

All right. Thank you. I think the most important point here that we want to make is that we're advancing the Model 3 build plan substantially, and just the overall volume plan, with Tesla aiming to get to the half million unit per year run rate in 2018 instead of 2020. And this is based off of the tremendous [amount of interest] received for the Model 3, which I think is actually a fraction of the ultimate demand once people fully understand what the car's capable of and are able to do a test drive.

So this is probably the biggest change strategically. Also, Tesla is going to be hell-bent on becoming the best manufacturer on earth. Thus far, I think we've done a good job on design and technology of our products. The Model S and X I think are generally regarded by very critical judges as technologically the most advanced cars in the world. And so I think they've done well in that respect.

The key thing we need to achieve in the future is to also be the leader in manufacturing. We take manufacturing very seriously at Tesla. It's the thing that we need to obviously solve if we're going to scale and scale rapidly and make the cars more affordable. So I really want to sort of send the message out there to the best manufacturing people in the world, we want you to come join our company. And that is going to be the primary focus of Tesla, is how do we get super-good at making large, complex objects? So that's I think the most salient point. It's easy to get wrapped up in like a bunch of sort of short-term issues, but I think in terms of what matters for the future, I think that's the most significant thing.

Overall, on the short-term stuff, our quarter-over-quarter stuff I think has improved quite significantly. I've seen Model X production increase by a factor of five from Q4 to Q1, and we continue to make huge strides in volume and quality of the vehicle. And I'm personally spending an enormous amount of time on the production line. My desk is at the end of the production line. I have a sleeping bag in a conference room adjacent to the production line, which I use quite frequently. The whole team is super-focused on achieving rate and quality at the target cost. So I felt very confident in us achieving that goal.

And with the increase in ramp, we do feel comfortable affirming the 89,000 deliveries this year. So, I think the rate of improvement with each passing day is very significant. I'd like to sort of thank Greg Reichow, who was our head of production for tremendous contribution over the last five years. Contrary to some media reports, Greg is still at Tesla. He is still with the company, and he is helping with the transition to some new leadership. And we have some I think exciting announcements coming in the next, possibly the next few weeks about additions to the Tesla management team on the

production side. So I'm feeling really, really excited about where things are headed in that direction.

All right. With that, let's go to questions.

Question-and-Answer Session

Operator

Thank you. Our first question comes from James Albertine of Stifel.

James J. Albertine, Jr. - Stifel, Nicolaus & Co., Inc.

Great. Thank you so much question. And, Elon, thank you for that introduction. There's no doubt you have an incredible undertaking in front of you. Can you help us understand some of the key obstacles and how we should consider those obstacles between now and your anticipated launch of the Model 3 in late 2017? Whether it's sort of P&L adjustments that we need to make along the way? But can you just help us sort of choreograph how that's going to take place?

Elon Reeve Musk - Chairman & Chief Executive Officer

Sure. So with the Model 3, as I mentioned on the last earnings call, we're really trying to take a lot of lessons learned from Model X, where Model X, we put a lot of bells and whistles on Model X and a lot of advanced technologies that weren't necessary for version one of the vehicle. And with Model 3 we're being incredibly rigorous about ensuring that we don't have anything that isn't really necessary to make a very compelling version one of the car. We also have a much tighter feedback loop between design engineering, manufacturing engineering, and production.

And so no element of Model 3 can be approved unless manufacturing has said that this is easy to manufacture and that the risk associated with manufacturing it is low. There are many ways to skin a cat, and it's remarkable how you can achieve a single objective with a hugely varying degree of difficulty. You can sort of take the analogy and say, if you wanted to kill a fly, you can kill a fly with a thermonuclear weapon, you can with a Moab, with a cruise missile, with a machine gun, or a fly swatter. So the end result is the same, but the difficulty is considerably more significant from one to the other and the collateral damage is considerably more significant. So having production be really fundamental to the design of the Model 3 I think is very important and then making sure we're not adding extraneous features to the 3 that aren't necessary to achieve the production volume is also extremely important.

At the risk of this being misinterpreted, and probably there will be some number of articles that do, I think it's worth explaining sort of how manufacturing a complex object with several thousand unique components actually works. And what date's relevant and – in order to achieve volume production of a new car with several thousand unique items, you actually have to set a target date internally and with suppliers that is quite aggressive. And that is a date that has to be taken seriously. So like the date, because I'm sure this will leak it's hard to keep a secret, really. The date we are setting with suppliers to get to a volume production capability with the Model 3 is July 1 next year.

Now, will we actually be able to achieve volume production on July 1 next year? Of course, not. The reason is that even if 99% of the internally produced items and supplier items are available on July 1, we still cannot produce the car because you cannot produce a car that is missing 1% of its component. Nonetheless, we need to both internally and with suppliers take that date seriously, and there needs to be some penalties for anyone internally or externally who does not meet that timeframe. This has to be the case, because there's just no way that you have several thousand components, all of whom make it on a particular date.

So the reality is that the volume production will then be some number of months later as we solve the supply chain and internal production issues. But it is a bit of a confusing thing, and it does create some churn, because people are like, well, what's the real date? It's like, you have to take the July 1 date seriously in order for some date a few months later or some number of months later to actually be the real date. So, yeah, that's actually how it has to work. So in order for us to be confident of achieving volume production of Model 3 by late 2017, we actually have to set a date of mid-2017 and really hold people's feet to the fire internally and externally to achieve an actual volume production date of late 2017.

So as a rough guess, I would say we would aim to produce 100,000 to 200,000 Model 3s in the second half of next year. That's my expectation right now. Yeah, so that's the thing.

Now what I would say to anyone that is thinking about ordering a Model 3, now is a good time to actually place your reservation or place the order, because you don't have to worry about placing your order and receiving it five years from now. If you place your order now, there's a high probability you will actually receive your car in 2018. So I'd really recommend that anyone who wants to receive their car in 2018 place their order very soon.

James J. Albertine, Jr. - Stifel, Nicolaus & Co., Inc.

