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Vishay Intertechnology Inc Investor Day

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PRESENTATION

Peter G. Henrici *Vishay Intertechnology, Inc. - Executive VP of Corporate Development & Corporate Secretary*

Thank you for attending our first ever Analyst Day. And welcome to Vishay 3.0. I will just read -- One second, sorry. So this one.

Okay. Sorry about the glitch. I prefer to read the text to go with the forward-looking statements. Comments in the following presentations other than statements of historical facts may constitute forward-looking statements. Such statements are based on current expectations only and are subject to certain risks, uncertainties and assumptions, many of which are beyond our control.

Please refer to the slide and our filings with the SEC for more information about these risks. The following presentations also include non-GAAP financial measures. Again, please refer to this slide for more information about these non-GAAP measures, thank you.

And now we'd like to open with a short introductory video on the New Vishay. Thank you.

(presentation)

Joel Smejkal *Vishay Intertechnology, Inc. - President, CEO & Director*

Welcome. Nice to see you all. Welcome to the New Vishay. We call it Vishay 3.0. We're changing the company. We're doing a lot of new things in the first year, 1.5 years of this new leadership team. We're excited to see all of you here today, excited to present to you our business plan. Where are we going to take the company in the next 5 years? That's what you'll see throughout the session today.

The opening video, the one that was rolling earlier shows the breadth of our customer base, the breadth of the applications that we support and our strategy inside this 5-year plan, is to be able to participate at a greater rate in all of those market segments and applications that you've seen. We're changing the company. You've heard a lot, if you listened to our earnings calls, we're changing the company. We're a 180-degree difference from how the company operated 2 years ago.

We're driving a customer philosophy, think customer first. There's an intensity in the organization. There is excitement. There's new energy and every conversation with our employees about -- is about think customer first. We're driving a business-minded approach to how we run the business. Previously, we were very operationally focused, and we're driving a business-minded focus. So reshaping the company is quite important, but then we also talk about what matters in the end is revenue growth and profitable revenue growth, enhancing our margins.

So this is quite important to us, and it's 2 levers that we speak about in every business decision, growth of revenue and profitability. I refer to Vishay often as a well-funded startup, the New Vishay. I think it's important to think of us that way, because we're looking at every opportunity. We understand the business quite closely in this new leadership team, and we're looking at every business opportunity like a startup would. We want to grow at a greater rate, and you'll see that through our plan today. We've got a new executive team. I'd like to introduce the team. I'm very excited about this team.

This team brings a lot of experience, a lot of talent, and they're quite aggressive. They also are willing to take a calculated risk. And that's part of growing the company is willing to take a calculated risk. So this team of leaders, myself, you've heard me on calls, 33 years with the company, different experiences. I've had engineering roles, I've had marketing sales responsibilities, operational P&L, business development. I've seen the company from inside and out. When I was in my sales role, this helped me see Vishay from the outside looking in and how we could better perform.

Jeff Webster. Jeff is here today, Jeff our Chief Operating Officer. Jeff will be presenting the operational strategy and the manufacturing capacities. Jeff has 24 years with the company, quality in his background, very strong quality person, operations, P&L, IEHS and marketing. Dave McConnell, Dave McConnell is our new Chief Financial Officer. Dave has been 32 years of service in many different roles, he's Treasurer. He's an audit. He's an operational finance. He understands the company quite well from the numbers perspective.

Roy Shoshani, 20 years of service with the company, Roy came from our semiconductor side of the business. He developed the IC business in Vishay from the ground up, and it was quite successful. Roy is also operational P&L experience. M&A. Roy has been quite involved in the Newport acquisition. He led this as well as the MaxPower. He led that acquisition. Michael Sullivan, a new position that we created. He is the Chief Administrative and Legal Officer. Mike's got 12 years in the company, legal, compliance, ESG, EHS. And Peter Henrici, 26 years of service with the company, marketing communications, internal communications, Corporate Secretary and a number of different roles.

I show you this, but I want to also make a comment. Even though you see decades of responsibility, decades of experience in the company, these are all seasoned individuals who have had success inside the company in their responsibility. I've heard some people say a lot of the people are promoted from within. There's quite aggressive people which are inside of Vishay. And they're going to show you the plan of growth today. And I think you'll appreciate the difference in what you may have seen in the past, the mindset towards growth and where we're going to go collectively as a team.

This leadership team is driving change. They're driving this change in the company. We talked about Vishay. Maybe the left is Vishay 2.0 and the right is 3.0. We were a company that was very operationally minded, we had to set capacity and often, we were sold out. We were on allocation a number of times in the last 2 upcycles and unable to take on a greater rate of business. We had to choose customers. And we're moving more now in Vishay 3.0 to a customer focus, a market focus to really understand where the business is going and prepare for it. We were a company that concentrated on cash flow, and we're moving to a P&L mindset where we're running this business on profit and loss decisions, product technology by technology, manufacturing location by location to drive greater outcomes financially.

Fulfilling orders. We took orders, we built product and we shipped product. We're about now anticipating customer need with a lot of my experience in front of the customer, a lot of travels in front of the customer. If we are there to scale, the customer will share their forward plans. They'll share a 2-year plan, a 3-year plan of demand. And we want to learn that. We want to have that information, and we want to incorporate that into our growth plans for the company.

The agenda we have today, I'm doing the opening. Jeff Webster will step up and talk to you about manufacturing, the capacity expansion plans, channel management. I'll come back and talk to you about how we're engaging the different channels of the business.

We'll take the Q&A session after that for Jeff and I, our portions of the presentation, then we'll have a short break. Silicon carbide strategy, Roy will speak about how we're moving fast now after the acquisition of Newport. Product development, Roy will talk about development plans and talk about solution selling, the applications that we talk about to showcase Vishay.

Financial targets, Dave McConnell, our new CFO, for 30 days now. He'll have the opportunity to present the financials. Capital allocation will be discussed. We'll have closing remarks, and then we'll have another Q&A session.

So let's talk a bit about the company. We're the broadest manufacturer of semiconductor -- discrete semiconductors to passive components. There's no other supplier that matches the portfolio of Vishay. So I know from your perspective, it's hard to gauge someone. It's hard to gauge Vishay against someone, you gauge us against a semiconductor company or maybe a passive company, but we're a little bit unique. We have this product differentiation, and we need to leverage it with our customers. This is a promotional aspect of our

business for growth. We have the lowest voltage diodes all the way to the highest energy capacitors -- high-energy capacitors are quite large. They're as big as file cabinets in your office that are used in electrical distribution systems.

We really strive here in power applications, and this is a new promotion we put together at Electronica. We can populate 80% of the electronic components on a circuit board, 80%. There's no other supplier that can do that. So this is a focus for our sales force, our marketing people, our business development people, go populate the Board we'll have the capacity to support what you do design in, and we're giving the assurance to the customer that we'll be there when they scale.

Customers. We've got OEM customers, we've got EMS customers, and we've got distribution trusted by customers. The strategic accounts, we often talk about, these are the top accounts, but there's thousands of Vishay customers as we go through distribution. The left side here is automotive. You see many big names from Conti to Bosch to Hyundai, BYD. There's the automotive customer base just a sampling of it. The far right side is many big industrial names. Honeywell, Siemens, ABB, GE, all strong customers for Vishay. In the lower middle here, you see just a sampling of military accounts. You see Raytheon, BAE and Northrop Grumman, but there's others. You see computer companies, Asus, GIGABYTE, NVIDIA. These are customers where now with this capacity growth plan, we will have the ability to go engage where previously the capacities went to automotive, industrial, military, medical, we didn't have the capacities to go and focus on some of these.

So these are the others when you see our market segment charts, the Nokias, the Ericssons, designing in Vishay, but we didn't formally have the capacity to support their demand. So these are opportunities for us to grow. A broad customer base we're quite proud of. The EMS, you see the big names here, the JABIL, the Flex, the SANMINAS. They're all strong users of Vishay, and I'll talk about those later in the channel management about our strategy to provide more to them and distribution.

We've got a broad list of distributors. Here's just a sample. We've got global distributors. We've got catalog distributors that support us quite well. And we have regional distributors. It could be regional distributors in China, in India, where it's a different type of business approach. So we've had to add some local VARs, value-added resellers or distributors. So what are the customers saying about us? I travel a lot to customers. Every week, I'm on the road somewhere because I feel it's very important to be engaged in what the customer is looking for from us. And the key statement across the top is the common theme. The customer wants more from Vishay. So here's a few testimonials from different customer segments. This happens to be catalog distribution, Vishay does not rely on existing technology, the New Vishay focuses on developing innovative solutions to fit the changing technical challenges.

Vishay's level of customer engagement and support is best-in-class. That's from the leader of Mouser, Honeywell. Vishay's wide product offering has added value, take the business relationship to the next level as both the organizations align on new technology road maps. This is what I was speaking about. We want to hear what the customer is going to do in year 2 and year 3, not just next year. JABIL, from the Chief Procurement Officer, Vishay is laser focused and determined to ensure that there is a continued smart investment strategy that will allow customers to have peace of mind around continuity of supply. Operational excellence as well as product technology continues to be a differentiator for Vishay. And the last one is Bosch. Vishay has a good understanding of our needs and aspirations, aligning their expertise to support customers on strategic vision.

A commitment to innovation. They're very excited about what we're doing with silicon carbide. Vishay is characterized by a focus of strategic collaboration which has been proven by the capacity expansion through the acquisition of Newport or the construction of the new fab in Itzehoe and demonstrates Vishay's strong commitment to new business and customer focus. This is the type of feedback we're getting from the customers. They're excited about what we're doing.

Now we have a job to do as the leadership team. We need to scale our capacity and have proper service to be able to support the customer. We talk a little bit about 2023, just to give you an idea of the baseline that we're referencing. This is about serving channels, as well as the markets. When we start at 12:00, and we move clockwise around the donut, 53% of our business is distribution, 7% is EMS and 40% is those OEMs, the strategic account program plus some military customers or medical customers that want to buy direct from Vishay.

End markets, starting at the top, 37% is industrial. This is robotics. This is industrial automation. This is the renewable energy, the solar,

the wind, the new electrical grid transformation systems that are coming. There's a lot of industrial Vishay here, power supplies. Automotive. Automotive, everything. It could be the internal combustion engine. It could be the hybrid vehicle. It can be the electric vehicle, Vishay's breadth of components is supporting at all. It may be in body electronics on the car. It could be in entertainment, infotainment, it can be in traction controls, security systems, Vishay's selling a broad portfolio inside the car.

Aerospace defense, Aerospace Defense Vishay is the largest holder of the military QPL, qualified parts list for the passives. Resistors were on #1, capacitors were #1 in military components. So any time there's a military requirement in a rocket, in a drone, any type of high military systems, we're the supplier and there's significant military growth coming with what's happening in the world with the last 2 wars.

Medical, it's a small piece of the pie, but medical is here because it represents the quality levels of Vishay. We want to grow at a greater rate in medical. We're doing some things to increase that. I'll show you that later in a slide. And then we've got others. And others is what I was speaking about the telecom, the AI and computing, the consumer, high-end televisions. These are the type of markets where we would participate, not chasing the low-end consumer, but more where the technology differentiation is needed in key applications, having the capacity and you hear about the \$1.2 billion CapEx that I mentioned in the very first call, this is important to bring Vishay's capacity up to a level where we can support this entire market segment and not just be focused on 4 slices, we're going to focus on the market in its entirety.

We talk about regions, the sales of Vishay, 37% are Asia, 26% the Americas and 37% in Europe. This is 2023. We foresee the Americas growing. We know what's happening with on-shoring, near-shoring things are moving out of China and companies are coming to Mexico. So we're talking to a lot of companies that are looking for that regional supply of product.

Hence, you heard about the La Laguna factory in Durango, Mexico area. Jeff will talk about that as well as an expansion in Juarez. Customers are looking for product to be manufactured close to where they're going to consume. The product types 47% of Vishay, we refer to as certified products. What is certified? I mean these are automotive certified, AEC-Q200. These are military-certified products, these are UL-approved products, if it's our Opto devices. This could also be FDA-approved type of products.

So they have some level of certification or higher level quality versus a standard commodity product. The next section here is custom, 31% of Vishay's business is custom. These are typically one-to-one of Vishay design product for a specific customer. They may have needed a different packaging. It may require a heat sinking. It may have longer leads on 1 side versus another, if it's a thermistor or a sensor. It could be a medical product for an implantable pacemaker. It's a custom device. Then finally, we get to the commodity, the commodity is 22% of Vishay. As I've traveled and talked to some people, they say, we think Vishay is a commodity company. The reason Vishay hasn't been investing is they're concerned about other commodity suppliers just having significant capacity where Vishay can't catch up. I said that's not the story.

The story is we're a technology company. We are a certified company. We are a custom company. We're engaging customer engineers. They would like to buy a data sheet product first. The engineers would naturally like to choose a standard data sheet product. But when you get into the technology discussion, they're often looking for better. They're looking for better performance. And that's why you see almost 80% of Vishay is certified or custom.

So let's talk about a couple of applications. This happens to be automotive. This is the 800-volt battery electric vehicle power application. We all know the car was a 12-volt car, then it moved to 48-volt and 400-volt is out there now, and engineers are designing for 800 -- 800-volt systems. What are they after? Their after, faster charge time and longer range, everybody hears it. If the EV is really going to accelerate, it's got to be convenient for the consumer.

So we show you this real quick because there's 4 main applications inside the EV. There's the main inverter, there's the onboard charger. There's the high-voltage battery and there's this suspension control, active suspension control. What's important to show here is in red are the passive components that we can supply, and you see many inductors, capacitors, resistors and in blue are the semiconductor products.

Roy will talk about this diversity when he gets into the product development side of the business, onboard charger same thing. You've got MOSFETs, you've got diodes, you've got TVS high -- voltage protection devices. There's many different capacitors required in the onboard charger, resistors and also thermistors. In the high-voltage battery, similar, a different mix of semiconductors, diodes and MOSFETs, also optical devices, the Opto product and then the suspension the same thing. This is the breadth of Vishay. And this is where I speak about selling more products to the customer. We shouldn't just be selling a resistor to a customer or only inductors to a customer.

We sell the Vishay portfolio. to the customer, and we designed it in. We talked about sustainability. This is a little city we built. And let's start with energy collection, energy generation. So you've got solar here. Solar panels, the inverters that require the breadth of Vishay semiconductors. You see MOSFETs, diode and Opto product as well as resistors and inductors and capacitors in the inverter. If we step over here to wind power, another energy generator and collector MOSFETs, diodes, capacitors and resistors.

We've got to transmit that energy, so we'll talk about the transmission lines, a lot of very large high-energy capacitors here. The Siemens, the Schneiders, the ABBs, the Hitachis, those are customers that we're engaged with or talking about the grid, the new design of grid systems. Then you get into energy storage, again heavy capacitors, resistors and semiconductors to help with the control systems. And finally, what we all know out in our world is charging stations. There'll be more charging stations. You got to have a way to offer the power to the user, and you see many Vishay devices there. This is our company. And this is what's exciting about Vishay is the breadth of technology from semis to passives when our engineers or our sales teams sit with a customer. We have a big toolbox and we're going to have the capacity to support the customer.

Every customer I speak to had issues with assurance of supply over the last 2 up cycles. So they want to engage a supplier who has the ability to scale and this is our message. We have technology. We're going to have print position. We're going to be in the up-and-coming applications. We're going to continue to innovate because we're talking to the engineer. But we're also going to have the capacity to scale. So the purchasing and the commodity teams feel confident about the direction we're going.

So we got levers. We talk about levers often inside the company. Each leader has levers they can pull. When I talk about Vishay historically, there's a market out there. The market is left to right. It's a big market. We served a very narrow portion of the market. We had limited capacity. We had a lot of technology. We designed across the market, but we serve a narrow portion, often sold out. So we have levers. We have 8 levers we can pull. Invest in internal capacity expansion, \$1.2 billion of CapEx over 3 years. And now with Newport, we're adding another \$200 million.

So it's going to be \$1.4 billion over the 3 years. Jeff will give you some insight into what that looks like afterwards out to 2028, but we're going to invest. We need to invest to catch up because the customers, again, the customers want more from Vishay. So internal capacity is one, external capacity is another. We are qualifying a number of commodity products, commercial products with outside sources for passives with third-party by resellers, contract manufacturers.

So we can free up Vishay capacity for that pie chart where at the donut, where I showed you the certified and the custom, we need to have attractive lead times. So we're going to move some of the commodity devices to an outside source. It's going to be the Vishay recipe. It's qualified. The customer is going to get the same level of performance in that commodity. We're just going to be able to have flexible capacity, whether inside or out. Optimizing the global manufacturing footprint, in a lot of my travels customers a couple of years ago, said, Joel, we know we told you globalization for the last 20 years, forget it. It's regionalization now. You got to be where we buy. We need faster service.

