Q3 2023 Earnings Call

Company Participants

- Elon R. Musk, Chief Executive Officer
- Martin Viecha, Vice President of Investor Relations
- Unidentified Speaker
- Vaibhav Taneja, Chief Financial Officer

Other Participants

- Colin Langan
- George Gianarikas
- Pierre Ferragu
- Rod Lache
- William Stein

Presentation

Martin Viecha {BIO 17153377 <GO>}

Good afternoon, everyone, and welcome to Tesla's Third Quarter 2023 Q&A Webcast. My name is Martin Viecha, VP of Investor Relations, and I'm joined today by Elon Musk, Vaibhav Taneja, and a number of other executives. Our Q3 results were announced at about 3 p.m. Central Time in the update that we published at the same link as this webcast.

During this call, we will discuss our business outlook and make forward-looking statements. These comments are based on our predictions and expectations as of today. Actual events or results could differ materially due to a number of risks and uncertainties, including those mentioned in our most recent filings with the SEC.

During the question-and-answer portion of today's call, please limit yourself to one question and one follow-up. Please use the raise hand button to join the question queue. But before we jump into the Q&A, Elon has some opening remarks.

Elon?

Elon R. Musk {BIO 1954518 <GO>}

Thank you, Martin. So just a Q3 recap. Last quarter was impacted by downtime for global factory upgrades that will help us reduce cost per vehicle as well as increase production. We remain focused on three main objectives, which is the cost reduction of our products,

investments in artificial intelligence, and other growth projects like Optimus, and continued free cash flow generation.

Regarding vehicle cost, our team was able to reduce the cost per vehicle further in Q3 despite headwinds from factory idle costs and ramp-up of new factories, and we believe there's still a meaningful room for improvement there. Regarding Autopilot and AI, our vehicles now driven over 0.5 billion miles with FSD beta, Full Self-Driving beta, and that number is growing rapidly. We recently completed a 10,000 GPU cluster of H100s. We think probably bringing it into operation faster than anyone's ever brought that much compute per unit time into production, since training is the fundamental limiting factor on progress with full self-driving and vehicle autonomy.

We're also seeing significant promise with FSD version 12 versus the end-to-end AI where its photon count-in controls out, or really you can think of it as there's just a large bitstream coming in and a tiny bitstream going out, compressing reality into a very small set of outputs, which is actually kind of how humans work. The vast majority of human data input is optics from our eyes, and so we are like the car, photons in, controls out, with neural nets -- just neural nets in the middle. It's very interesting to think about that.

We will continue to invest significantly in AI development, as this is really the mass game-changer. And, I mean, success in this regard in the long term, I think, has the potential to make Tesla the most valuable company in the world by far. If you have fully autonomous cars at scale and fully autonomous humanoid robots that are truly useful, it's not clear what the limit is.

Regarding energy storage, we deployed 4 gigawatt hours of energy -- of storage products in Q3. And as this business grows, the energy division is becoming our highest margin business. Energy and service now contribute over $0.5 billion to quarterly profit.

The Cybertruck, I know a lot of people are excited about the Cybertruck. I am too. I've driven the car. It's an amazing product. I do want to emphasize that there will be enormous challenges in reaching volume production with the Cybertruck, and then in making the Cybertruck cash flow positive. This is simply normal for, when you've got a product with a lot of new technology, or any new vehicle -- brand new vehicle program, but especially one that is as different and advanced as the Cybertruck, you will have problems proportionate to how many new things you're trying to solve at scale. So I just want to emphasize that while I think this is potentially our best product ever, and I think it is our best product ever, it is going to be -- require immense work to reach volume production and be cash flow positive at a price that people can afford.

Often people do not understand what is truly hard. That is why I say prototypes are easy, production is hard. People think it's the idea or you make a prototype, you design a car. And as soon as they're designing a car, it's just anyone can do it, it does require taste, it does require effort to design a prototype. But the difficulty going from a prototype to volume production is like 10,000% harder to get to volume production than to make the prototype in a first place. And then it is even harder than that to reach positive cash flow.

That is why there have not been new car startups that have been successful for 100 years, apart from Tesla.

So I just want to temper expectations for Cybertruck. It's a great product, but financially, it will take, I don't know, a year to 18 months before it is a significant positive cash flow contributor. I wish there was some way for that to be different, but that's my best guess. So really the demand is off the charts. We have over 1 million people who have reserved the car. So it's not a demand issue, but we have to make it, and we need to make it at a price that people can afford. Insanely difficult things.

In conclusion, we continue to focus on ramping production while maintaining positive cash flow, and we continue to target and expect to have around 1.8 million vehicle deliveries, as stated earlier this year. The Tesla AI team is, I think, one of the world's best, and I think it is actually by far the world's best when it comes to real-world AI. I'll say that again, Tesla has the best real-world AI team on earth, period. And it's getting better.

And lastly, I wanted to thank all of our employees, who are making a lot of extra effort during uncertain times. Thank you very much for your hard work and the impact that you're making.

Martin Viecha {BIO 17153377 <GO>}

Thank you very much, Elon. And our CFO, Vaibhav, had some opening remarks as well.

