Tesla Inc Solar Roof Conference Call

Company Participants

- Andrew D. Baglino, CTO
- Elon R. Musk, Founder
- Kunal Girotra, Senior Director of Energy Operations

Other Participants

- Darrell Etherington, Analyst, TechCrunch
- Hope King, Analyst, Cheddar
- Karissa Bell, Analyst, Mashable
- Kimberly Javaheri, Analyst, YouTube channel
- Kyle Field, Analyst, Clean Technician
- Phil LeBeau, Analyst, CNBC
- Roberto Baldwin, Analyst, Engadget
- Sean O'Kane, Analyst, The Verge

Presentation

Elon R. Musk {BIO 1954518 <GO>}

Hi. This is Elon. Welcome to the Tesla Solar Glass unveil, if you will. We'll -- I'll just do a very, very brief introduction and then go into questions. The intent behind the sort of Solar Glass Roof is that we can make roofs come alive, that you have a live roof instead of a dead roof. We have all these roofs out there just gathering sunlight but not doing anything with it. And our intent is that you can convert that sunlight into energy. And I think in the future, it will be odd for roofs to be dormant or dead or not gather energy.

And you have to ask, what is the future that you want? And the future that I think we all want, well most of us, is a future where you look around at a neighborhood and the roofs are all gathering energy, they're all doing something useful and they're -- they look beautiful. They're very robust and resilient. And they're powering the houses that they shelter. I think this is what we'll want to, say, actually, in 20 years from now, you look around the neighborhood. And that's how it is.

Now the Solar Glass Roof is not going to make financial sense for somebody who has a relatively new roof because this is, itself, a roof that has integrated solar power generation. So it's -- it has, therefore, the cost of roofing a house in addition to the cost of solar panels or solar cells.

However, we've been able to achieve with Version 3 a cost -- a price point that is less than what the average roof costs plus the solar panels. So if you're looking at 2 options, one is you need a roof or you either need a new roof or you need to reroof your house. And -- but you look at the cost of that, the average cost of that and then the cost of adding solar panels to that roof versus the cost of Tesla Solar Glass, which is an integrated roof plus solar panel or solar cell, that because the Solar Glass Roof will cost less.

This is to the best of our knowledge accurate. And we'll obviously see, now that it's debuted, whether this is correct. I mean it's not going to be correct everywhere because there are going to be times when there's a very cheap roof and a very cheap solar panel. And there's maybe some corner case where it's not where it is cheaper. But I think maybe 80% of the time or more, the Tesla Solar Glass Roof should make the most economic sense and look the best and be the longest lasting. That's our intent.

And it's been quite hard to get to this point. This is a -- quite a difficult product, because roofs have to last for a long time. Then when you add electrification to the roof, that's obviously a fair bit of complexity because they have wires and you need to make sure that it's all going to be safe and not cause any risk to the house. And also that it will last for many decades. I mean we want this to last for something in the order of 30 years or more. So that's -- it's not easy to do accelerated live testing because you want to say, Okay, well, how do we -- in the course of, say, six months and try to accelerate the life of the roof such that we know what it will be like in 30 years. This is quite hard.

So the system has to be extremely robust. Then figuring out how to install it effectively is very non-trivial. And we're actually going to have like install -- kind of install-athons, if you will, where we've got -- and we have this now at our Fremont factory, 2 houses that are identical. And we have the 2 competing teams. So who can install the Solar Glass Roof the most efficiently. And then we're going to try to get like some of the best roofing teams in the country to also give it a shot. So it's not just Tesla internal. And actually, I should say that the Solar Glass Roof, while we were going to start out just having Tesla installers do it, this is something that we intend to open up for roofing contractors in general.

So unlike vehicle sales, which only go through Tesla stores or online. And that's because we sort of -- we don't want to get trapped in like franchise law and there's a lot of complexities in automotive distribution that if we kind of break precedent there, it's highly problematic potentially in many places.

But for the Tesla Solar Glass Roof, I think it's a different situation. It is a -- you don't have like local sales monopolies. There's -- it's a highly competitive market. And I think it's going to make sense, therefore, to have like a Tesla certified installers who's going to install the Solar Glass Roof. And I think that will be a very powerful driver of demand and allow us to grow much faster than we could otherwise grow.

