

## **Cowen Sustainability & Energy Transition Summit**

Event transcript

Date: June 9, 2021

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### **Opening**

#### **Thomas Boyes, Vice President, Cowen and Company, LLC**

Good morning. Thank you for joining us on day two of Cowen Sustainability & Energy Transition Summit. My name is Thomas Boyes. I'm the Vice President on the Sustainability and Mobility Technology team. Today, we have the pleasure of hosting Eric Dresselhuys, the CEO of ESS. Before I begin, I just want to take a moment to callout the Q&A chat feature. It should be in the top right hand corner of your screen. Please feel free to submit any questions. I can ask them anonymously on your behalf. Just there is a slight delay. So if you have questions, please don't wait until the end.

Eric, thank you very much for joining us today and I believe we're going to start off the session with a short slide deck presentation, and then transition to a Q&A. So I will turn it over to you.

#### **Eric Dresselhuys, Chief Executive Officer**

All right. Well, thanks, Thomas. And thanks to Cowen for having us. And knowing that ESS may not be as familiar to some of the other companies, that are taking part in the conference, we thought just a few slides to set up who we are and what we're working on would be helpful. So if you can go to the next slide, you can skip the next slide, that normal disclaimer slide. What ESS is working on is really a game changing technology for sustainability on the grid, specifically around long duration energy storage. So think batteries, think ways to store energy for a long time.

And so if you go to the next slide, we build products that are designed to store energy for periods of greater than four hours and up to a day. We build two products. One is called the Energy Warehouse. It's a commercial industrial type product. It's considered, in the industry lingo, behind the meter. This is a product that somebody might put it in an industrial facility or in a college campus. And then we have a much larger project that's designed for what we call front of the meter. These are large scale IPPs utilities - think battery in a box versus battery in a building.

If you go to the next slide, what's driving it? Well, probably everybody on this conference is aware that renewables are growing in share of the energy system as we work to decarbonize both the energy system and really more broadly the economy. When renewables were 2%, 3%, 4%, 5% of the system, it didn't really matter much. It kind of tucked in around the edges. But as we're getting towards 20%, 30%, and of course, we've seen ambitions that have been put out by various States and countries around the world for 70% and 100% decarbonized systems, renewable penetration is growing pretty dramatically and that's created a challenge around stability and resiliency on the grid.

It's a 24-hour day. And so of course, we all know about the duck curve or what some people are now seeing as the Nessie curve. It looks like the Loch Ness Monster, right. It was a peak in the morning and a peak in the afternoon. And we have too much renewable energy being generated at various times during the day. The battery and energy storage systems that have been available to date have been typically two and four-hour systems, and that doesn't get it done.

That doesn't get us power through the night. I live in California. And there's billboards everywhere now that talk about please, don't do laundry or use electricity between 4:00 p.m. and 9:00 p.m., because we don't have enough renewables to get us through that time. And of course, that's when most people are going home. They want to plug in their new EV. They want to cook dinner. They want to watch the game. And so, we are looking to address that problem.

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Go to the next slide. The technology that's broadly been used for energy storage today is lithium ion. And of course, lithium ion is the same basic technology that's in your phone. It's in your EV. But our technology, which is an iron flow technology, really has some superiority when you're looking at long duration. Think of this as something that's got about kind of cost parity when you look at the shorter four hours of the range. But if you go to 12 hours or beyond, our technology has an inherent cost advantage.

Lithium, if you think about it, if you wanted to – if you had a four-hour system and you said, could I do an eight-hour system with lithium? You could, but you just would build twice as much. Flow technology actually has a built-in cost advantage in terms of how it addresses that problem. That's not just in terms of the capital costs. If you look at the lower part of the chart, there's a metric that's talked about more and more now called levelized cost of storage. It's the equivalent of that levelized cost of energy we talk about with renewables. And flow batteries actually have a much built-in advantage. When you look at the total cost to own, operate, decommission at the end of life, you're talking about \$0.02 per kilowatt hour with a flow battery versus best case \$0.07 with lithium ion.