Vaibhav Taneja {BIO 20985733 <GO>}

Thanks, Martin. Vehicle deliveries in Q3 outpaced production, and we had yet another record quarter of profitability in our energy business. Congratulations to the Tesla team for the continued focus on operational excellence, as we navigate through a period of economic uncertainty, higher interest rates, and shifting consumer sentiment. As Elon mentioned, our Q3 operational and financial performance was impacted by planned downtimes for our factory upgrades. This was necessary to allow for further factory improvements and production rate increases.

Despite such factory shutdowns, our cost per vehicle decreased to approximately $37,500. We saw sequential decreases in material cost and freight. Reducing the cost of our vehicles is our top priority.

On the operating expenses front, R&D expenses continued to rise due to Cybertruck prototype builds and pilot production testing combined with spend on AI technologies like Full Self-Driving, Optimus, and Dojo. We have and will continue to make investments in these areas, and hence our capital expenditure and R&D will continue to grow in the near term. However, our focus is to continue making investments through positive cash flow from operations. This year itself, we have generated operating cash flows of approximately $8.9 billion and free cash flows of approximately $2.3 billion.

Our other businesses are becoming more prominent on a standalone basis, with energy business leading the charge primarily from the growth in megabyte deployments. Our services and other businesses, on a year-on-year basis, also continue to show positive momentum as we benefit from our growing fleet. As regards our pricing strategy, in addition to what we have shared before, I want to elaborate that most car buying happens with one or other form of financing, and hence, we also view pricing in terms of monthly costs for the customer.

And therefore, as interest costs in the U.S. have risen substantially, it has required us to adjust the price of our vehicles to keep the monthly cost in parity. We have tried to offset such adjustments via a focus on reducing costs. However, there is an inherent lag in cost reductions, which in turn impacts margins. To that extent, we recently announced a partner vehicle leasing program in the U.S., whereby you can get a standard range Model Y for as low as $399 a month.

In conclusion, as we navigate through a challenging economic environment, we're focused on reducing costs, maximizing delivery volumes, and continuing making investments in the future, in particular, AI and other next-generation platforms. We believe this strategy positions us well for the long term. Once again, I would like to thank the Tesla team for their efforts in the last quarter.

Questions And Answers

A - Martin Viecha {BIO 17153377 <GO>}

(Question And Answer)

Thank you very much. And now let's go to investor questions. The first investor question comes from Craig. How many Cybertruck deliveries do you anticipate for 2024?

A - Elon R. Musk {BIO 1954518 <GO>}

It's difficult to make an accurate guess at this point. Going back to what I said earlier that the ramp is going to be extremely difficult, and like I said, there's no way around that. If you try to make -- if we just try to do some copycat vehicle design, of which there are literally 200 models that are slight variations on a theme in the combustion engine world, just distinctions without a difference, then it's really not that hard. But if you want to do something radical and innovative, and something really special like the Cybertruck, it is extremely difficult, because there's nothing to copy. You have to invent not just the car, but the way to make the car. So the more uncharted the territory, the less predictable the outcome.

Now I can say that if you say, well, where will things end up? I think, we'll end up with roughly 0.25 million Cybertrucks a year. And -- but I don't think we're going to reach that output rate next year. I think we'll probably reach it sometime in 2025. That's my best guess.

A - Martin Viecha {BIO 17153377 <GO>}

Thank you. The second question is, can you provide a progress update on the 4680 cell, particularly progress towards performance improvements and cost savings you outlined on Battery Day? Thank you.

A - Unidentified Speaker

Sure thing, Martin. 4680 cell production in Texas increased 40% quarter-over-quarter. Congrats to the Texas team for producing their 20 million cell off of line one. Texas is now our primary 4680 facility. We're heavily focused on quality. Scrap is down 40% quarter-over-quarter. With the increased volume and yield improvements, cell costs consistently improved month-over-month within the quarter, although we have a lot more work to do to achieve our steady state goals. And that is our priority.

The Cybertruck cell with 10% higher energy than our Model Y cell started production on line two in Texas. This quarter, we convert to building 100% Cybertruck cells to simplify and focus the factory as we ramp all four lines in Phase 1 over the next three quarters. Phase 2 of the Texas 4680 facility is currently under construction. The additional four lines incorporate further capital efficiencies over Phase 1, and our target is for them to start producing in late 2024.

Lastly, in Kato, we're retooling to enable large-scale pilot runs of our next generation cell designs. Kato's long-term goal is to be the launchpad for new cells, one generation ahead of our mass production facilities, enabling faster iteration and smoother ramp-ups of new designs.

A - Martin Viecha {BIO 17153377 <GO>}

Thank you. The next question from institutional investor is, could you please provide an update on capacity expansion plans for companies, factories in Berlin and Austin, and the opening schedule of Gigafactory in Mexico?

A - Unidentified Speaker

Berlin and Austin factories, the current priority is actually maximize the output from our existing lines by laser focus on efficiency improvement. As always, maintaining a high quality and reducing per unit cost will be as critical as growing production volume.

For Mexico, we're working on infrastructure and factory design in parallel with the engineering and development of the new production that we'll be manufacturing there. That's all I can share for now.