And this is all going to be produced at the Giga New York, our factory in Buffalo, where people have been working really hard. And I'd just like to say it, our appreciation for the team there. They've really been putting in a pretty huge effort to ramp up production of the Solar Glass Roof. And it's -- I was pretty impressed when I visited there earlier this year. That was -- I was like, Okay, there seems to be like a lot of -- a ton of people here. It seems like a good situation. I think we'll definitely make you all proud about that, that factory looks it's going to be great.

So yes. So I think this is like -- it's a really cool product. Well like I said, in a nutshell, if you are getting a new roof -- or if you're reroofing or getting a new roof, I feel this is like -- I feel quite confident this is a smart move. Then -- but if you have it -- if you already -- if your roof is already new, then it will not be the smart move financially. You may still want to do it. But it's going to be financially punitive to do it on an existing roof that still has a long way to go.

So this -- and if you -- so you have an existing roof with a lot -- and that has a lot of life left on it, then we would recommend the Tesla solar panels, like the -- just get -- solar retrofit is what we call it. And that's the right move if your roof still has, like, say, 10 years of life or more. And then Tesla Solar Glass if it's a new roof or reroofing.

All right. And with that, we'll move to, like, the questions and just -- I'll just repeat the questions and then try my best to answer them.

Questions And Answers

Operator

Thank you. We will start the call with the most up-voted questions related to solar roof from the retail investors on say.com. Justin asks, What changes has Tesla implemented V1 to V2 and now V3? And what has been their impact on cost or performance?

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

I mean, there's quite a few changes. I also have Drew and Kunal here. Guys, do you want to sort of answer some of the changes that we've made. There's a lot.

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

Yes. I mean, we really wanted to achieve all the goals that I'm just -- I'll let it there. And that involves assessing cost, beauty, installability, manufacturability across all axes. So we've -- just to run through some of the key points there. We've increased the size of the tile, increased the power density of the tile, dramatically reduced the number of parts and subassemblies in the tile by more than half. All of this goes in the direction of lower cost and easier manufacturability. We also changed some of the materials in use, changed the methods that we're using to -- the technology that we're using to achieve the hidden solar cells to something that's more scalable. We --

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

I should say, like, this is one of the hardest things about the, say, Solar Glass Roof is not seeing the solar cells beneath the glass because that would -- that's kind of off-putting to see the cells. Then the hard part is you want this -- the photons from the sun just to get to the solar cells. But not create something which is aesthetically unappealing. So it's quite a hard challenge.

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

Yes. Solar cells are optically isotropic, meaning it can look purple from one angle and green from another. And we have, through a number of different iterations and technology experiments, landed on a technology that gets the solar tiles to a point where they're anisotropic. So they blend in with the surrounding nonsolar tiles in the trim.

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

They look the same from any angle.

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

Exactly. The other thing we did --

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

Let me view it in a helicopter. It may look weird if you're in a helicopter.

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

Even from there, it still looks damn good. But the other key aspects was focusing on installation. We really wanted to achieve an installation time that was faster than a new roof plus traditional panels.

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

Well in fact, we're trying to improve even the installation time for a roof.

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

Yes.

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

I think with the right tooling and equipment and especially paying close attention to the edge effects of where multiple planes of a roof meet, I think we can add and just apply some of the world's best engineering to that. I think we can actually have the Solar Glass Roof installed faster than comp shingle, which is -- that's -- like that's the target.

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

That's been the clear goal.

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

Yes.

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

And we're definitely moving there quickly.

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

We're coming after you, comp shingle.

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

The installs on is part of our ambition to achieve that. And the key part of installability is looking at how the parts get from the factory to the field to the roof and then how they come together on the roof. So we did a lot of iterations on that.

Then the final thing I would mention is the flashings, the sort of like the -- the edges or the trim -- the trimming of the roof, I would say, in early versions of the product, was almost like custom handicrafts. And what we've done is thought a lot about those problems and come up with beautiful solutions that are very achievable in the field.