Elon, thank you. And if I may as a follow up, can you give us some reference as to – again, most generously you would think if you said fourth quarter of 2017, so six months at its most generous calculation, how did that compare with the volume production agreed date for the Model X just as an example? And then how did this flow with your cash needs as you've articulated? It seems you've walked back a little bit from the prior quarter's discussion around cash flow, positive and no need for Capital Market's raise. It seems like there may be a need here, but if you could just articulate how the two fit together, that'd be helpful, thanks.

Elon Reeve Musk - Chairman & Chief Executive Officer

It's always tempting for people to reason by analogy instead of first principles. And that would be the mistake of assuming that anything to do with the X production has bearing on Model 3. They are very different programs with completely different approaches. So I would not try to extrapolate from that any more than it would've made sense to extrapolate from the Roadster that when we were making 600 cars a year to 20,000 cars a year with the Model S. So in the Roadster case we went from making 600 cars a year in 2010 where Lotus made the body and chassis, we made the powertrain and we did final assembly. It was a far simpler car than the Model S. We tell people we're going to do 20,000, get to around 20,000 cars a year with the Model S despite it being a vastly more complicated car and a car where we made the whole car and not just the powertrain.

If you were to extrapolate from the Roadster experience, you would be completely wrong about the Model S outcome, and many people were. That's why I would say X is not relevant. As far as the increased capital raise, well, obviously if you double your plan volume, you can't expect the capital to stay the same. I think our capital efficiency will actually improve on a per-car basis, but obviously it can't stay the same.

James J. Albertine, Jr. - Stifel, Nicolaus & Co., Inc.

Thank you so much.

Operator

Thank you.

Jeff Evanson - Investor Relations, Tesla Motors, Inc.

Operator, let's go to the next question.

Operator

Our next question comes from Colin Langan of UBS.

Colin Michael Langan - UBS Securities LLC

Oh, great. Thanks for taking my question. Just a kind of follow up, you've had issues with the X. There's management changes. What gives you the confidence that the 500,000 – that's a pretty amazing jump into next year? What kind of gives that conviction that that's going to be possible by 2020?

Elon Reeve Musk - Chairman & Chief Executive Officer

You mean by 2018?

Colin Michael Langan - UBS Securities LLC

Yeah, 2018. Yeah.

Elon Reeve Musk - Chairman & Chief Executive Officer

Yeah, well, first of all, I think we've got an excellent team at Tesla in production, and we're adding world-class aces in production with each passing week. It is a huge advantage to have the most – I mean, I think it's fair to say it's probably the most compelling product program in the world with the Model 3. I'm not sure what would be more compelling. I think there's a good argument that Model 3 is the most compelling program on earth from a manufacturing standpoint.

So our ability to recruit top manufacturing talent to the most compelling product on earth is very strong. We find the response to be extremely good when we call people up. So based on the rate at which we're adding world-class manufacturing expertise and some of the things that I know we're going to announce in the future, I feel highly confident that the Model 3 is going to be well executed as a program and – yes, you want to add something, J.B.?

Jeffrey B. Straubel - Chief Technology Officer

Yeah, if I might just add, I mean, you mentioned this briefly before, but the design of the vehicle lends itself to high-volume production very efficiently. And I think...

Elon Reeve Musk - Chairman & Chief Executive Officer

Yeah.

Jeffrey B. Straubel - Chief Technology Officer

That's really...

Elon Reeve Musk - Chairman & Chief Executive Officer

Designed for manufacturing.

Jeffrey B. Straubel - Chief Technology Officer

Absolutely. And that's something that we're doing even today. Those designs are firming up. So this is something happening far, far ahead of time. And the second point would be the quality and the motivation of the suppliers involved in the program is...

Elon Reeve Musk - Chairman & Chief Executive Officer

Yeah.

Jeffrey B. Straubel - Chief Technology Officer

Best ever.

Elon Reeve Musk - Chairman & Chief Executive Officer

Massively increased. Yeah. I mean, every supplier wants to be in this program.

Colin Michael Langan - UBS Securities LLC

Got it. And if I could just ask a follow-up. I mean, obviously cost is going to be an important factor when 3 launches. I think you've indicated that your battery cost with PACCAR now under \$190 per kilowatt hour. How do you think that compares to the industry? Where do you think it'll be by the time the Model 3 is launching, since that launch is being pulled forward?

Elon Reeve Musk - Chairman & Chief Executive Officer

Yeah. We're trying to comment on individual component costs, and that's fairly proprietary. It's kind of like giving away our playbook. But I think it's pretty obvious that we will exceed anyone else in the world in scale economies with the Gigafactory, and we're very confident in Panasonic's ability to execute on that front. So I just don't know anyone who in terms of intrinsic cost is going to be close to what the Gigafactory can produce on a cost per kilowatt hour basis.

Colin Michael Langan - UBS Securities LLC

And any color when you think about the \$190 per kilowatt hour, how much like a CAGR of decline until the Gigafactory is open, another 30% once that's on line?

Elon Reeve Musk - Chairman & Chief Executive Officer

Yeah, next question.

Colin Michael Langan - UBS Securities LLC

Thank you very much.

Jeff Evanson - Investor Relations, Tesla Motors, Inc.

We will go to the next question, then. Thanks.

Operator

Thank you. Our next question comes from Colin Rusch of Oppenheimer.

Colin Rusch - Oppenheimer & Co., Inc. (Broker)

Thanks so much. As you look at this accelerated plan for production, what can we expect on OpEx spending to support all of those cars coming out a lot faster than you previously expected?

Jason Wheeler - Chief Financial Officer

Yeah, this is Jason. I think when we updated our guidance on OpEx for the year a little bit in the letter, we talked about 20% last year and moving that range to 20% to 25% for 2016, so there's obviously going to need to be more OpEx at this. However, at the same time, you see how we improved quarter-over-quarter in terms of OpEx. We were down \$12 million from Q4, down 3%, so there's a renewed focus in the halls here at Tesla. I'm making sure that we are managing costs extremely effectively. And all of our employees get that and are contributing to that.

Elon Reeve Musk - Chairman & Chief Executive Officer

Yeah, I mean, I think our sort of operating leverage means sort of fixed cost relative to our variable cost is going to improve dramatically as you get volume up.

