Q1 2022 Earnings Call

Company Participants

- Andrew D. Baglino, Senior Vice President of Powertrain & Energy Engineering
- Elon R. Musk, Technoking of Tesla, Chief Executive Officer & Director
- Lars Moravy, Vice President, Vehicle Engineering
- Martin Viecha, Senior Director for Investor Relations
- Unidentified Speaker
- Zachary J. Kirkhorn, Master of Coin & Chief Financial Officer

Other Participants

- Alexander Potter, Piper Sandler
- Colin Langham, Wells Fargo
- Dan Levy, CSFB
- Mark Delaney, Goldman Sachs
- Pierre Ferragu, New Street Research
- Rod Lache, Wolfe Research
- Trip Chowdhry, Global Equities Research

Presentation

Martin Viecha {BIO 17153377 <GO>}

Good afternoon, everyone, and welcome to Tesla's First Quarter 2022 Q&A Webcast.

My name is Martin Viecha, VP of Investor Relations, and I'm joined today by Elon Musk; Zachary Kirkhorn; and a number of other Executives.

Our Q1 results were announced at about 3 PM 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 and 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.

Before we jump into Q&A, Zach will have some opening remarks.

Zach?

Zachary J. Kirkhorn {BIO 20940148 <GO>}

Yes. Thanks, Martin.

Just to start off here, Q1 was a challenging, but extremely successful quarter for the company. Despite numerous supply interruptions, including shutdowns at our Shanghai factory and nearby suppliers due to COVID, we have continued making progress and achieved our best ever vehicle deliveries.

Last quarter, we demonstrated a series of new financial records, including revenue, gross margins, operating margin, and bottom-line profitability. GAAP automotive gross margin reached 32.9%, and for the first time, exceeded 30% when excluding regulatory credits. Higher pricing continues to positively impact our financials as we make progress delivering cars in our growing backlog.

Note that for most vehicles, our delivery wait times are quite long, thus cars delivered in Q1 generally carried pricing set in prior quarters and at levels lower than cars being ordered today.

Our per unit vehicle costs increased as well. Inflation, raw material prices, expedites, and logistics costs, continues to impact our cost structure. Factory shutdowns also occurred with little to no notice, hence we were unable to take action to plan those interruptions in a cost-efficient manner. Additionally, we saw a slight mix shift towards more profitable vehicles, including the Model Y. We also recognized a one-time benefit of $288 million from credit revenue relating to a regulatory change in the U.S. CAFE penalty, without of which credit revenue would have declined compared to the same period last year.

The energy business has continued to be impacted by macro conditions more severely than the vehicle business. Our storage products are in need of chip supply and new import processes have impacted supply of certain components for our solar systems, which is reflected in our solar volume for the quarter.

OpEx as a percentage of revenue continues to reduce, driven by higher revenue, lower stock-based comp expense and other items. As a result of our ongoing improvements in operating leverage, we achieved a record operating margin of over 19%.

Note that commissioning cost for our factories are in R&D as Berlin started production in late March, and Austin in early April. These costs will be in automotive COGS going forward given these factories are now producing customer-sellable cars.

Our free cash flows have remained quite strong, yet, were impacted by working capital related to lower than planned production. Additionally, we have reduced our debt, excluding product financing to nearly zero.

Looking ahead, in the immediate term, a few things to keep in mind for Q2. First, we've lost about a month of built volume out of our factory in Shanghai due to COVID-related shutdowns. Production is resuming at limited levels and we're working to get back to full production as quickly as possible. This will impact total build and delivery volume in Q2.

Second, as I've mentioned before, Austin and Berlin are just starting their ramps and thus those inefficiencies will start to flow through our gross margins in Q2.

Third, we do have higher ASPs in our backlog, which will help to offset some of these headwinds. We continue to drive towards further strengthening of our financials in the second half of the year, and believe our 50% or above growth rate remains achievable for the year.

I want to conclude by thanking the Tesla team, our suppliers, and our new customers for a great first quarter.

Martin Viecha {BIO 17153377 <GO>}

Thank you very much. And Elon has some opening remarks as well.

Elon R. Musk {BIO 1954518 <GO>}

Sure. Some of my remarks will be redundant with Zach's, but it's maybe worth repeating.

Q1 was once again a record quarter on many levels, reaching the highest deliveries, profit and an operating margin of 19%. This was despite a lot of chip shortages, many logistics challenges, and an overall a difficult quarter.

So, I really like to congratulate the Tesla team on achieving record profitability and an output despite many, many difficult headwinds. And especially the Tesla China team and our Shanghai factory, they really had significant challenges due to the COVID shutdowns, and nonetheless, have been able to output a tremendous number of high-quality vehicles. And we're already back up and running with the Shanghai factory.

So, as Zach said, we remain confident of a 50% growth in vehicle production in 2022 versus '21. I think we actually have a reasonable shot at a 60% increase over last year.

So, let's see -- obviously, we have production, as people know, with Giga Berlin and Giga Texas in the past few months. So, we've two fantastic factories with great teams, and they are ramping rapidly. With new factories, the initial ramp always looks small,

but it grows exponentially. So -- but I have -- we have very high confidence in the teams of both factories, and we expect to ramp those initially slowly, but would like to see it growing exponentially with them achieving high volume by the end of this year.

So, we're also working on a new vehicle that I alluded to at the Giga Texas opening, which is a dedicated robotaxi, that's highly optimized for autonomy, meaning it would not have steering wheel or pedals. And there are a number of other innovations around it that I think are quite exciting, that it's fundamentally optimized for -- it's trying to achieve the lowest fully considered cost per mile or cost per kilometer, accounting everything. And so, it's, I think, it would be a very powerful product, where we aspire to reach volume production of that in 2024.