If you move to the next slide, how we do that is with technology. It's a relatively simple base set of technologies, or excuse me, chemistries. Iron, salt and water is how you build this. So there's no toxicity. There are no fire risks. There's no explosion risk as there is with lithium batteries. And our team has really been revolutionary in terms of how they thought about the problem of long duration storage, and what's the best way to go solve that problem.

If you go to the next slide, we're listed as a private company on the agenda, but we have announced that we are proposing to go public via SPAC with a company called ACON S2, which is publicly traded today. You can see some of the details here, but it's at a little over \$1 billion pro forma valuation. We're in the middle of that process. Now we just closed a – as a part of the announcement, we closed a \$250 million PIPE led by Fidelity, Koch and other leading investors. And so we're in the middle of that process right now. That's on top of a really stellar group of existing investors, including Breakthrough Energy Ventures, SoftBank Energy and others.

If you go to the next slide, so just a couple of facts about what we think the opportunity is. Long duration storage has got a lot of growth behind it right now as this renewable penetration has happened. Depending on whose reports you look at, it's expected to be about a \$56 billion market by 2027. And we're solving that with a really simple yet revolutionary technology that's entirely sustainable, doesn't have any other rare earth metals or toxicity issues that other technologies have. And the combination of all of that delivers a breakthrough performance cost metric in this field.

Next slide. More information is available on our website. So if anybody wants to dig in deeper, there's a more complete presentation. And of course, people are free to reach out to us at ESS. And with that, I'll thank the operator, we can have a discussion.

### **Thomas Boyes, Vice President, Cowen and Company, LLC**

Excellent. Well, first, I know that you and Jeff Osborne, who's the lead analyst of the group, go pretty far back, when Silver Spring was still a standalone company. Can you kind of talk about what attracted you to the ESS story? Why you decided to join? And just go from there.

### **Eric Dresselhuys, Chief Executive Officer**

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Yeah, sure. So I've been working on sustainability and decarbonization since the 1990s. So I – it's funny, I hear people talking about a clean tech 1.0. And I think I may have started at 0.1 version of clean tech. We founded Silver Spring Networks in 2002. And so I've known Jeff and Cowen and have really respected the work that you all have done. And I haven't been a part of this journey for a long, long time. And Jeff is an absolute kind of stalwart legend in the space.

Throughout all at that time, as we were working on smart grids and the introduction of wide scale renewables, from the early 2000s, people were talking about, what are we going to do about storage? This was a problem that people saw coming, and a lot of folks have tried to address it, but it's been hard. It's been hard technologically to do it. So I had a chance to meet Craig Evans and Julia Song, the two founders of the company a number of years back, and really understood what they were doing. And I – they deserve a lot of credit. I mean, visionary is a term that gets tossed around a lot, but they were absolute visionaries in terms of understanding the scale of the problem that was coming and setting out to go solve that problem in the right way, as opposed to just looking around at what was maybe available that you could do.

So that combination of the market opportunity, the absolute criticality of long duration storage to making this energy transition happen and then the specific technology and the team that's been built here at ESS was kind of a while for me across the board. I was a pretty easy yes to join that. And as they were looking at how they go from more of a development company into a full operating company in a public market environment, that was a great match with experiences that I've had taking organizations and scaling them globally.

### **Thomas Boyes, Vice President, Cowen and Company, LLC**

Excellent. As four different types of battery chemistry or things that are looking at large storage solutions, can you kind of diagram out where the iron flow batteries kind of excel, not just against lithium ion; are there other chemistries that, that would be under consideration and maybe there are performance characteristics that they are not meeting that give you kind of an edge?

### **Eric Dresselhuys, Chief Executive Officer**

Yeah. Well, it's – there's a couple of things. The first thing about, and this would be true about any flow battery, is flow batteries have a kind of an inherent advantage in the sense that we separate power from energy, right. So you think about how you might scale a system. You could say, well, I want a 500 kilowatt system. And then you can say, but I want four hours or six hours or eight hours or more. And you can scale that system up by adding effectively more juice. I apologize for being a little cute about it. But the liquid is what determines duration.

So any flow battery could potentially do that when you kind of then break into the different types of flow batteries that are out there. There are a couple of challenges that have come up for other people. The first is, what's the cost of the materials? So as again, I said, we're iron, salt and water. So, really earth abundant, comparatively low costs inputs into the system. Vanadium and other technologies that have been around can work, but they've got some problems - that the cost of vanadium alone prices it out of the market for being cost effective at scale.

