deX Progress Update 2020 - Full Transcript

Mark Woodall, Executive Chairman of GreenSync

Starts from: 00.09

Hello, my name is Mark Woodall, Executive Chairman of GreenSync. I've been with the company for 3 years now and I took over as Executive Chairman in May of last year **[2020].**

GreenSync is an energy company, an energy tech company to be precise, and we're headquartered in Melbourne, **[Australia]**.

Our vision is for an electricity system that is powered by renewables and for that system to be resilient, sustainable and affordable.

In order to enable this vision to become a reality, we created deX, a software platform that facilitates the grid of tomorrow, one that will have millions of smart distributed energy resources powering a dynamic system that delivers value for all.

So, how do we do this? Well, deX is a software platform that enables electricity grids to support more renewables, handling the growing increase in rooftop solar, domestic batteries, electric vehicles, and other distributed energy resources.

It does this through the power and efficiency of APIs that connect all of the participating actors to and through the deX platform to the registered DER, resulting in the provision of visibility, control, and verification functions.

Here in Australia, we are already delivering this capability in South Australia, to assist that state with the management of ever increasing levels of DERs in a safe, efficient and effective manner for the grid.

We are also active in other states in Australia, as well as in New Zealand, the UK, and Japan.

We've been working with **[the Australian Renewable Energy Agency]** ARENA on this program. ARENA is contributing $10 million to enable and accelerate the scaling of the deX platform in Australia.

Despite all the challenges of 2020, we're progressing well against the ARENA deliverables.

The team will tell you more about these shortly, but I'm excited about where we are and where we're going

My colleague Bruce Thompson, Head of Customer here at GreenSync, will dive into more detail. Over to you Bruce.

Bruce Thompson, Head of Customer, GreenSync

Starts from: 02.43

Thanks very much Mark.

As Mark said I am Head of Customer. My role is to have responsibility for our customers, who we are providing services to, the partnerships we have in the industry and our engagement with key industry stakeholders.

What I'm here today to do is to tell you about the **progress** of the deX initiative funded by ARENA, the **achievements** that we made in 2020 that line up against the **key project outcomes**.

As our mission is to collectively increase our grids to a 100% renewables, the challenge is around that hosting capacity and to do with the scaling and the technical characteristics of distributed energy resources, whether they are solar, electric vehicles or energy storage, for the grid to increase its hosting capacity; avoid the risks that that represents and ensure that we maximise the benefits for both the customers and the broader community.

Critical to that is being able to have visibility to those DER which is a core tenet of deX; but also interoperability, how we can avoid some of those risks during certain system events.

The South Australian government has moved and acted on a program called Smarter Homes which now as of 1st January 2021 requires all solar installations to have the ability to remotely disconnect.

We've been working very actively with the major solar PV inverter manufacturers who are providing products in South Australia, along with South Australian Power Networks, as well as the Office of the Technical Regulator, to be able to enable that technology capability.

The exciting thing for us in that concept is, as those DER are being registered and being able to meet that compliance requirement at the point of install, we're actually then able to work with the OEM vendors, the installers, and retail partners to be able to look at how that functionality can allow those customers to participate in virtual power plant capabilities

The registration process for us has been a really interesting journey. We're working together with all the stakeholders to bring together the critical pieces of information that are quite important to this, identifying an association with a national metering identifier (NMI) number, being able to match that with a serial number, and being able to show we have customer consent.

Sounds kind of easy, but actually we've got the information in different places, in different parts of the supply chain that are actually recording that information.

So, we've been working with deX registration tools that we are providing to installers; and also working with South Australian Power Networks connection process, as well as commissioning apps that each of the OEMs have to bring that together in an increasingly more efficient and seamless process.

We're really looking to increase the **opportunity for customers** and networks to be able to view DER information and ensure we're supporting that longer-term benefit. Building on those processes really gives us the pathway to bringing new technologies as we go.

Each time we're doing integrations and learning from each of the different approaches, we're able to ensure that we're working towards industry standards to be able to bring a common approach; but combining that with the functionality that each of the technologies are providing.

So, as we're really focusing on the scaling of solar, we're applying those same principles to battery storage; and increasingly to electric vehicles which have additional characteristics and technology API requirements to fulfill that same management and coordination function.

We've seen the industry really evolve around **dynamic connection agreements**; certainly a concept that deX and GreenSync has been very much part of the conversation and is now being able to demonstrate that functionality.

[We're] doing that in project partnerships like Evoenergy and Schneider in Canberra, which is demonstrating the process to enable the more dynamic coordination of individual DER assets or VPPs.