A - Kunal Girotra

Yes. Totally. This is Kunal. Our installers have been working hard installing this. They have already seen, this is much simpler, faster and a lot more intuitive to install. So all those things that you guys have said have led to really fast install times. And we're targeting even faster than comp shingle. So yes.

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

Yes. I think I'm comfortable we'll get there, actually. Yes. But there's quite a bit of R&D just in the installation process itself. And the difference between having a few simple tools, one way or the other, it can dramatically affect the install cost and time. It's also important, like, to have the least amount of bother. Like, it's hard to be in your house while a new roof is being put on. So having that occur within an 8-hour -- doing like basically an entire roof in 8 hours is quite important because then you can literally come back and -- just go to work, come back and you've got a new roof that's generating electricity. Well that's our target too, 8-hour roof.

A - Kunal Girotra

I do see that done on some of the roofing company now.

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

Yes. Yes. So this is kind of like a roofing company is going to sort of install the roof.

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

Yes. Even in buildings.

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

Buildings, yes. So yes. So --

Operator

Alexander asks, when can we expect Solar Roof V3 to be available for wide residential adoption?

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

Yes. That's now actually. Yes. So you can simply go to the website and enter your address and place an order right now. But -- and we'll be doing installations, ramping up as fast as we possibly can, starting in the next few weeks, actually. I think, actually, some are underway right now. And yes, I mean our goal is to actually get north of 1,000 roofs per week as quickly as possible. It's always hard to predict the early stages of a production ramp because things move as fast as the slowest item. And -- but I think we should be over the next several months, well past the 1,000 roofs a week. I think that's our goal.

Operator

Robert asks, what is the current solar roof production capacity? And how should we think about the production ramp through 2020? How are you feeling about demand?

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

Well I don't think we're really going to have much of a demand problem, to be honest. I think demand will be far in excess of supply. As always, it's very difficult to predict a supply -- a production ramp because it almost always looks like an S-curve. So it starts off very slow at first because you have a number of constraints. And it could be a very trivial part that's limiting the production ramp. But that still will limit the production ramp if it's missing even the simplest item or that just one little thing is taking longer than expected, that sets the total production rate.

So it's -- I mean, it's essentially impossible to predict with accuracy the fast-moving part of the production S-curve. But you can, I think, predict when the S-curve starts to flatten out, that's like much more predictable. And that's why I think we say, like, probably several months from now, will we be able to do more than 1,000 roofs a week? I think the answer is yes. Then long term, we want to obviously do like 10,000 roofs a week and then 20,000 roofs a week. So it's -- I think, like, the addressable market here is something on the order of 100 million houses worldwide.

So that's -- you obviously want to ramp up as quickly as possible. And we're starting off with kind of the textured black glass. And then hopefully, we'll be able to bring to

volume production other variance of the Solar Glass Roof, I don't know, every 6 to nine months, something like that. One of the most challenging is the -- achieving a good sort of earth tone Solar Glass Roof, meaning like a clay tile type of thing. It's doable. But it's harder to achieve the right look. But that's something maybe is on the order of a year away, something like that. Yes. So we'll see.

Operator

John asks, how will Tesla handle logistics for installations? Do you already have partnerships with installation companies?

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

We don't have any plans just yet with installation companies. The current plan is to just -- I announced the broad brush strokes with our internal installation crews. And so we feel like we're hitting kind of a flat positive part of the learning curve and then bring in outside roofing companies and installers. And say, Okay, we're -- how can you help us make this better? And so I think we'll see a very rapid improvement in the solar roof and the installation timing.

So -- but like I said, Version 3 is really -- this is like the first version that we think is -- should be ramped up at scale. And this is often true of new technologies, like Windows 1 and 2 weren't -- didn't really work, frankly. Windows 3 was the first big one.

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

Sort of like 3.1 or something.

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

Yes, I know 3.1. True. It's old school. 3.1.

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

But this is the 0.1 release.

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

Sort of the 0.1 -- 3 minus 1, a really giant bug. I think that's true. So -- and we think like Version 2 -- hopefully, it would not be 3.1 in our case but we're going to keep improving the roof as we scale.