And then a lot of the technologies that have been around have either had toxicity issues, which we think are going to be kind of a problem. It just doesn't strike us that if you're working on sustainability,

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you're going to do that with toxicity. That just doesn't match in terms of how you're going to solve the problem. And then the other problem that some flow batteries have had in the past is they require a lot of maintenance. So you've got to kind of keep going and then adjusting it or maintaining it, or it's got backflow cycles and cleaning cycles and things, and so all of those have created challenges. The ESS technology has avoided that; they've avoided some of the technical issues that have limited the performance. And so we think that's going to be to our advantage.

### **Thomas Boyes, Vice President, Cowen and Company, LLC**

That makes sense. Now, you have a behind the meter solution, you have a front of the meter solution, can you just give some insight into maybe what type of potential customers in that category that you're going after, and does that change over time? Is it that you're going to start more with a specific type of customer, and then as the business grows, then you're going to transition to different things, like if you would eventually do maybe grid services where you're providing more software features or something like that?

### **Eric Dresselhuys, Chief Executive Officer**

Sure. Well, so the behind the Energy Warehouse product, which is the behind the meter product, the logical audience for that are people who are trying to build island grids or microgrids. Large industrial customers, the people that we work with today, on that product tend to be very large, commercial industrial type customers, who are trying to, in some cases they've already put in solar plants or other renewable resources on their side, and they're saying, hey, how do I get to a 24/7 kind of operating model? Plus, we have customers, I'll give one example of one that's not been publicly announced; we have a customer that's in a wildfire zone in California. So they've been subject to these power safety shutoffs, and that's really disruptive for their business. So they want to use this technology as a way to buffer short-term outages.

And of course, in a fire zone, you can't put a big lithium battery, because that might start the fire. It's not allowed in California. And if there was a fire, it would be a real safety hazard. And then the Energy Center product is going to be a more Utility Scale IPP scaling. You're starting to see, over the last, just months, maybe a year, a real push to having a solar plus storage, wind plus storage, hybrid type environments coming in. Because, if you look at what's happening to grid pricing in say the Midwest, there are times where we have, an increasing a number of times, where we have negative pricing on the grid. You cannot sell - there's no off-take program for your wind or your solar, because there's too much production during the day.

So people are deploying it. They want to deploy storage as a way to buffer the economics. Store during the day, discharge at night. How does that change over time? We actually do have some utilities to date. We're buying Energy Warehouses, That lets them get started and they can do very select, kind of drop in. And then, for lack of a better term, they graduate to an Energy Center or something with much larger scale.

### **Thomas Boyes, Vice President, Cowen and Company, LLC**

Got it. So it wouldn't necessarily be something maybe on, you can, because it's sub four hours, for if you like, there'd be no voltage regulation. I mean, that's where it kind of some of the value of the market is now, but over time with the Nessie curve, it's really the longer duration storage assets that are going to have kind of a home. Is that, am I understanding that correctly?

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### **Eric Dresselhuys, Chief Executive Officer**

Well, I think it's an interesting thing. We do all of those things as well. So people have, if you put in long duration storage, you kind of get all of the benefits for a say, peaker plant replacement for 24/7 operations. But the dynamics, we go from a dead cold start to fully rated power in less than a second. So you can do ancillary services, you can do a voltage support. You can – you could – if you had a large flow battery, you could fit into capacity markets and other things as well.

So you can play all of those market mechanisms. But then it also worked for eight or 12 or 16 hours, depending on how you've configured it. And so you'd get that benefit too. So we think that value stacking is really what's good, people are going to start to focus on, because you don't want to have – to be put in a position where you say, I can either have ancillary markets or I can do peak replacement, you kind of want to do both.

### **Thomas Boyes, Vice President, Cowen and Company, LLC**

Yeah, that absolutely makes sense. You gave us some good insight into the kind of the TAM as you see it today, but could you just maybe overlay from a geographic basis on maybe what – where you're seeing areas of strength? And is there a specific policy that you could call out maybe that that would be accretive to that area if you will?