So, I think that that really will be a massive driver of Tesla's growth. And we remain on track to reach volume production of the Cybertruck next year.

Let's see. So, it's basically -- once again, I'd like to thank the Tesla employees for their hard work, but also I'd like to thank our suppliers, who have really gone the extra mile. They -- we have an amazing supplier group and I want to say heartfelt thanks to the suppliers that have really worked day and night to ensure that Tesla is able to keep the factories running.

And we're really at the early stage of our journey. We only crossed 1 million units in the past 12 months, recently, and we are -- we aspire to head to 20 million units a year. So, we're basically 5% along the way for -- towards our goal. And -- but we are growing very, very rapidly year-over-year and remain confident of exceeding 50% annual growth for the foreseeable future for basically several of the next years, I mean -- so, yes.

And then, there's of course, Optimus, which -- I was surprised that people did not realize the magnitude of the Optimus robot program. This -- The importance of Optimus will become apparent in the coming years. Those who are insightful or listen carefully, will understand that Optimus ultimately will be worth more than the car business, worth more than FSD. That's my firm belief.

So, and then of course, insurance is growing well. We expect to address the part shortages that limited our progress with batteries and solar, so we expect batteries and solar to also grow well this year, and basically future is very exciting. I've never been more optimistic or excited about Tesla's future than I am right now.

Thank you.

Questions And Answers

A - Martin Viecha {BIO 17153377 <GO>}

(Question And Answer)

Thank you very much. Let's go through the first investor question. And the first investor question is, Elon has historically provided FSD timelines with not optimal accuracy. We love his optimism for 2022 release, but is there any data Tesla can share with investors to help them make their own conclusions on progress being made, interventions per mile driven, or any other data?

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

Sure. Well, with respect to Full Self-Driving, of any technology development I've ever been involved in, I've never really seen more kind of false dawns or where it seems like we're going to break through, but we don't, as I've seen in Full Self-Driving. And ultimately, what it comes down to is that, to solve Full Self-Driving you actually have to solve real-world artificial intelligence, which is -- which nobody has solved. And the whole road system is made for biological neural nets and eyes. And so, actually, when you think about it, in order to solve a Full Self-Driving, we have to solve neural nets and cameras to a degree of capability that is on par with or really exceeds humans.

And I think we will achieve that this year. The best way to reach your own assessment is to join the Tesla Full Self-Driving Beta program, where we have over 100,000 people right now enrolled in that program, and we expect to broaden that significantly this year. So, that's my recommendation, is join the Full Self-Driving Beta program and experience it for yourself, and take note of the rate of improvement with every release. And we put out a new release roughly every two weeks. So -- and you'll see a little bit of two steps forward, one step back. But overall, the rate of improvement is incredibly quick. So, that's my recommendation for reaching your own assessment is to literally try it.

A - Martin Viecha {BIO 17153377 <GO>}

Thank you. And the second question is, how much of an impact will the production shutdown in Shanghai have in Q2? What is the timeline for localizing the Model 3 in Europe, or will newer models be prioritized in Berlin?

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

Well, the -- we did lose a lot of important days of production. And because there are sort of upstream supplier challenges where a lot of suppliers have also lost many days of production. But our Tesla Shanghai -- Giga Shanghai is coming back with a vengeance. So, I think, notwithstanding new issues that arise, I think we will see record output per week from Giga Shanghai this quarter, albeit we are missing a couple of weeks. So, that means that most likely vehicle production in Q2 will be similar to Q1, maybe slightly lower, but it's also possible we may pull a rabbit out of the hat and be slightly higher. But it's really, call it, roughly on par. But then Q3 and Q4 it'll be substantially higher. So, it seems likely that we'll be able to produce over 1.5 million cars this year, is my -- that's my best guess.

And then Model 3. It's important for new factories to be focused on -- and have the least amount of complexity and variation, which is why Giga Berlin and Giga Texas are focused on the Model Y. It's -- from the point in which you have a factory complete and you're making a small number of units, to the point where it's

producing high-quality vehicles in volume, is sort of 9-months to 12-months from start of production. So, now hopefully, we're getting better at that ramp, so maybe it's a little less. But to get to sort of the 5,000 a week level, has typically taken us around 12 months from start of production. Yes.

A - Martin Viecha {BIO 17153377 <GO>}

Thank you. The next question is, how much raw material exposure do you have, measured roughly in percentage of cost of goods sold for example, in a given quarter versus one to two years out, both direct and indirect? Separately, how do you think about price increases versus prioritizing higher mix vehicles going forward?

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

Actually, on the price increase front, I should mention that it may seem like maybe we're being unreasonable about increasing the prices of our vehicles, given that we had record profitability this quarter, but the wait list for our vehicles is quite long. And some of the vehicles that people will order, the wait list extends into next year. So, our prices of vehicles ordered now are really anticipating supplier and logistics cost growth that we're aware of and believe will happen over the next 6-months to 12-months. So, that's why we have the price increases today because the car ordered today will arrive, in some cases, a year from now. So, we have a very long wait list, and we're obviously not demand-limited, we are production-limited by -- very much production-limited.

A - Martin Viecha {BIO 17153377 <GO>}

And raw material exposure?

A - Zachary J. Kirkhorn {BIO 20940148 <GO>}

Yes. Just to add to what Elon is saying, there's different ways to calculate raw material exposure. I think the simple way, we estimate we're around 10% to 15% of our cost structure exposed to raw materials. And just to clarify a couple of things on that. So, we've been experiencing increases in cost in general, but also raw materials for a number of quarters now. That pace picked up in Q1, so last quarter. And what we're seeing for Q2 is slightly higher than that as well. And as indices move, it doesn't impact us immediately or directly. In some cases, we have contracts with suppliers. But then as those contracts expire, we have to renegotiate them so that there can be a lag.