Jason Wheeler - Chief Financial Officer

Yeah, absolutely. We talked a little bit about this on the call last quarter. The potential for operating leverage is massive with production scaling.

Colin Rusch - Oppenheimer & Co., Inc. (Broker)

Great. And then, Elon, what do you need to see to move your desk out of the factory? It's kind of a dramatic thing to talk about having your factory in your sleeping bag there, so obviously there are some things you're concerned about but what are you going to want to see to go back to a different location?

Elon Reeve Musk - Chairman & Chief Executive Officer

Yeah. I mean, my desk has frequently been in the factory. This is not some new thing. On the Model S ramp, my desk was also in the middle of the factory at the start of the body line for a year. So I move my desk around to wherever the most important place is for the company. And then I sort of maintain a desk there over time to sort of come and check in on things. But I mean, I suspect probably by the end of this quarter, most of my time will not be spent on the factory floor.

Operator

Thank you. Our next question comes from Pat Archambault of Goldman Sachs.

Patrick Archambault - Goldman Sachs & Co.

All right. Thank you. Good afternoon. So getting back to the capital requirement for the expanded Model 3 production, I appreciate the guidance that you've provided for this year from a CapEx perspective, that's helpful. But, I don't know, maybe this is a question for Jason. I mean, have you guys – can you share with us maybe what a total capital cost estimate might look like for the Model 3 program now that you've got a handle on what your volume is going to be or what you want to produce to?

Jason Wheeler - Chief Financial Officer

Yeah, a couple of things there. So, one, we provided some bread crumbs, like we updated our CapEx guidance to – we had guided at \$1.5 billion last quarter and we think it'll probably be 50% higher than that for 2016 into 2017.

Jeffrey B. Straubel - Chief Technology Officer

1.5?.

Jason Wheeler - Chief Financial Officer

What?

Jeffrey B. Straubel - Chief Technology Officer

1.5?

Jason Wheeler - Chief Financial Officer

1.5. And into 2017 we're not going to talk about that right now. But the other thing to pay attention to is our CapEx for this quarter was \$216 million, which was a 47% decrease over Q4. A little bit of that is what we talked about last quarter were a lot of the big investments for Model X had already been made, but also we're just really focusing, as Elon has said, on capital efficiency and making sure that we are investing in the highest and best uses of cash. And I think those principles are what's going to guide the Model 3 program.

Patrick Archambault - Goldman Sachs & Co.

Yeah. I mean, look, that's a good starting point to work with for us. I mean, we appreciate the update for this year. Maybe the way to take the question is just to kind of understand when the peak spending periods are going to be. If you're launching through middle of next year, is it kind of a good idea to maybe extend the amount of capital you see spending kind of in the balance of three quarters through the second half of next year? And then, clearly with the launch, that tapers off. Is that a right way to think about it? And then second to that, I would probably ask the same question, just on the R&D front. When do those costs spike in the timeframe of that program?

Jason Wheeler - Chief Financial Officer

Sure. I think you are thinking about it the right way, the way you've laid it out, and you can kind of use Model X and Model S and the ramp of capital for those programs as a way to think about Model 3.

On the R&D piece of it, that is a big driver behind our updating of our range to 20% to 25% OpEx in 2016. So we'll start to see a little bit of that in the second half of this year, and then certainly some more into the first half of 2017.

Patrick Archambault - Goldman Sachs & Co.

Got it. If I can squeeze in one last one, just on the sourcing. Is this changing your strategy of working with suppliers? I mean, you have done a lot in-house for all your products so far, but obviously this is a very different kind of volume number you're talking about. So are you thinking about changing the level of vertical integration, and how does that work into sort of an ongoing capital requirements for this program?

Elon Reeve Musk - Chairman & Chief Executive Officer

No, I think we are actually going to increase the amount of vertical integration that we have. I think it's very important for us to have the ability to produce almost any part on the car at will because it alleviates risk with suppliers going back to like where if 2% of supplies is not ready we can't make the car. Having the ability internally to adapt and make that 2% of parts internally it really massively reduces risks associated with the production ramp. That, I think, is a very important thing.

Now once, like if we get to steady state, and maybe we talk to a supplier and they can do a very efficient job of making that part, we have no problem transitioning it from in-source to outsource. Our goal is not to in-source for the sake of in-sourcing, but rather to in-source if we think that it has meaningful improvement on schedule, or cost or quality. And, I mean, one of the challenges we face is that for a lot of supply chains, they are impedance-matched to the timeframe of the big OEMs, and Tesla just moves a lot faster than the big OEMs. And so if the impedance matched to a typical sort of like a six-year development cycle, and we are on a two or three-year development cycle, it just doesn't connect properly. Some suppliers can handle that and some can't.

Patrick Archambault - Goldman Sachs & Co.

Certainly seems to limit some of the people you could work with. Thanks for the clarification.

Operator

Thank you. Our next question comes from Brian Johnson with Barclays.

Brian A. Johnson - Barclays Capital, Inc.

Yes. Good evening – afternoon. I just want to talk a little bit about maybe some of the milestones that you see, in terms of this accelerated development and launch of the scale up of the Model 3. First, it looked like in the proxy that the alpha prototype was completed as of when it was filed a few weeks ago. So a few questions. One, when do you kind of expect the beta prototype to be achieved? When do you think you will have firm specs for both your internal parts operations and for your external suppliers? And then in terms of the capital, do you see – two other questions kind of – when would you see raising capital, if at all, to meet this? And then, finally, given the volume of trade-off decisions you're talking about making between manufacturing, design, engineering, do you see any role for a COO type similar to what you have at SpaceX to accomplish this timeline?

Elon Reeve Musk - Chairman & Chief Executive Officer

Okay. That's like 17 questions in just one.

Brian A. Johnson - Barclays Capital, Inc.

You can send us the project plan.

Elon Reeve Musk - Chairman & Chief Executive Officer

Well, from an engineering standpoint, we are already almost complete with the design of Model 3. And in fact, the prototype that was driving at the [Motor Event] at the end of March was actually using the production drivetrain. So I think we feel pretty good about engineering completion of the last items probably within six to eight weeks, thereabouts. And so we're sort of completing the final release for tooling no later than the end of June. That sort of leaves roughly nine months for the tools you manufacture, which I think is an achievable timeframe. [Get] some suppliers, but it's an achievable timeframe. If you can have – you can create a human baby in nine months, you can pretty much make a tool in nine months. So that's our expectation. So then we want to have parts of production tooling starting in April next year. Still we've got three months of validation for a normal start of volume production in July.

