% of revenue. For full fiscal 2019, cash from operations was $13.2 billion, representing 56% of revenue, down from $17.4 billion or 57% of revenue in fiscal 2018. Cash flow margins remained almost flat due to effective working capital management.

During the quarter, net capital spending, was approximately $2 billion, down from $2.2 billion in the prior quarter. For full fiscal 2019, our net CapEx was $9.1 billion, up from $8.2 billion in fiscal 2018, but down meaningfully from the $10 billion to $11 billion plan we originally had entering fiscal 2019.

We expect our fiscal 2020 net CapEx to be in the range of $7 billion to $8 billion, down meaningfully from fiscal 2019. We expect that CapEx for buildings and back-end manufacturing will increase significantly from last year, while the front-end equipment CapEx will decline more than 30% year-on-year.

Looking at cash generation, we generated adjusted free cash flow of approximately $260 million in fiscal Q4 compared to $500 million in fiscal Q3 and $3.1 billion in the year-ago quarter. Adjusted free cash flow for fiscal 2019 was $4.1 billion, down from $9.2 billion in fiscal 2018.

We received notice for approximately $180 million of convertible note redemptions in the quarter, which will remove approximately 4 million shares from our ongoing share count in fiscal Q1. For full fiscal 2019, we returned approximately $2.7 billion to shareholders in the form of buybacks, representing 65% of free cash flow, at an average purchase price of $40.

Including these share repurchases and our convertible note redemptions, we reduced our average diluted share count by 80 million shares in fiscal 2019, representing 7% of shares outstanding. We remain committed to returning at least 50% of our annual free cash flow to shareholders in the form of share repurchases in the future.

Days of inventory was 131, down from 143 days in fiscal Q3. Inventory ended the quarter at $5.1 billion, increasing from $4.9 billion at the end of fiscal Q3. We will continue to focus on reducing our days of inventory and expect to see further reduction in fiscal Q1.

As mentioned before, we are seeing pockets of tight supply in certain parts of our business. Our long-term normalized inventory target has increased over time to above 100 days as a result of greater process complexity and the broadening of our product portfolio to high-value solutions, such as SSDs that require longer assembly and test cycle time.

Total cash ended the quarter at $9.2 billion, up quarter-over-quarter, largely as a result of our $1.75 billion investment grade debt issuance. Our total debt increased to $5.9 billion. Total liquidity ended fiscal Q4 at $13 billion.

We are holding approximately $1.4 billion of liquidity for the acquisition of the IMFT joint venture, expected in fiscal Q1 2020. This acquisition will eliminate approximately $700 million of member debt financing and will be funded by drawing down $1.25 billion from our term loan facility secured in fiscal Q4.

Before moving on to guidance, I want to share some expected changes to our upcoming reporting. We continue to evaluate planned technology node transitions, capital spending, and re-use rates for NAND equipment.

Based on our preliminary assessment, we anticipate changing the depreciable life of our NAND equipment from five to seven years beginning in fiscal Q1 2020. This change will reduce our depreciation expense included in cost of goods sold for Q1 by approximately $80 million, and increasing to approximately $100 million to $150 million per quarter for the remainder of fiscal 2020. As a reminder, depreciable life for DRAM equipment is already seven years.

Also starting in Q1, we expect to change how we report MCP revenue, which we currently include within NAND revenue. We will begin disaggregating MCP revenue into DRAM and NAND, which will reduce our reported NAND revenue and margins in FQ1 while increasing our DRAM revenue. We believe that this change will help improve the transparency of our DRAM and NAND businesses.

Now turning to our financial outlook. As our portfolio strengthens and we improve our share in high-value segments, we are seeing growing demand for both DRAM and NAND and this is creating pockets of supply shortage, particularly in some leading-edge nodes and in back-end manufacturing.

However, the market remains competitive and industry inventories continue to adjust to economic and geopolitical uncertainties. Notwithstanding these challenges, we expect bit shipments for both DRAM and NAND to grow in fiscal Q1, with NAND increasing more than DRAM.

With that in mind, our non-GAAP guidance for fiscal Q1 is as follows. We expect revenue to be in the range of $5 billion, plus or minus $200 million, gross margin to be in the range of 26.5%, plus or minus 150 basis points, and operating expenses to be approximately $780 million, plus or minus $25 million. Based on a share count of approximately 1.13 billion fully diluted shares, we expect EPS to be $0.46, plus or minus $0.07.