So when you look at the Vishay's manufacturing footprint, Jeff will talk a little bit about it. We are a company that's quite regionalized in the manufacture of products supporting the customer, increasing technical head count. We've got this breadth of product. The engineers want help. They want solutions. They want reference designs. They want engineers which can coach them and guide them on new technologies. We're adding the engineers to be able to do this, to engage the customer and design in to reach that 80% of the bill of materials.

Enhanced channel management. This is about having capacity for OEM, not just a strategic account, but all the OEMs that are interested in Vishay. The EMS, we had to allocate over the last 2 upturns to EMS. We don't want to allocate. If we've won the bill of material position

we want to support it with volume. And then finally, with the distributors, whether it's catalog or the mainline distributors, you've heard me talk about SKU counts, adding SKUs, adding part numbers where previously we couldn't add those part numbers because we didn't have the capacity to support. I'll speak about that in channel management as well. Innovation, how do we get innovation? Well, the engineers are sitting with the customer engineers and they're talking about the portfolio of Vishay and now the next new need of a product when it's needed in 2 years out or 3 years out as spoken about.

This then comes back to our R&D team and Roy leads that to decide do we put the resources to R&D that product together? Do we get into maybe a joint venture with someone? Do we make an acquisition? So this is a trigger. This is information gathering to make a business decision with innovation. Solutions as we're sitting with the engineer and we're able to populate 80% of the products on the board, let's start talking about solutions, and we're doing this. We've released a number of solutions Roy will share where the customer can quickly see, here's a potential reference design from Vishay. Here's the controller with all the Vishay products on it. Maybe the engineer he chooses to use it. Maybe he decides to modify a few of the parts on there because he wants a little different performance. But we're coming to the customer to help the engineer move forward fast. And the last 1 is M&A.

So these are the 8 levers. And if we get these 8 levers move, but we're now supporting the whole market on top to be able to broaden our portfolio and be truly a valued supplier at the customer where they say Vishay's first because of all of these levers that are being pulled plus the engineering talent and the customer feels quite different about our company versus how they did in the past. So as a snapshot of 2028. We did a 5-year plan. We had a 3-year plan originally, and we had the movement with MaxPower and Newport and we said that's not going to show the message of what's going to happen with Newport, buying a fab, getting the equipment landed and then qualified. It's going to take some time.

So we've got a 2023 revenue of USD 3.4 billion. Our CAGR is going to be 9% to 11% out to 2028 with those levers that I talked about with the customer engagement that we have. The gross margin in 2023 finished at 28.6%. We're going to be in the range of 31% to 33%. What you're going to see here when Dave McConnell speaks, we're investing and then there's depreciation. So you're going to see how the depreciation falls in 2027 and 2028.

We naturally want to move above this number. We do, that's our strategy. But because of the intense spending in the years '24 and '25 with the fab in Itzehoe as well in '26, you're going to see how the depreciation rolls out, which impacts gross margin. Operating margin, 14.3% in 2023, we want to be in the range of 19% to 20% -- 21% or higher. Adjusted EBITDA, 19.5% we want to be in the 25% to 27%. That's our target for this 5-year plan. Return on invested capital, 11.2%, greater than 14% out in 2028 and the capital intensity, this is going to have some flow to it. We're investing heavy now. And we know why we're investing because the customer wants more and we have the technology. So we're at 9.7% of sales.

You're going to see this in Jeff's slide how it moves. And when we get out to 2028, we're going to have capacities, we're going to have a lower capacity intensity of 6% to 7%.

So we're now going to shift to Jeff. Jeff is going to speak about manufacturing and our capacity expansion plans.

Jeffrey Allen Webster *Vishay Intertechnology, Inc. - COO & Executive VP*

Good morning. Nice to have you here in our Investor Day, our first ever. I think you heard that once or twice before. So I've been -- Joel mentioned it. I've been here with Vishay for 24 years in different roles, but 1 of my longer-term roles was in corporate quality. And in that role, I was responsible to drive the quality program to get those -- the medical level, the automotive level, the aerospace level. And so what we had to do at the time is we had to come up with a strong program and execute on that program. I am now tasked to do the same thing in operations. And this is my passion, come up with a plan and execute on the plan. So this is what we're going to talk about. There's 5 things that we're going to do to transform us from the Vishay 2.0 to 3.0, which just as a reminder, is customer first, growth-oriented and watching the P&L, that's specifically for me.

Okay. So here's the 5 elements that I want to talk about. And when I talk about these 5 elements, I'm going to always refer to where we were, where we are to where we are going. Now we've heard capacity, of course, a lot here and it's true. Joel has mentioned it. We have great products. We have what the customer wanted. But we weren't able to deliver to give to them what they wanted because there was

just a small upturn in the business cycle and we quickly became full.

We used this dread word called allocation. Joel talked about that market. When you're on allocation, you shrink it. You give your product to only a certain select few of customers, although many more want it. So our focus now is to move to what's called capacity ready. We're going to make significant investments to be capacity ready. And it's going to be smart investments. You heard the testimonial about the customer, making smart investments. We're using market intelligence, from the visits of Joel, of Roy, of our sales team, of our FAEs to understand what the long-term road maps are from our customers so that we are investing in the right products and technologies. This allows us to be ready, not only for a normal business cycle, but for an up cycle as well.

I'll get into more detail about what the investment it looks like over the years and what our goal is in the end. The other is the customer first element of it. So we were a very manufacturing-focused company in the past. When the internal metrics were looking okay, we are happy. But we created situations that we had lead times greater than 1 year, sometimes 2 years. So you can imagine a customer wants to come and buy product from us and we tell them okay? It will be ready in 52 weeks from now. This is gone. We're moving away from that. And our goal is that even in an up cycle that we are going to have competitive lead times.

The next element I want to talk about is the global footprint. So Vishay was a company that has grown through acquisitions. When we had those acquisitions, obviously, we received facilities as well. But we kept those facilities the same. Typically, there were smaller facilities, single-line product facilities, and they became siloed. So now we're looking at optimizing our global footprint. And we're looking at it from 2 perspectives. #1 is to have larger, more efficient facilities, campus-like structures, as we call it internally, that are going to service multiple product lines. #2 is that we're going to have regionally diverse facilities, localizations because our customers want product from us from specific areas.

So we're going to accomplish that both in this area. #4, as Joel has talked about, is external production. I mentioned it once before. We are a manufacturing company. We wanted to do almost everything internal. But we need to grow now. And so we are looking more and more at external partners. This is going to help us 3 ways: One is it going to help us add capacity with little or no capital. #2 is it's going to bring new products that maybe we haven't produced before because they are commodity-based type elements or products. And #3, especially for those commodity items because they have scale, we'll be able to get products at cheaper than we can manufacture them. And finally, profitability, our past, we always talked about maximizing utilization independent of what product it was.

Now we're looking at and managing the product portfolio. And I'll have a separate slide on that to talk about some of the things, how we categorize our products and some of the activities we're going to do with those specific products. Okay. So investments. Joe has mentioned that we are going to initially invest \$1.2 billion. That has now moved to \$1.4 billion because we have acquired Newport, and we're going to use that money to be able to build our most advanced MOSFETs and prepare for the silicon carbide. But a little history. So in the past, if we look from 2017 to 2020, we are investing at a rate of 5% to 8% when we talk about capital intensity. This was not enough to get enough capacity to satisfy our customers.

So now we are in a catch-up phase, and we're going to be looking at spending between 9% to 15% out to 2025. After which, we're going to decrease it down to a more normal and sustainable level. Now you look and say, okay, you're going to be at maybe 5% to 7%, aren't you going to get back into the same situation you did before? And the answer is no for 2 reasons. One is in this capacity investment that we're going to be doing here, we're going to have extra capacity. We are also going to be setting the structure up so that any incremental investment that we have to do is going to be less than during this period.

In addition, we are going to be bringing more external partners on to help supplement the capacity that we need. So if you look at this time frame from '23 to '28, we're going to actually invest \$2.6 billion, 70% of that is going to be in capacity expansion, and it's going to be focused on our growth products. And our ultimate goal here is 2. We want to run our growth lines at 80% utilization. With that 80% utilization as the market increases, if we get an upturn, we're going to be able to support that market. Just with normal capacity. And then on top of that, if it's a very hot market, we have the ability, obviously, to do over time, work weekend shifts and these other type of things. The other and to keep the customer first attitude is that we're going to do it with competitive lead times. We don't want to go back to the situation where we built strong relationships with customers, and they come to us and say, "I'm ready to place a lot of order, and we say, you have to wait 52 weeks. This is what we want to get away from.

So let's talk a little bit about the footprint. There are 7 locations up on this map. I'm going to talk about 4 of them specifically, and we're going to show you videos of the 4 specifically. But I'll highlight this green one, as well. I think early on, I got a question about back-end semiconductor facilities. There is a program to locate our next back-end semiconductor facility in Southeast Asia that's going to support all of our semiconductor lines. So we're in the final process of selecting the sites and we'll be able to provide some more updates in the next few investor calls in that area.

So today, I'm going to talk about Newport in Wales, U.K. Itzehoe, Germany, La Laguna, Mexico and Juarez, Mexico. Turnin and Taipei, or 2 diode facilities that Joel has talked about on the investor calls, they're expanding to 8-inch products, and we'll give more information later in the future on those. So Newport. Newport is the recent acquisition we have done. We just closed it in this quarter in Q1. It's located in Wales, as I mentioned, it's a fab that has a square meters of almost 3,700 square meters.

It has the capacity of about 30,000 wafers per month. We've primarily purchased this facility to be the location that we're going to make our silicon carbide and GaN product. So there's going to take some time where we'll have a timeline of how we're going to develop that and how it's going to come out. So short term, we are going to fill this with our MOSFET products, some Opto products and some thin film products as well. You'll see that our first commercial products will come out in Q4 and then moving to automotive in Q1 of 2025.

So it's important to note that this was obviously a facility being run by a different company. The utilization rate is relatively low and it's going to decrease over time. So we have a strong priority to fill this fab and fill it quickly. The good news is we have the right products to put in there. So it's a positive thing.

Okay. I think we're ready to run a short video this facility.

(presentation)

Jeffrey Allen Webster Vishay Intertechnology, Inc. - COO & Executive VP

Okay. So 1 or 2 other important points about this site. So it's -- as mentioned, it's on a 28-acre campus. This gives us the ability to further expand this location. We can expand the existing fab, and we can build 2 additional fabs in the future, potentially getting the site up to 100,000 wafers per month. So this fits exactly in our strategy to have larger, multiproduct line locations. In fact, with the current footprint, that if we look out into 2028, this is about a 10% to 12% capacity expansion for us. If you look out when this is full with silicon carbide, it can be up to a 24%, 25% expansion for us.

So this was a very big deal this acquisition. Okay. So the next is our 12-inch wafer fab that we are building in Itzehoe, Germany. This is located next to our 8-inch wafer fab. In fact, when completed, these 2 will be connected together. It primarily makes MOSFETs and it's going to be a 4,000 square meter fab. It's designed that will be able to be expanded in 3 phases. Its first phase is going to be able to produce about 20,000 8-inch equivalent wafers per month. It all said and done, when it's completely full, it will be about 55,000 wafers per month. Windfall, it's about an additional 12% added capacity for us. It's going to be 1 of the most advanced wafer fabs in the world, fully automated, significant reduction in operator type individuals. And so we're very proud for this to be implemented. So we're looking here commercially in automotive that we're going to have a qualification and we can start initial production in Q2 of 2026 and shipments will be at the end of 2026 to customers in early 2027.

So I'd like to show you a little short video of this facility as well.

(presentation)

Jeffrey Allen Webster Vishay Intertechnology, Inc. - COO & Executive VP

Okay. So next, we move on to passives. So I gave you some indications of 2 expansion facilities in semiconductors and now we'll talk about 2 in passives. So the first one is in La Laguna. This is in Central Mexico, around Durango state. It's going to be an 18,000 square meter building and it's going to house inductors primarily, but also resistors. This factory in fact, double our power inductor capacity that we produce today. It will be a complement. Our current production is in Asia. This production will now be in North America. It fits exactly

the regional concept that our customers want. But also importantly, power inductors are heavy. These are heavy devices. Logistical costs are extremely high. With this location, we're going to support our North America and European customers at half the logistical costs. So there's a great cost advantage, it will be loaded with our most advanced equipment, we call it our Gen 2 equipment that is much more automated than our previous equipment.

So commercial, Q1 2024, starting now in automotive, it will be Q2 '24. So this location is just coming online as we speak. So we'll show you a short video as well of this location.

(presentation)

Jeffrey Allen Webster *Vishay Intertechnology, Inc. - COO & Executive VP*

As you can see, there's a lot of space in that facility to expand our capacity. Okay. The last facility today, we're going to talk about our Juarez facility. This will be our fourth location in Juarez, which fits exactly our campus concept, having buildings in one location obviously helps us reduce our fixed costs. So this will be a new building. It will be 10,800 square meters. It's going to be mainly focused on shunt resistors, which complements the other 3 facilities that we have there.

Again, we are in exactly the same spot. Here, commercially, we're talking about Q1 of 2024, automotive Q2 2024. What's also unique about this facility is that we are consolidating our supply chain -- for this particular technology of products, we actually had processes in 3 different locations. We are going to consolidate it because we now have enough room into one location. This is going to help us obviously save cost, reduce inventory, improve cycle time. So there's lots of benefits with this expansion. And then I'll show you just the last video about our [Torres] line.

(presentation)

Jeffrey Allen Webster *Vishay Intertechnology, Inc. - COO & Executive VP*

By the way, just for a little reference. So the product that would mainly be built there is the one that Dr. Zandman invented. You saw a video with the napkin and Dr. Zandman showing some calculations. This is his video. It's the one Joel grew up on, I would say, as many patents on. So it's a wonderful product for us first to the world, and we're expanding because it's used in multiple different types of applications.

Okay. So next, let's talk about external capacity. So as I mentioned to you before, is that we're working more aggressively to supplement our capacity expansion with external partners. And we look at it from 2 perspectives, 1 from passive and then 1 from semiconductors. So first on the passive side.

So as you can see in 2023, only 4% of our revenue for passives came from external sources, meaning manufacturer partners, either by resale, subcontractor, whatever it may be. So we're beginning much more aggressive in this area. We are going to more than double it to 10% by 2028. It's going to be a focus on different types of products, mostly resistors, mostly commodity-based products, but not [only]. There'll be some that we're going to add additional product families that we don't have today. So there's a strong program in this area.

Now the semiconductor side. So today, 40% of our wafers that we use and we sell are produced by external partners. It's going to stay 40% in 2028. The absolute dollar number is going to grow because we're growing as a company, but the percentage remains the same. And the main reason for that is because of the acquisition of Newport and Itzehoe coming online. So especially in the automotive world, especially in silicon carbide, the customers want the product to be built in-house. It's a critical new technology.

Quality is extremely important. So they want it built in-house. This is why we bought Newport. And so this is also 1 of the reasons why you see this percentage number staying the same. But on the assembly side, putting the product in the packages, Today, we're at 24%, and we're going to be moving to 45%, almost doubling it. And it's going to be across all the product lines for semiconductors, Opto products, diodes and MOSFETs. So increasing the capacity. Here is just a breakdown.

As you know, we report in 6 different business segments. MOSFETs, diodes, Opto's, resistors, inductors and capacitors. As you can see,

the majority of our [capacitor] increase -- or the 1 -- I shouldn't say majority, the one with the largest is the MOSFET area. But all the other areas, we're also growing, diodes, Opto resistors and inductors. As well, when we talk about our categorization of products, the high-performing products the growth products, this is obviously we're making the investments.

On the mature products, we're taking an opportunistic approach. If we see some opportunities on a mature product that a customer needs, we will invest as needed. And then on the legacy, of course, we are not growing. So if you look at the utilization, which is I told you 1 of the key metrics that we want to monitor here to be capacity ready.

For high-performing products, these are the ones that went on allocation when the market went up, we were running at 90% to 100% utilization. We are now targeting the 70%, 80% by investing in this capacity. The mature products, 90% to 100% will also go to 78%, with maybe some investment, but typically not so much. In the legacy, which we're typically running 70%-80%, as time goes and we implement some of our plans that I'll talk to you about in the next slide or 2, that capacity utilization will go down because we'll be selling less of them.

So maximizing profitability. I already talked to you about high-performing mature and legacy products, but may get a little definition for you. So high-performing products are products where we're technically leading and they are in growth markets, okay? We are going to be investing in the capacity and this should actually be more than 100%.