Again, it's a nominal start, and it's a date that we internally take seriously and that suppliers need to take seriously. But it is one where inevitably there will be some small number of items that cause slippage such that the actual date of reaching volume production is some number of months after that. This is simply in the nature of things. It's unavoidable. And so that's – and if you could tell me what those parts would be, we would be able to take action now.

It's easiest what these things are in hindsight but not in advance. And sometimes there are things you don't expect to be a problem. So Tesla is a large, complex business. I don't want to comment on too specifically on Senior Exec hires.

Brian A. Johnson - Barclays Capital, Inc.

Okay. And, I guess, does this imply similar accelerated schedule for the Gigafactory, which always seemed tied to the 2020 0.5 million unit goal?

Elon Reeve Musk - Chairman & Chief Executive Officer

It does. J.B., do you have anything to that?

Jeffrey B. Straubel - Chief Technology Officer

We've – I mean, as we've discussed previously, this is a small part of why the Gigafactory was – we accelerated some of our plans there. And we're still on track to have first cell production starting at the end of this year so that we'll be able to ramp up to match the Model 3 schedule as well.

Elon Reeve Musk - Chairman & Chief Executive Officer

Yes. Again, I sort of want to emphasize some comments that I made earlier in the earnings call, which is Tesla is really hell-bent on being the world's best at manufacturing. Like this is a big deal. And I think it's the right thing to do because what we're trying to do is get as many electric cars on the road as possible. And what's the limiting factor? Well, it's production. Like how can we scale and scale efficiently? And so we need to get to – we need to figure out how to be the world's best manufacturing and that's what we're going to be hell-bent on doing.

Brian A. Johnson - Barclays Capital, Inc.

Okay. Thanks.

Operator

Thank you. Our next question comes from Adam Jonas of Morgan Stanley.

Adam Michael Jonas - Morgan Stanley & Co. LLC

Hey, Elon. So on our math, your combined fleet of Model S and X are driving more than 3 million miles a day. So in just one day, your cars do about 2x the distance that Google's done in the entire history of their self-driving car project. Now while your cars aren't exactly sensor-encrusted Christmas trees with tens of thousands of dollars of equipment like a retrofitted Google car, it's still a lot of miles. And I'm just wondering if you can explain to the investment community what kind of advantage this gives Tesla in the race for sustainable transport an accident-free driving in some commercial financial terms, if you could. Thanks. Or even engineering terms.

Elon Reeve Musk - Chairman & Chief Executive Officer

Well, I mean, I think you've pretty much asked the question and then answered it. Data is everything really when you're trying to solve the autonomous transport problem. And having millions of miles per day of data accumulating and then as the fleet grows that grows proportionate to the fleet is incredibly helpful.

I mean, I think really, and particularly as we go to, say, kind of in the long term kind of fully autonomous driving, which I think is going to, I mean,

that's going to require quite a lot of regulatory oversight, and I think in order for regulators to be comfortable approving that they are going to want to see a very large amount of data, I mean, maybe billions of miles showing that the car is unequivocally safer in autonomous mode compared to manual mode in a wide range of circumstances in countries all around the world with different rules of the road and ways of behavior. And it'll have to be something statistically significant like billions of miles.

Adam Michael Jonas - Morgan Stanley & Co. LLC

Okay. Well, that actually, Elon, leads to my follow-up. Which is, once high volumes of statistical data for your autonomous miles are collected and analyzed, I can't help but get out of my mind – I have this image of you and some CEOs of other auto companies and CEOs of other software and tech hardware firms testifying in Congress about the urgent need to replace these dangerous purely human-driven cars on the road with available affordable and proven, even L2-L3 technology or semi-autonomous that's ready for introduction to dramatically improve the epidemic of traffic fatalities as like a national public health and safety priority.

Am I crazy, Elon, about kind of that type of – that role for people in your position to play armed with the data empirically? And if I'm not crazy, then how soon do you think it would take for tech firms like you to have a sufficient quantity and quality of data to be able to make such a scientifically proven case? Thanks.

Elon Reeve Musk - Chairman & Chief Executive Officer

Well, I already feel like – I mean, Tesla will argue for autonomous driving, but we're not going to argue against manual driving. And I believe people should have the freedom to choose to do what they want to do. And, yes, sometimes those things are dangerous but freedom is important. And if people want to drive, even if it's dangerous, they should be allowed to drive in my view. But then the autonomous safety systems should be in there such that even if you're in manual mode, the car will still aid you in avoiding an accident.

Adam Michael Jonas - Morgan Stanley & Co. LLC

Okay. Great. Thanks.

Operator

Thank you. Our next question comes from Joe Spak with RBC Capital Markets.

Joseph Spak - RBC Capital Markets LLC

Thanks. Good afternoon, everyone. Also wanted to focus on the adjusting the Gigafactory plans. I believe originally you indicated about 15 gigawatt hours per year were earmarked for energy. And with Model 3 demand clearly robust and likely more robust than you originally planned, I'm wondering if that moved some of those Tesla Energy ambitions to the back burner? Does it accelerate the need for a second Gigafactory? Or maybe perhaps you found a way to squeeze more out of the existing one?

Jeffrey B. Straubel - Chief Technology Officer

Well, I think the simplest answer is that we have a lot more capacity at that site than the initial 35 and 15 gigawatt hours that we discussed. That's part of why we've so aggressively made sure that we have extra land and extra space around the site so that we can continue to expand. And we won't need to rob from Tesla Energy plans in order to meet the Model 3 schedule. We definitely have a way to solve both.

Joseph Spak - RBC Capital Markets LLC

And are you willing to provide an update to those initial targets?