A - Kunal Girotra

And we're hiring a lot of installers.

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

Yes. We're hiring a lot of installers, yes.

A - Kunal Girotra

As well as we'll be partnering with installation companies in weeks to come. So lots of action deploying this product.

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

Yes. So --

Operator

From John from say.com, will Buffalo manufacture more than just solar? Any plans to add cell production and manufacture powerwall/packs there as well so Giga 1 can focus on vehicle cells?

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

Sure.

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

Yes. So Giga 2 is already producing more than just solar. So all of the superchargers are actually manufactured there today, along with the inverter for a powerpack and the power electronics for the upcoming Megapack. So yes, there's a real center of excellence of power electronics there, which couples well with solar when you think about it's frequently coupled to the solar. So yes.

And regarding beyond those solar roof and solar and power electronics, we don't have any plans at the moment.

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

It's really primarily just to the Solar Glass Roof. That's what our Buffalo factory will focus on. But this will be for consumption worldwide. We're going to start off in the U.S. because there's a need to have a tight feedback loop. If there are any issues, we can fix them rapidly and then scale. But this is already something we provide worldwide.

Operator

Our first question from the phone lines comes from Kyle Field with Clean Technician.

Q - Kyle Field

It's Kyle from CleanTechnica. The cost of the solar roof has been a big barrier to-date for Version 2. Can you speak a little bit about the relative improvement in cost from Version 2 to Version 3 of the Solar Glass Roof?

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

Yes. You're right. But I mean Version 2 is just -- was too expensive. It wasn't -- it's not like we're making a ton of money, we're just basically trying to not lose money on it. And it just wasn't a version that was worth scaling because it's just too expensive. So I -- we think Version 3 is something where we do think we can get below the cost of an average roof plus retrofit solar panels and feel pretty good about our cost structure there. So it's -- that's worth going big time with this version.

Q - Kyle Field

Okay. We actually have --

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

Sorry, I should also say, like, one of the things that's obviously delayed Tesla solar in general is that we have to focus -- about 18 to 24 months, we had to focus the entire company on Model 3 -- on the Model 3 production ramp. And so that really -- we kind of stripped resources from solar for 1.5 years or thereabouts. And -- because we had to make Model 3 work or Tesla wouldn't exist. And now that Model 3 is in relatively smooth operation, we've been able to redirect resources towards solar and stationary storage.

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

That's true.

Q - Kyle Field

No. That makes sense. Actually, we have the Version 2 of the solar roof on our house and the installation process looks like kind of the Lego version of building the Death Star on the roof.

Can you talk a little bit about what you guys have done to streamline that process, because that feels like a major barrier for cost and just the speed to installation.

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

Sure.

A - Kunal Girotra

Yes, I can talk about some of the installation improvements. I mean one of the big things that Drew and Elon both touched upon when you installed V2 was that when 2 roofing planes met or the roof plane had an edge, what we call the edge conditions, we had to like cut the tiles in V2. And that was a very cumbersome process. It took a lot of time, created a lot of wastage on-site, needed extra tools. We've gotten rid of all that in V3. And that's a big, major improvement. Just total number of material and parts reduction from V2 to V3 has massively reduced the number of touches our installers have to do on-site. And that reduces the time they have to take to install.

So there's tons of timing improvements like that we made across the product to make the installs really fast. And that's the advantage of Tesla having a vertically integrated chain from -- we have a team of engineers and installers working day and night at the test home and giving rapid iterative feedback to improve minor installation efficiencies. And we'll be doing a lot more of that.

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

These edge conditions are not -- were basically a nightmare on Version 2. And it was quite artisanal. It was like artisanal glass factory, a lot of like the final production was actually at the house. It's sort of like if you're building airplanes and you finish your production on the runway. This is not great.

Operator

Our next question comes from Phil LeBeau with CNBC.

Q - Phil LeBeau

Elon, a quick question on the installation crews. Can you give us some sense of how many crews you currently have? And what's the staffing per crew? Is it 3 people? Is it 4 people? And are they primarily based in California right now? Give us some kind of a geographic sense of where they are.