In some cases, our contracts do directly reflect movement in commodity prices or raw material prices. But the timing in which that Tesla pays for that, has a lag associated with it as well based on the contract. And so, to Elon's point, what we're trying to do here, because it's quite an unprecedented situation of raw material movement and all of these various lags and uncertainty around renegotiating contracts, is we're trying to anticipate where things will go and make sure that the pricing that we have put in place at the time that those raw material cost increases hit us that they align, and that the company can remain financially healthy in various scenarios as we look out over the next four quarters.

A - Martin Viecha {BIO 17153377 <GO>}

Okay. Thank you very much. The next question is, why does Tesla continue to fight dealership laws on a state-by-state basis versus taking it federal? Separately, why isn't Tesla using an 800-volt architecture in its vehicles? What are the advantages or disadvantages?

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

Sure. So, from Tesla's standpoint, obviously, we'd like to have federal legislation that allows direct sales in all states, but we have not seen willingness on the part of the Congress to enact such laws that would override a variety of state laws. So unfortunately, we have to fight it on a state-by-state basis. And Drew, do you want to answer the 800-volt question?

A - Andrew D. Baglino {BIO 21161872 <GO>}

Yes, sure. On the 800-volt thing, yes, so it's really a case-by-case thing. For the smaller platform vehicles like 3 and Y, there's some wins and losses with 800 volts, not everything is better. And so, we look at that platform, and we're not like ignoring the reality that you can go to a higher voltage, but there's nothing really encouraging us to do so on that platform. It's really about mass and power. And as you look at bigger vehicles, there are some advantages on those bigger vehicles.

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

Let me just quantify that --

A - Andrew D. Baglino {BIO 21161872 <GO>}

Yeah.

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

Basically, our estimate is that going from 400 to 800 volts might save $100.

A - Andrew D. Baglino {BIO 21161872 <GO>}

Yep.

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

It's not really moving the needle.

A - Andrew D. Baglino {BIO 21161872 <GO>}

And you're changing many things.

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

Yes, but --

A - Andrew D. Baglino {BIO 21161872 <GO>}
The charging infrastructure all the way through the entire vehicle system --

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

A - Andrew D. Baglino {BIO 21161872 <GO>}
-- to get maybe $100.

A - Elon R. Musk {BIO 1954518 <GO>}
Yes, exactly. So -- I mean, in the U.S. you've got 110-volts household power or voltage. And then, in Europe, most households you have like sort of 220. But really, it doesn't make that much of a difference, and appliances work pretty much as well in, say, Europe as they do in the U.S.

A - Andrew D. Baglino {BIO 21161872 <GO>}
Yep.

A - Elon R. Musk {BIO 1954518 <GO>}
So, there's some -- the advantages are small and the cost is high. Like I said, like long-term, like years from now, is it -- will it make sense to probably move to an 800-volt architecture, probably. But it really needs a very big vehicle volume to pay for the cost of changing from 400 to 800 volts. And then, Drew, do you want to continue to with it?

A - Andrew D. Baglino {BIO 21161872 <GO>}
I was just going to say that 100 volts is also kind of like a spreadsheet exercise, right?

A - Elon R. Musk {BIO 1954518 <GO>}
$100.

A - Andrew D. Baglino {BIO 21161872 <GO>}
Sorry, $100, it's roughly like a spreadsheet exercise, like you have to get through the full program to the end to see that maybe it's been whittled away to $50 or less.

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

A - Andrew D. Baglino {BIO 21161872 <GO>}
On bigger vehicles, where you're talking about higher power on the charging side or higher power from the battery to the power electronics or you need more torque,

so the current requirements go up, there's a little bit more semiconductor and actual like conductor savings of going to the higher voltage. And so, we do consider that for Semi and Cybertruck. But for the 3/Y platform where we've got everything running and the benefit is questionably small --

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

Yeah. It's basically zero for robotaxi.

A - Andrew D. Baglino {BIO 21161872 <GO>}

Yeah. For robotaxi, yes, it doesn't make sense here. So --

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

No, sorry, this as such -- yeah, go ahead.

A - Andrew D. Baglino {BIO 21161872 <GO>}

Sounds good.

A - Martin Viecha {BIO 17153377 <GO>}

Okay, let's go to the next question. Next question is, how are the current 4680s performing versus expectation set during the Battery Day in terms of expected range increase and dollars per kilowatt hour?

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

Yes.

A - Andrew D. Baglino {BIO 21161872 <GO>}

Yes. We're working in all the areas we shared on Battery Day, and we have sort of consistent progress across all of those areas towards achieving the five-year cost trajectory goals for the cost within our control. But we do not control all of the commodity costs, so that's an exception I needed to call out.

Similar to Model 3, it will take us several years to get rate and yields to the point where everything that we've discussed is achieved. Our priority was on simplicity and scale during our initial 4680 and structural battery ramps. And as we attain our manufacturing goals, we will layer in new material technologies we are developing and higher-range structural pack revisions.

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

I think maybe, in a nutshell, I think it probably is fair to say that 4680 structural pack will be competitive with the best alternatives later this year. And we think we'll exceed the best alternatives next year.

A - Andrew D. Baglino {BIO 21161872 <GO>}

Yes. I mean, we have some good existing proofs, right? Like we've built the facility here in Texas, like we know how much we spent on capital equipment in the facility. And it's more than 5x less than prior technology installations. So, we're saving huge on CapEx, on utilities and personnel. We know what those loads are and how many people are needed to run what is basically in a highly automized factory. And we have massive reductions in both of those. So, like the cost model is well understood. It's really about rate and yield, which will come in time, as Elon said, over the course of this year and next.

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

Yes.

A - Martin Viecha {BIO 17153377 <GO>}

Thank you. The next question is, how does Tesla plan to secure raw materials required to scale to extreme size?