Elon Reeve Musk - Chairman & Chief Executive Officer

Not yet. Maybe in one or two earnings calls from now I think we'll be able to shed more light on that. But, yeah, as JB was saying, we're going to make sure Tesla Energy is not constrained by vehicle needs. And I think the growth rate of Tesla Energy is on a percentage basis only going to be far greater than the growth rate in cars.

Joseph Spak - RBC Capital Markets LLC

Okay. Thank you.

Operator

Thank you. Our next question comes from Ryan Brinkman of JPMorgan.

Ryan Brinkman - JPMorgan Securities LLC

Great. Thanks for taking my question. We can all now see with the Model 3 preorders that you are entirely correct that there is tons of demand for the car just like you've been saying all along. So I think about a month ago when you started tweeting those preorders, right, the investor and part supplier confidence in your ability to ramp to 0.5 million units rightfully skyrocketed. With that said, from a supply perspective, you have sometimes

had difficulty in achieving delivery targets because of issues and smoothly increasing capacity and assembly and you've shown a strong preference for emphasizing quality over quantity.

So is there anything that's changed on the supply side of the equation that should also be confidence-instilling? Maybe, I don't know, lessons learned from the launch of X or some other factor that should give confidence in your ability to be at a 200,000 unit to 400,000 unit annual run rate of Model 3 production approximately 14 months from now?

Elon Reeve Musk - Chairman & Chief Executive Officer

Yeah, again, I want to emphasize that the July 1 date is not a date that will actually be met. It's an impossible date. However, it's a date we need to hold ourselves to internally and we need to hold suppliers to. But it is an impossible date because there are 6,000, 7,000 unique components in the Model 3 and that would assume that all of them arrive on time. And just like a college term paper, there are always late term papers. But you still have to have a deadline, and it needs to be real, and one with consequences if the deadline is not met. But it absolutely will not – the probability of it is occurring is incredibly low of actually achieving it on July 1 but nonetheless, it's a date we have to take seriously.

I explained that with some risk of this being misinterpreted but hopefully you'll appreciate that I am trying to explain how it needs to work and kind of has to work that way. There's no other way to do it.

And the things that help us get there are designing Model 3 for manufacturing with engineering, manufacturing engineering and production and supply chain, all in a very closed loop and making sure that we design the car to easy to make, that we iterate with suppliers and ask them if we're giving them a design that's easy to make or one that's hard to make, or how do we make it, how do we reduce risk and improve it and make it easier to build? This is really fundamentally different from S and X.

The S was the first car we really designed ourselves, and it was all about just trying to make the car work in the first place. X was basically built off of the S platform, but then even more complicated, so unfortunately even harder to make. The Model 3 is the first car Tesla is creating that is designed to be easy to make. This is really a fundamental difference. And then I mentioned also increasing the scope of our in-house abilities so that if there is a supplier that is unable to deliver on time, we can scramble fast and produce that component in house.

Ryan Brinkman - JPMorgan Securities LLC

Okay. That's helpful. Thank you.

Elon Reeve Musk - Chairman & Chief Executive Officer

Thanks.

Operator

Thank you. Our next question comes from John Murphy with Bank of America.

John J. Murphy - Bank of America Merrill Lynch

Good afternoon. Just a first question on the capital needs. I mean, it looks like there's a little over \$400 million left on the ABL, and given the preorders or the reservations for the Model 3, it seems like you'll have at least another \$400 million flowing in in the second quarter. So just curious, I mean as you look at that kind of cash potential or liquidity and potential inflow, do you really think you need to do a capital raise this year, or could you get by with those sources of cash?

Elon Reeve Musk - Chairman & Chief Executive Officer

Well, I don't think we want to rely too much on customer reservation money as a source of capital. Maybe there is a buffer or something, but it's not as a primary source of capital. So yeah, I mean, I think it's going to make sense for us to raise some amount of money, some combination of equity and debt and make sure the company has a good buffer of cash on hand. I think it's important for de-risking the company.

John J. Murphy - Bank of America Merrill Lynch

Okay. And then...

Jason Wheeler - Chief Financial Officer

John...

John J. Murphy - Bank of America Merrill Lynch

Yeah.

Jason Wheeler - Chief Financial Officer

This is Jason. The only thing I'd add to that is we did draw \$430 million on the ABL this quarter. A lot of that was we had a large amount of cash in transit at the end of the quarter. Our deliveries were a little bit back-end

loaded. And as those cars were delivered in early April, we were able to pay a significant portion of that back.

Elon Reeve Musk - Chairman & Chief Executive Officer

Yeah. And I think most people are familiar with asset-backed line, but it's important to say like why is that different from like general debt. Unlike other automotive companies, Tesla doesn't ship to dealers. We ship to customers. So we build the cars to order, the car is complete, and it's going to a known customer. So really the only risk associated with that is if like the ship sinks or something or the truck that's carrying the cars crashes. But the ABL is – the asset-backed line is basically finished goods in transit to known customers. It's not like general corporate debt. It's, I think more appropriately thought of as, a slight increase in cost of goods sold.

John J. Murphy - Bank of America Merrill Lynch

Okay. That's helpful. And then if I could just ask one follow-up from another question is, I mean, as you look at the ramp with suppliers, is there any recourse to suppliers that don't meet sort of that start of production next year or any point of the production schedule? Or is it really just you cancel the business and move on to another supplier?

Elon Reeve Musk - Chairman & Chief Executive Officer

Yeah. So we'll be asking for some commitments from suppliers to meet that timeframe and I'm meeting personally with the team from that supplier, who is going to execute on the task, so that I have not just the commitment of the CEO or general manager of that supplier, but the actual team that will execute on the product, and we want to confirm that we feel confident in the actual team. And basically what we're asking for are the A team from the A supplier and a commitment from that A team that they intend to work harder than they ever have on any other program. And if they are willing to do that, then we'll work together, otherwise not.

John J. Murphy - Bank of America Merrill Lynch

And recourse if they miss targets?

Elon Reeve Musk - Chairman & Chief Executive Officer

Yes. So along the way, we will be assessing progress and our confidence level that suppliers will meet the July 1 target. If it looks like they will not, we'll have a conversation with them. If our comfort level drops below a certain level, they will not be a supplier to Tesla.

John J. Murphy - Bank of America Merrill Lynch

Okay, great. Thank you.