A - Elon R. Musk {BIO 1954518 <GO>}

In Mexico, we're laying the groundwork to begin construction. And doing all the long lead items. But I think we want to just get a sense for what the global economy is like before we go full tilt on the Mexico factory. I'm worried about the high interest rate environment that we're in. It's -- I just can't emphasize this enough that the vast majority of people buying a car is about the monthly payment, and as interest rates rise, the proportion of that monthly payment as interest increases naturally. So if interest rates remain high, or if they go even higher, it's that much harder for people to buy the car. They simply can't afford it.

So -- and we are tracking, I believe at this point, for Model Y to be the best-selling car on earth, but not just in revenue, but in unit volume. If you compare that to the other vehicles that are number 2 and number three and whatnot, they cost much less than our car. So, we're just hitting law of large numbers situations here.

I know people want us to advertise and we are advertising. I think there is some -- there's something to be gained on the advertising front. I don't think it's nothing. But informing people of a car that is great, but they cannot afford doesn't really help. And -- so that is really the thing that must be solved is to make the car affordable, or the average person cannot buy it for any amount of money. They can't afford it. They can't afford it. So this is big deal.

A - Martin Viecha {BIO 17153377 <GO>}

Okay, thank you very much. The next question is, when do you expect Model 3 Highland to be available in the U.S.? I just wanted to address that, unfortunately, we don't answer product-related questions and timings on earnings calls, so let's go to the next one.

Current sell-side consensus assumes that Tesla will deliver 2.3 million vehicles in 2024, representing 28% growth versus 2023 guidance. Is this growth rate achievable without any mass market launches in 2024, and when does Tesla expect to return to its 50% long-term CAGR?

A - Vaibhav Taneja {BIO 20985733 <GO>}

Thanks for the question. When you look at 2024, there are a lot of moving pieces. Elon just talked about what is happening in the macroeconomic environment. So we're focused on growing our volumes in a very cost-efficient manner and are carefully reviewing all our options, and we'll be able to provide a much more meaningful update at our next earnings call.

A - Elon R. Musk {BIO 1954518 <GO>}

Yes. I mean, the risk is stating the obvious. It's not possible to have a compound growth rate of 50% forever, or you will exceed the mass of the known universe. So -- but I think we will grow very rapidly, much faster than any other car company on earth by far.

A - Martin Viecha {BIO 17153377 <GO>}

Thank you. Next question is, do you have an approximate timeline in mind for the robotaxi, driven or non-driven? What excites you most about how this project is progressing?

A - Elon R. Musk {BIO 1954518 <GO>}

Well, robotaxi is like necessarily non-driven. I guess I'm very excited about our progress with autonomy and the end-to-end, nothing but nets, self-driving software is amazing. Drives me all around Austin with no interventions. So it's clearly the right move. And so it's really pretty amazing. And obviously that same software and approach will enable Optimus to do useful things and enable Optimus to learn how to do things simply by looking. So an extremely exciting in the long term.

As I mentioned before, given that economic output is a number of people times productivity. If you no longer have a constraint on people, effectively you've got a humanoid robot that can do as much as you'd like, your economy is quasi-infinite, or infinite for all intents and purposes. So I don't think anyone's going to do it better than Tesla, not by a long shot. Boston Dynamics is impressive, but their robot lacks a brain. They're like the Wizard of Oz or whatever.

A - Martin Viecha {BIO 17153377 <GO>}

(inaudible)

A - Elon R. Musk {BIO 1954518 <GO>}

Yes, lacks the brain. And then, you also need to be able to design the humanoid robot in such a way that it can be mass manufactured. And then at some point the robots will manufacture the robots. Now obviously we need to make sure that there's a good place for humans in that future, that we do not create some variance of the Terminator outcome. So we're going to put a lot of effort into localized control of the humanoid robot. So basically anyone will be able to shut it off locally. And you can't change that even if you put -- like a software update, you can't change that. It has to be hard-coded.

A - Martin Viecha {BIO 17153377 <GO>}

Thank you. The next question is, why was the price dropped on FSD, if it is getting better and robotaxi is expected so soon?

A - Elon R. Musk {BIO 1954518 <GO>}

Well, we just wanted to make it more affordable, so more people could try it. Yes. But I think over time the price of FSD will increase proportionate to its value, so it would regard the current price as a kind of a temporary low.

A - Martin Viecha {BIO 17153377 <GO>}

Thank you. The next question is again on FSD. Mercedes is accepting legal liability for when its Level 3 autonomous driving system drive pilot is active. Is Tesla planning to accept legal liability for FSD? And if so, when?

A - Elon R. Musk {BIO 1954518 <GO>}

Well, there's a lot of people that assume we have legal liability, judging by the lawsuits. We're certainly not being let that off the hook on that front, whether we would like to or wouldn't like to. So --

A - Unidentified Speaker

I mean, I think it's important to remember for everyone that Mercedes' system is limited to roads in Nevada and some certain cities in California. It doesn't work in the snow or the fog. They must have a lead car and marked lanes, only 40 miles per hour. Our system is meant to be holistic and drive in any condition, so we obviously have a much more capable approach, but with those kind of limitations, it's really not very useful.

A - Elon R. Musk {BIO 1954518 <GO>}

I think some people understand the profundity of the Tesla AI system, but it's very, very few. It's basically baby AGI. It has to understand reality in order to drive, baby AGI.