On the mature product lines, these are leading products, but with limited growth potentials here is we're going to be more actively managing them. We're going to be doing things like cost reduction and price management. On the legacy product lines, these are older products with lower growth potentials heavy price management. If we're not getting what we want out of it, we're going to divest or terminate.

Okay. So just to wrap up here. Vishay 3.0, customer first, business-minded, growth-driven, being capacity ready is growth mindset. It's also thinking about the customer. Customer and service-driven. This is customer first. I told you that we want to have the lead times competitive during the entire business cycle, the ups and the downs.

Optimized global operations. This is being business-minded. We need to be smarter about our operations to ensure our profitability and we want to be regionally diverse to meet the localization requirements for the customer. So that's a customer first. We're going to be balancing between internal and external production, business-minded adding the capacity without spending the capital. It also allows us to grow because we have that capacity.

And finally, maximizing the profitability, keeping this in the business mind, this is an important element because we want to improve our gross margins.

Joel Smejkal Vishay Intertechnology, Inc. - President, CEO & Director

Okay. Thanks, Jeff. We are now going to talk about channel management. Channel management. I spoke about this earlier, what are the customers asking for? They want more from Vishay. We were unable to support them. We underserve them so we are now adding capacity, which gives the customer assurance of supply, assurance of supply is the first door opener. If we're showing we can scale, now we get to talk to the customer engineers. Historically, we talk to the customer engineers and what are not able to scale. Customer had to look for a new supplier. The purchasing people are really now concentrating on which suppliers are focused on growth.

So we'll have the capacity. It gets us more engineering activity. Our design activity went up 75% in 2023, 75% with the new messaging and the approach of how we're going to engage customers, did not design news were up that high. So with this capacity and now the engineering activity, we will have the opportunity to reengage customers that had moved away from Vishay. We have a story to tell. We have a business plan that we're developing, and we're executing towards it. We're able to go out and engage more customers.

So we're going to talk about the 3 channels. This first 1 is OEM. OEM, what do they say for us? It's -- you guys have all heard it too, it's assurance of supply. Can you scale with me in year 2 and 3 of my program? Are you going to be there for me? Technical resources I mentioned earlier, they want help from component manufacturers. Many of the large automotive OEMs as they're getting into the

e-vehicle, the big brands are wanting to bridge those Tier 1s, and they want to speak to the component manufacturer.

Our Chief Technology Officer, Roy was at CTS and he had many meetings with the Mercedes, the GMs, the Volkswagens, they want to learn about technology. The traction inverter is a big item. It's a high-cost item inside the EV. They want to learn about the technology of the component companies to shape the design.

So the FAEs is quite important. And then we talked many times about regionalized manufacturing and competitive lead times, that's a common theme. So we look at some of our customers, again, feedback, how are we doing? This is a content Continental. Vishay is a key supplier and technology leader for essential components, MOSFETs, metal, composite inductors and thin film. We're showing the willingness to grow and adapt business with us more and faster.

BAE Systems. Vishay is newly focused and investments in capacity strengthened the strategic partnership with BAE. Vishay leans forward in expanding capacity in order to meet the growing demands of aerospace and defense. Seagate, Vishay is at the forefront of MOSFET technology and the first resource I turn to, high-quality inductors, very flexible in terms of creating customized solutions.

You might not expect to hear that from a computer hard drive company, customized solutions. Northrop Grumman, finding the new substrate sources to meet our war fighter needs, we're innovative. We're helping them with custom products. Those are just a sample of many customers who are giving us positive comments after the first full year of where we're driving the business.

If we talk about EMS, EMS, the second item is really the most important item here. Being on the bill of materials. This is important as the EMS receives the programs from their OEM. Who's on the bill of materials? Who am I going to buy from? So bill of materials is first. That's our engineering work out front. Assurance of capacity assurance of the ability to supply and scale, again. If you're on the bill of materials and the program is moving at a fast growth trajectory, can you support the demand?

Engaging the customers in-house design engineers. I mentioned in the last call, we just gained access to Jabil's early access program. There's 5 suppliers who have access to Jabil. We are -- these [2] suppliers are not overlapping. So Vishay is the broadest portfolio of semis and passives that gives us access to their design engineers to show them our technologies to work on reference designs, sometimes a complete design for the Jabil customer. This is new for us. We had the same conversation with Flex, giving us access to their technical team.

Many of our competitors have been there. They've been there for a number of years. We didn't have the access. This is something new now. As they see we have the ability to scale. We're getting access to the customer engineers because they believe in the direction we're going. And then the regional manufacturing here is how Flex comment from their VP of Procurement.

Vishay has shown great responsiveness to our needs, adapting its business practices to provide flexibility we require. Our respective teams are exploring opportunities to enhance collaboration through early engineering and sourcing engagement with our extensive product portfolio. It's a big plus for us. And then Kimball, significant improvements in leadership and customer service since the reorganization, the realignment, delivering on their commitments to the customer relationship.

These are all very important pieces of feedback for us because it helps to continue to fuel the direction we're going. Distribution. Distribution, there's 2 types of distribution. There's catalog distribution, which is NPI. And then there's the full service fulfillment distributor. Best-in-class Vishay. You heard that earlier in the [Mouser] comment, Vishay is best in class in new product introduction. We have to make sure we have the products introduced and on the shelves, and we don't run out of stock.

This is an initiative that Jeff and his operations teams focus on very closely. We can never be out of stock of the new products that go to catalog. Expanding our SKU counts, I mentioned this 1 in the last couple of calls. It's a main initiative. We had limited capacity. We played a narrow game. Our distributors had to service their customers, our distributors added suppliers because Vishay couldn't support the demand by Vishay expanding our capacity, adding the SKU count, we'll be eventually having conversations about they don't need supplier #7, 8, 9 and 10 of a particular commodity. They can rely on 3 suppliers if Vishay is there.

Historically, we were viewed as opportunistic when the business got an uptick, we took our limited capacity and we went to our strategic accounts. The distributors had to find other suppliers. Even though it's 53% of our business, we still underserved. So expanding SKU counts, you hear about it, the continuous supply of product. This was mentioned by Jeff, even during upturns. We can't leave a partner during an upturn. We have to be there with capacity, and regional manufacturing.

This is comments from Avnet, Phil Gallagher, CEO, a congestive offering of both semi and passive technologies addressing the need. The customer has a bias towards suppliers who are customer focused and solution providers, rapidly migrating away from the collection of disparate brands to a unified enterprise providing technology solutions and creating extraordinary value for their mutual customers.

Vishay truly does build the DNA of tech. We're getting promising comments there. DigiKey, Dave Doherty the CEO. The new team has injected a noticeable sense of energy and purpose towards growth. Vishay's ability to service the market with a broad array of products is unrivaled, I must take bold calculated actions without being reckless. We are seeing and experiencing this spirit with the new Vishay team.

And the last I is from TTI, the CEO of TTI, the strategy of developing new technologies and investing in production capacities to create growth versus reacting to market growth, creates an opportunity for distributors to offer wider technologies and additional product availability with short lead times, increasing Vishay's market share.

It's everything you've heard. And now we're getting the feedback after the first year. Even though we're in a sideways soft economy, we're positioning for putting more of a Vishay on the shelf at the distributors, more part numbers and being a long-term reliable supplier continuously in all market cycles.

So now when we look at the markets, what's this 5 years look like and what type of projection are we talking about? Automotive is on the left. Automotive, we're saying 11% to 13% CAGR. There's a lot of customer to Vishay design activity happening. So the 11% to 13%, we're quite bullish and positive with Industrial. 9% to 11%. I talked about redesign of the grid. I talked about energy collection, energy distribution, charging stations, robotics.

There's a lot going on in industrial, and we're all watching the world. The industrial segment is a weak I right now. Automotive is showing its positive a bit. Car count, they say it's going up a touch, but there's always more automotive electronics. So here we are. Industrial, government investment in infrastructure needs to be the trigger, and we're all looking for that so we can enjoy the design activity that we have with customers. We can put it into U.S. Medical. Medical, you see 1% to 2% here. We've just added a new medical sales leader in the Americas. This is a growth that is, at this point, a small target, medical takes some time.

We have a couple of key medical customers but we want to expand further, why did I say it takes time, FDA approval on a number of things takes years. So getting the design activity and getting that moving. We want to see a better number the next time we have an investment day, but at the moment, it's 1% to 2%.

Aerospace defense, aerospace defense is 7% to 9%, and this is warfare. This is missile guidance systems. This is soldier to soldier communication, walkie talkies, there's a lot going on in aerospace defense, plus you see the Airbus and you know the backlog of Airbus and Boeing, it's a big backlog, a lot of product here. I've talked to a number of aerospace and more defense companies. They talk about these 2 wars. They said Joel in 5 days, we shot 7 years of inventory in missiles in 1 of these wars. There's a lot of replenishment that has to happen.

So we're excited about our position in military. And then the other, the other are those that I talked about, the consumer, the computer and the telecom. Historically, this didn't have much growth here. We're saying 6% to 8% at this point. We have design activity. We've got to go in and win the volume business. So you're seeing across these segments, double-digit growth in auto, nearly double-digit in industrial, medical starting small but expecting to improve, aerospace defense at the rate of 7% to 9% and other as well, broadening the focus.

If we look at by channel, which we started this conversation, OEM because of the automotive OEM wanting to be direct to the supplier.

We're saying 9% to 11% here. That's what's driving the OEM. Automotive was high, OEM direct is high. EMS, where I mentioned, we're now having access to their technical teams. We're going to be designing programs to help them go into production, which we didn't have before. We're showing 13% to 15% CAGR. And finally, distribution, 8% to 10%.

This is adding SKU count again, this is making sure we have product on the shelf, and we don't leave. We're there as a long-term supplier plus helping them look at their entire warehouse to decide how many suppliers do they truly need if they have the strength of Vishay supporting their demand. So if we look at growth, we talked about percentages. Historically, 2018 to 2022, the CAGR was about 3.6%. With a big year here. We know what this year was. This was ASP a singularity year, everybody raised ASPs in 2022, and that lifted '22. We're showing 9% to 11% here, almost 3x the rate of growth of what we historically have had and it's not -- I hope you understand, it's not just throwing money at capacity.

It is engaging the customer, it is repositioning the company. It's having the technical people in front of the customer. I'm an engineer. I grew up in this company being in front of the customer and speaking about their long-term demand and what they're going to need, we aggregate this across all of the customer interactions to build our business plan decide where we're going to manufacture. Jeff talked about 2 sites in Mexico.

We're really putting a very cross-functional analysis of the business and how our initiatives are prepared so we can support the customer in a much more positive way for growth than we have in the past. So that's the first section this morning, Jeff, if you want to come up. If you have any questions for Jeff or myself about the operation about the customer-facing about the business plan. After the break, you're going to hear about R&D and you're going to hear the finances. So if you have any questions for Jeff and I about what you heard, please let us know.

QUESTIONS AND ANSWERS

Joshua Louis Buchalter *TD Cowen, Research Division - Director*

Josh Buchalter from TD Cowen. Thanks for hosting the important presentations. So you spend a lot of time about the capacity investments both internally and with external partners. And historically, that just coming off the shortages makes total sense to invest for growth, but that's historically also led to some element of cyclicalities a few minutes talking about sort of what actions you're taking place? Is that something that you're prepared for and fully understand and appreciate or like actions you're taking to protect for when periods aren't as good as they were in 2021?

Joel Smejkal *Vishay Intertechnology, Inc. - President, CEO & Director*

Yes. So qualifying the external partner is very important because it gives us capacity, as Jeff said, we don't have to invest in. That's a benefit. Now managing that capacity. We have flexibility in our planning when to use the outsource, when to use the internal Vishay as the cycles move up and down. Jeff's team will have the flexibility to decide. Is it capacity of Vishay and the Vishay head count at risk? Or do we move in some of that was outsourced into Vishay to keep our factories moving. Jeff, do you want to comment for that?

Jeffrey Allen Webster *Vishay Intertechnology, Inc. - COO & Executive VP*

Exactly. This is a nice thing. It's not 100% flexibility, of course, you can't shut them off. But that ability to take and say now our factories are underutilized and then be able to utilize that business and bring it in-house provides us a lot of flexibility to ensure that our operations are running at the levels we want them to.

Joshua Louis Buchalter *TD Cowen, Research Division - Director*

Curious how much is (inaudible) to your internal sides and external?

Jeffrey Allen Webster *Vishay Intertechnology, Inc. - COO & Executive VP*

Yes. Yes, it depends on product line. So it varies. There is an element, like we said, there are some products that we will only produce externally. But if that business goes down, then it goes down and it's separate, but the majority of our business, especially when we talk about in the semiconductor side is things that we can bring in and out, not a problem.

Joel Smejkal Vishay Intertechnology, Inc. - President, CEO & Director

Now he mentioned resistors as 1 of the passive products that was built in-house, and we didn't have enough capacity. We had -- we were significantly lowered capacity where we're adding a new subcon. Even if the market would go softer or very high peak and come back down, the volume that we're able to get out of this subcon far exceeds what we were able to manufacture. So it's really a plus-plus in this case, even if it got softer, we're still well ahead of what we were historically able to supply.

Jeffrey Allen Webster Vishay Intertechnology, Inc. - COO & Executive VP

Yes. And the product line that Joel is specifically talking about, I think we're even in allocation in the down market. To be quite frank.

Joel Smejkal Vishay Intertechnology, Inc. - President, CEO & Director

We have been.

Jeffrey Allen Webster Vishay Intertechnology, Inc. - COO & Executive VP

So for products line like this, it's not a problem. We actually need that external capacity.

Matthew John Sheerin Stifel, Nicolaus & Company, Incorporated, Research Division - MD & Senior Equity Research Analyst

Matt Sheerin with Stifel. Just a question on the capacity expansion plans. You put percentage numbers on it. But doing the math, it looks like you're talking about '28, what \$4.4 billion, \$4.5 billion in revenue if everything plays out in terms of that growth rate, is that right?

Jeffrey Allen Webster Vishay Intertechnology, Inc. - COO & Executive VP

It will be higher.

Matthew John Sheerin Stifel, Nicolaus & Company, Incorporated, Research Division - MD & Senior Equity Research Analyst

Like closer to \$5 billion?

Jeffrey Allen Webster Vishay Intertechnology, Inc. - COO & Executive VP

Yes, it would be closer. I mean you have to look at the range of the CAGR, of course.

Matthew John Sheerin Stifel, Nicolaus & Company, Incorporated, Research Division - MD & Senior Equity Research Analyst

Okay. And what is -- it sounds like you're expanding both passives and actives, but a lot more on MOSFET and the silicon carbide. So what does the mix look like in '28 passives versus actives?

Jeffrey Allen Webster Vishay Intertechnology, Inc. - COO & Executive VP

Yes. So I think we'll have that in the slide. But I can just give you just some roughly about the capacity. So about 2/3 of our investment is going to be on the semiconductor side, and it's going to generate about 2/3 of the capacity expansion as well. So based on those numbers, you can make the calculation.

Matthew John Sheerin Stifel, Nicolaus & Company, Incorporated, Research Division - MD & Senior Equity Research Analyst

Okay. And in terms of getting that -- the point where lead times are normal, even in a hot environment. Does that mean that you're willing to invest in your own inventory and add some inventory buffers and maybe control that a little bit better like we're seeing a lot of semiconductor companies now are controlling that inventory or even in the channel. So how do you think about that?

Jeffrey Allen Webster Vishay Intertechnology, Inc. - COO & Executive VP

This is a very good point. Historically, we have swung our inventory up and down quite significantly. We are trying to be that customer first. So we are managing inventory much better than we did in the past. So that we are ready for the up cycles. So we prebuild them. We don't cut our factory so dramatic now that we reduced them in slow times, we build inventory as needed, not excessively, but in the areas where we see, especially in areas like automotive, where we see the scheduling agreements.

So you can see out 6, 9, 12 months. So we have the ability to look there, and we know that they're going to take the product. So we've been more flexible in our inventory management.

Joel Smejkal Vishay Intertechnology, Inc. - President, CEO & Director

I think another part of that answer is, if you look historically, when I say we were a cash flow managed company, it was the cash for that given calendar year. So Jeff talks about the inventory adjustments that were made within the calendar. Inventory lower at the end of the year to provide for a greater cash at year-end. But the business didn't stop. The business keeps rolling.

So the customer is looking for that Q1 delivery and Q2 delivery which we then would ramp up inventory to start the next calendar year. It's a dynamic business. The customer doesn't run on calendar year. They run on programs. So this is what he talks about where we've got to run it differently. We're going to make sure we're supporting the demand based on the agreements we have with the customer and the volume they need.