Ultimately, as we build up that capability - that hosting capacity - we really are turning to unlock that value. If we've got a safe connection that's able to export safely, then when we group individual customers together for a retailer or an aggregator, that retailer or an aggregator is able to participate in market services opportunities.

The next step then is how does that scale for the benefit? VPPs are now moving from a pilot stage into being offerings from a lot of retailers who are really keen to develop offers for the customer and for those customers to be able to bring their own device.

We now have to move with the technology trials that we and our partners have been a part of and the policy considerations that many stakeholders have been involved in, and take the implementation over the next two years to ensure that we have a safe grid, an affordable grid, and a grid that is zero carbon.

The critical thing that we take from 2020 is a strong confidence in validating the deX as a concept.

We really recognise the support that ARENA has given us and we think we're able to really demonstrate that the purpose and objectives are really becoming very visible now.

I am now going to handover to Ann who will be telling you about the deX project progress in a bit more detail.

Ann Southall, deX Product Manager, GreenSync

Starts from: 08.54

Thanks Bruce. My name is Ann Southall. I'm a deX product manager at GreenSync, and as you might guess from the product title I'm here to tell you about how **[we are]** going with the deX product development.

So, in other words, I'm going **[to tell you about]** how are we going along with our release roadmap **[and]** changes we've made.

So, firstly let me talk about some changes. In early 2020 we undertook a review of the roadmap **[in the context of]** and the market **[and]** industry needs.

From that assessment, we agreed to modify elements to the product roadmap to more effectively meet the needs of our customers and the broader market and industry.

The release roadmap, at a high level, is how we want to deliver deX as a product; and **[the]** time frame around that.

So the product releases **[which we]** delivered in 2020 [were]:

- We had the **deX device registration tools**: and we had one for installers, our installer app, and for device owners.
- We had **device enrollments:** So that's the next step from that piece. Once you have the information captured in deX registration apps and tools, they can get processed through deX enrollments to be registered in deX **[to be]** controllable.
- We had the **service catalogue:** These **[are]** the different services that you can provide to the VPP operators [usually these are electricity retailers] and [to] network operators.
- We had **dispatching**: Dispatching as a whole and **[specifically]** for (Frequency Control Ancillary Services (FCAS) purposes, as a new feature.
- And we had a large number of **integrations** completed in 2020.

- **[We also]** added information to **registration tools**; **[added]** the ability to **register devices through bridges**; and improved our overall offering to have **larger, diverse DER assets available to VPPs and network operators**.

To talk through the practical applications of the deX features we've worked on over 2020, my colleague Jack will now tell you all about our use cases. Over to you.

Jack Terry, Power Systems Specialist, GreenSync

Starts from: 10.46

Thanks Ann, Bruce and Mark. My name is Jack Terry. I'm a Power Systems Specialist at GreenSync.

I'm a technical expert in the product team, and my role is to help our software engineers design and build solutions for our customers to help solve their problems.

Today I'm here to talk to you a bit about some of the use cases that we've been focusing on in 2020.

The first question that we really get asked is what is a use case? From our perspective, it's a specific application of the deX functionality to realize a goal for a user or, in some cases, solve a problem for a user.

Some of the key use cases that we've been focusing on in 2020 were:

- **device registrations**, so this is really about getting **[solar PV, battery or EV charging]** devices into deX so that they can provide services to deX users;
- **remote disconnection**, providing the ability for devices to be remotely turned off to as a response to a critical system event; and
- **dynamic limits** which is really about providing more fine grained control, so that a DER owner can realize the maximum value from their system, while remaining within network limits.

So, from the perspective of **registration**, we really think about it as getting a device from being installed and commissioned to a point where it can provide telemetry and control services to a party with the right consent.

We're really seeing that this is one of the most significant challenges in industry at the moment, just because there's such a variety of approaches, both from an OEM vendor perspective as well as the parties that are contracting those devices.

So we're really focused on looking at approaches that are transferable across those vendors, robust and sustainable that make it simple for all parties and as low effort as possible.

So, **remote disconnection** as a use case is really about providing the ability for an authorized party to disconnect many DER in a very short time frame to address some critical system security concern.

As a part of the South Australian Government's Smarter Homes program we are working with a number of OEM partners to provide part of the technical solution to allow them to meet their obligations under the new regulations.

Part of this includes building the integrations as well as registering the devices, but critically the functionality tooling to remotely disconnect thousands of DER in a very short time frame; and also report on the outcome of those disconnection requests.