A - Martin Viecha {BIO 17153377 <GO>}

Thank you. The next question on Optimus. Will Optimus be working on Gigafactory lines next year? If so, how many would you guess will be deployed?

A - Elon R. Musk {BIO 1954518 <GO>}

I think at this point, we are not ready to discuss details of the Optimus program, but we will make -- provide periodic updates online. So as you can see, where Optimus a year ago could barely walk, and now it can do yoga. So a few years from now it can probably do ballet.

A - Martin Viecha {BIO 17153377 <GO>}

Sounds good. And the last question from investors is, neural net path planning represents a significant advance in capability and safety for FSD. What steps is Tesla taking to make this technology available outside the U.S.?

A - Elon R. Musk {BIO 1954518 <GO>}

Yes. Our approach has been to try to get it, like the more places we're trying to make it work, the harder the problem is. And so the reason we don't do it in all countries simultaneously is that it would take much longer to make it work anywhere at all. So that's why it's currently just North America. And also for most parts of the world, you have to get approval before deploying things, whereas in the U.S., you can deploy things at risk or at least you take liability for what you deploy. So it's -- whereas most countries require some sort of extensive approval program.

So we only want to go through that extensive approval program when we think it's kind of ready for prime time in that country. I apologize it's not out in those countries, but we keep finding ways to make it better. And I -- it really -- it needs to drive such that it exceeds the, even unsupervised, significantly exceeds the probability of injury of a human, or significantly better, a lower probability of injury than a human by far.

I think we're tracking to that point very quickly. Obviously in the past, I've been overly optimistic about this. The reason I've been overly optimistic is that the progress tends to sort of look like a log curve, which is that you have kind of rapid initial improvements, and that if you were to extrapolate that rapid, fairly linear rate of improvement, you get to self-driving quite quickly, but then the rate of improvement curves over logarithmically exhaust the asymptote. That's not happened several times. I would characterize our progress in real-world AI as a series of stacked log curves.

I think that is also true in other parts of AI, like LLMs and whatnot, a series of stacked log curves. Each log curve gets higher than the last one, so if you keep stacking logs, eventually you get to FSD.

A - Martin Viecha {BIO 17153377 <GO>}

Thank you. Let's now go to analyst questions. The first question comes from Will Stein from Truist. Will, please go ahead and unmute yourself.

Q - William Stein {BIO 15106707 <GO>}

Great. Thanks so much for taking my question, and thanks for all the updates today. We learned earlier in the call, it sounds like you don't think the truck will ramp to significant volume until its third year of production. Should we have a similar anticipation for the ramp of the next-gen platform, or is there any reason that we should be maybe more optimistic or pessimistic about the ramp profile there? Thank you.

A - Elon R. Musk {BIO 1954518 <GO>}

Yes. I mean, to be clear, it's not really the third year of production, it's kind of like the 18 month of production, it's roughly my guess. So it's just that it'll happen. It starts this year, spans next year, and gets to 2025. So technically there are three calendar years in there, but there's actually only 18 months, not three years. I would be very disappointed if it took us -- that would be shocking if it took us three years. But 18 months from initial deliveries to reach volume and reach prosperity was an immense -- I can't tell you how much, the blood, sweat, and tears level required to achieve that is just staggering. I've been through it many times, and then here we go again.

Q - William Stein {BIO 15106707 <GO>}

Similar path for the next-gen platform?

A - Unidentified Speaker

I mean, there's like unique complexity to Cybertruck.

Q - William Stein {BIO 15106707 <GO>}

Yes.

A - Elon R. Musk {BIO 1954518 <GO>}

I mean, Cybertruck is (inaudible). Yes, I mean, we dug our own grave with Cybertruck. Nobody -- in general, nobody digs their own grave better than themselves. And so, it is -- Cybertruck's one of those special products that comes along only once in a long while. And special products that come along once in a long while are just incredibly difficult to bring to market, to reach volume, to be prosperous. It's fundamental to the nature of the newness. So now the sort of high volume, low cost, smaller vehicle is actually much more conventional.

A - Unidentified Speaker

Yes. In terms of the technologies we're putting into it, we didn't have to invent how to bend full hard stainless steel or have mega 9,000 ton castings or the largest hot stamping in the world or new high-voltage, low-voltage architectures. It's learning from everything we have done. So we hope we ramp faster than the technology -- (Multiple Speakers)

We also not do like (inaudible)

A - Elon R. Musk {BIO 1954518 <GO>}

Significantly less part. So yes, you all need to (Technical Difficulty) less of this. I mean, you could probably be best in.

A - Unidentified Speaker

Yes, exactly.

A - Elon R. Musk {BIO 1954518 <GO>}

I mean, that side is still pretty revolutionary in how we are going to end up with. The manufacturing approach for high volumes, more vehicle is revolutionary (inaudible) revolutionary quite in the same way as the Cybertruck. I think it will be quite a fast ramp. So as long as you're saying, we're doing everything possible to simplify that vehicle in order to achieve a units per minute level that is unheard of in the auto industry.

A - Unidentified Speaker

Yes. I mean, the simplification makes it easier to automate. It also makes it lower cost. It's intrinsically lower cost.

A - Elon R. Musk {BIO 1954518 <GO>}

Yes. Let's be clear, it'll be cool, but it's utilitarian. It's not meant to be, fill you with Owen Magic, it can get you from A to B. It'll be so beautiful, but it's utilitarian. It's utility.