Gregory Stephen Williams Mountaineer Partners Management, LLC - Chief Compliance Officer

Greg Williams from Mountaineer Partners. Just a few questions. I guess, first off, for clarification, especially given the prior, the guide is 9% to 11% CAGR from '23 through '25, right?

Joel Smejkal Vishay Intertechnology, Inc. - President, CEO & Director

So '23 to '28.

Gregory Stephen Williams Mountaineer Partners Management, LLC - Chief Compliance Officer

'23 to '28, apologies. So that translates to 61% revenue growth over the period or roughly from 3.4% to 5.47% revenue is the midpoint of the guide in 2028, right?

Joel Smejkal Vishay Intertechnology, Inc. - President, CEO & Director

In that range, yes.

Gregory Stephen Williams Mountaineer Partners Management, LLC - Chief Compliance Officer

Just for clarity's sake. And then on Slide 20, I think you showed CapEx as it relates to revenue. And in there, in 2025, I believe the implied growth rate is roughly 20% revenue growth from 24% to 25%. Did I misread that slide?

Jeffrey Allen Webster Vishay Intertechnology, Inc. - COO & Executive VP

I would have to look, no. So we were talking about only capacity at that point.

Gregory Stephen Williams Mountaineer Partners Management, LLC - Chief Compliance Officer

I believe that slide was CapEx and then there was a line as a percent of revenue, right?

Jeffrey Allen Webster Vishay Intertechnology, Inc. - COO & Executive VP

As a percent of revenue.

Gregory Stephen Williams Mountaineer Partners Management, LLC - Chief Compliance Officer

Right. So the CapEx remains flat and the change in percent of revenue.

Jeffrey Allen Webster Vishay Intertechnology, Inc. - COO & Executive VP

You can calculate at this way. Exactly.

Gregory Stephen Williams Mountaineer Partners Management, LLC - Chief Compliance Officer

Works out to roughly 20% revenue growth in 2025? Okay. Just wanted to make sure I was clear on that. And then stepping back, I think, correct me I'm wrong, that the midpoint of the guide on EBITDA implies roughly [1.42] or so, of EBITDA in 2028, from today's roughly 700. Is that a fair assessment or 100% growth over the 5-year period? I just want to make sure I'm not missing the.

Joel Smejkal Vishay Intertechnology, Inc. - President, CEO & Director

You're (inaudible) numbers, but your math is quite good.

Gregory Stephen Williams *Mountaineer Partners Management, LLC - Chief Compliance Officer*

Just for clarity. And then I guess more operationally focused. One thing that strikes me as unusual is I'm used to seeing capacity utilization going down and margins going down, yet you show margins expanding. How confident are you that you can deliver margin expansion while utilization is coming down?

Jeffrey Allen Webster *Vishay Intertechnology, Inc. - COO & Executive VP*

So we are quite confident. We have lots of elements in our program cost reduction type things, efficiency type improvements. We have mix improvements as well, newer products. So we have a whole slew of things. As Joel likes to say, we look under every rock here to find the opportunities. And where in the past, we talked about it's only cash flow. That's what we talked about. But now it's really we're focusing on margins and looking at multiple ways of improving those margins. And of course, the external capacity as well also helps because -- in some cases, there are lower cost options than what we can do internally.

Gregory Stephen Williams *Mountaineer Partners Management, LLC - Chief Compliance Officer*

And then for the external capacity, can you help me understand what the impact is on the financials. Is that how you structure the agreement from a rev share or margin impact? I'm just trying to understand the stability that it might add to performance going forward.

Jeffrey Allen Webster *Vishay Intertechnology, Inc. - COO & Executive VP*

Yes. So we have lots of different types of agreements with our customers. So it depends if it's an assembly one, it depends if it's a wafer foundry, it depends if it's a buy resale. And if I take, for example, in the resistor category by resale. We've worked very closely with them to identify it's sort of a cost plus a fixed margin number for them. And then we look at what the market rates are going to be on top of that. And -- but it's fixed pricing, which, of course, helps us.

It's a positive market. We can increase our ASPs and these types of things. So it's a mixture of different ways, but it is going to help improve our profitability. This is for sure.

Joel Smejkal *Vishay Intertechnology, Inc. - President, CEO & Director*

So Greg to expand on his comment, Jeff came to you with the operational answer of efficiencies, locations, external, but it's also the channel management. Distribution margins higher. When we underserved, we participated in lower-margin business. EMS margins typically are higher than could be a long-term agreement with the OEM. So having the capacity. He is working very diligently, he and his team on the cost side to position us, but also having the capacity for the higher-margin markets as well as a plus.

Gregory Stephen Williams *Mountaineer Partners Management, LLC - Chief Compliance Officer*

That's very helpful. And 1 additional question, especially on the OEM side, when you're specced into a device or a car, how long should we think about the typical life of that agreement where you're having -- where you're on that bill of goods? Is that a 5 year...

Joel Smejkal *Vishay Intertechnology, Inc. - President, CEO & Director*

We are on the bill of material for the program, it could be 5 years. But every year, we have to negotiate the award. They don't necessarily get multiyear awards. It's a 12-month award. So that's where the productivity and the improvements that we can make and the cost continue to position us for greater share as we bid the second year of a program, the third year or the fourth year of a program.

Industrial, by the way, those are typically 7-year projects. It runs much longer. And the industrial companies a little different approach. They're looking at the high quality of the product. Automotive is too, but typically get a longer-term award for industrial.

Jeffrey Allen Webster *Vishay Intertechnology, Inc. - COO & Executive VP*

In aerospace, they can be up to 30 years.

Joel Smejkal *Vishay Intertechnology, Inc. - President, CEO & Director*

30-year program.

Nikolay Todorov Edgewater Research Company - Senior Research Analyst

Nick Todorov at Edgewater Research. You gave some very robust revenue growth targets, and you talked about the capacity expansion. I think it makes a lot of sense. The question really is how much visibility you have from a design pipeline in terms of wins? If you think about a typical design cycle of anywhere from 1 to 3 years in industrial and automotive, you should have some visibility. But think today, obviously, you don't have 5-year visibility. But looking into over the next 1, to 3 years, how much visibility you have in terms of design wins to hit your revenue targets?

Joel Smejkal Vishay Intertechnology, Inc. - President, CEO & Director

Okay. we do -- every year, we log design, new and design win each of our engineers, the FAEs have this as their initiative in their on program design, new design win. Roy, do you want to comment, step up and comment about the percentage. I think it's near 50% isn't it?

Roy Shoshani Vishay Intertechnology, Inc. - Executive VP & CTO

So yes, certainly, Joel. So for Industrial, we are able to convert almost 50% of our design wins, design new to design wins. And from that perspective, when we go to industrial and automotive, we have a longer view. So typically, between the design new to the production, I would say, 2 to 3 years, depends on the programs. When we go to computing, telecom and so forth, it's much, much harder. But we do have a good visibility. As Joel mentioned, we expanded by more than 75% our design new in 2023.

And for 2024, we believe we will continue in this path. So we feel quite confident that we have a robust pipeline, supporting us moving forward.

Nikolay Todorov Edgewater Research Company - Senior Research Analyst

And a separate question I have is on automotive market. I think you made a comment recently that EVs is a relatively small percentage of your business today. But I think on the slide, you highlighted the 800-volt architecture in e-mobility. So maybe can you talk about how much do you see of your business coming from EV and automotive specific over the next 5 years.

Joel Smejkal Vishay Intertechnology, Inc. - President, CEO & Director

Roy do you want to take that one? From the business development side?

Roy Shoshani Vishay Intertechnology, Inc. - Executive VP & CTO

Yes, certainly. So you're absolutely right. So today, automotive and electrification is a large business for us, but it's mainly coming from a 12-volt and a 48-volt type of business. Our design went into 400-volt and 800-volt is enormous. So we do see that as the largest growth moving forward for us. So I would prefer not to put specific numbers, but certainly, I would say that's the #1 application.

Joel Smejkal Vishay Intertechnology, Inc. - President, CEO & Director

Any other questions? Okay Peter do you have a question?

Peter G. Henrici Vishay Intertechnology, Inc. - Executive VP of Corporate Development & Corporate Secretary

We have one online question. Given the capacity expansion, could you please elaborate more about the competition in your key categories such as MOSFETs and passive components. What is the implication on the pricing in the next couple of years.

Jeffrey Allen Webster Vishay Intertechnology, Inc. - COO & Executive VP

So for MOSFET, of course, there are other people that are expanding as well. I mean you see a lot of news reports indicating people building wafer fabs as well. We have built in ASP in our model. It's overall for the company, it's around 2.4% ASP decline year-over-year. You'll hear the number. It is higher in the semiconductor market. So we have taken that into account. There is going to be much more demand for sure, there is going to be more capacity, but we look at that in our modeling and we look at that in our projections.

Obviously, overall, we're going to see our mix improve because we're going to be moving more to things like silicon carbide, that's going to have a better profitability. So this also helps.

Roy Shoshani Vishay Intertechnology, Inc. - Executive VP & CTO

If I may add on the MOSFET side. So unfortunately, we were not able to grow as fast as some of our competition in the last 2 or 3 years because of the capacity constraint. But again, from a customer's perspective, we feel that we have a very slow foothold. We have a great technology. We have a great relationship and our quality is excellent.

So from that perspective, we were penalized, and we believe we will be able to catch up on some of that, not all, but plus with the increase in market. We do see the customers is asking Vishay to take more to participate. They don't like to have 1 or 2 suppliers getting too large. But we do think that with our technologies, we'll be able to continue and compete and from the ASP, I think it will just continue in the same normal ways. We saw that until now. We don't have any other concerns on that.

Joel Smejkal Vishay Intertechnology, Inc. - President, CEO & Director

Any other questions? I have us take a break, and then we'll come back with silicon carbide.

(Break)

Joel Smejkal Vishay Intertechnology, Inc. - President, CEO & Director

All right. Roy will talk to us about silicon carbide. The strategy that's put together. You remember MaxPower in 2022, at the end of '22, the acquisition of technology and then Newport to bring it into scale, Roy, welcome to the stage. Roy Shoshani, CTO, Chief Technology Officer, is going to present silicon carbide strategy.

Roy Shoshani Vishay Intertechnology, Inc. - Executive VP & CTO

Good morning, everyone. Thank you very much for coming today. And I'm excited to try to present to you in the next 30 or 45 minutes, our silicon carbide strategy, but also our overall technology and product road map. So before that Joel already introduced me, but let me just give a quick overview. I've got some -- we had some discussions a few minutes ago.

So I'm located in Northern California in San Jose. I joined Vishay in 2004, I had some management and R&D experience. And I did some increasing responsibility positions until in late 2008, I got my position as managing the IC business unit. As you guys know, end of 2008 wasn't a great time to be in the business. And that was quite an experience.

And what I can tell you that what I took out of it is that we went through a tough time. We laid off a lot of guys. We streamlined the entire operations I can say that in 2022, when I finished with my job, so after 14 years, we grew 15% [CAGR] a very high also with a very high profitability but we changed 95% of our products, and we change 100% of our operations.

Now of course, coming to my new position in 2023 for the CTO, it's not the same team. We have a great company. We have great products. But what I'm saying, we are up to the task to make the changes, and we understand it's not an easy one, but I think we are all -- as a management here, we all did our things. We made those changes in a smaller scale. Now we have the ability to drive it forward.

So what I would like to do is when we -- before I discuss the silicon carbide strategy is basically to talk about my team and the responsibilities and how we're going to drive innovation because that's the main responsibility. And Jeff mentioned earlier, that we are a manufacturing company, which is too, but you're also a technological company, and we need to put a focus on that.

So from that perspective, we're going to have a lot of capacity, and it means that now we need to have great products. And we should be able to be competitive products in order to get the right margins because we don't want to just fill the products with a low margin our capacity is low margin products.

And by how we start driving the innovation. It starts with a technical customer engagement with the customers coming back again to the 3 pillars, think customer first. So the business development or what we call the field application engineers is a team that we are focusing now to higher engage with the customers on a daily basis. It starts from a higher level with myself Joel was also with me in last CES, honestly, 2 CES, we met consistently with the same customers.

First CES, I can tell you, was quite tough meeting with the CTOs and the management of our key OEMs and Tier 1 because we've got tough comments where were you until now, what are you leading in and so forth. In January, it was better. We met with the same guys, and we were able to execute. So we had some credibility.

Next one, I think we really need to be able to be there. But along the course of the year, I spend most of my time meeting with customers. And from that perspective, the expectation is also with the rest of the FAE's and also some of our R&D as well. The goal is to better understand the pain points of our customers and better understand their needs. And also what they don't know we need to try to provide the solution.

We need to understand where the competition is and trying to provide a better solution. And so it all starts with thinking customer first. The second 1 is about the solution focus. We are selling components but in the past, we came to the market. Our approach was we are selling a component. Now we are saying that we are selling a component, but we are coming with a solution. The added value goes in both ways.

Number one, from a customer perspective, we offer them a wide range of products. We are helping the design engineers to get to the endpoint where he needs to be. When you make an IC or you have something which is controlling or defining the architecture, it's easier for you to do so because you define everything. For us, we are a discrete company or a passive component company. So it was hard to come with a product that potentially can be in place.

So we are trying to help the design engineers, understanding the [pain] needs, bringing them a better solution. It also comes back to us that we understand where is the competition, what do they need? It goes back to our R&D team, we define the road map.

We define what do we need to do, how do we need to make it in such a way that we'll be able to grow profitably in the future. The second thing that we are doing is enhancing the R&D execution. So of course, we need to execute better on the R&D. Honestly, having the capacity makes a big difference on our R&D execution. Most of our R&D is done on the production lines.

So you can imagine that if you are under a location, it's hard to get a priority or to move the research and certainly the development fast enough. So just by the fact that we are investing capacities make it much, much easier. But on top of that, we are implementing many strategies and methodologies to improve on our execution of the new product development. New product development is critical for us in order to change the mix and in order to enrich the mix moving forward.

A part of it, we -- in order to accelerate that we started working with more universities and R&D institutes. The goal is to bring more technologies internally and also to work on more future technologies in such a way that we will not be a follower, but we will be a leader. So we heavily started that a year ago. We already signed 2 MOUs with 2 universities. I mentioned that (inaudible) is a part of the silicon carbide, not only silicon carbide also gallium nitride, and we are working on other things as well. And the last point would be on the increased investment.

So in order to grow, we will invest more in R&D. But of course, we need to be thoughtful of the P&L. So we can't really afford to go overboard. But at the same time, we are also putting a big effort of getting external funding. We built a team working with the local government, with the local institutes and trying to get more research and development funding, so we can help also to drive our R&D. So quite a few changes from the way how we did that before.

And with that, let me please -- I'll go to the silicon carbide portion, and afterwards, we will have a chance to go back to the global Vishay from a development perspective. So I'm sure most of you already heard about silicon carbide, but just to recap in to give an overview for some of you that maybe are not as familiar.

So the power silicon carbide device market is a very large market today. But what I would say, and again, it's hard to see out of the graph because it looks like a linear graph, but I still call that go exponentially. So you can see that in 10 years, the growth was phenomenal or it is expected to be phenomenal, I would say.

And it will do more than what the silicon grew for power silicon in 30 years. And that's the reason why, of course, we need to be there. And we can say that we are late to the market, and I will try to convince you that we will be successful, although we are a bit late. We understand that. But at the same time, you can see that the big market is indeed coming in the future. And that's the reason why we had to run fast, implementing our strategy moving forward.

So why is the market growing so fast? It's mainly because of electrification. And electrification is coming from 2 megatrends. One is the e-mobility and the second one is from sustainability. On the e-mobility side, the application that was driving silicon carbide gold is basically EV. It starts with the charger and the traction inverter and basically goes to other peripheral like the heat pumps. So in order to get our EV cars, having them able to drive for a longer distance or faster charge time. That's exactly what the silicon carbide is able to provide us.

When we go to the industrial side on the sustainability, the green energy is helping us to try with silicon carbide to a much more efficient power conversion. So silicon coverage is a great technology when we go to high voltage, high power. That's where it's characteristic versus the silicon excels.

Now from a Vishay perspective, we go back to the basics. We are starting and we are focusing on the device side. And the device side starts from a schottky diode to a MOSFET for a wide range of voltages, 650-volt going up to 1,700 volt but we do have the intention, we want to take it further to 3300 volt and so forth. But that's where we focus today. And this is like the same things as we do today on silicon. Now we are moving to do that on silicon carbide. But because these are power devices, the innovation in the device itself is not good enough because there is still -- even with the improvement in efficiencies, there is a lot of, I would say, power and energy that needs to be managed. And in order to keep the thermals, it really goes to the package innovation or if we sell that as a die in order to go to a power module. So the package design and the innovation is extremely important in order to be able to get the right quality, the right cost. But I would say mainly it's because of the quality and the reliability, it's critical.