### **Eric Dresselhuys, Chief Executive Officer**

Sure. Well, if you're looking for an easy cheaters guide, go for places that have higher renewable penetration, right? Any place where people cross that 20%, 25% renewable penetration very quickly after that people say, wait a minute, we can't just absorb this amount of renewable anymore. We need some way to buffer the system for stability. So you could look at that on a state-by-state basis, the Hawaiis and the Californias of the world, you can look at states like New York that have made big announcements around decarbonization, even places like Arizona and others.

If you look around the world, Australia is a place, of course, that gets talked about quite a bit as a place with very high penetration of solar and having lots of grid maintenance and kind of stability issues on the grid as a result of that. So that's a pretty easy way to follow it. In terms of what policies, there is ITC for combination solar storage, and there's talk as part of the infrastructure bill, standalone storage ITC, and that certainly would help. I think from maybe a more mechanical basis, you've seen places like California, Cal ISO has come out and said, hey, wait a minute, the two to four hour thing kind of doesn't get it done anymore. We need eight hour plus storage to buffer the systems. And so that probably has a more immediate impact, just the operating requirements of the grid operators is a more immediate thing than anything else.

### **Thomas Boyes, Vice President, Cowen and Company, LLC**

I appreciate the color. Maybe we could touch upon main competitors at the moment. How do you think about the competitive dynamic of that landscape?

### **Eric Dresselhuys, Chief Executive Officer**

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Well, I'd say if you look at what do people buy today, of course, people buy lithium today, and there are a lot of people off doing lithium. As you pointed out, kind of two to four hour durations, using it more for short-term, riding out issues or playing ancillary markets and those kinds of things. So that's really where the market has been largely. So in the strictest sense, if you said, when RFPs come out, who responds to them and that's your competition, that's the competition.

There is, of course – there are alternative approaches around things like pumped hydro, which have been around for a long time and can work quite well, but the problem is not everybody has a mountain nearby, right? So it can be very limited in terms of where it can go and the permitting and environmental impacts for some of those technologies can be really problematic. But more broadly, I think I would say for the foreseeable future, there's such a pent up demand for storage that it's not really going to be an A versus B as much as it's going to be a kind of a pie growing scenario for the foreseeable future.

### **Thomas Boyes, Vice President, Cowen and Company, LLC**

That makes sense. I would actually love to hear a bit more about maybe the relationship with the SoftBank Energy Ventures. Could you just maybe tell us how that developed and really why it's important to the ESS story?

### **Eric Dresselhuys, Chief Executive Officer**

Yeah. Well, SoftBank Energy is a big developer of renewable assets, and they just announced that they've got 1.2 gigawatts or something they've developed last year, so really one of the major players in the space. And we got to know them initially as a potential partner customer, because they were really working and kind of, I think ahead of the curve on understanding the requirements for storage to complement their renewable generation solutions. That led to them becoming an investor in the company. So they became – their venture group became an investor in ESS. And they've been an investor for some time now. We announced not so long ago that we've now put a framework agreement in place for 3 gigawatts of development over the course of the next number of years.

And that's really been important to us, because it of course gives us some path and surety to the revenue growth of the company. But they're also a great partner to us in terms of helping us understand the requirements, and the sizing, and the implementation of the scaling of the organization. So it's really been a fantastic relationship. It's a non-exclusive relationship. We work with a lot of folks who are, I guess, nominally competitors with Softbank Energy as well. But it's been a very synergistic relationship for both parties.

### **Thomas Boyes, Vice President, Cowen and Company, LLC**

And maybe as a follow on to that, just what strategic initiatives are you looking for now that you do have a kind of considerable amount of capital? Is this bolt-on acquisitions? Do you see a portfolio – IP gaps in technologies that you need to acquire to kind of drive this further? Or what would you be using that for?

### **Eric Dresselhuys, Chief Executive Officer**

Yeah. Most of it is really just kind of shoulder to the stone kind of doing the work. So we've got operational scaling in our factory. So we build all of our products here in the U.S., something that gets

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talked about a lot and there was just news coming out yesterday of most to ensure a supply chain and materials for the renewable transition. One of the really great just inherent things about our technology is it can be locally sourced. These are very commonly available abundant solutions.