A - Unidentified Speaker

That's not 14 inches of travel under suspension.

A - Elon R. Musk {BIO 1954518 <GO>}

Yes, as an example. Yes. So I mean, the Cybertruck has a lot of bells and whistles.

A - Martin Viecha {BIO 17153377 <GO>}

All right. Thank you very much. Let's go to Pierre Ferragu from New Street Research.

Q - Pierre Ferragu {BIO 15753665 <GO>}

Hey, can you hear me fine?

A - Martin Viecha {BIO 17153377 <GO>}

Yes, yes.

Q - Pierre Ferragu {BIO 15753665 <GO>}

Hey, I have first like a follow-up question on FSD, and pricing, and adoption. So I agree with you that as FSD improves, we should see its value increasing. But I guess like the

ultimate values of FSD, which is to be able to handle like the robotaxi, is not going to necessarily interest everybody. And you have a bit of a degraded version that would be like a chauffeur service where the car drives by itself, but you still have to be in the car and around. And then there is like the hands on eyes on version of the service. And I guess, there should be like much lower costs, lower feature kind of variance of the service that could have a very large penetration on your install base and more expensive one that would remain at a lower penetration level. So I'm just wondering if you're taking that bit.

And last but not least, like the simplest version of FSD are available and are going to work from a technical perspective probably before like the ultimate robotaxi version can work, if ever. And so, I'm wondering how you take that into account in how you're thinking like the financial contribution of FSD over time and whether you could evolve your pricing along that kind of tiers to increase adoption.

A - Elon R. Musk {BIO 1954518 <GO>}

Yes. I mean, a fully autonomous vehicle, I think here sort of the economics of a fully autonomous vehicle are truly astounding in a positive way. When you look at passenger vehicles today, they only get about 10 to 12 hours of usage per week. That's -- if you drive an hour and a half a day on average, that's roughly 10 hours a week out of 168 hours. And then there's also you're going to have parking and insurance. You got to take care of the car, it's like there's a lot of overhead.

So I mean, it's -- yes. It's like the economics of the system are just insanely positive. If given that the car -- like all of the cars we're making and have made for a while, we believe are capable of full autonomy. So then if you're able to say increase the utility of that car by a factor of 5 which still only means that you -- it's being used, or maybe 50 hours a week out of 168. So you still notice -- you still assume -- you best still assume it's less than a third of the hours of the week is doing something useful. You've increased the value of that by 5, but it still costs the same. Like you have something, then we're a hardware company with software margins.

A - Martin Viecha {BIO 17153377 <GO>}

All right. Pierre, do you have a follow-up?

Q - Pierre Ferragu {BIO 15753665 <GO>}

Yes, I'd have actually a follow-up on a different topic for you. They've had -- if that's okay. It's about like your gross margin in the quarter. Could you give us a sense of, like in how the gross margin evolved sequentially, how much was the impact of idle cost? How much was like the sequential benefit, I imagine, of production ramping at Berlin and Austin? And then I saw, like, this massive jump in energy storage, very strong, positive surprise. So if you can give us the background on that and tell us how we should think about that gross margin going forward?

A - Vaibhav Taneja {BIO 20985733 <GO>}

Thanks for that question. So, in terms of -- you have a few different aspects of your question. So if I just look at from Q3 perspective, obviously factory idle time had an impact. It did impact by, I mean, I won't give you the exact percentage, but it had decent

impact for the quarter. And when you look at the other pieces which we are trying to do, we did see certain of our other factories ramping up pretty well, right? And they actually contributed pretty well to the margin for this quarter. In fact, one of the factories came pretty close to in terms of per-unit costs to where we are for one of our other established factory, which is Fremont. So that was a positive in the quarter.

And when it comes to energy margins, we have -- Megapack deployment was the key driver there. And that product has done well. I mean, on the cost curve also, we've been able to do a lot there. But I do want to caution that, Megapack deployments are a bit lumpy. So, yes, we had a great quarter this period, but depending upon where we are trying to deploy that product in different markets, you would see periods where there would be downward pressure on deployment because of us trying to get the product to that place where it's --

Q - Pierre Ferragu {BIO 15753665 <GO>}

Yes, product in transit.

A - Vaibhav Taneja {BIO 20985733 <GO>}

Yes.

Q - Pierre Ferragu {BIO 15753665 <GO>}

Yes.

A - Martin Viecha {BIO 17153377 <GO>}

Okay. Thank you very much. Let's go to Rod Lache from Wolfe Research. Rod, feel free to unmute yourself.

Q - Rod Lache {BIO 1528384 <GO>}

Thanks. Really nice to see the rate of vehicle cost improvement despite the downtime that you took. You've taken now about $2,000 out of the average vehicle cost over the past year. Can you give us maybe a sense of the rate of improvement that you see from the changes that you alluded to, the factory changes you alluded to? Is there a way maybe to convey the speed of improvement on your existing product from here? And then related to that, can you share the timing of your next gen -- the lower priced product that you talked about earlier this year?