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

Well I'm not sure that's -- like, we're really trying to be product-focused here. And I think our current, like, number of crews and how -- I'm not sure that, that's particularly helpful to end customers. Like this is really meant to be a call explaining the product to the consumer as opposed to some sort of finance call or something like that.

Q - Phil LeBeau

Well I'm not looking for finance. I'm just trying to get a sense of you guys are talking about wanting to ramp up. And we're trying to get some sense of what that ability is right now in terms of, Hi. we're planning on having 2,000 crews, 3,000 crews. What's that capacity like?

A - Kunal Girotra

So let's put it this way. We installed Tesla Solar in 25 states in the country. We'll be definitely installing solar roof in all those states because we already have energy warehouses and we'll be installing solar roof there as well.

And as Elon said, we'll be expanding across the country with our own crews as well as third-party crews. So that's all we can say right now. But we are in 25 states installing solar. And solar roof will be there in all those states as well.

Operator

Our next question comes from Sean O'Kane with The Verge.

Q - Sean O'Kane

It sounds like there is a little bit -- why you simplified some of the stuff that makes it a little easier to install the new version. There's maybe a little bit more going on in the tiles themselves. Is there -- can you tell me what sort of process you went through to make sure you don't run into the same sort of production issues that you have with previous versions?

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

Yes. I think --

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

Like the issue with those prior versions was not much of production. It was the installation was problematic. So we could have ramped up production of Version 2. It's just -- but it would have run into a fundamental obstacle with the difficulty of installation. But if you're wondering like will we run into difficulty ramping Version 3? Absolutely. Like a ton -- a massive amount of difficulty and, we'd go through a ton of pain. And there will be, like, step backs. I want to be clear.

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

We have applied some preventative measures, however, by reducing the number of parts and subassemblies by half. We've dramatically reduced the number of processing steps and manufacturing steps, which simplifies any manufacturing ramp. And I will say that the early production that we are in right now has gone smoothly. And now as we ramp on the S-curve, we will find things that we have to overcome. But the early production looks good so far.

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

Yes. It's always quite sort of jumpy and thorny on a sort of short-term basis. But I think a year from now, it will be pretty smooth sailing.

And like I said, actually it feels like I'll just get to you folks on the short term. I think if you understand like where our products are going to go long term, you just go and say, what do you want the world -- just what do you want the world to look like? And it's like, do you want a future where you look around at the houses in the neighborhood and they're generating electricity and they're beautiful and they're long-lasting? Of course. So that's the future we need to make happen.

Operator

Our next question comes from Kim Javaheri from the YouTube channel, Like Tesla.

Q - Kimberly Javaheri

I'm just curious if you could elaborate a little more on what the warranty is like for the tiles? And if you're using a third-party roofer how that will affect the warranty?

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

Yes, sure, Kunal.

A - Kunal Girotra

Yes. This version, we are offering a 25-year warranty, which is weatherization, power. And we have 130 miles per hour wind resistance, hail resistance. So 25 years of warranty right now.

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

Yes. I mean, these are things that are fairly standard in the roofing industry. So --

A - Kunal Girotra

Then, it's more derivative.

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

Yes.

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

Yes. We definitely don't have all the answers right now. But -- and it's kind of like a -- frankly, it's kind of like a weird and a sort of odd product. Like, it just -- you don't really care about. It's like, why would anyone make a solar roof, how strange. But it's just the thing that should be. And so we're going to make it. Yes. It's going to be real confusing because there's like no actual product like this. That's the nature of the product.

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

My one comment is on -- like if we have third-party installers, how will the warranty work. I mean, that is how roofing works today, right? There's like a manufacturer of the tile or the asphalt shingle square. And if the certified installer or roofer has been trained and has been audited to install correctly, then eventually the warranty is extended to that installer. But I wouldn't expect us to do anything different with this product.

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

There's quite a big market for roofs, actually. I mean on the order of 100 million roofs in North America. And they get replaced out every 25 years. So set up like maybe 4 million roofs a year.

A - Kunal Girotra

4 million roofs.