So we built, we're here, I'm here in Wilsonville, Oregon, just south of Portland. This is where our factory is. And we're putting in among other things, automation lines to increase throughput and improve the efficiency of our operation. There is a huge amount of demand globally. So global growth will be another area of focus, and building out our team to support all of these projects. We don't have any – there are no massive breakthroughs or acquisitions we need to do to be a viable company. We can grow at a pretty substantial rate based on the technology and the path that we have forward. Of course, we'd always be open-minded on the acquisitions as well.

### **Thomas Boyes, Vice President, Cowen and Company, LLC**

Maybe just – again, just to follow-on to that point as well as just from thinking about levelized cost of energy from where it is today. What levers could you kind of pull, is it scale is going to bring it down to further improve it? How should we think about that maybe over the next four or five years?

### **Eric Dresselhuys, Chief Executive Officer**

Yeah. So scale is a big part of it. That's the most important part of many of these things. It's just getting up to speed. Of course, everybody's quite familiar with the lithium cost curve and how that's come down. That seems to be flattening out a little bit. You get down to kind of the cost of materials is a terminal price at some point. So scale is a really important part of it for us. That's the single most important driver to us. We also have some design optimizations, kind of design for manufacturer at scale that will drive things, but we're an engineering R&D house, and we're going to continue to invest in that. We've got a pretty robust roadmap of things we'd like to do over the next number of years to improve energy density as an example, when you're looking at levelized cost of storage, that's one of the big drivers, you've got to – how do you get more out of the same electrical assets?

### **Thomas Boyes, Vice President, Cowen and Company, LLC**

Great. And then just again, because kind of the theme coming out of 1Q was a lot of discussion around the supply side. And you had mentioned that a lot of these things are readily available. Is there any kind of impediments from a supply side, just maybe based on freight or shipping, as opposed to just a dislocation?

### **Eric Dresselhuys, Chief Executive Officer**

Yeah, I think we've kind of some – listen, I think everybody has had some amount of supply chain disruption. The shipments come through well, but then everything gets backed up at the dock. So I think everybody's had at least a little touch of that. We've been really fortunate. I think we have had a lot less than maybe other people have had. And because of the nature of the materials that we're using, they're more broadly available.

So iron prices have gone up a little bit, but as a total percentage of cost of goods on the product, it's a very de minimis amount of our total costs. But it's something that we're watching very closely, keeping an eye on, and I think probably most people who build products, and we build a physical

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product, have thought a lot more about supply chain resiliency and dual sourcing and things like that to ensure that we don't have supply disruptions going forward.

### **Thomas Boyes, Vice President, Cowen and Company, LLC**

Absolutely. And then maybe coming up on the time, to close it out, if we were to come reconvene a year from now, what are the one or two things that investors would see as the biggest accomplishments that have taken place over that timeframe or the KPIs that people should be paying attention to?

### **Eric Dresselhuys, Chief Executive Officer**

Well, I think what you'd see is a couple of things, I think, you'd see kind of customer announcements, project announcements is the number one thing. And I apologize if that's my computer, that's making all the noise. You'd see customer announcements, project announcements is the biggest thing. We're in a long lead time business, where our business will kind of run at the pace of normal renewable development. So these are things that are announced and then deployed over the course of years.

So I'd say, the thing you want to be looking for is announcements, what will precede that and you've already started to see it is how the procurement part of the process works. People bought two and four hour power energy storage systems, because that's what was available. That's what you could buy. That's what people knew. So as there's more and more awareness that you can go six, eight, 12 hours and beyond, I think you'll start to see and you've already started to see some of the green shoots out of places like California, where the procurement for long-term grid planning are going to call for longer storage.

### **Thomas Boyes, Vice President, Cowen and Company, LLC**

Thank you very much. I really appreciate the time, the insights around what ESS doing is great. And thanks again.

### **Eric Dresselhuys, Chief Executive Officer**

Thanks for having me. I appreciate it.

### **Thomas Boyes, Vice President, Cowen and Company, LLC**

Absolutely.

### **Eric Dresselhuys, Chief Executive Officer**

Take care.