A - Vaibhav Taneja {BIO 20985733 <GO>}

Yes. So just in terms of product margins, there are lots of puts and takes when you look at this. There are certain things which we control, and there are certain things which we don't control. We get -- we expect that we'll get some benefits from our cost reduction efforts, which are all underway. But on the other hand, we just finished our factory upgrades late in Q3. Some of these factories are still in the early ramp phase in Q4. We're still not up to where we want those factories to be, so they'll impact in the near term.

Plus, like Elon mentioned, we're going to be ramping Cybertruck, which is going to be another headwind, which we will be dealing with. On top of all that, there's overall uncertainty in the macroeconomic environment, which even makes it harder to predict precisely as to where we'll land. But yes, this is something which -- it's an evolving thing which we're observing every day and reacting to it on a daily basis.

A - Unidentified Speaker

I would just say that on the cost reduction efforts, like we are not -- we are unflagging in our pursuit of additional cost downs for 2024. We do have a good pipeline of them and work on both the engineering side and the factory operation side, and our intention is to like maintain or exceed the trend that you saw. We're trying as hard as we possibly can.

Q - Rod Lache {BIO 1528384 <GO>}

The timing of the next gen product, can you share that?

A - Elon R. Musk {BIO 1954518 <GO>}

Not at this time.

Q - Rod Lache {BIO 1528384 <GO>}

Okay. And just as a follow-up, obviously, price is also a driver of demand, but that's obviously not happening in a vacuum. And you mentioned that -- I think you mentioned that at some point during this call that you're also maybe hitting the law of large numbers on some of your products. Can you just share how you're thinking about price elasticity, just at this point and in this macroenvironment, and any thoughts along those lines?

A - Elon R. Musk {BIO 1954518 <GO>}

I think that there's very significant price elasticity. I mean, to be totally frank, if a car cost the same as a RAV4, nobody would buy a RAV4 or at least they are very unlikely to. It's worth noting that a lot of these incentives, like the -- their tax credit and whatnot. But they're actually very difficult for the average person to access, because they -- most people do not have $10,000, or even $7,500, burning a hole in their bank account. A lot of a large number of people are living paycheck to paycheck, and with a lot of debt, they have got credit card debt, mortgage debt.

So yes, it's -- that's reality for most people. It's sometimes difficult for people who are high income members, and I'd say high, it'd be like someone who's earning over $200,000 a year to understand what life is like for someone who is earning $50,000 or $60,000 or $70,000 a year, which is most people. So for a lot of people like these tax credits, they can't front $7,500 for 18 months or even six months, to get for the tax credit. And they actually don't, it's okay, so even have that $7,500 of taxes. So it's really just the best regard to people is how much money do they have to pay immediately and how much per month. That's it. And you can stop right there. And a car is still much more expensive than RAV4 when you look at it that way.

A - Vaibhav Taneja {BIO 20985733 <GO>}

Yes. One other thing which I'll add, when you look at car buying in general, we're trying to get to the next set of EV adapters.

A - Elon R. Musk {BIO 1954518 <GO>}

They're not an EV adapter, just who wants a great car.

A - Vaibhav Taneja {BIO 20985733 <GO>}

Exactly.

A - Elon R. Musk {BIO 1954518 <GO>}

It's not a -- sometimes you get these, like -- no, honestly, I would say it's like, somewhat correlates with the why doesn't everyone work from home crowd? I'm like, I mean, this is like some real Marie Antoinette vibes from people that say, why doesn't everyone work from home? Like, what about all the people that have to come to the factory and fill the cars? What about all the people that have to go to the restaurant and make your food and deliver your food. It's like, what are you talking about? You -- I mean, how detached from reality is the work-from-home crowd have to be? While they take advantage of all those who do, you cannot work-from-home. So I mean, you have to say, like, why did I sleep in the factory so many times? Because it mattered. So I just can't emphasize how important cost is. It's not an optional thing for most people. It is a necessary thing.

We have to make our cars more affordable. The people can buy it and I keep harping on this interest thing, but I mean, it's just raises the cost of the car. I mean, we're looking at an internal analysis, which. I know we feel like we think is more or less on track that when you look at the cost or the price reductions we've made in, say, the Model Y, and you compare that to how much people's monthly payment has risen due to interest rates, the price of the Model Y is almost unchanged.

A - Vaibhav Taneja {BIO 20985733 <GO>}

If you factor in the change in interest rates.

A - Elon R. Musk {BIO 1954518 <GO>}

Yes, which is what I'm trying to say. The thing that matters is the monthly pay -- it's how much money do they have to put down, and do they literally have that in their bank account, or will the check bounce? And then, what is the monthly payment? And it doesn't matter how -- if that monthly payment is principal, interest, or whatever, it's just a number, and that number has to not cause their bank account to go negative. As it -- so going from near zero interest rates to kind of the current very high interest rates, the actual monthly payment is basically the same, it's just a bunch more of it is going to interest. And there's some incremental challenges beyond that, which is the difficulty of getting credit at all has increased. And so the number of people who simply cannot get credit, period. Even if they've got a job and everything's solid, the banks are a little gun-shy on handing out credit, given that a bunch of them kicked the bucket earlier this year.

A - Unidentified Speaker

Yes, there's also just fewer options. Even if they plan to hand out credit, there's fewer banks to go there.