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

Yes. So, this is something we think about quite a lot. It depends on what extreme size means. But, certainly looking at, like say, the $5 million, $10 million, $20 million -- 5 million, 10 million, 20 million vehicle levels, you really have to analyze the sort of macroeconomic, just like what is the tonnage of lithium that you need, of nickel, of iron phosphate, of graphite separators, electrolytes. It looks like really you think of like just macro tonnage.

And when we need to think about this for the world as a whole, because just -- we want to -- what are limiting factors for accelerating the advent of a sustainable energy future. And whatever those limiting factors are, Tesla will take action on those limiting factors. So, right now, we think mining and refining lithium is -- appears to be a limiting factor, and it certainly is responsible for quite a bit of cost growth in the sales. It's I think the single biggest cost growth item right now, certainly on a percentage basis. Although just for those who don't totally know this, the actual content of lithium in a lithium-ion cell is maybe around 2% or 3% of the cell, so --

A - Andrew D. Baglino {BIO 21161872 <GO>}

5 kgs a car.

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

Yes. It's 5 kilograms, except it's not -- it's called a lithium-ion cell, but by far, like the most expensive and heaviest item in the cell is the cathode. So, that's the nickel or the iron phosphate. So, we're looking carefully at all of the raw materials and trying to figure out how we can accelerate the total amount of raw materials needed to transition the world to sustainability. And I think we've got -- we don't have enough time on this call to really go through all those details, but we are thinking about these things and we think we'll have some exciting announcements in the months to come.

A - Andrew D. Baglino {BIO 21161872 <GO>}

Yes. One thing I want to call out is like, we're also committed to recycling at all of our cell factories. We're recycling 50 tons a week right now in Reno and ramping to 150 tons with all of that reclaimed material going directly back into our cathode supply chain. So, we're looking at the beginning and end of life needs here.

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

Yes.

A - Lars Moravy

And that's true, like since in Reno we built the Gigafactory, we started getting out batteries. But as we built newer factories or vehicles, for example Giga Texas here, where we are today, we sent all of its non-yielded or scrap aluminum from the stamping shop directly into the casting shop. We regrind any plastics that gets out. And so we're really concerned about raw materials, not just like mining them and consuming them, but when we get them in the door, using all 100% of them.

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

Yes, Lars, that's a great point. So, we're restoring -- we're installing sort of furnaces for aluminum, like sort for the Model Y that we've built here in Giga Texas has both a front and a rear body casting. So, we're casting almost two-thirds of the body. Then that -- it's high pressure die cast aluminum. And so, we can take both aluminum -- both scrap from the casting machine and the gating that comes out, and put that -- just really toss that back into the melting -- aluminum melting pot. And then, as Lars was saying, also take any stampings and any other aluminum scrap and also throw that in the melting pot. Matter of fact, we've also figured out that we can use wheels from practically any car.

A - Unidentified Speaker

(inaudible) wheels.

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

Yes, so we're going to be recycling the cast aluminum wheels from legacy gasoline cars as well and throwing that in the melting pot for our aluminum cast body of Model Y. And also we'll be moving to the sort of cast part rear body in all vehicles over time. Well, actually, maybe not S/X, but 3/Y.

A - Martin Viecha {BIO 17153377 <GO>}

Thank you. At what rate do you expect Berlin and Austin to ramp relative to Shanghai? Are you able to leverage learnings from Shanghai or are the processes substantially different in the new factories?

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

I think hopefully we should be able to ramp production faster than Shanghai because we have learned a lot. And we've now gone through the -- we have basically veteran teams that obviously in the 3/Y ramp -- Y ramp especially in multiple locations. And we're obviously sharing what we've learnt. And so we don't want to get complacent or entitled, but this should be a faster ramp because we have learnt more, and we have done a lot to simplify the production process of Model Y that should lead us to a faster ramp within Texas and Berlin. Yes.

A - Lars Moravy

We also had a structural casting, about 30% less robots, we expect to almost double the capacity for body, for example, reducing the number of robots, but doubling our capacity in a lot of areas.

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

Yes, right. The body line for the structural pack is -- and if you got a structural pack and front and rear castings, the body shop is -- body shop size drops by over 60% relative to the standard way of making a car.

A - Unidentified Speaker

We got tax savings in general assembly and everything else, because we have the structural battery, the floor is the battery. We put the seats on the battery and then we put that in the cars. So there's actually 10% and 15% less (inaudible) engineering because of the general assembly site.

So, really, like I think about this the way we think about cars. If you're waiting for the best Tesla, you're going to be waiting forever. If you're waiting for the best factory, you're also going to be waiting forever because every new factory is better than the last one because we take all that learning and we try to (inaudible)

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

Yes.

A - Martin Viecha {BIO 17153377 <GO>}

Thank you. Next question is, at Cyber Rodeo Elon mentioned that a futuristic driverless robotaxis vehicle is on the roadmap. When can we expect more details on the product offering to be unveiled? Is this something that people can own or will this be only offered by Tesla as a service?

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

So I think we want to hold up on -- we don't want to jump the gun on kind of exciting product announcement too much. So, I think we'll aim to maybe do a product event for robotaxi next year and get into more detail, but we are aiming for volume production in 2024.

A - Martin Viecha {BIO 17153377 <GO>}

All right. And maybe the last question from investors is, what is the current run rate of 4680 cell production at Fremont and at Giga Texas? What do you expect run rates of 4680 to be in Fremont and Giga Texas or Berlin at the end of the year?

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

Well, Berlin is using the 2170 non-structural pack, so they're not constrained by 4680. They will transition to 4680 hopefully later this year, but current production does not require that. We also have, just as a risk mitigation, 2170 non-structural pack capability here at Giga Texas as well. But if things go according to plan, we will be in volume production with 4680 sometime perhaps towards the end of the third quarter and certainly in the end of the fourth quarter. Is that accurate, Drew?