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

And 5 million new homes a year. I mean, sorry, 1 million new homes.

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

Yes. 1 million new homes a year. So like on the order of 5 million in North America. And we're just 5% of the world's population or thereabouts. So it's quite a big market. This why I think we're going to be production and sort of installation constrained. It's going to -- I mean on a percentage basis, it will grow like kelp on steroids. But there's just like so many things that have to be sorted out. But I think it's going to be a very exciting product. And it's like those kind of thing that I think people will want on their -- want their roof to be this way. But yes.

Operator

Our next question comes from Roberto Baldwin with Engadget.

Q - Roberto Baldwin

I'm curious on the energy efficiency of the tile and virtually panel. So if you have, let's say, a 200 square foot area of the tiles and 200 square foot area of the panels, like what is the difference in the sunlight-to-energy conversion?

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

Sure. There's a slight impact.

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

Well the target is equivalent to or better. There are some benefits to the solar roof in that we have a smaller, like, integer size. So when you think about --

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

The granularity of a -- we can basically put a question of like what's the cell efficiency. If you're purely looking at it on a cell efficiency basis, you'll always going to take some knockdown in order to have better aesthetics. That knockdown, we want to keep that knockdown to something on the order of maybe 10%-ish. Hopefully, less. Drew like saying less. But from like a best case -- like, ideally, it's like a single-digit effect on the energy efficiency on a cell level. But you can put far more cells on the roof and do so without affecting the aesthetics. In fact, you can't even tell which one is the active. And which one panels are -- which panels are active, which ones are not active. So the total power generated in the roof is significantly greater with the Solar Glass Roof.

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

Yes. And if you haven't ever had solar, I mean, just drive around your neighborhood and look at homes. And you can see the quantization problem of the panel. And like, you've got skylights, you've got stove pipes restoration.

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

Roofs are messy and complicated. And by the way, generally, look terrible.

A - Kunal Girotra

You normally don't pay attention to the roof.

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

You normally don't pay attention to roofs. And you're like, wow. We had a lot of trouble finding good-looking roofs. Because like we want ours to be the best-looking roofs and it's not easy finding pictures of good roofs. Let me tell you, it's very difficult. And this also is a giant part of the task.

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

So for all of those reasons, we have equivalent or better -- and better in almost all cases, power generation.

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

From a consumer standpoint, it will be a better outcome -- if the right move if you're going to get a new roof and solar panel, this is a Solar Glass Roof with integrated cells, there's maybe a better outcome, we believe, in the home in terms of economics, power generation, aesthetics. And durable.

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

Yes. And I just want to add one more comment. We're not married to a particular solar cell technology in our aesthetic solution. So as solar cells get better, we -- the solar roof will also get better. And that was a very important target for the team is to make sure that we'd not let -- stick ourselves on a legacy source of technology while we increase energy in solar.

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

Although solar efficiency has quite plateaued.

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

Yes. Yes.

Operator

Our next question comes from Darrell Etherington with TechCrunch.

Q - Darrell Etherington

I was just wondering, do you see any other potential formats or incarnations of this technology that might enter the market in different ways or be offered to consumers in different ways?

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

Yes. We're really just scaling this one variant for now, which is the kind of like textured black glass look. And -- but then, over time, we want to have -- some like their roof to have sort of an earth tone, like sort of more like a clay tile. We want to have one that looks like a French slate. And because not all houses should have like black textured glass. This is -- especially if it's sort of a more Mediterranean architecture, it's going to look out of place. So making that work is next on the agenda from a product development standpoint in terms of a significant improvement or significant, I should say, variant, not improvement. But it's like we're getting earth tone version that looks right is the next major challenge for the ensuring team. I think we'll get some time probably next year.

Operator

Our next question comes from Hope King with Cheddar.

Q - Hope King

So from a consumer standpoint, especially what we've seen happen in California, I mean PG&E says you could take another 10 years before some of these outages are -- will be ratcheted down significantly. And Elon, you've been tweeting recently to get folks to order Tesla solar and Powerwall. Are you already seeing orders grow, demand grow as a result of the outages?