A - Elon R. Musk {BIO 1954518 <GO>}

It's like, does your bank still exist? Well, if your bank does not exist, you have to establish a relationship with a new bank. And so a lot of regional banks are died, and I mean, even Credit Suisse. I mean, geez, that's -- that was a shocker. You've got a 160-year-old-ish Swiss institution that doesn't exist anymore. That's mind blowing. And I think there's still quite a few shoes to drop on the bad credit situation. Commercial real estate obviously is in terrible shape. Credit card debt has been rising significantly. The credit card interest rates are usurious, over 20% interest rates, meaning like, which over time is just -- becomes extremely punishing. If someone is paying 20% interest on their credit card, it means they cannot pay them off. And if you cannot pay them off, and you're still accruing interest at 20%, that's headed to a bad place.

A - Martin Viecha {BIO 17153377 <GO>}

Thank you. And let's go to the next question from George from Canaccord.

Q - George Gianarikas {BIO 19376739 <GO>}

Thank you for taking my question. Just to focus on the cost per vehicle, coming down in future quarters as you discussed in your written remarks. I'm curious as to what the levers of that could be. Is it more scale, more factory utilization? Is it material cost reductions? Are there things like giga casting? I mean, can you just kind of give us some data points to give us confidence that that's going to come down over time?

And if I can sneak one in, please, there are press reports, and I know how perilous it is to believe some of these, but they say that you've included RADAR as an option in some Model Ys in China. And I'm just here to ask you if that's true, and if so, why? Thank you.

A - Elon R. Musk {BIO 1954518 <GO>}

We've not included RADAR. We have RADAR as a Tesla-designed RADAR is an experiment in the Model S and X. That's it. We'll see whether that experiment is worth it. But there are no plans to integrate RADAR into 3 and Y. Just as humans drive well, and in fact, an excellent human driver can drive with amazing safety simply with their eyes, the car will far exceed the average human's safety just with vision. Far, far, far.

Because -- I mean, the car is looking in all directions at once, and we don't have eyes in the back of my head. So -- and the computer never gets tired, it never gets distracted, get drunk, hopefully. And so, RADAR is -- what really matters is how much does it affect the probability of an accident. And in order for the RADAR to be effective, you have to be able to do RADAR-only braking, or you have to do actions that are RADAR-only. Otherwise, you get this disambiguation problem between vision and RADAR. That's why we actually turned off the RADAR in cars historically that we had shipped. All 3 and Y used to have RADAR, but we turned it off, because the RADAR actually generated more noise than signal.

Now the Tesla-designed RADAR is a high-resolution RADAR, that has some potential to be useful, but the jury is still very much out on whether that is, in fact, the case.

A - Unidentified Speaker

On the cost question, I guess, from the vehicle side, like, as Drew mentioned earlier, we are always trying to engineer our products to be cheaper to make and more efficient to make. That comes, obviously, on the engineering side as we come up with new innovations, but as well on the supply chain side with our partners, we work with them to automate some of their lines, remove their bottlenecks and their high costs as well. On the logistics side, getting parts to the factory. It's not like a one thing that -- you have to attack cost everywhere. And we do it ruthlessly at all times.

-- operations efficiencies all of the above.

A - Vaibhav Taneja {BIO 20985733 <GO>}

Yes. I mean, I would say there's a whole laundry list of things which we are chasing. We internally call it the cost attack, where we're literally going line by line and saying, how can we make it better? And it's a grind.

A - Elon R. Musk {BIO 1954518 <GO>}

A grind.

A - Vaibhav Taneja {BIO 20985733 <GO>}

It's a game of pennies.

A - Elon R. Musk {BIO 1954518 <GO>}

It's a game of pennies. It's like Game of Thrones, but pennies. I mean, first approximation, if you've got a $40,000 car and roughly 10,000 items in that car, that means each thing on average costs $4. So in order to get the cost down say by 10%, you have to get $0.40 out of each part on average. It is a game of pennies.

A - Unidentified Speaker

We play it willingly.

A - Elon R. Musk {BIO 1954518 <GO>}

Yes. We've done it many, many times. And even something as simple as like a sticker, like there's too many stickers internally in the car that nobody ever sees. There's something as simple as a QR code. You might think, well, putting a QR code on part one and just put them on there. It's like, well, are we actually going to use that QR code.

A - Unidentified Speaker

That's a penny.

A - Elon R. Musk {BIO 1954518 <GO>}

Yes. Exactly. And then, inevitably, some anti, QR code doesn't go on properly or you can't read it properly and it stops the line.

A - Unidentified Speaker

It's worth more than a penny.

A - Elon R. Musk {BIO 1954518 <GO>}

Yes. Absolutely.

A - Vaibhav Taneja {BIO 20985733 <GO>}

So --

A - Elon R. Musk {BIO 1954518 <GO>}

It's chipping away with -- I mean, it is trying to, it is -- it does feel like digging a tunnel with a spoon at times.

A - Martin Viecha {BIO 17153377 <GO>}

Very much escaping prison.

A - Elon R. Musk {BIO 1954518 <GO>}

Yes.

A - Vaibhav Taneja {BIO 20985733 <GO>}

On top of it, like we said, we did some factory upgrades, so we expect volume to go up, that would also bring some savings from higher production. But then on the flip side, we're going to be ramping a new product, like Cybertruck, which we talked about. So yes, so those are the real puts and takes, which we are working for.