The last use case that I'll touch on today is **dynamic limits.** Whereas remote disconnection as a tool for the mitigation of critical systems security risks, dynamic limits provide a mechanism for DER to be able to utilize the greatest extent of network capacity available.

In our projects with EVO energy and Schneider, we've built an integration to network systems that allows for automatically calculated dynamic limits to be communicated to end DER.

What this means is that DER owners will be able to access increased network capacity when it's available, but the network has confidence that, as the network loading increases or as the voltage rises, that they can curtail that DER to ensure the network is maintained within limits.

In terms of what this all means, I think really our approach to use cases reflects our thinking that the best way to solve the challenges presented by DER is to work on the most immediate and critical problems, such as registration and disconnection.

At the same time, though, this allows us to establish a foundation for future functionality and feature use cases that will increase the value that DER owners can realize.

I'm now going to hand over to our project partners to talk about some of our collaborations and what they're expecting to come in 2021.

Wilf Johnston, General Manager, Enphase Energy Australia

Starts from: 15.12

Hi, I'm Wilf Johnston, General Manager of Enphase Energy Australia.

Where do you see deX providing value to your business?

deX is driving higher adoption of high functionality DER products by creating a framework where those high functionality products can actually contribute to solving problems with networks, with the market.

We can also provide more visibility and, ultimately, control of that DER to the owners or operators of the market or network.

For Enphase it's great to be able to finally plug into that kind of functionality in an organized **[and]** orchestrated way.

There's a lot of work that needs to be done to orchestrate and coordinate the linking of assets with networks, with markets.

There needs to be a really solid middleware platform for those things to all interact.

You only need to look at South Australia and see how they've had to go from a fairly aggressive target and clear vision of what they want to do and execute on that.

That's the kind of situation and the kind of problem that, I think, deX does a really good job of solving.

I can't imagine that South Australia will be the only place that needs to solve those problems in the coming years, so it makes complete sense that that same solution could very well be rolled out in other regions.

Does deX meet your current or anticipated needs?

The more organizations, regulators, asset owners etc. adopt deX as a framework, as a way of operating, the easier it will be for DER asset manufacturers, designers, producers - like us - to actually participate in those markets that they create.

I think, on top of that orchestration, visibility is probably the first step to going down this road to a distributed energy marketplace network and so forth.

That visibility, if provided early enough and analysed correctly, will enable all those actors to really comprehend the size of the problem ahead, and how quickly they need to move, and what kind of things they need to implement.

Whether they be customer-provided solutions, whether they be network-provided solutions to keep the grid running stably and efficiently.

What surprised you in 2020?

Solar growth

In 2020 we were quite surprised that the **[Australian]** market grew by 39% for smaller solar systems **[across all brands].**

We didn't expect that to be quite so dramatic, especially given the environment that it was occurring in, with everything else that happened in 2020.

Unfortunately, a lot of that was in what we call the one-size-fits-all category of assets. So, off-the-shelf standardized solar systems that weren't really designed with the customers' needs in mind, particularly, or definitely not with the networks' or wider energy market or energy sector's needs in mind.

What did you see accelerate (in 2020)?

Regulatory changes accelerated, but compliance is lagging

We were also, I guess, a little surprised [at] at the amount of new regulations that were proposed and implemented.

Compliance and enforcement still remains to be a major issue that doesn't seem to be [being] addressed yet.

That could be an interesting area for deX to engage with, because there's a lot of regulations.

[The] thinking and planning and strategy **[for regulations]** takes many, many years to articulate and document.

[And so,] for them to effectively not be correctly executed on and really required in the market. It's the compliance [and] enforcement] not being there with that sort of follow through and to really complete the loop.

What was slow in 2020?

Slow growth of battery market; EV adoption lagging

The battery market remained fairly flat, no real activity there. I think we're all expecting **[at]** some point there'd be a little bit of growth, a little bit of change, but from what we're hearing it wasn't a wasn't a big change over that period.

Adoption of EVs and plug-in hybrids is also lagging, I think, behind what a lot of us would expect.

It still doesn't seem to be part of the mainstream, yet. It still very much seems to be relegated to the category of "Well, you know my next car will probably be an EV, but I don't know when that will happen, **[maybe in the]** next few years."

In reality, there are quite a lot **[of EVs]** available right now and the discussion needs to be kicked forward a bit, I think.

What are you looking forward to in 2021?

There's a lot of pilots going on at the moment, with various technologies, with asset owners, networks and regulators. So, we hope those pilots are swiftly executed and the learnings taken on board, so we can actually get on with creating something more at scale.