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

Yes. I think we are seeing some demand growth as a result of that, yes. So that's the reason that when you turn the lights off on people, they don't want that to keep happening for the next 10 years. So -- and there's no obvious solution. And so that -- when you're just sort of sitting there in the dark and all of your devices are battery powered, you lose your phone connection, it's like a security risk. I mean you can't even call 911. It's like if there's a problem. So we're definitely seeing people interested in Solar plus Powerwall batteries. So they can have no blackouts and have renewable energy. And yes, that's definitely we're seeing demand increase as a result. And I think we'll continue to see that in the future.

Q - Hope King

And just how important is this also to developing the overall Tesla energy ecosystem that you guys want to build out?

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

Yes. I think this is very important. The fundamental goal of Tesla is to accelerate the advent of sustainable energy. So we have to, therefore, generate the energy in a sustainable way. Then -- so which really means solar primarily, in our view. So that's for solar at the residential level, at the commercial level and at the utility level. Then we -- since the sun obviously doesn't shine at night.

And as you have like cloudy weather at times, you have to have storage to have continuous power. And so there's really 3 parts to the sustainable energy future. It's, from a Tesla standpoint, solar power generation, storing that solar with stationary storage with the Powerwall power pack and Megapack and then consuming that energy in a sustainable way, which means electric transport. And I think the fundamental good of Tesla, in my view, is to what degree did we accelerate the advent of the sustainable energy future.

Operator

Our next question comes from Karissa Bell with Mashable.

Q - Karissa Bell

You've talked a lot about kind of how you're improving the installation process, making that more efficient, a lot faster. I'm wondering if you can kind of talk a little bit more about sort of what you're anticipating the wait time will be like for people who make a reservation or preorder for this. And kind of how long you're anticipating that they'll have to wait between that and when they'll actually be able to get it installed.

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

Well it depends on how many people sign up for the Solar Glass Roof. If a lot of people, then it will depend -- then we'll sort of queue things accordingly. And I don't know, it might be a few months that you'll have to wait or several months. I think the sooner people sign up, the less time they'll have to wait. And we will grow this exponentially. So I don't know, it might be like doubling every month or something like that. So we want to get to the point next year where there's a very short wait time, if it's possible to do so. We'll do our best to achieve that.

Q - Karissa Bell

Do you anticipate that -- do you anticipate that the installation process will help speed things up overall, that this should be like a much more efficient end-to-end from reservation to installation than it was with the Version 1 or 2?

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

Yes. This is really intended to be easy to install. And there will continue to be improvements that we make to Version 3 that actually are mostly related to the edge conditions, like, essentially the corners of the roofs where the planes of the roof meet and at the edge of the roof where the rain gutters are and that kind of thing. So those are very rapid evolution of those edge condition details. And that's, I think, what is the key to growing this rapidly and like I said, getting our install time for a typical roof under 8 hours, which means we really think it's better to basically have a fairly big crew attack the roof all at once, kind of like surgical strike. And get it done quickly versus a small number of people take a long time to do the roof because that minimizes -- having it be done fast just minimizes the inconvenience to the homeowner.

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

And there's less setup, tear down time every day. Fewer truck rolls and -- totally.

A - Kunal Girotra

Yes. And we'll be installing starting next month in California. So -- and we already have customers lined up. One other comment on the wait time.

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

We're not actually employing some --

A - Kunal Girotra

The wait time, one thing to consider is weather. So in places where it's like buried and covered in snow, like, obviously, there's some wait time there. But --

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

Or very rainy ultimately.

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

Yes.

A - Kunal Girotra

But I mean, I guess, the intention here is, this is a roof, we want to install it faster than traditional roofs are installed. And so the benchmark is that calling somebody up saying you want a new roof and getting the roof installed like as soon as the weather is good, that's exactly how our products will work.

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

Yes. It's like seamless and easy and not have to wait a long time.

So all right, cool, I think that's probably our last question. Thanks, everyone, for joining in. I look forward to -- we look forward to installing, ultimately, millions of roofs. Thanks.

Operator

Thank you, ladies and gentlemen. This concludes today's conference call.