A - Andrew D. Baglino {BIO 21161872 <GO>}

Yes. And the other thing I would add is like, with the China COVID shutdown and the semiconductor bottlenecks we had through Q4 and hence a little bit in Q1, we have sizable cell inventory at the moment and excess cells to support the 2022 volume targets you described. So, that gives us the ability to be pretty deliberate in the 4680 ramp where we can maximize the learning step-by-step, take engineering down time to upgrade key pieces of equipment and modify the structural pack design to improve reliability, all while achieving what you just said, so.

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

Yes. 4680 output is not a risk to achieving 1.5 million vehicles produced this year. But it would become a risk next year if we do not solve volume production by early 2023, but we're highly confident of doing so.

A - Martin Viecha {BIO 17153377 <GO>}

Thank you very much. Let's go to analyst questions now. The first question comes from Dan Levy from CSFB. Please go ahead and unmute yourself.

Q - Dan Levy {BIO 17519730 <GO>}

Hi. Good evening. Thank you for taking the questions. First, maybe you can just talk through or address what some of the drivers of cost improvement were in the quarter. Was it just further improvements within Shanghai, within Fremont, anything around sort of ongoing kaizen that you've talked about in the past? Maybe you could just talk through what you benefitted from in the first quarter?

A - Zachary J. Kirkhorn {BIO 20940148 <GO>}

Sure. I mean at a high level, cars produced in Shanghai do carry a lower cost structure than cars produced in Fremont. And so, as our mix of cars shift towards Shanghai, the average cost is positively impacted by that. We're also seeing some progress in manufacturing efficiencies in Fremont, particularly on the S and X side as volume increases improves there. Expedite has been a huge story for the company. In Q4, we had massive amounts of expedites. Q1 was still quite large, but we did make progress bringing that down some.

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

Yeah, as Drew mentioned, credit goes to the Fremont manufacturing team and our associates there because we're achieving record output at Fremont.

A - Andrew D. Baglino {BIO 21161872 <GO>}

Yes. The Fremont team is doing a tremendous job, (inaudible) from the back quarters.

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

Yes.

A - Andrew D. Baglino {BIO 21161872 <GO>}

It's hard to underweight, like you should -- expedite situation with the crazy logistics that occurred with COVID. I mean --

A - Zachary J. Kirkhorn {BIO 20940148 <GO>}

Yes. And to Elon's point, the Fremont team and also the Shanghai team has been extremely dynamic with the unpredictable nature of our part arrivals. And our supply chain team, in particular production planning portion of supply team -- supply chain. We often get very little notice when there's part shortages coming, and it's kind of a scramble couple days before that part is supposed to arrive to figure out how to get it here. And so, the amount of herculean effort that goes in to produce a quarter like Q1 and even the quarters before that is absolutely immense. And certainly --

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

It's just like there is a saying in the military, it's like, amateurs talk about tactics, professionals talk about logistics when it comes to war.

A - Zachary J. Kirkhorn {BIO 20940148 <GO>}

Yes. So there were some inherent cost improvements, as I mentioned, but there's also offsets that we've talked about previously on raw materials, commodities. Outbound logistics continues to remain a challenge despite a ton of efforts to increase capacity there and bring those costs down.

Q - Dan Levy {BIO 17519730 <GO>}

Great.

A - Martin Viecha {BIO 17153377 <GO>}

Dan, do you have a follow-up? Sorry, go ahead.

Q - Dan Levy {BIO 17519730 <GO>}

Yes. Thank you. Second question, one of the initial goals of Model 3 way back when was to have an EV that was affordable for a wide portion of the market. And we know prices are much higher now, just given the supply constraints, prices are higher for all other automakers. We know that there is inflation that you're battling through and some of that needs to be passed through to the price of vehicles. And you're going to be supply constrained for the foreseeable future, so it's sort of a moot point. But given the goal long-term of making EVs more widely available to the masses over time, how do you look at the progression of prices over time?

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

We absolutely want to make EVs as affordable as possible. It's been very difficult with the -- I mean, I think inflation is at like a 40 or 50 year high. And I think the official numbers actually understate the true magnitude of inflation. So -- and that inflation appears to be likely to continue for at least the remainder of this year, is what -- when we're talking to suppliers, suppliers are under severe cost pressure. So, yeah. And in some cases, we're seeing suppliers' request 20% to 30% cost increases for parts from last year to the end of this year. So it's -- there's a lot of cost pressure there.

That's why we raised our prices because we know -- I mean when things are this uncertain with respect to inflation, that you know it's high, then we got orders that go out a year or more in some cases, then we have to anticipate those cost increases. But I think especially with the robotaxis and autonomy, I think we will end up providing consumers with by far the lowest cost per mile transport that they've ever experienced. Yeah, I mean with robotaxi like maybe five to ten times cost per mile, it's really quite substantial.

A - Andrew D. Baglino {BIO 21161872 <GO>}

And therefore, accessible to everyone.

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

Yes. I mean, looking at some of our projections, it would appear that a robotaxi ride will cost less than a bus ticket, a subsidized bus ticket or a subsidized subway ticket.

A - Martin Viecha {BIO 17153377 <GO>}

Thank you very much. Let's go to the next question from Rod Lache from Wolfe Research.

Q - Rod Lache {BIO 1528384 <GO>}

Hi, everybody. I'm trying to just parse out your comments about the inflation and constrained supply in battery feedstocks, and the initiatives that you are working on internally to secure these materials. It sounds like you're optimistic about Tesla's ability to solve this for Tesla. Do you -- but do you see this as a constraint on EV adoption more broadly?