And the last point is really about that integration of solution. Bringing it all together, help us to provide a better solution for the customer either it's from a size perspective, ease of use but also power density and reliability. Now we did power margins for quite a few years already. And we are -- we have successful business in -- on both charges and in other e-mobility applications. But in the past, we didn't choose our own semiconductors because we didn't manufacture our own semiconductors in our own fabs. So we had to buy it from third parties, mainly our competitors. And you can imagine that now when we bring everything in-house, internally.

First, we can get much better products because we can design the products to feed the customer needs but we will be much more, more competitive. And when you look at the power module today, the 3 main competitors on the top our semiconductor guys, and we believe now we'll be able to finally move much faster on the power module itself.

So with these 3, the way how we plan to execute it. We started with the acquisition of MaxPower. So to be honest, we started earlier research and development on silicon carbide but we started late. We started roughly in 2018. And one of the first things that we did as a new executive team already in 2022, when we went through the transition period, was to identify this opportunity to say, hey, we are late, we need to move fast.

So what we did, we identified a company, which is MaxPower, which we were able to acquire late in 2022. We started to work with them earlier. We knew those guys quite well. Some of them used to work for us. So it was a local and also close to where I see that was very easy. But the best thing is that it was 100% complementary to Vishay. It's a great company because it has a very highly skilled and experienced team. It had a great IP and it still has a great IP on both technologies on MOSFET, which I will explain in a minute on planar and trench technologies. And they also had that proven. So it was really good. But it was even better from that perspective because the valuation wasn't so high because they were not able to manufacture that. They didn't have the manufacturer capability. They didn't have the customer reach, and that's where exactly Vishay comes in.

So it's a perfect fit for both companies, bringing their own strengths altogether. And I would say that until now, 18 months after completing the acquisition, it still continued to exceed our expectations, and that's great. Now the future is still far and we still need to work hard. But until now, we are very happy. So what we acquired for MaxPower is basically, you will see here, the technology is in white

are the technologies that are using planar technology. And the first one that we released already in production in 2018. The second one, we released basically at the end of last year, and we are going now to production.

Now what we did, because as I mentioned, the technologies were already proven but they were not produced in the right manufacturing facilities. So we decided to say, okay, let's stop. Let's bring those technologies to our foundry partners to the guys that we have strategic relationships with where we trust them on the quality, on the capacity and also they want to support us on the right cost to be able to scale. And that's what we did and that's why it took slightly longer but we have already this technology now going to production.

The 2 generation in -- is already a change technology and that's where really the IP comes into play. MaxPower is a trench company. And by the way, also Vishay and Siliconix, which was acquired in Vishay is a trench company. We were the first trench company to -- or the first MOSFET company to be able to produce trench MOSFETs in the '90s. So from that perspective, we move this technology again to additional 2 foundries. We plan to sample the products by the end of the year, released by the end of the year and go to production next year. But we are extremely excited also from our 4 generation, which will be produced in our own new fab.

Now we mentioned the fab and also Jeff mentioned how we're going to run operations between our external partners to internal. So it certainly helps a lot from the operational perspective to balance and also to -- not to spend all the capital doing that internally but it also helps a lot of the capability when we want to develop the new products. And it also helps us where we want to keep the IP, especially at this point in time. So overall, MaxPower is really carrying us forward. We are heavily investing in supporting them.

And from that perspective, I'd like to take the next few slides slightly more technical but I will try to make it relatively fast to explain to you why we think the technology that we own now is better and superior to our competitors. So in essence, basically, there are 2 technologies, main technologies for MOSFETs, a planar technology on the left side and the trench technology on the right side. With MaxPower, we have both. But the key IP that we feel that we can excel is really on the trench. So let me start first on the planar. The main difference between the 2, you will see we put the structure, not that you need to totally understand it, but the base will be that the substrates on the bottom the EPI and the structure coming from the bottom is very similar between the 2. Not too much difference. So the difference comes basically in the structure of the device itself.

Now I discuss later on silicon carbide from a substrate perspective because that's extremely important but we'll focus at this point only on the device. So from a device perspective, on the planar, we have the gate here in red, and we have the source on the side. So basically, when the channel we need to run the current, the electrons, they will go basically down all this way. But Basically, that's the structure. Everything is on the surface of the device.

When we go to a trench device, now the source is here -- sorry, the gate is in the middle, the sources are on the site, and basically, now we can shrink the device because we are using the additional dimension. So when we look now -- again, on the planar device, typical planar device go from 6 micron, best-in-class can go 4.8 micron and maybe below. We don't think it can be shrink much more than 3-micron just because of the structure itself, as I mentioned, to all being on the surface. But this is a single device. When we want to make a larger device that can carry high current, we need to go for low resistance. So we put them in parallel. And that's where you can see many devices goes in parallel. At end of the day, we have a die. A die, for example, for a traction inverter, which is very common today is 5 x 5 millimeter, 25-millimeter square. So it's quite a large die. And at the end of the day, that's how many dies we can get per wafer.

When you go to the trench, you will see that trench today goes from 3.2 down to 1.8. And we think that we can take it even further to be smaller. We think that trench can be dramatically smaller just because of this structure. Now you will see that when we make the device again to try to match the same resistance in order to minimize the conduction losses, it would be much smaller than the planar device, leading us to a smaller die, and we can get more die per wafer. So from that perspective, we believe that's the future.

Now if the history is not going to lead us strong in the 90s -- sorry, in the 1980s, planar MOSFET were leading the technology. But late in the 90s, almost the planar technology went all to trench. And certainly today, all the low-voltage MOSFETs and moving up to the medium voltage and so forth, are trench technologies. So we don't too much of the difference in this case from a device perspective. As we said, we are doing that for the last 30 years. We were the first company to do that.

Now when we go to silicon carbide, within the top 5, still most of the companies are doing planar devices today. There are already big competitors doing trench. But even those that are doing planar are looking and are indicating very publicly that they're going to move towards trench. So from that perspective, we think that our approach is the right approach. And what I would like to show you here is one of the metrics of how we measure the performance of the device, which is the resistance per area.

In this case, it's million per square centimeter. And this is a key metric because as I mentioned earlier, we want to get a large device in order to get a low resistance in order to minimize our conduction losses. But in order to do so, it cost us money. So we would like to shrink it. And shrinking the pitch of the device is the key way today, how to be able. It's not the only way but it's still the main way how to be able to get the device to be more effective and more competitive.

So if I go back to 2011, Cree was the first company to release a silicon carbide device, a planar device, and they were here. And you will see that along the years, and here in red we have many of the competitors. It's done by -- this map was done by a third party. And the competitors -- the technology started to excel. It certainly accelerate with the last few years because the business is coming and the potential is huge. But what you will see as well is that where we are coming from a Vishay perspective, with our 3 generations that I mentioned earlier, we are coming at the top of the pack.

Now as I mentioned, yes, we are slightly late and that's true and now we are shifting it to our own production. But you will see that our generation 2 is already very, very competitive, and our generation 3 also fits with the best-in-class. Now we do acknowledge that our competitors are working on their new technologies and they're outstanding still. But at the same time, as we mentioned, we have our generation 4 and we already have a good understanding of how we're going to take it forward in our new fab. So having the fab and having the ability to get the latest equipment where we need that helped us a lot. So we can utilize it in order to take it to the next step and be at the top of the pack from a performance perspective.

Now I mentioned shrinking the dies and I talked a lot about resistance but it's not all about resistance. These devices are switching and silicon carbide is switching much better than silicon. And that's the reason why we are running that at the higher switching frequencies, typically at the mid kilohertz level. So from that perspective, the switching losses are very critical. And from that perspective also, it relates to the capacitors that is coming from the device and that goes linear to the size of the device. So shrinking the device helps us also on the capacitance, lowering the capacitances getting a better switching performance device. Everyone likes it because at the end of the day, we have -- if we go higher frequency, we have smaller systems, less capacitance, less inductance, more cost effective for the system companies and also lower cost and lower weight.

So with that said, I'll try to summarize that. We believe that not only we can provide a good performance, we can also enhance the reliability. And our products are more rugged. Our gate is shielded, and we think that we can get a better protection on the gate. We have a lower electric field, we think that, that will help us also. So we think our silicon carbide will excel from a ruggedness perspective, which is extremely important in this high temperature, high reliability applications. As I mentioned, we can improve the performance and also scale that moving forward. And the last but certainly not least, we believe that versus the other trench competitors, we have a simplified process. So we believe we'll be able to take it moving forward with our operations and we'll be able to be also very competitive on the cost.

Now let me try to touch on the operations side. That's extremely important. And I will do that on the next slide but just to explain to you our strategy. Our strategy on operations, which starts first by having the starting material, which is the silicon carbide substrate moving to the EPI and then getting their wafers to the fab, packaging test and up to whether it's a packaged device or a power module. So we believe on having a hybrid model. What does a hybrid model means? It means that we are running a diversified supply chain in our partners and foundry partners as well as we're going to run that in-house.

One of the reasons why we are forced to do so because, as I mentioned, MaxPower didn't have the right capability to produce. So we understood that. Number one us is the time to market in order, not to miss the designing windows. So if we can capture the designing window, we can capture a more significant business in the later years when the business ramps up. So we focused on that. And our foundry partners and our subcontractors were the right way how to do so. Now we intend to keep it also moving forward while we are bringing our own operations because we want to have the resilience. We want to have the redundancy and we do expect that we will

need to get more capacities. And as Jeff mentioned, that will be our way how to balance things.

So from that perspective, you will see that we -- from the power module test and packaging, we already have everything in-house. We are already running the same power levels, the same voltage levels internally, and now we are just expanding it and extending it to silicon carbide. From the fab, now we have Newport and we'll do also the EPI, and I will mention on the silicon subset in the middle, and that's the reason why it's a hybrid also because we intend to do both.

So I'll focus a bit about Newport and its importance in what's the various phases that we are going to address moving forward with Newport. So we started in last year. As we mentioned, we just closed a deal exactly 4 weeks ago. But last year, we did a planning stage. We analyzed the capabilities of the fab, understanding all their equipment. We thought that Newport is a jewel for us. And the main reason why we thought so because it's a brownfield. It was a discrete fab. It was already ready for our products, whether it's MOSFETs, whether it's dies. So the equipment was the right equipment for us. We got a lot of new equipment investment, which was done by the previous owner, and that's equipment that is less than 2 years designated exactly for these applications. So we got equipment, we got the fab. We got highly skilled operation team. So that was the fastest way for us how to ramp up the production, how to transition versus going on a greenfield that we believe would have cost us 2x to 3x higher because, again, we can reuse most of the equipment.

Now we can't choose all the equipment and we need dedicated equipment, and that's also what we did. We went and we selected carefully the equipment last year. And honestly, that was a big plus for us because we are late comer, and we enjoy the benefits of our peers software for so many years going through that cycle. So our goal was to leapfrog -- okay, we are not going to leapfrog all the software but certainly, hopefully, a big portion of it. So we selected the newest and greatest equipment to the specific processes that we think that will bring us the extra value and will carry us forward in the development of the technology.

And the last thing we did, we took the risk and we already ordered the equipment last year. So we were able to close on the deal, and we have started already a few months ago, the Phase II, where we are developing the module development. In this case, it's not the power module. This is silicon carbide technology module development. It reads that by every machine, every process, whether it's the photolithography, the implant and so forth the trench, we are starting to do the process integration. We are working with third parties. So as I mentioned, we increased our collaborations with universities, with some of our other partners that we are buying equipment from and that will help us to expedite the process because we want to be impressive. Time is of an essence. And we are installing equipment in these coming months.

So moving forward, we'll focus on qualifying the process in our fab with our equipment and starting the production ramp-up. And with that said, we do plan to start it a 6-inch. But the 6-inch is running in an 8-inch fab, under an 8-inch equipment. And from that perspective, we will start an 8-inch pilot line at the same time, 1 month delayed from the 6 inch. So basically, we are sacrificing some of our capacity instead of allocating the tools, 100% for 8-inch to be able to also to -- so to 6-inch also to be able to run the 8-inch in parallel. So while we are doing so and optimizing the yields, our goal will be in the year 2028, running full 8-inch with a yield optimized in our fab. And here, we think that we'll be highly competitive versus our other peers today.

Now when we look on the other aspects, so I go back to the fab, not only that we have today and available. 30,000 8-inch fab, which for silicon carbide, again, you guys are good in math, you can calculate, it is a big potential for the business. We have 3 additional phases that we can expand. By the way, we can also decide to expand if we want in silicon for 300 millimeter. But certainly, we are looking more on the compound side and we can do 3 additional capacity increases that will carry us at least up to 100,000 wafers.

Of course, we're not going to invest before we make sure that we have the business and we have a leading position. But we have -- as Jeff mentioned, we have the ability to do so. These are the things that we didn't have before. So now it's really how we want to execute and when we want to execute on it.

The second thing is a part of the campus is trying to make the EPI in the same place. So EPI is an important process for silicon carbide and also for gallium nitride and also an expensive process. We hire the right talent and we selected the right tools, and we are going to start to do so already this year. That will help us not only to run the products or the wafers in our fab but also in the subcontractor or the foundry fabs in order to start to lower our cost before we can fully utilize that as a part of our own fab.

Now going to the substrate. Substrate is extremely important. And most of the issues year-to-date came because of the substrate. And that's something that in Vishay, that's not basically our strength. You look on companies like (inaudible) today, that's the strength. But what we see today and without diminishing that importance of the substrate, we see the cost of the substrate dropping. We see many, many suppliers coming, we see many, many opportunities, and we see the improvement in quality of the substrate.

So the first thing we did, we engage with multiple suppliers to North America, in Asia, and we are working to sign long-term agreements in order to make sure that we guarantee our supply and making sure that will be cost effective. At the same time, we are engaged with multiple companies on various technologies to be able to license the technology if we decide to produce the substrate internally.

Now it's -- I think it's too early for us to say anything. And we are engaged already for quite some time but the first goal was really to close on the fab. Once we closed on the fab, we closed on the EPI, now we're working on the execution of both and we are focusing on the substrate side. The good thing is that there is many emerging technologies that may be someone that invested a few years ago, plenty of millions of dollars, maybe looking forward, would have thought differently. And that's the advantage of a late comer. There is plenty of disadvantages from a market perspective that you guys know very well. But at least I can tell you what our advantage is. And that's what we exactly expect to use. Okay?

And last but not least is the module line. Module going for the integration, 80% today of the silicon carbide is sold as a die, and that goes into power modules. We intend to sell it to everyone else and also to our basically customers OEM or Tier 1s but we also intend to strengthen and to grow our module line. We already built and we opened a new facility in Borgaro, Italy, which is a nice place, 30 minutes from Turin facility that is running today our automotive products but not all automotive, also industrial and focused on solar applications.

So this facility today, we already invested in the new lines like new molding line for the transfer mold. So now we are shifting it gradually to support more and more on the silicon carbide. And here, we think that we can achieve a big growth. But in the next slides, when I talk later about the technologies, you will see the other technologies that we are bringing, and we do think that bring it all together and making that integration, can bring more value for our customers and certainly bring more value for Vishay.

So not only that we hired the MaxPower team and we bought additional technical team, silicon-carbide, there is a lot expertise there. So we also position a very strong support team from the academic side. So on the reliability -- on the silicon carbide device reliability, we have a leading professor with more than 20 years' experience in silicon carbide, the same on another university with another professor, more than 20 years' experience and focus on silicon carbide.

On the EPI, we were able eventually to bring internally, a very capable person with more than 25 years focusing on development of silicon carbide EPI reactors. And finally, on the substrate, another very strong processor with more than 30 or 35 years focused on silicon carbide. So just to say, yes, we are new to silicon carbide but we think that we got a good team with the MaxPower and the efforts that we have in Vishay, and with our focus on the same customers, same type of devices and packages, we think we'll be able to ramp up quite fast.

And last and not least, I mentioned 2 MOUs that we signed. So we are working on the third one. Basically, we are establishing strategic relationship with the U.K. universities. We think that will be a great benefit for Vishay, great cooperation, having the fab, having the capabilities trying to push it to the future. These are things that we haven't done in the past. And we are really now trying to transition. Our competitors are doing so, and we think that we can learn and we can certainly improve on that.

So trying to summarize everything that I mentioned on silicon carbide. We are standing from a low point but we are starting from somewhere, and we do have an ambitious growth plan. It's a big market. But again, we think that the potential is there, and it's all about us executing. Last year, as Joel mentioned, we already achieved a very large pipeline of design new opportunities. We are working with key OEMs. We are working with key Tier 1s on designs moving forward. The design cycle here is quite long, I would say. So we are looking at 2027, 2028, up to 2030.