Elon Reeve Musk - Chairman & Chief Executive Officer

Yeah.

Operator

Thank you. Our next question comes from Rod Lache with Deutsche Bank.

Rod A. Lache - Deutsche Bank Securities, Inc.

Hi, everybody. A couple of questions. One, distribution and franchise laws in the U.S. have always seemed like they're an issue that they're going to need to be dealt with at some point. Does this trajectory force the issue or is this something that you can accommodate even with the distribution constraints?

Elon Reeve Musk - Chairman & Chief Executive Officer

Yeah, first of all, it's worth emphasizing that the whole dealership thing only applies in the U.S. We don't encounter that issue anywhere else in the world. And what's happening is that dealers are using kind of vestigial legislation that was originally put in for a just purpose, which is to protect them from predatory practices from the franchisor, and then using it for an unjust purpose, which is to prevent direct distribution. We believe that in the long term justice will prevail.

Rod A. Lache - Deutsche Bank Securities, Inc.

Okay. But is there a view that you can actually achieve this even under the constraints that exist today, or is that something that you do need to address in order to achieve this plan?

Elon Reeve Musk - Chairman & Chief Executive Officer

We believe that that is not a constraint on our ability to achieve the plan.

Rod A. Lache - Deutsche Bank Securities, Inc.

Okay. And second question is, I'm assuming that concurrently with this plan there is kind of a longer term plan for growth and that there is going to be a Fremont number two, and I think you've alluded to further expansion of Gigafactory. Can you just give us a sense of what you're aspiring to in terms of the trajectory by the end of the decade, as you've done before?

And Jason, I know you didn't want to get into details on project spending, but it would be helpful just to pass along some thoughts on what needs to go into the company in terms of investment, in order to get that sort of thing out. Is it reasonable to assume that the new level of spending that we're seeing right now is something that we should assume as being a sustained level going forward?

Jason Wheeler - Chief Financial Officer

Sure. On that, so yeah, at least I don't want to go into the details of what we think the total capital cost is going to be for the Model 3 program, but certainly as we continue to ramp there's going to be more capital requirements of the company. That's just a fact. And ideally, I'd like to fund as much of that as possible with cash flow from operations. So that is really the focus that we have in the short term.

Rod A. Lache - Deutsche Bank Securities, Inc.

Is there a...

Elon Reeve Musk - Chairman & Chief Executive Officer

It's better to say like our 2020 target for volume is closer to maybe close to 1 million vehicles in 2020 or something like that.

Rod A. Lache - Deutsche Bank Securities, Inc.

Okay, great. Thank you.

Operator

Thank you. Our next question comes from Charlie Anderson with Dougherty.

Charlie Lowell Anderson - Dougherty & Co. LLC

Yeah, thanks for taking my question. I had just a two-parter on the Model 3 reservation holders. I imagine for many of them this was their first interaction with Tesla and maybe the first time they went to a store. And I wonder as you've looked at that base if there is any potential to upsell to a S or X in the interim while they wait for their car, if you have any programs planned to address that. And then secondarily, I was curious if you have any color on sort of the geographic split of the reservation holders. Thanks.

Jonathan McNeill - President-Global Sales & Service, Tesla Motors, Inc.

Yeah. So this is Jon. In terms of your first question on whether or not the reservation orders, this was their first interaction with Tesla, just about 93% of the reservation holders, this is their first interaction with Tesla. So it's a super, super majority of a new client base or a customer base for Tesla and it's exciting. It was exciting when we walked the lines, there were people waiting in line at the stores and they were excited to become a part of the Tesla community and family. And the demographics of the owners, we're not going to say much about that, but they are a bit different, as you can imagine, than the Model S and Model X owners today. And it presents an exciting new market for Tesla as well.

And it should be noted that these folks are not interested just only in Tesla Motors, but also Tesla Energy, because the price point of the Tesla Powerwall is an accessible price point for many of these folks and so they're expressing interest in both. In terms of S and X as a bridge to Model 3, we are talking through and thinking through that. Just as Elon mentioned earlier, the quickest path to receiving a Model 3 is being a Tesla owner. We've agreed that Tesla owners are receiving priority in terms of production, and so you can run the math I just mentioned. If 93% are new to Tesla, 7% of the reservation holders are Tesla owners. And the fastest way to get production vehicle even in 2017 is through Tesla ownership and so we're finding that there's a good conversion rate of folks that are coming in to test drive an S or an X who are Model 3 reservation-holders and are motivated to be Tesla owners now so that they can receive their Model 3 earlier.

Elon Reeve Musk - Chairman & Chief Executive Officer

Yeah, actually – one point worth mentioning is that we're fairly worried about what would happen with the Model 3 announcement. Would it cause some big drop in, say, Model S sales? It seems to have had the opposite effect. It seems as though S demand has increased. It has...

Jason Wheeler - Chief Financial Officer

It has increased.

Elon Reeve Musk - Chairman & Chief Executive Officer

It has increased.

Jason Wheeler - Chief Financial Officer

Yeah. I think you saw the estimated number in the first quarter is 45% up year-over-year and that demand continues.

Charlie Lowell Anderson - Dougherty & Co. LLC

Thanks so much.

Elon Reeve Musk - Chairman & Chief Executive Officer

Yes.

Operator

Thank you. Our next question comes from Emmanuel Rosner of CLSA.

Emmanuel Rosner - CLSA Americas LLC

Hi. Good afternoon. I wanted to ask you guys about any early thoughts on need for manufacturing expansion. Obviously, if you are delivering 500,000 units by 2018, I think that's the original capacity of the Fremont plant. So do you need to start thinking about an additional plant? And in that context, any thoughts on global expansion you were mentioning? Obviously, very strong increase in Model S orders in Asia, for example. Anything you could share with us at this point?

Elon Reeve Musk - Chairman & Chief Executive Officer

Yeah. I mean, I'd say our plans for international expansion and establishment of new plants are sort of speculative. We haven't made any firm decision. But I mean, some of the things are just sort of common sense that manufacturing cars in California and then shipping them all around the world is not a very efficient thing to do, particularly as you go to more affordable vehicles. So, at some point, it's going to make sense to have a plant in Europe and a plant in China, and probably plants in other parts of the world. So that's kind of natural thing you'd expect. It's like it wouldn't make sense to ship cars from California to Europe or California to Asia.