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

Yeah, absolutely. What's sort of keeping our cost down, at least in short term, is that we have long-term contracts with suppliers, but those long-term contracts will obviously run out, and then we'll start to see potentially significant cost increases. But at a macro, sort of looking at the world as a whole and saying, okay, what does it take for Earth to transition to sustainable energy faster? It's fundamentally -- the fundamental limiting factor is the output of the cell -- basically cell output we have. At what rate can lithium-ion cells increase the gigawatt hours per year? That is the fundamental limiting factor. So, in order for -- and that will move as fast as the slowest least lucky element of the whole supply chain.

Currently, we see that as being a challenge with lithium and it is not -- to be clear, it's not that there's a shortage of lithium ore in the world, lithium is present almost everywhere, it's a very common element. However, you still need to dig up ore, dig up basically the spodumene [ph] or whatever the clay with the lithium, and then you need to go through a whole series of refinement steps. And thus a lot of industrial equipment is needed to refine lithium ore to lithium that can be used as lithium hydroxide or lithium carbonate in the battery cell.

So, we think we're going to need to help the industry on this front. But the -- I mean industry is growing fast. And it certainly encouraged entrepreneurs out there who are looking for opportunities to get into the lithium business. Lithium margins right now are practically software margins. I mean, if the -- it's something -- literally I think if this -- I mean, Zach, correct me if I'm wrong, but I think we're seeing cases where the spot lithium price is 10 times higher than the cost of extraction. So it's not like we're talking 90% margins here. Can more people please get into the lithium business? Do you like minting money? Well, the lithium business is for you.

Q - Rod Lache {BIO 1528384 <GO>}

It's interesting. So, I guess we'll stay tuned to see what happens from that. My second is, it's impressive to see just a modest increase in cost per vehicle, cost of goods sold per vehicle given what we've seen in terms of commodities actually. And from here you have a lot of savings, opportunities with 4680 cells and the cell manufacturing changes, the anode chemistry structural packs, Giga castings. Are you suggesting that even those may not be sufficient to offset the inflation that you're seeing and that you're going to need additional pricing as well, in addition to those specific initiatives that you've called out?

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

Well, we hope we don't need to increase the pricing further. The current pricing is anticipating what we think is the probable growth in costs. And if those growth -- if that growth in cost does not materialized, we actually may slightly reduce prices. So, we do not currently anticipate making significant price increases. But obviously, we don't control the macroeconomic environment. If governments keep printing vast amounts of money and if there's not significant increases in lithium extraction and refinement and other raw materials such that everyone's competing for a limited amount of raw materials, then obviously that will drive prices to high levels. So it was -- if you have a crystal ball that can tell us what the future is going to be like, we will

adjust accordingly. But the current prices are what we -- the current prices are for a vehicle delivered in the future like 6 to 12 months from now. So this is our best guess.

A - Andrew D. Baglino {BIO 21161872 <GO>}

But I think if you zoom out, right, like as you said, our mission is to accelerate the transition to sustainable energy.

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

Yes.

A - Andrew D. Baglino {BIO 21161872 <GO>}

So, we are working with our existing suppliers and others to figure out how to grow all of these raw materials as quickly as possible, to not slow down the transition.

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

Yes.

A - Andrew D. Baglino {BIO 21161872 <GO>}

And whether that means we have to get directly involved in some cases or not comes down to the counterparty and their willingness to expand the way we think they should be able to expand. And that's similar to what we've done with everything else, like we built a Gigafactory in Reno because it needed to be done.

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

Yes.

A - Andrew D. Baglino {BIO 21161872 <GO>}

And so like, we will do what needs to be done to not slow down the transition, and affordability is a goal because if it's unaffordable, it's going to retard the growth of what is inherently a good thing that we can't have that as an outcome.

A - Martin Viecha {BIO 17153377 <GO>}

Thank you. The next question comes from Pierre Ferragu from New Street Research.

Q - Pierre Ferragu {BIO 15753665 <GO>}

Thanks. Can you hear me? Can you hear me well?

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

Yes.

Q - Pierre Ferragu {BIO 15753665 <GO>}

Great. I'd like to ask you some questions about free cash flow. Do you -- so first maybe in the long run, Elon, if you look at your performance and your growth model material and your growth ambitions, I did the math real quick and I see you guys sitting on $400 billion or maybe $500 billion of cash at the end of the decade. And I was wondering if it's something you have given some thoughts about. (Multiple Speakers)

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

If inflation keeps going crazy, $500 billion might be like $20 billion today. I don't know. So, we will see what $500 billion buys you in a decade, but it might be a lot less. So, I don't know if we'll -- that seems like a lot of cash. I don't know. We'll try to do something useful with it, I mean Zach, salary hikes problem, that's for sure.

A - Zachary J. Kirkhorn {BIO 20940148 <GO>}

The way we've been -- I think we have to take this one step at a time. And so, we have investments that are happening right now to get Austin and Berlin up and running. And then, as Elon mentioned, installing capacity for robotaxi production. And there's some decisions that, as Elon alluded to just, to share in the future about what the economic model looks like for robotaxi. And so, the way Elon and I have discussed this is --

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

Let me just -- yeah, everyone just mute if you're not.

A - Zachary J. Kirkhorn {BIO 20940148 <GO>}

Yes. So our focus is to get to the point where robotaxis are on the road, Optimus is in use, get the economic model for that dialed in. And then evaluate the size of cash flows at that point and make decisions then as to what's next.

A - Martin Viecha {BIO 17153377 <GO>}

Okay. Pierre, do you have a follow-up question?

Q - Pierre Ferragu {BIO 15753665 <GO>}

Yes. (Technical Difficulty)

A - Unidentified Speaker

That's from the new line.

A - Martin Viecha {BIO 17153377 <GO>}

All right. Let's go to the next one. The next question comes from Trip Chowdhry from Global Equities Research.