Despite a variety of industry and trade-related challenges in fiscal 2019, Micron delivered strong financial results. At our 2018 Analyst Day, we laid out how we believed Micron was structurally improved and able to weather the storm in even challenging periods for the industry. While we are not out of the woods, we are proud of our execution as we have moved through the current cycle.

We are exiting the fiscal year with a stronger product portfolio, deeper customer relationships, and our highest liquidity and net cash position to date, and we have also made good progress on our share buyback program. We are well-positioned to emerge from the current cycle ready to capitalize on the secular growth trends driving our business.

I will now turn the call over to Sanjay for concluding remarks.

Sanjay Mehrotra

Thank you, Dave. Fiscal 2019 has been a solid year of accomplishments for the New Micron, as we continue to focus on structural improvements across a range of functions in the Company, to take our performance to new heights. While we have made dramatic progress over the last couple of years, there is significant opportunity ahead of us to further improve our operations, drive product cost reductions, further improve engineering execution, build on our go-to-market strategy and initiatives, deepen customer engagements, and enhance the core competitiveness of the Company to best-in-class levels.

As we look ahead, the long-term opportunities are exciting, and we are extremely enthusiastic about the momentum we have established at the New Micron. On October 24th, we'll be hosting our Second Annual Micron Insight event, which will bring together leaders from across the industry to discuss how a world activated by data can transform the way we use information to enrich life and how memory and storage are vital to these efforts. We will be webcasting Micron Insight live from San Francisco, and I encourage you all to tune in.

We will now open for questions.

Question-and-Answer Session

Operator

[Operator Instructions] Our first question comes from Mark Delaney with Goldman Sachs.

Mark Delaney

Yes. Good afternoon, and thanks for taking the questions. So I'm going to talk a little bit about your customers' inventory levels. And one of the big concerns or debates in the financial community at the moment is whether the pickup in memory volumes that I think Micron seeing, is that mostly being driven by fundamentals? Or is it just potential inventory stocking because of some of the trade concerns?

And Sanjay, I think you maybe talked about a bit of both factors in your prepared comments and some potential inventory stock, but also inventory coming down in some important markets like data center. So maybe you can just kind of level set and put those things together and do you think the pickup in your business is it primarily been driven by fundamentals or how much of this is maybe some of that inventory stocking because of trade concerns? Thank you.

Sanjay Mehrotra

I think certainly the pickup in business is being driven by the industry fundamentals. I would just like to remind you that in the first half of calendar 2019 because of the inventory that the customers had built up the demand to the producers was low, yet the end market demand for all applications continue to be robust. And now as the customers have worked down their inventory to normal levels, the demand is coming back to the producers and as a result, you saw in our calendar – I mean fiscal Q4 results a strong growth in DRAM bit as well as NAND.

And second half is the demand is back – the customer demand is back. And yes, there maybe some level of inventory build in China, due to the reasons that I mentioned by certain customers. But I'll tell you that we do not think that that inventory build is anywhere close to the kind of inventory build that had gone on in the second half of last year, so no where materially close to that level.

So overall, the industry environment in terms of demand return is certainly solid. Certainly in DRAM, there is still some excess supply with the producers. But the inventory is improving fast; we talked about our inventory actually improving faster than would we perhaps anticipated some time ago and overall we even see some shortages in some leading-edge products particularly on the DRAM side.

So overall we think that industry, inventory at the producers is being consumed at a rapid clip. The demand trends are back to normal levels. And especially when you look at the trends of through next year 5G, you look at smartphone average capacity is continuing to increase both for NAND and DRAM, and cloud demand drivers continuing to be solid, new platforms, new CP architectures being used that allow greater use and higher use of DRAM capacities as well as AI applications driving more DRAM and NAND.

So the demand trends, when I look at 2020 I believe that the industry demand/supply environment will be in a lot healthier place. Yes, maybe calendar Q1 may have some cyclicality, but the industry fundamentals overall from demand/supply point of view, I think in 2020 will be in a much healthier place.