Jeffrey B. Straubel - Chief Technology Officer

In those volumes.

Elon Reeve Musk - Chairman & Chief Executive Officer

In those volumes. It's just not an efficient way to go. And particularly as we saturate on Fremont volume in terms of satisfying demand in North America, I think just to satisfy demand in North America for our future product lineup, we're going to need more than one plant in North America just to satisfy North American demand.

Emmanuel Rosner - CLSA Americas LLC

Right. So when we think about these extra capital needs that you're sort of alluding to, in addition to just the – obviously, the cost of the Model 3 development, are you also contemplating as part of that to raise the money for an extra factory to the extent that just beyond 2018 you would already need some extra capacity?

Elon Reeve Musk - Chairman & Chief Executive Officer

I don't think we'll be raising money for new factories before we're at volume production of the Model 3. And as Jason was saying earlier, we'll really try to find as much of this as possible from operating cash flow.

Emmanuel Rosner - CLSA Americas LLC

Got it. Thank you.

Operator

Thank you. Our next question comes from Ben Kallo with Robert Baird.

Benjamin J. Kallo - Robert W. Baird & Co., Inc. (Broker)

Hey. Thanks a lot. I have 18 questions. The first one I have, Model X production. Where are we at right there? Because we've had all this Consumer Reports issues, I think they're a little backdated, but can you talk to us about the state production of that? Number two. On the Gigafactory, the battery size with Model 3, I think everyone is dividing by 80 kilowatt hours or 75 kilowatt hours to the number of cars. And how do we think about actually the Model 3 battery size and what the Gigafactory can support? And then the third question is why is Bob Lutz and Jim Chanos, they keep on saying such negative things about you guys? What do you have to do to get the dissenters to actually believe in Tesla a little bit? Thank you.

Elon Reeve Musk - Chairman & Chief Executive Officer

Yeah. So, I mean, I feel confident that we're going to hit the 2,000 vehicle a week target by the end of this quarter, of which on the order of 40% are X. I'm just telling you that's our internal plan and what we expect to meet. There's no question the X is a very difficult car to manufacture. I think it's unquestionably actually the most difficult car to manufacture in the world, and Bob Lutz would agree with that. I think he said something to the effect that he thought it wasn't manufacturable or something like that. I mean, it's certainly manufacturable. It's just a hard thing to go for.

So, I mean, we have some internal milestones that I think we've achieved thus far that I'm pretty excited about. Friday at 3 a.m. we achieved our first flawless production of the Model X, where we went through the whole production process and had zero issues. That was a great milestone. Still celebrating with the 2 a.m. and 3 a.m. Friday. It was great. And now we are starting to get several in a row that are flawless and so it's really gaining momentum very quickly. We feel pretty good about the trajectory of S and X.

As for convincing all the naysayers, I think that will basically be never. and I would just say like what I find ironic about a lot of the naysayers is that they – the very same people will transition from saying it was impossible to saying it was obvious. I am like, wait a second. Was it obvious or impossible? It can't be both.

Benjamin J. Kallo - Robert W. Baird & Co., Inc. (Broker)

Got it. And Model 3 battery. We are all analysts here, we stir down our straw dividing by 75 kilowatt hours. Is that the right thing to do with the Model 3 or should we have a lower number like 40 kilowatts or 45 kilowatts? And then you've got the guy with the Volt making that car saying that it's going to be ahead of you guys and then sell for cheaper than you. So how do I think about GM being able to make a car cheaper than you versus making a margin on a Tesla with a lower battery cost? Does that make sense?

Elon Reeve Musk - Chairman & Chief Executive Officer

Yeah. I mean, we aren't going to get into real specifics on battery pack size, but I think it's fair to say that the average battery pack size for the 3 will be less than 75 kilowatt hours. That's...

Benjamin J. Kallo - Robert W. Baird & Co., Inc. (Broker)

I'm sorry, what was that?

Elon Reeve Musk - Chairman & Chief Executive Officer

The average energy content of a 3 pack is certainly going to be less than 75 kilowatt. It doesn't clearly need to be anywhere near 75 kilowatt to achieve the range of 215 miles. But we don't want to get into the nitty-gritty. It's probably unwise. Yeah.

Jeffrey B. Straubel - Chief Technology Officer

Yeah. And, I mean, I don't think it's probably – you probably don't need to fixate on the 35 gigawatt hours. We're planning the Gigafactory to meet the

production needs of the energy that we know the cars will need. So there's not a problem in scaling that as we need to. So, obviously, internally we know the math and we know what we need to do and we're on track to do it.

Benjamin J. Kallo - Robert W. Baird & Co., Inc. (Broker)

Yeah. I guess, my 18th question is, so I'm not a car guy, but so I have a – you guys have 40,000 units of the Model 3 in 2017. And from your commentary, it seems like I need to raise my numbers. But how do I think about that ramp up from 0 to 500,000 over, let's push it from 2018 on? Does it go from 0 to 500,000 over two years? Or one year? Or how do we think about that?

Elon Reeve Musk - Chairman & Chief Executive Officer

Well, I mean, obviously if we're saying that Tesla will have total vehicle production of on the order of 500,000 cars in 2018, it would have to be more than sort of two years to get there. So, now, just sort of another maybe better education about production ramps is production ramps look like an S-curve. It is extremely difficult to predict with precision the early part of the S-curve. So because in the early part of the S-curve, you have, it sort of starts off very slow and then it increases exponentially, it moves to a linear, and then moves to a logarithmic.

So, really, it's very difficult to predict exactly what the shape of that S-curve is, and that's where things get tricky because you end up putting quarterly results kind of bracketing somewhere on that S-curve, and depending upon where you are on that S-curve, it can actually look like a big difference. But actually it could be a shift of a few weeks because of the exponential nature of the beginning of the S-curve.

Benjamin J. Kallo - Robert W. Baird & Co., Inc. (Broker)

And my 19th question, can you make 50% gross margin on it? Or 20% gross margin? Or how do you think about margin? Because people think you can't make it profitably...?