Our customers were very happy with our execution because we were able to get a fab, we are able to make the first steps, it's a long journey. But we do see the opportunities. We do plan to hold to those opportunities and execute, and hopefully to be able to achieve -- I would say, supersede our targets. So with that, I'll finish my portion on the silicon carbide.

And I will go to the next session, which is on the overall Vishay product development and technology road map.

So the way how I wanted to take this time not to overwhelm you and I know it's already quite a longer session today and quite a lot of information to digest. So I go back to the same slide as we started and I want to focus on the solution focus first.

So we mentioned that earlier, how important it is for us to engage with the customers, trying to provide them a solution, trying not to sell one component but to sell the entire breadth of components that we have in Vishay. But as I mentioned, it's also for us to understand how do we impact the entire application of the customers? How do we help them not on the component level to improve -- improving the cost of delivery and so forth and maybe performance on the component level but to bring that type of an added value. And from that perspective, we established our first application lab also in the Polytechnic of Turin, where we opened our e-mobility lab, which now we are growing. It was important for us to position it close to our customers and also to be able to be very highly technical team members on our side, technical not only on the device but mainly on the application because these guys need to engage with our key customers and to be able to talk to them and help them on finding solutions on their own applications. But in return, of course, we expect that we'll be able to design many more Vishay products.

So in the next slides, I would like to take the opportunity to use our reference designs which started originally by Joel when -- in his previous position as a sponsor for the business developing, starting that change in state of mind in Vishay of selling solutions, presenting solutions. And that started, as I mentioned, 2021, 2022 and now I'm trying to take it together with the team to the next phase.

So the first application that I would like to show you here. And honestly, I will focus mainly on the e-mobility side today, and I apologize I'm not focused on other applications such as AI or industrial but just for the sake of time, I would like to show you the breadth of our products and where we excel from the Vishay product perspective.

So I'll start with an 11-kilowatt on-board charger, which is typically on most of the EVs today, not on the high end but I would say more on the on the mainstream perspective. So on-board charger is a key component. Every EV has it because it takes basically the charging station, alternating current and convert that to a AC equipment in order to charge the battery. And just having here -- looking here on the components, I will start and I acknowledge that maybe it's hard to see on the back. So I will read that. Our Vishay content is more than 90% of the total bill of material for this onboard charger. Now again, we're not saying we're going to sell 90% of the products but just to explain to you the breadth of the products that we have in Vishay.

Now you also need to understand, we are a power company. There is one key common thing between all of our product lines. Some with a greater extent than others but in general, I can say that we are more than 75% of our products goes to power applications. So when you look on an application like that, you can see how it all comes together from a customer perspective and also from the value that we can provide them.

So if I start with the resonant transformer, this is a key element in helping to convert that AC equipment. And from that perspective, this transformer is patented by Vishay, integrating also the inductor inside and providing a much lower losses, basically improving the efficiency and less heat and also less -- smaller size and lower weight for our customers. That's the key magnetic that you can see here but we have our output filter, our IHDM family, which has the best-in-class performance. And you will see that we have also here a common mode choke that's basically for the common mode. We have a few additional filters with our IHLP, which is also the best-in-class and patented. (inaudible) conductor for multiple years. So you can see the content -- the large content that we have on inductors. Now inductors for us, for many years, was the fastest-growing business unit. It grew to the high stage. And in this case, we still think that it will continue and grow fast in the next years, exceeding 10%.

The second product that I would like to show you is on the capacitor side, you can see here at resonant film capacitor. You can see here the DC link capacitor. These are also a film capacitor, the same as the safety caps, and here, we have additional safety caps. So from a

capacitor perspective and specifically from a DC link or a film cap for the last 5 years, we grew 24% CAGR. We do expect that we can continue and grow another 24% the next 5 years as well. These type of applications are really driving the capacitor. And between the capacity in the magnetics and the power semiconductor that incorporate from a cost perspective, again, more than 75% of the total cost of the bill of material that goes there and Vishay can supply it to all.

We do think, again, from a capacitor -- from a -- magnetic perspective for many years, we were missing capacitors. And the team did a great job now investing in the capacitors. You saw the new factory. So we think that we have the ability to expand fast. We are adding more new families, new products to our inductors. The same, as I'll show you in a minute on the shunts, on the current sensing, and we think that, that will help us to carry us forward.

I mentioned now the shunts. You can see here, it's a bit maybe hard to see but there are 6 shunts here. There is also 3 shunts on the other board. You will see shunt or a current sense resistor, high current senses resistor on all of these high-power applications because they're required in order to make sure that the system are regulated properly and to keep them safely. From that perspective, the shunts coming out of the Vishay Dale division, are the best in class for the last 25 years. We are a leader in the low ohmic -- with our low ohmic shunts. We are adding a lot of capacity in the same factories. We are adding a lot of new technologies and new products in this coming year and so.

So you will see in the next application, how it all comes together but we think it's not only about the semiconductor. Now what you don't see here is that under this board or connector to this metal plate, there are 4 power modules, Vishay power modules using an impact package. These power modules -- for this reference design, they use a 650-volt super junction technology and also our fast recovery diode technology. When we go to a 22-kilowatt design, which we are working now with our key customers that would be silicon carbide modules. Now for a 22-kilowatt design, we see an opportunity in Vishay for \$230 per on-board charger, just to try to quantify the size of the opportunities.

Now another on-board charger, which has a very similar topology that we just recently released, and we worked a part of our e-mobility lab together with a key customer is for a low speed 48-volt. In Southeast Asia, it's mainly for a 3-wheeler. But we can see that also coming in the large cities for a 4-wheeler or for vehicles that leads maybe up to 30 miles per hour speed and certainly, maybe 80 miles of a range. And they don't have the ability to charge high power fast and that could be a very cost-effective solution.

So the reason why I wanted to show you here is that, again, very same topology but now we're using different components, different technologies. For the DC link we have our aluminum technology, and safety caps, the same, shunts, inductor, different technologies but still same best performance from Vishay.

Now what I would like also to emphasize here is coming back on the current sense resistors. There is a small component here. It's a family of basically a divide, it's a CDMA family of thin-film resistor. We have a great success designing it into our key customers, very high accuracy, very high performance, lower temperature coefficient. So plenty of products. It's hard to see here but on this board, we have more than 70%, which correlates to 310 Vishay products into this type of an on-board chargers.

And the last product I would like to mention is basically this PTC, the positive temperature coefficient. That's a resistor that we use for protection. It is a very fast-paced growing line for us, also a double-digit KGM. Moving forward, we see great potential for that. Our products are highly reliable. They can support up to a very high energy to protect the circuit. And from that perspective, we do intend to heavily invest also into the protection market moving forward. So I just wanted to show you different products and how it comes all together on this type of boards.

Now one of the key applications is really the traction inverter. That's what takes now the DC current out of the battery and convert that to an AC in order to drive the motors that we have in the car. And typically, in an EV, we can have between 1, 2 and even 3 motors depends on whether it's a high end or not. In this case, I show you a reference design that we just did to one of our, again, key customers. Again, going back to the low speed. So you can see here our aluminum hybrid polymer capacitors, 64 capacitors per board. You can see we have an e-fuse, power IC e-fuse, a programmable e-fuse. And we have our MOSFETs. These are 80-volt basically dual-side cooling MOSFET with our advanced packaging, 32 MOSFET per board. And the last one, again, coming back is the shunt, as I mentioned that we can see

that everywhere. In this case, more than 60% of the products are Vishay products that relates 390 components on the bill of material.

Now when we go to the higher power traction inverter, which we are working with our, again, customers and we'll introduce later in the year, we are moving to silicon carbide. On these boards, we are already looking at around \$340 per board content for Vishay.

Now the last reference board that I'll show you today is a heat pump. In this case, it could use for both e-mobility, all for a commercial or industrial buildings. Basically, the goal is to improve the heat conversion between a traditional, I would say, more energy wasting conversion to this efficient heat pump. Where in this case, the key element is our silicon carbide MOSFET. That's the first time that we are using it on our reference board. We introduced that at the end of 2022.

You can see here our film capacitor with the lowest profile. You can see again the shunts, the safety capacitors and again, the magnetics, the filter. In this case, on the power stage, we have 100% of the Vishay components on these boards. So the goal was just to show you how Vishay all comes into power, and it's not different business units. And certainly, it excels in the e-mobility. I think -- and the next time that we'll have the opportunity, I would be able to present also the other market segments and other applications that we are focusing on.

Now we talked about power a lot, and I will come to power in the next slide. But on this one, I would like to focus on our optical sensors. So our optoelectronics division is a very important division for us. We are heavily investing in that. And then again, we focus on the e-mobility side, we see a lot of opportunities. So you can see sensors, as you know, goes everywhere. And you can find our also sensors everywhere in the automotive. So 25% of the specific sensors that we support today, we believe we have a market share that, again, is growing double digit for us moving forward.

So some of the applications that I can share with you is like on the forward sensing. When you want to touch your touch panel, right, everything now moves to a touch panel. So you identify -- the system will identify that you're approaching it, it will -- basically with a proximity sensor and the ambient light sensor, it will adjust the light intensity, whether it's evening or whether it's daylight. So that's also for the dimming. But also for the turnoffs, our optical sensor -- transmissive optical sensor is heavily used in many OEMs today and it's keep growing. On the driver monitoring side, we have our high-power infrared LEDs. On the LiDAR, in order to position the LiDAR system itself, this will be an emerging application mainly coming later on, on the late, I would say, level 3, level 4 type of systems, we have our reflective optical sensors and also with the fixes embedded inside in order to help to position that.

On an air quality, we have UV emitting diodes. We have our photodiodes for the detectors. So quite a lot of content. In this case, we started a few years ago to produce and design, again, with all the IC design tools internally. We are fabricating that in some cases in the foundry. But when we go into the gallium arsenide, which I will show you in the next slide, many of the products we just built a new fab that we started the production earlier -- sorry, a year ago, and we are still in a ramp-up phase. So from that perspective, I would like to mention that our optoelectronics are not only about the sensors, although sensor is going very, very fast, it's also coming back to power. And it all comes together to our solid-state relay and to our MOSFET driver. So typically, they have to provide a very high isolation when there is high voltage.

We go to silicon carbide, we go to the applications, that's where isolation is required. So you can find them whether it's under charger, either on the outside on the wall box or in car, whether it's a part of the cell balancing, the cell balancing, the better cell balancing. There is battery that sits on the bottom of our EVs with plenty of cells. We use our solid state relays. So plenty of opportunities from that perspective.

Now the last line that I would like to focus on for the e-mobility is MOSFETs. And MOSFET line is not only important for us, we're going to double the revenues in these 5 years. So of course, we built a 300-millimeter fab or it's ongoing, and we are heavily investing also in Newport. At the same time, also with our foundry partners. So these new factories will help us also to keep the leadership from a technology perspective, which we believe we already have on many of the products. So we think we have the best channel MOSFET technology with a very wide range of voltages from a 40-volt to 100-volt, mainly supporting load switches. We have a leading switching and low resistance gen 5 technology that we are just now releasing and extending the voltage from a 40-volt to 150-volt to support a very wide range of application.

And I wanted to list here the key applications that we support. And here, we're not talking about EVs, we are talking about everything, 48-volt and whether it is a hybrid car or in any variations, the electrification is everywhere. And you can find our MOSFET, whether it's on the battery management, whether it's on the starter generator, whether it's on the power steering everywhere. So we see the content keep increasing. And even with the delay on EVs or whatsoever, the demand is still extremely strong but the future for us is very -- I would say, is very rosy here.

Again, you can see our solution based. And not only that we are heavily investing in the silicon technology, we are also heavily investing into our packaging solutions because, as I mentioned earlier, on the silicon carbide, it helps us to basically dissipate the heat. It's a part of getting the performance, keeping the reliability and also our cost together. And I missed also one more technology, a new technology that we are bringing out to automotive with improvement is our 650-volt super junction. That technology was released last year, and we are ramping it to production soon.

So with that said, I'll try to summarize the technologies that I mentioned and looking also on the newer technologies. So silicon, we're working for many, many years, and we will be able to excel now with the capacities and the capabilities. And with the new research and development that we are driving super junction. I just mentioned to you, we are bringing more and more technologies now. In silicon carbide, we also mentioned. That already gives us a big breadth of products that, again, we didn't have before. I would say with the silicon carbide, it doubles almost our total available market.

IGBT is very interesting because it's a technology that we used to have in our Itzehoe fab, and we used to basically use it for our own power modules.

But because we were so constrained, we had to decide to cut the production and focus on our key customers. Now when we acquired the new fab in Newport, we are coming back to an IGBT. Now we haven't made a decision whether we want to continue and invest in IGBT or not. We are very sensitive to be focused, not to diverse too much. So we really want to execute, but we see a big potential again. So we have the tools, we have the capabilities, and we are producing in this fab high-volume agilities.

Now we need to decide whether we want to do that or not, and that's something that we are going to review in the course of this year and will come to a conclusion. But we still see IGBT market growing until the end of this decade. Of course, silicon carbide at the end of the day is hitting a part of it, but it is still a growing market.

The last technology that I would like to mention today is the gallium nitride. So gallium-nitride is there already for a few years, but it is still relatively a small business today, but we believe it will be a significant business moving forward. And that's a key element in order to continue and increase the switching frequency, support low voltage and high voltage. We already are working on gallium nitride research and development for more than 6 years. We're going to come and basically sample the first product, 650 volt by the end of this year. We plan to be in production next year. We are putting big efforts into our Newport fab and also with our, as I mentioned, research and development partners, to drive hard on the gallium nitride.

With that said, we believe that we have in our arsenal moving forward the full range of technologies. Now again, we need to be focused, and it doesn't mean that we're going to put all the efforts in the same way. But we want to be business minded, and we want to be able to drive it fast and to take a leadership position also from a technological perspective. At the end of the day, it all comes together with our customers with applications that we are supporting. So this is a New Vishay and that's totally different than where we were before. Now it's about our execution.

So just before the end, I'll mention briefly about the M&A. So as Joel mentioned, so once you understand the customer needs, and we know where we want to drive from a strategy perspective, our product, our best way is to do is to do the organic growth and to drive it internally. But we do need also to complement that with M&As. And the way how we want to treat M&As, and you can see how we did that for MaxPower and also for Newport, first of all, is focusing on our profitable growth. We want to use that as a tool to accelerate our profitable growth. We want to have strategic acquisitions that will enhance our organic growth. We want to see innovation, technology bringing us portfolio expansion, which, again, we did that with silicon carbide, and we think that there are others that we can do in order

to make sure that we don't do only what we do today, but we can also capture the future trends.

We are also focusing on vertical integration. This can be smaller acquisitions that will help us to improve either cost or basically the supply chain and supply guarantee. Synergies, but most importantly, it always to be highly accretive. So what we did basically this year and last year, we created a team. So myself and Michael Sullivan, which is the Chief Legal Officer and Administrative Officer, are working on that. We have now a dedicated finance. We have a project manager. We start to align the way how we treat our M&As before that, doing the due diligence and also doing the transition to make sure that we can effectively execute on it, making sure that effectively will integrate it and we make it successful.

So just to summarize (inaudible) the last 2 slides that -- the 2 sessions that we took. So basically, we are enhancing the technical customer engagement. We are increasing the design opportunities. We want to see more design (inaudible), and we want to translate that to a higher percentage of design wins. We're accelerating our research and development programs basically driving our organic growth and at the same time, we'll focus on strategic acquisitions. Thank you very much.

Joel Smejkal Vishay Intertechnology, Inc. - President, CEO & Director

All right. What you saw with Roy there was the technology. Vishay Intertechnology. We are a technology company. The New Vishay is digging inside applications. We're inside the customers' discussions. You saw just a sample of a few reference designs of key applications that we're seeing common across automotive and mobility. So we use these tools now to show our sales team, our marketing team, our distributor FAEs, our rep FAEs to go into the customer and drive this design activity.

Dave let's talk about financials. We're going to hand it over to you, Dave McConnell, our Chief Financial Officer.

David E. McConnell Vishay Intertechnology, Inc. - Executive VP & CFO

Good morning, everyone. My name is Dave McConnell. I have been in the job for 30 days as Chief Financial Officer, as Joel said earlier, I have been with the company for a long time, 32 years, I've had just about every financial job in the company that you can have. And I'm here today to talk to you about financial targets and capital allocation.

Okay. Everybody's been asking, what are we getting? Some people stole a thunder already earlier. What we're getting is, we're spending our money on accelerating our revenue growth. Today, Vishay is \$3.4 billion company. Last 5 years CAGR, 2.3%. That's not good enough. Not good enough for us. It's not good enough for you. It's not good enough for our customers.