David Zinsner

Another way to look at this and kind of back it up mathematically is if you look at the year-over-year bit growth in the fourth quarter it's only in the kind of 14% kind of range. So that kind of backs up the idea that this is really about industry fundamentals, more so than it is about stocking inventory.

Operator

Thank you. Our next question comes from John Pitzer with Credit Suisse.

John Pitzer

Yes. Good afternoon, guys. Congratulations on the solid results given the macro uncertainty. I guess I have several questions, just around the guidance gross margins for the fiscal first quarter. If you look at the incremental, you think you're getting from IMFT that's more than offset by kind of the change in depreciation and yet you still kind of getting sort of a 400 basis point drop sequentially in gross margin on kind of flattish to up revenue.

And I know you guys don't comment about future pricing, but can you talk about other puts and takes around mix that might be negatively impacting kind of the gross margin and I guess given that the incremental cost of IMFT is probably driven by you taking receipt of

the whole joint venture in the month of November why wouldn't that hit get higher as you go into the fiscal second quarter and have it for the full quarter.

David Zinsner

Okay. So yes, let me kind of walk through a little bit of the puts and takes. Obviously pricing is a factor in the expectations around gross margins for the first fiscal quarter. And of course, we don't talk necessarily about forward pricing.

But the second piece is cost. And as Sanjay mentioned, our cost declines for fiscal 2020 in total will be kind of high-single digits that's lower than the cost declines we got in fiscal 2019 versus fiscal 2018.

And so we are seeing a slower rate of cost declines for DRAM, and that's of course something we've indicated was coming given the complexities that we face in as we migrate nodes. And as we talked about obviously on the NAND side, we're going to have very minimal cost declines as we kind of transition to replacement gate. So those are certainly factors in that, and I would tell you that the first quarter cost declines are very minimal.

The third piece is mix. If you look at the mix from just a move to high value solutions, that of course is positive, but what is overshadowing that is the mix of NAND and DRAM. And of course, NAND has a lower gross margin than DRAM. And we will see likely a higher mix of NAND next quarter which will affect gross margins negatively.

And then as you pointed out, there's two kind of unusual items I guess in the quarter. One is the change in the useful life of NAND equipment that will be positive, but more than half of that will be offset by underutilization expenses associated with IMFT. So those are kind of all the puts and takes of gross margins.

I think it's likely that it will be a little higher from Q1 to Q2 in terms of underutilization expenses, but it was somewhat in the noise. We might be a little bit lower than $150 million of underutilization expense in fiscal Q1, and we might be a little higher than that in fiscal Q2.

Operator

Thank you. Our next question comes from Mitch Steves with RBC.

Mitchell Steves

Hey, guys. Thanks for taking my question. I just wanted to kind of poke again on the gross margin question that's asked. But one of the bigger question I have is just with your commentary about pricing getting better, but then you're talking about gross margin is going down on a higher revenue base. So if you offset that with depreciation as well, I mean does that imply that November quarter should be the bottom for gross margins? Or are you guys implying that February could also be down sequentially?

David Zinsner

Well, I think clearly we're talking about NAND getting better. And we are seeing the early signs in DRAM of kind of the fundamentals getting better, demand is coming back, inventories on our balance sheet and the industry's balance sheets are coming down. Of course that hasn't gotten completely to where it needs to be.

And also as Sanjay mentioned in his prepared remarks, the market continues to be a bit competitive and so we'll have to see when that all those things come together and supply kind of aligns with demand to drive more healthy market or healthier market for DRAM.

Operator

Thank you. Our next question comes from Harlan Sur with JPM.

Harlan Sur

Good afternoon. Thank you for taking my question. On your fiscal 2020 DRAM outlook for high-single digits cost reductions versus fiscal 2019, is that how we should think about your longer-term annualized cost down profile given the higher complexity capital intensity that you are aligned? Or are there some impacts from the pullback in utilizations, drawdown of your own inventories and/or maybe a slower 1Z transition that's impacting the cost down profile as well?

David Zinsner

We definitely have some underutilization expenses in DRAM. Certainly we have that built into our expectations for the first fiscal quarter. It may last into the second fiscal quarter. And so that certainly is an impact, but I would tell you that over time as complexity of these nodes goes up and as capital intensity goes up, the cost declines are going to become more challenging. So the high single-digit will probably not be something we can routinely do year-to-year.