A - Elon R. Musk {BIO 1954518 <GO>}

Yes. But there's not like some accidentally some gold -- brick of gold that we've left in the car, unfortunately. And it's -- we're trying to be very rigorous about improving the quality and capability of the car, because, it's like any fool can reduce the cost of a car by making it worse, and just deleting functionality and capability. And that's how I called sort of any fool -- if you want to like lose weight and you said, well, I need to lose 15 pounds right away, well, you can chop your arm off, but then you're sitting there with one arm, right? And you're still fat.

So it's sort of like, yes, you actually have to eat less food and work out. That's the actual way and doctor's advice. Yes, super fun, because food is delicious. And I personally, I'm not a huge -- I don't love working out. I know some people do, I wish I could, but I don't. Unless moving the mouse consists of working out, in which case I love moving the mouse.

A - Martin Viecha {BIO 17153377 <GO>}

All right, let's go to Colin Langan from Wells Fargo. Colin, can you unmute yourself?

Q - Colin Langan {BIO 15908877 <GO>}

Sorry about that. Can you hear me now?

A - Elon R. Musk {BIO 1954518 <GO>}

Yes.

Q - Colin Langan {BIO 15908877 <GO>}

Great, thanks for taking my question. You said in the commentary that you're not going full tilt on the plant in Mexico until there's signs that the economy is strong. Can you continue at a 50% CAGR without that plant? And where would that come from? And any color on what you mean, sort of not going full tilt? Could that plant get delayed indefinitely? Or what are you kind of talking about?

A - Elon R. Musk {BIO 1954518 <GO>}

No, we're definitely making the factory in Mexico. We feel very good about that. We put a lot of effort into looking at different locations and we feel very good about that location. And we are going to build a factory there and it's going to be great. The question is really just one of timing, and yes, it's going to be a broken record on the interest front is just the interest rates have to come down. Like, if interest rates keep rising, you just fundamentally reduce affordability.

It is just the same as increasing the price of the car. So I just don't have visibility into it. If you can tell me what the interest rates are, I can tell you when we should build the factory. We're going to build it. And I mean, I think we'll start the initial phases of construction next year. But I am still somewhat scarred by 2009 when General Motors and Chrysler went bankrupt. So well, that's now 14 years ago. It's -- that is seared into my mind with a branding iron. Because Tesla was just hanging on by a thread during that entire time. And I mean, we closed off a financing round in 2008 at 6 p.m., December 24th, Christmas Eve. And if we had not closed that financing round, we would have bounced payroll two days after Christmas. So we actually closed that round on the last hour of the last day that it was possible. Stressful, to say the least. And then barely made it through 2009.

So I'm like, I want to just -- I don't want to be going at top speed into uncertainty. A lot of wars going on in the world, obviously, as well. So -- and we have room here, like, in Texas, you said we still have room in this building. It's not full with Cybertruck and the why and there's plenty of growth opportunities still to have inside the building where our team already is. We also have 2,000 acres here.

A - Unidentified Speaker

There's also a (inaudible)

A - Elon R. Musk {BIO 1954518 <GO>}

We're actually only occupying a tiny corner of the land that we are. But we could -- maybe technically do all the scaling just here. So I mean, personnel is our biggest challenge and that the Greater Austin area only has -- generously the Greater Austin area only has 2 million people. So people are moving here and they're willing to move here, but there is somewhat of a housing crisis. They got to live somewhere.

So yes. So I don't know. I mean, I'm just curious. Like, I just -- I'm not saying things will be bad. I'm just saying they might be. And I think, like, Tesla is an incredibly capable ship, but it is, but if -- we need to make sure like as if the macroeconomic conditions are stormy, even if the best ship is still going to have tough times, the weaker ships will sink. We're not going to sink, but even a great ship in a storm has challenges. Now that storm will apply to everyone, not just us. And not just the auto industry, but apply to everyone, I think. So apart from necessary sort of staples, like food and stuff, but -- so I don't know. If interest rates start coming down, we will accelerate.

A - Vaibhav Taneja {BIO 20985733 <GO>}

All right.

A - Elon R. Musk {BIO 1954518 <GO>}

If anybody's got any guesses on this, I'd love to be less wrong. And I apologize if I'm perhaps more paranoid than I should be. Because that might also be the case. Because I have PTSD from 2009, big time. And in 2017 through '19 were not a picnic either. That was very, very tough going. So the auto industry is also somewhat cyclic. Because people tend to hesitate to buy a new car if there's uncertainty in the economy. So car companies do very well in good economic times and they have -- do good as well in tough economic times. So it's -- whereas if somebody is selling bread, then I think people still eat half bread. Yes, you need bread, you need food all the time, but new car, you don't have to have (inaudible).

A - Vaibhav Taneja {BIO 20985733 <GO>}

Especially if you have wars going on, and then that impacts your sentiment.

A - Elon R. Musk {BIO 1954518 <GO>}

Yes. I mean, if people are reading about wars all over the world, like this -- buying a new car tends to not be front of mind.

A - Martin Viecha {BIO 17153377 <GO>}

All right. Unfortunately, that's all the time we have today. Thank you very much for all of your good questions, and we'll see you again in three months. Thank you very much.