Turn the page, Vishay 3.0, new plan, CAGR, 9% to 11%. So split it down between semis and passives. Last 5 years, CAGR for semiconductors is 2.0. Once again, not good enough. The new target next 5 years, CAGR, 10% to 12%. Passives, today, approximately \$1.7 billion as well. CAGR 8% to 10% from 2.6%. So once again, 2.0% to 9% to 11%, 2.3% to 9% to 11%, 2.0% to 10% and 12%, and 2.6% to 8% to 10%. We're investing in accelerating revenue growth.

So some of you were asking for a deeper dive earlier. I got a brief slide here for the segments. We operate in 6 segments, 3 for the semis and 3 for the passives. As you would expect, what we just got done speaking about from Roy and Jeff, MOSFETs has the highest CAGR goal, 12 to 14. Opto also though, 10% to 12%, as Roy just presented their move to auto. And the rest coming into the 8% to 10% range. What's important here is that the growth is across all business segments. There's not one plant, one factory, one plan, one product line, one project. It's across all business segments.

Okay. So we're investing in accelerated revenue. We're also investing in improving our gross margins. Today, Vishay was 28.6% last year, 5 years average before that's 27.3%. The new target based on the 5-year plan is 31% to 33%. That's 400 basis points improvement on average. How do we get there? As most of you would guess, with all the expansion in volume gets us there 640 basis points. We leak a little bit of that back. ASPs, as Jeff mentioned earlier, 240 basis points, ASPs -- ASP declines. But we gained a lot of that back with cost efficiencies and cost reductions, automation moved to subcon, some consolidation of similar tech and locations.

The depreciation is new for our waterfall. Obviously, if you're going to spend the amount of money, we're saying we're going to spend on CapEx, your depreciation is going to go up. So it's about 70 basis points loss on the margin. And that leaves other approximately 120

basis points, mostly labor, other costs that are susceptible to inflationary pressures. At the end, 31% to 33%, 400 basis points increase.

Okay. Managing our SG&A. So overall, SG&A is going to decrease as a percentage of sales, 14% to 12%. But within the 12%, we have baked in increases. So for instance, we're increasing R&D headcount-related spending. We're increasing customer-facing positions in tech staff. 2023, we introduced a new broad-based stock compensation plan for the employees. We feel this will allow us to attract new talent and keep existing skilled quality employees that we have today. That's all baked into the 12%.

Okay. So we're investing for accelerated revenue growth, we're investing for gross margin improvement, and we're also investing for higher cash generation. Start with operating cash flow. \$366 million in 2023, approximately 11% of revenue, reach over to 2028, we're approaching 19%. Now we're going to need that operating cash flow in order to pay for expansion programs.

Last year was the first year our CapEx has increased significantly, \$329 million. You can see for the next 3 years, we're projecting \$500 million of CapEx spending in each of the next 3 years before it tails back down to a normal sustainable range. We talked about the depreciation earlier, \$184 million of depreciation expense in 2023, you can see that number is going to track up as Joel indicated earlier today. Eventually, the 2 will come to a point around \$300 million and level off, the 2 will match each other.

Okay. So what does that give us for free cash? That's what everybody is interested. Last year, Vishay had \$37 million free cash, its not a typical year. We had already started the capital expansion program, \$329 million, and we paid some large taxes to move money back to the U.S. 2024, 2025, you can see we're basically slightly negative to flat. We're well positioned to manage that given our existing liquidity. We have over \$1 billion on the balance sheet. We have a \$750 million revolving credit facility, that's untapped at the moment. So we're very comfortable with these 2 years. But then the story is, you can see what happens in '26, '27 and '28. Typically, over here, years Vishay is 4% to 5% free cash of revenue. This is closer to 12%.

Okay. Capital allocation strategy. Our strategy remains consistent. First up, we've talked quite a bit today about the CapEx. Part 1, \$1.4 billion worth of spending from '23 to '25, including the additional \$200 million for Newport, total \$2.6 billion from '23 to '28. Stockholder returns, very important to us. Target to distribute, we remain committed to distributing 70% of our free cash flow to shareholders in the form of dividends and share buybacks. And then M&A, obviously, we're active to having just completed the Newport acquisition, we will remain active. As Roy just listed out, we're looking for innovation, technology, portfolio expansion, market reach, vertical integration.

Now if we're generating 12% free cash flow revenue, we may be able to expand our opportunities in the M&A area in the future. I think it's important to note as well, in the context of this, the capital allocation strategy, we're predicting in 2028, we should be at \$2 billion of total liquidity. Compliance, net leverage ratio, less than 1, and we should be able to keep our ratings BB+ and BA2.

Okay. Tax strategy. Not my favorite subject, but we get a lot of questions from people to understand why our tax strategy is what it is. And we think this is a good forum to discuss it and bring it out. So Vishay operates in many countries. If we paid tax in the countries where we make earnings, our tax rate would only be 22.9%, okay? In order to execute though our strategy, especially the shareholder returns and the M&A, we have to bring money back to the U.S., okay? To bring money back to the U.S. We had to pay additional taxes withholding taxes, specifically 2 countries where we do business, Israel and Germany.

In 2023, we paid approximately 8% -- well, our tax rate was impacted by roughly 8% because of the ability to bring back money from those countries to the U.S. This year, going forward, we think it will be slightly less. It depends on how much the earnings are in Israel, and how much the earnings are in Germany, specifically. So I think 8%, it's going to fluctuate then year-to-year, depending on what their earnings are for those divisions who are operating in those 2 countries.

Okay. Just a recap briefly, since we've already talked about most of these, but financial goals. Joel had the same slide up there earlier today. Revenue, \$3.4 billion, 9% to 11% CAGR, we just discussed. Gross margin 28.6% to 31% to 33%, 400 basis point improvement. Operating margin, 14.3% to 19%, 21%. Adjusted EBITDA, 19.5% to 25% to 27%. Greg, you were right earlier, that doubles in absolute dollars, okay? Return on invested capital, 11.2% to 14% or greater. This is a gross ROIC calculation, if anybody's modeling. If we were doing net debt, it would be closer to 17% to 18%. And finally, capital intensity, 9.7% with a soft landing in 6% to 7%. Okay. Thank you.

Joel Smejkal Vishay Intertechnology, Inc. - President, CEO & Director

Thank you. In January of '23, when I did the first earnings call of the New Vishay. I made a statement about the company. I said Vishay is a sleeping giant. The giants awake, we've got a lot of opportunity as a company. You've heard from our operations leader, you've heard from our technology leader. There's a lot we can do with this company. This team sees it, guys, why don't you come on up?

We're going to take some questions. But first, there's initiatives. This entire company, it's a technology company, but there are significant initiatives that each leader is responsible for. Mike, do you want to come up as well? And Peter? We meet often. We speak often as a leadership team. We strategize and we've got a strategic plan, which is quite broad. We've given you a view of it, the product and the operation and the technology side and how we're going to move forward financially.

It's a great team. We work together quite well. We are cohesive. We collaborate, and we're going to take this company to a new level. This is the plan we have for you today. It's our plan through 2028. We're going to work very hard to beat it. This is where we are today. The customers have given us positive feedback, and we're quite confident in where we're going to go and what we're going to do. So I'm going to close it there, and we're going to open it up for questions. We're all available to field the answers. So who would like to answer the first question? Or ask the first question?

Joshua Louis Buchalter TD Cowen, Research Division - Director

Joshua Buchalter from TD Cowen again. First, what I was hoping to ask on silicon carbide. So you mentioned that you've -- I think there's 4 substrate suppliers. Any more details you can give us on confidence in your visibility to volumes there because silicon carbide has been so constrained? And also, I think you also mentioned potentially doing some outsourced on the front end for device business. I'd just be curious if you could share any details there because we haven't seen that model really develop yet as that industry has been again so constrained in the last several years? And I have a follow-up.

Roy Shoshani Vishay Intertechnology, Inc. - Executive VP & CTO

So let me take that. So just to start with the substrate question. So for the shorter term, for the next 2 years, indeed, we are using our foundry partners. So the substrate and the epi is mainly coming from their perspective. So it's already, I would say, secured by long-term agreements on their side. Now moving forward, we don't see today a big constraint if we look from 2027, 2028, we see plenty of suppliers and we see also all the existing suppliers are willing to install enough capacity with the long-term agreements. That's the reason why we are still in the final details, if you need the technical performance and negotiating the price, because things are moving relatively fast in this specific arena.

So we do see enough suppliers to be able to support both on 6 and 8-inch because mainly focus will be on 8-inch. 8-inch today is not really available today in a high volume, but we see that moving forward. Now as I mentioned, we are also working on engineering substrate, so where we see potential to license the technology and install that internally, which is another funnel. But we don't have today a big concern from moving forward 2027, 2028.

Now to answer your second question related to the foundry based, you're right, none of the big top competitors today are doing so because they already installed their own capacity. And of course, they can be much more cost-effective running internally. So we are forced to do so because of the MaxPower acquisition, as I mentioned, in our catch up. But it works well for us because the focus for us today is not really the high-volume type of automotive business. We are starting from a lower volume, mainly coming from industrial Tier 3, Tier 2.

So it works well for us to use the foundry for that. We have an agreement on capacity. We believe we can manage it. And it really helps us to move forward. Once we bring our fab, of course, we'll be able to take the big customers, the big volume in our fab and expand it. But we do think that we can keep it like that having a second and a third source just from a supply guarantee. Now how it will evolve for the next few years, we need to see. But we think for Vishay, it's the best solution for us at this point.

Joshua Louis Buchalter TD Cowen, Research Division - Director

And as a follow-up, I wanted to ask about the gross margin target. It looks like volume is the biggest swing factor there. Any details you can give us on sensitivity, in particular for entering the year? I think the first quarter guidance is 24%. The long-term model is 31% to 33%,

I guess. How should we think about in the shorter term, how gross margin will move around with volumes as you're investing for capacity for the back half of the decade?

Unidentified Company Representative

Do you want to take the back end first?

Jeffrey Allen Webster Vishay Intertechnology, Inc. - COO & Executive VP

Sure. So as was already calculated, 25% is going to be a significant growth year for us. So we're going to have a little boost there. We're having Newport that's coming on. We're having some foundries that Joel has mentioned in his previous conversations that are coming on. So you'll start to see that the gross margins are ticking up. We get big impacts later in the year, though, later in the 5-year cycle. We bring on our 12-inch wafer fab, which is a big cost reduction for us. So you'll see more improvements going along there. Silicon carbide is starting to come on that has higher margins in our typical products. So the bigger jumps will start coming in later years.

Joel Smejkal Vishay Intertechnology, Inc. - President, CEO & Director

Short term, there's a challenge with Newport. As you can imagine, we're transferring our technologies. We've got 8 transfers to do. So in the interim, we're running a fab at partial capacity. So there's going to be some margin impact because we have Nexperia, the previous owner transitioning out. We're still running some volume there. We had other -- a couple of other customers that they had, which have continued their volume in that fab, but we're running a fab not at scale. We're running a fab that is diminishing volume from the previous ownership and Vishay transferring in. So there will be a gross margin impact. Any comments you want to make further on that in the short term?

Jeffrey Allen Webster Vishay Intertechnology, Inc. - COO & Executive VP

Right. As we see it now, of course, everything depends on the timing. We may have a 1% to 2% gross margin impact this year, quarter over -- quarter by quarter, but it depends on how we can ramp up, how slow they ramp down. But it's around 1% to 2% negative, of course.

Joshua Louis Buchalter TD Cowen, Research Division - Director

Great. That's already been in first quarter guidance.

David E. McConnell Vishay Intertechnology, Inc. - Executive VP & CFO

Our first quarter guidance? I don't think we did (inaudible). I don't think -- we had now Newport at the (inaudible).

Joel Smejkal Vishay Intertechnology, Inc. - President, CEO & Director

Newport (inaudible). We didn't know when we were going to close specifically on targets and it's really not in the first quarter guidance, no.

David E. McConnell Vishay Intertechnology, Inc. - Executive VP & CFO

Yes. We'll have more information on the earnings call for the first quarter about the year when it looks like Newport.

Gregory Stephen Williams Mountaineer Partners Management, LLC - Chief Compliance Officer

Greg Williams from Mountaineer Partners. Joel and Dave, the financial outlook that you provided is a significant departure from what Vishay looked like over the last several years and is well in excess of what most analyst models have Vishay doing over the next 2 years. From what I know in Vishay corporate culture, is it fair to say that there was a lot of rigor put into those estimates and that in the distribution of outcomes that there's more opportunity on the upside than down, albeit the future is uncertain?

David E. McConnell Vishay Intertechnology, Inc. - Executive VP & CFO

Well, first, I'll comment first. I've been here 32 years ago. This is the first time I feel like we have a real 5-year plan at a very detailed level, thanks to this team over here, okay? So from that point, I'll let Jeff talk about the upside. There is certainly some upside.

Jeffrey Allen Webster Vishay Intertechnology, Inc. - COO & Executive VP

There is some upside. I would say it's -- our older models are extremely conservative, as you might guess. This is, I would say, achievable. There is upside. We talked about the capacity that we invested. There is upside to that capacity. So if the market is hot at that points. There is that upside. Obviously, if there's any price adjustments that have occurred at that time. So there is upside in our projections.

Gregory Stephen Williams Mountaineer Partners Management, LLC - Chief Compliance Officer

Great. And then as a follow-up to Joel and David, when I look at your outlook, I mean, you're looking at almost \$700 million of free cash flow in 2028 and only 1 year of negative \$100 million. You've got a revolver that's \$750 million in the revolver, you have unlimited restricted payments up to roughly \$2 billion that you could put out to equity if you wanted. What's the thought on the capitalization? Because it seems like you're massively overcapitalized and could use that cash pretty productively to reduce your share count?

Unidentified Company Representative

David, do you want to take it?

Joel Smejkal Vishay Intertechnology, Inc. - President, CEO & Director

Go ahead. I'll follow up after you.

David E. McConnell Vishay Intertechnology, Inc. - Executive VP & CFO

So we don't necessarily disagree with you. Okay. So I think what we're trying to do is get the input from today and after we presented our plan and our story, and we'll go back to the Board and (inaudible) discussions.

Joel Smejkal Vishay Intertechnology, Inc. - President, CEO & Director

So there's new conversations. I can tell you, this is a new company. We call it the New Vishay. The Board is seeing this plan. The Board has approved this plan, excited about where we're taking the company. And this brings a different type of discussion now. What is the total shareholder return? What is the capital allocation that we want to bring forward. So I appreciate your question. It is in discussion. There's been many scenarios discussed. I think you'll see us working very positively in how we're using this cash, whether it's further investment, M&A, greater M&A or as well as return to the shareholders. I think you'll see some different things.

Gregory Stephen Williams Mountaineer Partners Management, LLC - Chief Compliance Officer

And then I'm curious, and maybe this is more David or Joel or anyone else. But on the -- it seems like there's a significant return to the CapEx that you're putting out there. Can you help characterize the hurdle rates you're targeting when you underwrite new growth CapEx?

David E. McConnell Vishay Intertechnology, Inc. - Executive VP & CFO

(inaudible) about exactly the rate but?

Jeffrey Allen Webster Vishay Intertechnology, Inc. - COO & Executive VP

Would you want to talk about the rate?

David E. McConnell Vishay Intertechnology, Inc. - Executive VP & CFO

Well, you can go (inaudible). It's a high rate.

Jeffrey Allen Webster Vishay Intertechnology, Inc. - COO & Executive VP

Yes, we use a very high rate. Obviously, we calculate frequently the finance team. I would say our rate is higher than other companies based on how our structure, our capital and stuff is, and we target. When we look at investments, one of the key things is our NPV has to be greater than 0, which means the internal rate of return -- we have to exceed the internal rate of return or the hurdle rate that you talk about. So this is one of our key elements. But -- so even before that...

Gregory Stephen Williams Mountaineer Partners Management, LLC - Chief Compliance Officer

So are you saying that it has to -- that an investment has to generate a return greater than your ROIC that you're talking about?

Jeffrey Allen Webster *Vishay Intertechnology, Inc. - COO & Executive VP*

Yes. Close to our WACC.

Gregory Stephen Williams *Mountaineer Partners Management, LLC - Chief Compliance Officer*

Okay. And are you looking at on the -- for the ROIC in comparison to the net or gross number when you're thinking about that?

David E. McConnell *Vishay Intertechnology, Inc. - Executive VP & CFO*

So the ROIC there was great. Are you talking about what we're doing the internal?

Gregory Stephen Williams *Mountaineer Partners Management, LLC - Chief Compliance Officer*

Yes. Just as a comparison for a hurdle rate.