Elon Reeve Musk - Chairman & Chief Executive Officer

Yeah. I mean, we're highly confident that it can be made profitably and the design manufacturing and economies of scale are really the keys to achieving that outcome. Yeah, I think GM is not aiming for anything near the volumes that we are, and so they're – I mean despite being a big company, their economies of scale are going to be driven by whatever elements are unique in their EV. And we know for a fact that they will not get the economies of scales that we will be at for Model 3.

Benjamin J. Kallo - Robert W. Baird & Co., Inc. (Broker)

Great. Thank you.

Operator

Thank you. Our next question comes from Dana Hull with Bloomberg News.

Dana Hull - Bloomberg

Yeah, hi. What is the mix in 2018 of the 500,000 cars? I mean, it's combined S, X and 3. Should we think of it as like 300,000 3? Or I mean what's the kind of the mix of those 3 vehicles?

Elon Reeve Musk - Chairman & Chief Executive Officer

Well, I mean I don't think we've got like an amazing crystal ball to figure out exactly what it's going to be. But I mean I feel confident about the top line number, but the mix internally is – I mean it's difficult to figure that out. I mean, yeah, but maybe it's something like 100,000 to 150,000 S and X, and then 300,000 to 400,000 of 3. But this is, I don't know. It's really hard to say.

Dana Hull - Bloomberg

Hard to say. Okay. And then as you try to attract top manufacturing talent as you begin to ramp, have you given any thought to trying to hire a COO? I mean, I'm just thinking about your personal life, between Tesla and SpaceX, and sleeping in a sleeping bag and working 90 hours a week between two companies. SpaceX has a great COO and has had one since the company, for years, but Tesla never has.

Elon Reeve Musk - Chairman & Chief Executive Officer

I mean, the sort of scope of Tesla's activity is broader than SpaceX, and SpaceX is more of a pure technology company, and does not have the sort of sales service and kind of fleet management and customer financing and all that sort of stuff that Tesla has. Obviously, John's, John McNeill is taking that, has that role at Tesla, and then my focus is primarily on technology, design and manufacturing. So – but I think you certainly can expect that there will be announcements in the fairly near future about some great executives joining the ranks.

Dana Hull - Bloomberg

Okay. Great. Thank you.

Operator

Thank you. Our next question comes from Phil LeBeau of CNBC.

Phil LeBeau - CNBC, Inc.

Hi, everyone. I have a question. It was about 10 minutes ago, you made a reference to 1 million vehicles in 2020. Is that a production target, a production goal, or hypothetical? I'm just looking for some clarification there.

Elon Reeve Musk - Chairman & Chief Executive Officer

I mean, that's my best guess. Over a half million in 2018, and then roughly 50%ish growth from there, then it's probably around 1 million in 2020.

Phil LeBeau - CNBC, Inc.

And do you not have an estimate as to how many production plants you will need in order to make that happen?

Elon Reeve Musk - Chairman & Chief Executive Officer

Well, I think it is actually feasible, maybe not advisable, but feasible to do it with just Fremont and the Gigafactory. We actually believe that Fremont and the Gigafactory could scale to a million vehicles. Whether that's actually wise is a separate question, and as I said earlier, it's going to make sense to do localized production at least on a continent basis. Otherwise your logistics costs end up being quite extreme. Your logistics cost start becoming a bigger and bigger percentage of total vehicle cost. I mean that's really why manufacturers build their cars for a local market. They'll build cars for a market in that market because logistics costs associated with shipping one-and-a-half to two ton vehicle are massively greater than, say, shipping a little consumer electronics device.

Phil LeBeau - CNBC, Inc.

Great. Thank you.

Operator

Thank you. Our next question comes from Alex Sage of Reuters.

Alexandria Sage - Thomson Reuters Corporation

Hi. Can you hear me? Elon, you say that you're calling out to the best minds of manufacturing to join Tesla, but at the same time, Google and Apple are

giving out the same haul. I guess I would wonder what you would say to these people to have them join Tesla over these other companies. The second question is whether you had any takeaways in terms of your suppliers, in terms of Hoerbiger experience, and how you can hold these suppliers' feet to the fire on some of these more complicated tasks that they are asked to fulfill?

Elon Reeve Musk - Chairman & Chief Executive Officer

Yeah. I mean, in response to your first question, I'm not – I mean, for sure, you'll appreciate. I mean, Apple and Google do not manufacture things themselves.

Alexandria Sage - Thomson Reuters Corporation

Right. But they are hiring manufacturing people.

Elon Reeve Musk - Chairman & Chief Executive Officer

To do what?

Alexandria Sage - Thomson Reuters Corporation

Direct. It's a good question, but they are hiring manufacturing people, people with manufacturing experience.

Elon Reeve Musk - Chairman & Chief Executive Officer

Okay. Well, Tesla actually – Tesla believes strongly in making things. They do not. That's fine, it's a philosophical difference. We believe that manufacturing technology is itself subject to a tremendous amount of innovation, and in fact we believe that there is more potential for innovation in manufacturing than there is in the design of a car by a long shot. And so, now, this is just a philosophical difference. Perhaps we are wrong. But, in fact, we believe in manufacturing, and we believe that a company that values manufacturing as highly as we do is going to attract the best minds in manufacturing.

Alexandria Sage - Thomson Reuters Corporation

Okay.

Jeff Evanson - Investor Relations, Tesla Motors, Inc.

Okay. So I think that's all the time we have.

Alexandria Sage - Thomson Reuters Corporation

But the supplier question?

Elon Reeve Musk - Chairman & Chief Executive Officer

I don't understand who you are referring to.

Alexandria Sage - Thomson Reuters Corporation

Hoerbiger?

Elon Reeve Musk - Chairman & Chief Executive Officer

Hoerbiger? I am not familiar with that name.

Alexandria Sage - Thomson Reuters Corporation

It's the original...

Elon Reeve Musk - Chairman & Chief Executive Officer

We are certainly going to do our best to ensure that we have high confidence in the suppliers on the Model 3 program. Those that didn't perform very well on say prior programs are unlikely to be selected for the Model 3 program.