A lot of things we're doing **[already]** do scale perfectly well; and the difference between, you know, a 100 unit trial and 100,000 unit trial is, frankly, not that different.

So, as soon as we can get moving on that, the better.

Greg Skelton, CEO, Wellington Electricity

Starts from: 20.23

My name's Greg Skelton. I'm the CEO of Wellington Electricity.

We're a capital city lines company in New Zealand, and largely have a fairly densely populated network.

Where do you see deX providing value to your business?

Our interest in the deX platform really stems from the ability to start to unlock some value that **[is]** largely hidden from customers at the moment.

As a **[power]** lines company, poles and wires have done a really good job over the last hundred years of actually delivering energy to all of our consumers.

But as things change and alternatives become cheaper and consumers want to spend their capital on something that's on their side of the **[electricity]** meter, we're starting to see a bit a turn towards cheaper solar being put on homes and the ability to store that solar, so it can be used in the evenings when consumers get home if they are working in the cities.

We've largely been focused on one of the challenges that the government has **[set for]** us, and that is around **how we manage the electrification of transport fleets**.

Now, the consideration for us around that and with deX, **[where]** deX [is] has been the most valuable, is when we look to the ability to actually bring the visibility of that **[vehicle]** charging onto a platform and allow that to be managed in a way that can be shifted to be commensurate with the network and how it's going to allow that demand to be met in the future.

Does deX meet your current or anticipated needs?

The value for us of the deX platform is **[that]** it creates visibility [for] consumers or consumers' retailers to start to register these devices; and once these devices are registered and the permissions are in place for consumers to actually look at commercializing that investment.

We would certainly be looking at taking some of those **[future]** services for either energy storage or for solar generation to actually work at a time when that can support the network to act more efficiently.

And those things will naturally happen as we start to reschedule electric vehicle charging out of the peak demand period.

At some later date, we will be probably looking at services where vehicles could help support the network through the peak demand period [also].

All that has to be service-based, all that has to be **[done with]** an ability for engaging and getting dynamic connection agreements with consumers in place.

We see that the deX platform is going to be something that provides some quite different business optionality, more so than what we've done in the past of simply just building more assets.

What surprised you in 2020?

The [New Zealand] economy still stayed pretty strong throughout the Covid pandemic. And while we saw quite a transfer away from commercial **[and]** industrial load, we saw most of that picked up at the residential level - which surprised us.

[For example,] people working from home really started to put residential demand into a much higher volume.

So, that did require us to rethink how our network was going to be managed throughout the year. It also meant that we had to think about the importance of particularly the low voltage network at the residential level and how that's going to be exercised down the track.

That's where we think that the development of platform technologies is going to really come into its own.

What was slow in 2020?

Obviously, we deferred a lot of our work, we had to actually only pick essential projects. **[Because it's]** not a lot of fun for people who are working at home to suddenly have the power off, because we want to reinforce and maintain our network.

We had to be very careful about the reasons for why supply had to be interrupted.

Most of our demand solutions are really solved by building a bigger network. That's fine. But the downside is the peak period of when people want to use it getting narrower and narrower and happening on less and less days.

So, the idea of actually shifting demand into the period when we have a lot of capacity is something that we need to really start to get to grips with; and also allow a bit more flexibility in the policy and regulation settings.

What are you looking forward to in 2021?

So coming up to 2021, I suppose the excitement for us is our Climate Change Commission has given us their early ideas around how New Zealand is going to meet its CO2 emission targets. Our industry, in particular electricity, is really looking at taking fossil fuels out of vehicles.

The ability of actually starting to trial platform approaches and platform solutions is going to give us a really great head start.

[This can] also become a bit of a demonstration piece for [the] government to look at how to set policy to enable these sorts of things to happen.

That's largely what we're looking for - better outcomes that should, for consumers, hold the price of electricity reasonably constant, rather than **[us]** passing on costs for ongoing investments into the network.

Bruce Thompson, Head of Customer, GreenSync

Starts from: 10.46

Thanks to Wilf Johnston from Enphase Energy Australia and Greg Skelton from Wellington Electricity for taking time out of their very busy schedules to talk about our collaborations.

To summarise...

So, we're really excited about what we've achieved [in 2020], and we're really excited about 2021 now that we have that validation and that product functionality in place to be able to work with our partners and our customers to scale this technology for Australia's benefit - and to take that to the world.

Thanks.

-- Ends: 25.46 --