David E. McConnell *Vishay Intertechnology, Inc. - Executive VP & CFO*

Yes, I would say it's the net. Maybe the net, I'd say I'd. It'd be the net. It's not one that we focused on as much as we do the WACC. I mean we know what our WACC is -- you got to look at it sometimes that's not purely just the number, as you know. Net would be the way I'd say we look at it -- is exactly the same metrics, but equivalent to net.

Gregory Stephen Williams *Mountaineer Partners Management, LLC - Chief Compliance Officer*

Okay. And then just at a high level, it sounds like, and correct if I'm wrong, that you're expecting sort of share gains across the board, not just in silicon carbide, obviously, significant share gains or what you're targeting in silicon carbide. But are you taking share across the product portfolio you think as you look out over the next 5 years?

Joel Smejkal *Vishay Intertechnology, Inc. - President, CEO & Director*

Definitely. With the intention of covering the channels plus the market segments that we talked about, reengaging the others, the market segments known as others yes, gaining share across all those 6 business segments we talk to, 3 semiconductor and 3 passives, all showing significant growth over historical. We intend to take share, yes.

Gregory Stephen Williams *Mountaineer Partners Management, LLC - Chief Compliance Officer*

And finally, can you characterize a little bit the benefit to Vishay of pushing on the reference design side? That's something that's relatively new and expanding, but -- and I think it's a significant value, but if you could help characterize that a little bit.

Joel Smejkal *Vishay Intertechnology, Inc. - President, CEO & Director*

The reference designs, if you first go back to reference design, when I was -- first started calling on the reference design companies, the linear techs, the micro linear, I was in California in the '90s, promoting a product and getting the Vishay part number on a reference design, which goes to the customer for them to sell their IC, their chipset. This continues, but we didn't have a concentrated effort on those IC fabs, those IC houses. We've added head count over the last 2 years. We have an IC reference design engineer in California. We have another one in Dresden, Germany. We're concentrating on those somewhat competitors in a way that are developing ICs, so Vishay can populate their reference designs. That's one.

We've got a library database in our internal system with over 1,500 reference designs, which are FAEs, our sales force, our marketing people can latch on to and go to customer. Speaking about current IC part numbers and the Vishay products that populate that reference design.

Now third is our own solutions coming forward with what you saw, Vishay populating 80%, sometimes 90% of the parts in a design. This is another step of reference design. Why does the customer engineer want this? They're under the gun. They have speed, they need speed to design. They need someone, who is resourceful.

So we come at them in 3 ways. It could be the IC house reference design. It could be our own reference design library or our solutions. It

accelerates -- and it promotes Vishay, beyond what some people have said, we only buy Vishay for the inductors. We only buy Vishay for resistors. This is what Vishay is, an inductor company. Vishay is beyond that. So it helps to cast a broader net and broadcast the strength of the company, the power of the portfolio. Okay. Nik?

Nikolay Todorov Edgewater Research Company - Senior Research Analyst

Yes. First, I wanted to get back on Newport, maybe a clarification if I missed it. Have you guys given a time line on when we should expect Newport to become margin neutral?

Jeffrey Allen Webster Vishay Intertechnology, Inc. - COO & Executive VP

Yes. So it will be the second half of next year.

Nikolay Todorov Edgewater Research Company - Senior Research Analyst

And then a question on the profitability from an operating margin standpoint, can you talk about the linearity of progression? How should we think about those to next 5 years? Is there any puts and takes that will allow you to maybe get to the 19% to 21% target earlier than 2028? And it's also that -- do you see that target as an intermediate goal or maybe as a long-term margin targeted sustainable?

David E. McConnell Vishay Intertechnology, Inc. - Executive VP & CFO

I think we've referred to the margin target as to 2028 goal, right? Because a lot of the capacity really, especially with (inaudible) was back-ended on the 5-year plan. So I don't think we would get there in years 2, 3 or 2 or 3, certainly (inaudible).

Nikolay Todorov Edgewater Research Company - Senior Research Analyst

And lastly, on silicon carbide, maybe I was just wondering if you can share how much CapEx was as a percentage of what you're planning to spend is going to go into silicon carbide? And how much growth do you anticipate from silicon carbide? It doesn't sound like you have extremely high goals, I think from the chart of where you're targeting less than 5% market share in 2028. So it is accretive to the business, but it's not kind of the major driver. I just want to make sure that's the key takeaway there.

Roy Shoshani Vishay Intertechnology, Inc. - Executive VP & CTO

No, we want to take it first on the CapEx side.

Jeffrey Allen Webster Vishay Intertechnology, Inc. - COO & Executive VP

Yes, sure. So there is CapEx, but I think what Roy said, one of the key points is there's a lot of the tools that we could use in Newport. So we're not having to invest as much as other areas. We've done a, I would say, significant investment already this year, early this year to buy the equipment. And -- but it's not as much as others. There will be stages of it as well. So our initial investment now is sort of the capability, low quantity. And then in later years, starting in '27, '28 there'll be other investments to get the higher volumes.

Roy Shoshani Vishay Intertechnology, Inc. - Executive VP & CTO

Let me add on that. So we have basically a full step plan. So as Jeff mentioned, the capability, capability is already now, and that's really for the shorter term. You're going to see that coming basically this year, maybe early Q1 next year. The next steps are really also working with our customers, defining how much we're going to grow. Now you're right. You saw on our side, roughly 4% market share. And it's easy to calculate it, because we also presented what -- how do we see the market.

Now we have competitors that are saying they are going to get 30% and 40%. We plan to eat out of that. Now how much we will be able to do? We don't want to commit to more. But as I mentioned, we do have plenty of capacity or potential for capacity, and we're going to execute a part of these 4 steps. So every step we will basically invest we will make sure that we have customers there. So I think that will follow that methodology. And certainly we are not even using, I would say, less than half of the capacity. I don't have the exact number in my mind. But we have much more that we can go if we see that we are successful or the market is growing faster.

Jeffrey Allen Webster Vishay Intertechnology, Inc. - COO & Executive VP

I can confirm what Roy says, it will be 50% capacity.

Joel Smejkal Vishay Intertechnology, Inc. - President, CEO & Director

So I think it's also related to the timing for the customer project to go into volume. He's going to have samples available in 2025 on the trench. Samples will go to the customer engineer, they'll start looking at the benefit that they're receiving in the particular program. Does it help to reach the longer range, the reduced charge time? Do they see the benefit in the circuit, which then is going to determine, is this a 2026 program for volume? Is this in 2027? And many of the customers I've talked to, they all say we need another supplier for 2026 and '27 not having the capacity running and just closing the Newport acquisition, we're now ready to have a much more serious discussion.

At this point, based on a small set of customers, we're showing you 4%. It's going to grow at significant volume like Roy talked about. We're going to accelerate with samples when available. We're going to try and get into projects earlier. It's going to come down to the feedback from the customer engineer. If he says this is really a benefit, a true benefit and he can accelerate us into earlier programs, we can grow at a faster rate. Any other questions?

Matthew John Sheerin Stifel, Nicolaus & Company, Incorporated, Research Division - MD & Senior Equity Research Analyst

Yes. Roy, could you talk about the opportunities or Joel, that other category, particularly around IT data center, AI, obviously, a lot of needs for power management? So could you talk about any opportunities there or anything you're doing there?

Joel Smejkal Vishay Intertechnology, Inc. - President, CEO & Director

We are participating in the servers. We are at the high-end servers. AI is another opportunity now for us. We are reaching out, because we have the capacity. We're speaking to the AI servers. I was just in Taiwan 2 weeks ago. They were talking about an AI server. It cost \$200,000, the end product. It's very expensive, but the number of server farms that are going to come into play for AI is big, we're now able to have those discussions. We've always participated in the server market. These are products that are high temperature. They have to be able to handle high temperatures. There's a lot of high current as well in servers. So we've always been there. We just didn't have the volume of capacity to really support it at a high rate.

Roy, you have the other comments?

Roy Shoshani Vishay Intertechnology, Inc. - Executive VP & CTO

Yes, sure. So we have short-term program and long-term programs. On the shorter term, we see, as Joel said, with the capacity coming, we have opportunities on the resisted side on the current sensing. We have opportunities on the tantalum caps. We have a big effort from an inductor perspective. Where in the past, we didn't participate because of the capacities and now we believe we have a leading position. So certainly, this will be the short-term things that we will try to start and take later this year and the following years.

Now we have, for the longer term, also opportunities that we are working more from a power perspective, whether it's MOSFET, power ICs, controllers and so forth, focusing specifically on AI on the large OEMs. These are large opportunities, but they are slightly further away. So we prefer at this point not to go to too much details, but there is a lot of investment as well going into this type of computer applications. As Joel mentioned, that was our bread and butter at least in MOSFET for many, many years. We had to maybe deemphasize it, and now we are reengaged.

Joel Smejkal Vishay Intertechnology, Inc. - President, CEO & Director

Any other questions?

Gregory Stephen Williams Mountaineer Partners Management, LLC - Chief Compliance Officer

Curious on the capital side, there's no risk to the dividend with your capital plan, right? That's something you're committing to?

David E. McConnell Vishay Intertechnology, Inc. - Executive VP & CFO

No. For 2024, we're still committed to the \$100 million shareholder return, \$50-some million dividend and additional share buybacks of \$50-something million.

Gregory Stephen Williams *Mountaineer Partners Management, LLC - Chief Compliance Officer*

Okay. And just for clarity, again, I mean, if you hit your targets, you're trading at 2x 2028 EBITDA and you're going to generate -- you're going to return \$500 million of cash to shareholders in '28 under the current plan? Is that the right punchline summary?

David E. McConnell *Vishay Intertechnology, Inc. - Executive VP & CFO*

It's a possibility.

Gregory Stephen Williams *Mountaineer Partners Management, LLC - Chief Compliance Officer*

Well no, it's 70% commitment.

Joel Smejkal *Vishay Intertechnology, Inc. - President, CEO & Director*

Based on that guideline. The math is good, but based on that guideline. Yes.

Any other questions?

Bob Johnston

Bob Johnston with Herald Investment Management. Could you, hate to do it right at the end, but maybe just talk a little bit more on your 6 segments, just high-level competition. I mean you made some references here and there, particularly on the silicon carbide. But I mean -- do you see yourselves going where others are leaving? Or what -- I mean, how are you looking at where to stay, where to invest on the competitive front?

Joel Smejkal *Vishay Intertechnology, Inc. - President, CEO & Director*

(inaudible) competitors, you're asking the names? Who they are? STMicro...

Bob Johnston

Not who they are. But (inaudible) and what are they doing and how are you reacting to that?

Joel Smejkal *Vishay Intertechnology, Inc. - President, CEO & Director*

That's an interesting one. What are they doing today is a different story than what they were doing a year ago, there's a lot of inventory in the channel that has to move. This is a challenge that we're seeing in the particular business climate with semiconductors is the inventory at the OEM is high. We didn't stuff the channel. They -- many of our competitors had NCNR in their supply agreements and there's inventory there that has to be digested.

What are we doing? We're talking with these OEMs. They appreciated how Vishay was a flexible supplier. We allowed cancellations. We allowed them to adjust their demand last year. Vishay's inventory is relatively healthy, healthy being good, and we're trying to move Vishay ahead of the pack. This is a key message to our sales and marketing team. We can't stand around and wait for the inventory to be digested that's there from what our peers had stuffed the channel with, we have to get out and get ahead. And customers appreciate what we're saying. We're trying to find those spots where we can get out and get ahead.

From a technology point of view, do you want to comment at all about technology comparison semis versus Vishay? I think you did a great job of speaking about best-in-class and what we're doing to show a better than technology in silicon carbide.

Roy Shoshani *Vishay Intertechnology, Inc. - Executive VP & CTO*

Absolutely. I think on the MOSFET and diode side, we feel that we have a leading position. Now great competition, and it's always head-to-head, but we do now with the capabilities that we are putting together, we should be able to compete with them. And typically, for them, it's a very high-margin business. So I think that's a great place for us to compete against.

Jeffrey Allen Webster Vishay Intertechnology, Inc. - COO & Executive VP

And maybe I'll add on the resistor side as well. I think we're also a leader, we're the largest resistor supplier in the world in terms of dollars. We play in almost every major segment. There is one that we're going to attack that we have left, and this is the commodity resistor world based on our buy resale. So we have a very strong position in the resistor area.

Joel Smejkal Vishay Intertechnology, Inc. - President, CEO & Director

Now capacitors. We see a lot of opportunity on high energy storage and also with the redesign of the grid, we're seeing great opportunity for the very large capacitive products, the highest energy. So we're not the commodity MLCC player like Murata. We're not that kind. But we do find the specialty of our capacitors in many new programs is quite desired. So the passives are quite well. The inductors were a leader in inductors, hold much of the IP on the power inductor technology plus, a leading supplier of custom magnetics to military, to automotive as well as medical.

So we're seeing opportunities there. In many cases, we're the leader. We're the leader in technology. We weren't the leader in supply. So by winning the print position and now backing it up with the investments in capacity, we'll be able to enjoy the volume business where before we had to choose customer by customer.

Any other questions?

Peter G. Henrici Vishay Intertechnology, Inc. - Executive VP of Corporate Development & Corporate Secretary

We have online questions that I guess is how do we select external capacity vendors? What is the decision-making selecting external vendors?

Jeffrey Allen Webster Vishay Intertechnology, Inc. - COO & Executive VP

Sure. Let me take that one. So first of all, we have a brand name to protect. So when we select vendors, they have to meet our quality requirements and our technical requirements. This is number one. We look in a term of long-term partnerships that we can work together that -- it's not going to be a vendor, who's going to take advantage of us and increase the prices in very difficult years. And of course, it must be technically capable to handle our products. A lot of our products that we give to some of these vendors are our designs. We're having them make them. So they have to be able to meet this capability requirement as well.

Peter G. Henrici Vishay Intertechnology, Inc. - Executive VP of Corporate Development & Corporate Secretary

With aerospace and defense being a growing market, where there be a focus on investments made in space applications?

Joel Smejkal Vishay Intertechnology, Inc. - President, CEO & Director

I think the investments cover all market segments. When we invest line by line, it isn't specifically for automotive only or for industrial only. It's for the product, which serves across the market segments.

Peter G. Henrici Vishay Intertechnology, Inc. - Executive VP of Corporate Development & Corporate Secretary

Last, do you see more revenue growth from Asia, Europe or North America? Do you have enough field application engineers? Do you need to hire more staff to support revenue growth the revenue growth you are expecting?

Joel Smejkal Vishay Intertechnology, Inc. - President, CEO & Director

Do you want to talk about the engineers?

Roy Shoshani Vishay Intertechnology, Inc. - Executive VP & CTO

Yes, sure. So yes, certainly, we need to hire more field application engineers. We are in the midst of doing so. We started to do that last year. We do have a strong plan for the next 2 years to strengthen our position with all the 3 regions. We see opportunities, I would say, in all regions, but certainly big opportunities also coming from Asia.

Joel Smejkal Vishay Intertechnology, Inc. - President, CEO & Director

We'll see growth in all regions, as Roy said, what we watch very closely is what's being nearshore to Mexico, whether it's companies moving out of China coming to Mexico, or European companies coming to Mexico. We're very closely watching this. We've got the factories there. We've got a staff of sales and marketing people in Mexico. It's a quite close watch for us. Europe, we see things moving into Southeastern Europe, where we see some manufacturing.

But Asia is always a very focused point of growth for us. We have a very strong team. We're seeing growth in India, as well as in Vietnam and other countries. So we're staffing accordingly based on how we see the customers move to make sure we have the right technical people on the ground to engage the customer and the engineers. So I think we're going to see the growth across all regions. Most interestingly, well, what is going to happen with Mexico and how fast will accelerate. Anything else, Peter from online?

Peter G. Henrici Vishay Intertechnology, Inc. - Executive VP of Corporate Development & Corporate Secretary

No. That's it.

Joel Smejkal Vishay Intertechnology, Inc. - President, CEO & Director

Any other questions from the audience here?

We want to thank you again. We really appreciate you joining our first ever Investor Day. We're excited about where we're going as a company. We have these 3 items on the screen, which you've heard many times today, First and foremost, is think about the customer and guide our business to support the customer, both in service technology and operational placement.

Business-minded. We were an operationally strong company. We're going to run this business. It's a business of electronic components. We're a technology leader, and we're going to capitalize on being a technology leader and show that all the way through the revenue, to the margins and further innovation and M&A.

Growth driven, it sums it all up. We're going to grow at a rate greater than we have historically. It's a main point as we talk and decide our initiatives. We're excited about where we're going.

Again, we thank you for joining us today. And we'll see you again soon. Appreciate your time.

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