Q - Trip Chowdhry {BIO 5306842 <GO>}

Thank you. Two questions, I have. First is regarding the Cybertruck. I was wondering like, in terms of number of parts, how would Cybertruck compare with a traditional pickup truck in terms of number of parts? The second question I have is on Gigafactory Nevada, Sparks. Will we have any production of vehicles in that factory? Or all the future production will happen in Giga Austin? Thank you.

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

I'm not sure if we've actually done a comparison of a Cybertruck parts versus regular truck parts. I mean, Lars?

A - Lars Moravy

Yeah. I mean, if you want to go down, like depends what's your kind of part, we still have cells (inaudible)

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

(Multiple speakers) count.

A - Lars Moravy

If we don't count that, the simplicity of our structure is significant versus a traditional pickup truck or any other vehicle like, as we talked about the Giga castings, we save hundreds of parts there.

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

I mean the entire rear half of the car is one cast.

A - Lars Moravy

And even so with the Cybertruck and the doors for example, we have an exoskeleton design where the door is ready to take, and it takes a little bit of the side long-term impacts. So we really have -- like we don't have the door reinforcements, we don't have the (inaudible) beams. So to your point, haven't counted them because I don't often look back at old technologies to decide how well I'm doing, I check that once in a while. But in general, architecture is always moving to reduce complexity, reduce parts, or reduce parts count. I would say ignoring the battery cells, we are probably 20% to 30% less.

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

All right.

A - Martin Viecha {BIO 17153377 <GO>}

All right. Okay. Thank you. Let's go to the next (Multiple Speakers)

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

Do we expect to expand? Yes, we do expect to expand Giga Nevada. There is lot of room for expansion there and we do expect to increase output from Nevada. But the -- by far the biggest increase in output will be from Giga Texas.

A - Martin Viecha {BIO 17153377 <GO>}

Thank you very much. The next question comes from Alex Potter from Piper Sandler. Hey, Alex. Can you hear us?

Q - Alexander Potter {BIO 16150582 <GO>}

Yes. Hi, Martin. Can you hear me?

A - Martin Viecha {BIO 17153377 <GO>}

Yeah.

Q - Alexander Potter {BIO 16150582 <GO>}

Okay, great. So, first question I had was the extent to which other plants outside of China are insulated from any further upstream supply bottlenecks that we may have in China. Obviously, if this COVID lockdown thing gets out of hand, clearly that's going to continue impacting Shanghai. But is there a point at point at which it could actually also impact other facilities?

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

Yes. If it were to continue, but there are some parts that are sourced from China that apply worldwide. And that would be -- that would impact production elsewhere. But all indications are that we are -- Shanghai is back in production at fairly high levels already and so are our suppliers. So we don't think this is going to be a big deal.

Q - Alexander Potter {BIO 16150582 <GO>}

Okay. Thanks. And second question. Obviously, the higher profitability you guys have been able to experience over the last couple quarters, a lot of that is reflecting sort of, quote-unquote, real improvements. Another part of it is because we're no longer paying you, Elon, as much as we were. So, I'm wondering, the extent to which you and the Board are in the process of contemplating another one of these long-term compensation packages, which in the past have seemed to work quite well? Thanks.

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

There are no discussions, currently underway for incremental compensation for me.

A - Martin Viecha {BIO 17153377 <GO>}

Thank you. The next question comes from Colin Langham from Wells Fargo.

Q - Colin Langham

Great. Do you guys hear me?

A - Martin Viecha {BIO 17153377 <GO>}

Yeah.

Q - Colin Langham

Perfect. Just a follow-up, sorry, to keep going on the raw material issue on the battery side, but obviously it seems pretty important. How quickly can raw material supply be built? Because my understanding is, it takes many years to build that out. So, are we just sort of facing -- When do you think we will see a lithium shortage or a nickel shortage? And is there even enough time to build that sort of mining capacity in place? And then related, how quickly can you switch to like LFP for the nickel issue?

A - Andrew D. Baglino {BIO 21161872 <GO>}

Yeah. I mean, I'll take the LFP question. Like, it says so in our letter that like half of our products were LFP last quarter, which shows how quickly we were able to respond to -- well, honestly, it wasn't because of a raw material shortage, but just because it seemed like the right thing to do, we could change our cathode chemistry. And there's more to be done on the cathode side and we are actively pursuing it to give us substitution flexibility in response to market conditions between the other cathodes that are out there that can be competitive in our vehicles, for which there are many options.

So we -- I guess, what I would say is, specifically on the cathode side, like flexibility is the way we're going to achieve this and not all of the materials that go into cathodes are actually, first of all, hard to secure like they're mining or refining. And second of all, in many cases are like very plentiful already, like huge scale. And if all of the batteries in the world use those cathodes, it's less than a 1% increase in total annual output. So that's the cathode side.

I think, Elon already spent a lot of time talking about lithium. It really depends on the resource, some resources like just getting rocks out of the ground, expanding the amount of rocks you're getting out of the ground is, maybe a little bit of paperwork and some additional sort of blasting and trucking operations. The refining is maybe where there's -- it's a little bit more chunky to bring it online. But also the refining doesn't -- it's not like an oil refinery, it's a much smaller operation to refine lithium out of spodumene or liquid, like a brine or salt pond evaporation. So, you're talking about a time scale of one to two years.

And it's not like we haven't been talking to all of the lithium suppliers out there for many years. They have a lot of projects already in the pipeline to come online this year and next. Some of what's going on in the lithium market this year doesn't actually have truth to bear to the like fundamentals of supply and demand, which is also a little frustrating. But, yeah, if we look past this year and next year, into 2030 when we need 15 terawatt to 20 terawatt hours of this stuff to get on the growth trajectory -- stay on the growth trajectory we're on, we need everybody to do more in the lithium space than they currently are.