Sanjay Mehrotra

And I'll just add that we are certainly narrowing the cost gap in terms of DRAM production cost overall. 1Z node is a good example of Micron's leadership being the first one to introduce the 1Z node with the smallest feature size in the industry. And the result of cost improvements that we are making on DRAM as well as of course the high value solutions that are driving higher mix on the NAND side is a major improvement. 2,500 plus basis point improvement in our EBITDA margins versus the competition compared to the past 2016 timeframe.

Operator

Thank you. Our next question comes from Mark Newman with Bernstein.

Mark Newman

Hi. Thanks for taking my question. You talked about inventory down quite a bit Q-on-Q. You gave some numbers on that. Do you have a bit more breakdown on how that compares DRAM versus NAND?

And then looking forward to next-gen technology, you've obviously got – it's quite difficult to transition to the replacement gate to NAND. Can you give an update on the timing for that where you are on the 96 layers or where are your current generation [indiscernible] and where – can you give little bit details in the timing to the demand replacement there. Thanks very much.

Sanjay Mehrotra

So Dave will comment on your inventory part of the question, but let me just address your question on the 96-layers. As we had said before, 96-layer execution has gone very well with the Company in terms of yield ramp. 96-layer technology has given us the fastest yield ramp of any other NAND technologies in the past. So we are very proud of that accomplishment and 96-layer is continuing to ramp during the course of our fiscal year 2020. In fact, 96-layer will be the major driver of our NAND bit growth in fiscal year 2020.

As I mentioned in my prepared remarks, with respect to replacement gate, we have seen now functionality and yielding dies. We are certainly quite encouraged by that and continue to work on technology and product development. In fiscal year 2020, 64-layer and 96-layer will continue to be the workhorse technologies and our replacement gate technology of course will have a small mix in fiscal year 2020 for us as well.

Keep in mind, our first replacement gate node, which will have small production in fiscal year 2020 will be a rather limited node because we'll be deploying it across select set of products. It's our second generation node, which will of course come in the subsequent fiscal year that will give us – position us well and resume the year-over-year strong cost reductions for us. But basically the 96-layer will continue to ramp during fiscal year 2020 for us.

David Zinsner

Okay. So on the inventory question, if you – so we had 143 days of inventory in the third quarter that came down to 131 days in the fourth fiscal quarter. If you kind of break that out between DRAM and NAND, DRAM was meaningfully below that and NAND was meaningfully above that. I would say in terms of days, obviously in absolute dollars, DRAM has more inventory than NAND.

I would say that was – you got to remember there are two reasons why inventory was building for NAND. It was building as we kind of slowed down our supply, but customers were working down their inventory. Now the adjustments we've made to our supply both in terms of capital spending reductions and in terms of utilization adjustments, we have brought our inventory down pretty meaningfully this quarter. We expect to bring it down again meaningfully next quarter.

On the NAND side, we have elevated levels of inventory, but that's more strategic. What we're trying to do is, have some built up inventory in fiscal 2019 that we can use in fiscal 2020 to support the RG transition because the replacement gate transition will not drive a lot of bit growth. And so in order to support the increased demand next year, we will have to utilize this inventory for that purpose.

Operator

Thank you. Our next question comes from C.J. Muse with Evercore.

C.J. Muse

Yes. Good afternoon. Thanks for taking the question. I just want to hit on your commentary around DRAM and on the ongoing industry in calendar 2019. Within that, is that largely driven by Huawei, perhaps more aggressive competitors in certain markets, change in mix? I love to hear your thoughts on that. And then as we move into calendar 2020, what are your expectations vis-à-vis the market – for your market share? Thank you.

Sanjay Mehrotra

So in terms of overall bits, with respect to DRAM growth in terms of revenue, I mean it has primarily been impacted by the customer inventories that were built up last year for the first half. And our overall DRAM shipments are in line with overall, the industry, in this regard.

And I think what we said is that the industry demand mid-teens and our overall supply growth during the calendar 2019 to be slightly below the industry of course as a result of some of the underutilization actions that we have taken.