I don't know if that answers the question.

A - Martin Viecha {BIO 17153377 <GO>}

Yeah. Fantastic. Thank you very much. So, let's go to the last question from Mark Delaney Goldman Sachs.

Q - Mark Delaney {BIO 20093495 <GO>}

Yes. Good afternoon. And thank you very much for taking the question. I was hoping you could comment on your latest thoughts about potentially opening up the charging network in the U.S. to non-Tesla owners. It's certainly really important to have a good experience for Tesla owners in terms of wait times at charging stalls. But if Tesla is able to have enough capacity, it could be a really good way to bring other vehicle owners into the Tesla network, perhaps hope Tesla to sustain its network benefits and maybe make more people likely to buy Tesla vehicles in the future.

A - Andrew D. Baglino {BIO 21161872 <GO>}

Yes. As Elon has said and as we've publicly committed, yeah, we do plan to provide third-party vehicle access all over the world, not just in Europe where our original pilot was. And we are working on solutions in North America, which is a little bit more problematic with our connector being different than others. But we are moving in that direction, I feel like that.

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

Yeah, I think that's -- there's like nothing more to be said on that, but we're yes, we want to do the right things with respect to the whole system.

A - Zachary J. Kirkhorn {BIO 20940148 <GO>}

And we're going faster on adding chargers.

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

Absolutely.

A - Zachary J. Kirkhorn {BIO 20940148 <GO>}

With the growth of the cars that we're producing and then anticipating what you were just discussing, overall charger capacity is really important. And so the pace of our investments in supercharging has accelerated.

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

Absolutely.

Q - Mark Delaney {BIO 20093495 <GO>}

Okay. That's helpful. And for my second question, could you share any more details on Tesla Insurance in particular as you're rolling it out in more states? Are there any

metrics you can share and what take rates have been like? And how do profitability margins on the insurance offering compare to the corporate average? Thank you.

A - Zachary J. Kirkhorn {BIO 20940148 <GO>}

So we just launched Tesla Insurance for real-time insurance in Virginia, Colorado and Oregon earlier this week. Maybe one step that I'll share is that Texas is our longest standing real term insurance market. But based upon the information that we have, Tesla is the second largest insurer of Teslas in the state of Texas. And possibly by the end of this quarter, maybe early next quarter we'll be the largest insurer of Teslas. And so the customer reception to this has been quite positive.

And I was reading social media on Monday after we launched in the three new states, a lot of folks who are reporting their stories of saving quite substantial amounts of money relative to their previous insurance. And so, we're quite encouraged by that and we're working as quickly as we can to get to 80% of customers having access to a Tesla Insurance product by the end of this year, in the United States. At which point we'll pivot our attention to expansion outside of the U.S.

The other thing I'll say on insurance is with these three new states, the model is different, because we are now the underwriter and we are also not holding the risk. And so, with those states, we are a fully vertically integrated provider of insurance from systems and financials. With respect to the financials of the program, it's still very early. And so, as the program gets more scaled, happy to share more information on that.

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

And one side note is that we are seeing that having real-time feedback for driving habits is actually resulting in Tesla owners driving the cars in a safer way. So, because they can see the -- they get real time feedback on, okay, this is affecting my insurance rate or it isn't. And so when people see -- could see a real time score and realize, oh, if I make the following changes in my driving habits, then I pay less in insurance. Then they have a very -- like a real time feedback loop for driving -- for safer driving, and incentive to do so. So it is -- actually what we're seeing is it is causing people to drive their cars in a safer manner, which is also net good.

A - Zachary J. Kirkhorn {BIO 20940148 <GO>}

It's safer on average what we see in the data to Elon's point, and premiums are lower. We see that in the take rate data. We have extremely high retention for customers who experience the product. And I think, I've talked about this in the past, but this has become a real passion program for us.

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

Yes.

A - Zachary J. Kirkhorn {BIO 20940148 <GO>}

For these benefits, it's bigger than just the economics. We're trying to do a good thing here for our customers, save people money and make the roads a little bit safer.

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

Yes. I think it improves just overall macroeconomic efficiency. It's also a feedback loop for Tesla because we see if there is a crash, both large or small, we sort of see exactly what that caused. And then we think about how can we change the design of the car or the software in order to minimize the probability of that accident. Most accidents are minor, but how do you -- how those accidents occur less frequently, and how do we make the repair associated with that accident super-fast? Like, aspirationally, it would be like a same-day repair for a collision, which is just night and day difference compared to sometimes having to wait for a month while insurance claims are settled and figured out, because Tesla is also doing collision repair.

A - Zachary J. Kirkhorn {BIO 20940148 <GO>}

Again, the feedback loop is instant.

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

Yes.

A - Zachary J. Kirkhorn {BIO 20940148 <GO>}

Right. So, I mean, we do claims management in-house. And so, we receive the notification that there's an accident, we work to prepare the estimate. And we can, with the support of our customers, use our collision centers to do the repair.

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

Yes.

A - Zachary J. Kirkhorn {BIO 20940148 <GO>}

And so it's full end-to-end visibility. And all of that, to Elon's point, we can then identify areas of cost inefficiency, feed those back to our engineering teams or elsewhere, software teams, actually improve the product. This lowers the cost of insurance, improves reliability of the product. So, it's a full circle.

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

Yes. And basically, the customer experience is just vastly better because if there's an accident, there's no argument, we'll repair it immediately. And this is as compared to arguing with an insurance company and then a claims adjuster and then a collision repair center. And this can be a nightmare basically. So we're trying to turn a nightmare into a dream with Tesla Insurance.

A - Martin Viecha {BIO 17153377 <GO>}

Fantastic. Thank you very much. Unfortunately, that's all the time we have for this quarter. So, thank you very much for all your great questions and we'll speak to you again in three months. Thank you.