And of course, there is an impact of Huawei in terms of our overall business. We had said before that compared to the levels that we anticipated before Huawei's placement on the Entity Listing, our revenue is lower. And of course, we are very much focused on continuing to diversify our revenue base. But yes, I mean, the Huawei Entity Listing does have an effect on some of our shipments to the customer. I mean, some of our overall shipments in the market.

Operator

Thank you. Our next question comes from Raji Gill with Needham & Co.

Rajvindra Gill

Yes. Thanks for taking my questions. You had mentioned that you did see some elevated inventory levels in the lower process nodes. I was wondering if you could kind of elaborate on that particular comment.

Sanjay Mehrotra

This is really related to some of our overall production and mix and if some of the older nodes have lower demand compared to our total supply available, and therefore that's where we are primarily running underutilization on the DRAM side. So it really is about the overall demand and this is good inventory that overall will get consumed over time.

Operator

Thank you. Our next question comes from Aaron Rakers with Wells Fargo.

Aaron Rakers

Yes. Thanks for taking the questions. I was wondering if you could help me parse out the CapEx guidance a little bit more in detail. I know last quarter relative to the $9.1 billion you did for the full-year, you talked about roughly $2 billion for kind of cleanroom and facility kind of CapEx. Was that the case? And I think on the basis of that, what is that kind of CapEx spend specifically embedded into your fiscal 2020 guidance?

David Zinsner

Yes. It was a little bit lower than the $2 billion number, but certainly a meaningful part of our spend. And you could probably parse out from what Sanjay said. We expect that number to increase in fiscal 2020, and the opposite is we expect the front-end equipment spend to decrease in fiscal 2020 versus fiscal 2019. We also – we'll obviously make another investment in the back-end and we're expecting that to be roughly similar to what we're spending and what would be spent in fiscal 2019.

Operator

Thank you. Our next question comes from Vijay Rakesh with Mizuho.

Vijay Rakesh

Yes. Hi, guys. Just wondering on the same CapEx line, I know you guys talked about equipment CapEx being down 30%, so it looks like close to $5 billion for fiscal 2020. Just wondering what the spit could be on NAND and DRAM? Thanks.

David Zinsner

We don't tend to break that out. But I guess I would just tell you that our plan is to reduce front-end equipment spend in both DRAM and NAND next year.

Operator

Thank you. And our next question comes from Mehdi Hosseini with SIG.

Mehdi Hosseini

Yes. Thank you for taking my question. Two follow-ups. We talked about the demand trends are positive, but I want to get a better assessment of how do you see data centers. There has been some conversation in industry that data center demand is seasonal. Some argue that it is better than seasonal.

And Sanjay, I want to get your view, how do you see the data center demand for both SSDs and DRAM is tracking. And in that context, I'm surprised with your NAND bit demand projection for next year. This is well below a historical trend of near 40%. What do you attribute this NAND demand trend into 2020, which in my opinion is well below a trend line?

Sanjay Mehrotra

So with respect to the NAND demand trend in calendar year 2020, I mean, just keep in mind that in calendar 2018 the industry grew by approximately 45%, in calendar year 2019, again, by about 45% or so, low 40s to 45%. And that, then definitely, I mean, when

you look at a multiyear CAGR, I think, it does lead to calendar year 2020 to be approximately in low-30s or in that range, high-20s to low-30s kind of range in terms of calendar year 2020.

And I think what you have to realize is that with such aggressive pricing decline that had occurred in NAND over 2018 and 2019 timeframe, elasticity definitely has kicked in substantially, and as we said, pricing environment actually has started improving in NAND.

And some of the average capacity growth that you perhaps would have seen, next year actually has been pulled in faster into this year as a result of some of these aggressive price declines that have occurred and have driven the usage of higher capacities in terms of increasing average capacities of SSDs, increasing the attach rate of SSDs, as well as continuing to drive higher average capacities in the smartphone market as well.

So these are some of the factors that are absolutely playing an important role in terms of our assessment that for calendar year 2020 the year-over-year bit growth will be high-20s to low-30s range. Again, keep in mind that we still are few months away from next calendar year and we, of course, will continue to assess the overall industry demand trend, but this is our latest projection on that.

Your first question was around cloud, and let me just point out that, cloud definitely demand grew nicely for us on the DRAM side in FQ4. Strong demand increases. And yes, the cloud demand from time-to-time can be somewhat lumpy. However, overall demand growth trends on the cloud side continue to be solid.

In fact, we see cloud demand consumption both for DRAM as well as for SSDs continue to be higher than the average of the respective DRAM and the NAND industries. So overall, cloud again, new architectures, new CPU platforms that are really enabling more channels, as well as usage of higher density of DRAMs, as well as again, as I spoke earlier, the trend of AI applications all of this is driving greater usage of memory and storage in cloud.

So cloud, we see as absolutely strong. Cloud customers inventories have normalized and it's back to normal levels. Other than any aspects perhaps in China, as I talked about, of maybe some element of strategic inventory build by certain customers. But overall the

cloud demand trends are solid.

Operator

Thank you. Our next question will come from Ambrish Srivastava with BMO.

Ambrish Srivastava

Hi. Thank you. I just wanted to get back to NAND for fiscal 2020, and I just wanted to reconcile the comments you've made, and wanted to make sure I'm walking away with the right takeaway, is that you have limited cost down. And then you also talked about very low gross margin and then you're also selling from already built inventory. So what's the tradeoff between all these factors as I compare your profitability in NAND versus competition in fiscal 2020?

Sanjay Mehrotra

So I think in fiscal 2020 the main focus for us on NAND will be to continue to increase the mix of high value solutions. I think in mobile, you have seen us increase managed NAND solutions in terms of share gains substantially. And I've reported in my prepared remarks on the tremendous progress that we have made with our mobile business, and most of it is driven by the progress on the managed NAND side and we plan to continue to increase that part of the business in fiscal year 2020.

I also spoke about SSDs, SSD was certainly a headwind in terms of share opportunities for us in fiscal year 2019. And as we now have expanded our portfolio of NVMe solutions actually have introduced our first NVMe solutions during fiscal year 2019. Now we can leverage those solutions to expand our opportunities in fiscal year 2020 and we certainly look forward to gaining share and assuming gaining share in SSD on fiscal year 2020.

So I think those are important pieces of our strategy of continuing to drive healthier revenue mix of NAND in fiscal year 2020. And of course, we are extremely focused on cost reductions on assembly, test and non-memory [bound] as well which are important factors particularly when it comes to products like SSDs or Multichip Packages, et cetera.

And we're making good progress on cost reductions on non-memory part of the [bound] as well. So these are all opportunities for us in fiscal year 2020. But no questions that at the die levels, our cost reduction capabilities will be overall limited in terms of the cost reductions due to the RG transition that we talked about earlier.

Operator

Thank you. And our final question will come from Joe Moore with Morgan Stanley. Mr. Moore, your line is open.

Joseph Moore

Yes. Hi, can you hear me?

Sanjay Mehrotra

Yes.

Joseph Moore

Yes. I wonder if you could talk about your forecasted demand will accelerate next year on the DRAM side, can you kind of break that down between units and content and just generally, what's your expectation for DRAM content per smartphones and service next year?

Sanjay Mehrotra

I think on the smartphone side, the average DRAM content if you look at it this year, it increased by nearly 25%, slightly above three was the average – 3 gigabyte was the average capacity last year, expected to be in calendar year 2019 around 4.

And pretty similar double-digit gains continuing. 5G, if you look at Mobile World Congress, phones that were introduced there were 8 gigabyte and 12 gigabyte DRAM density in those phones. So as 5G phones start selling in the marketplace, some of those phones are already introduced in the market today in some parts of the world and this will continue to build momentum during calendar year 2020 and years beyond. Those phones will also require more DRAM.

And again the phones are becoming more and more feature-rich, more AI applications are being built into the smartphones today and rich video and imaging capability and lot more intelligence behind all those applications, they require more DRAM as well.

So looking at next year, we will certainly be seeing continuing average capacity increases next year as well. In fact, in calendar year 2020, if you look at industry projections, average capacity is expected to increase another 20% next year going to something closer to 5 gigabyte per smartphone.

But as I said before, the DRAM is not only about smartphone, its other applications related to server as well where the average content continues to increase, as well as the average content continues to increase in PCs as well with the applications such as gaming, driving higher need for more DRAM.

Operator

Thank you. Ladies and gentlemen, this concludes today's conference call. Thank you for participating. You may now all disconnect.