

## **Electric Avenue Pole Top Batteries Q&A**

6 September 2021

### **PROJECT**

#### **What is this project all about?**

United Energy will install 40 pole-top batteries in communities across Melbourne's east, south east and the Mornington Peninsula. This is Australia's largest rollout of community-based batteries.

It's part of an exciting group new projects under the Electric Avenue umbrella which are helping customers share power in their communities.

#### **How many customers will benefit from this project?**

When complete, the 40 Electric Avenue batteries will store 1.2MW of power which can support an estimated 5,000 customers. These could be homes or businesses serviced by the battery locally.

#### **What are the customer benefits of pole-top batteries?**

This is a way for customers to act locally to participate in a clean energy future.

We know that rooftop solar is becoming increasingly popular and often, the idea of a household battery to go with it is useful to store excess solar energy for the evening. But these batteries still cost more than many people can afford.

By putting a pole-top battery in a community, excess solar can be exported into our network and stored in the local battery. Then potentially, all customers in the community can share this local renewable energy when power is discharged from the battery.

It's a way for all connected customers to use more renewable energy whether they have solar on their roof or not.

It's also an important way for us to make sure all UE customers enjoy high levels of power reliability.

#### **What are the network benefits of pole-top batteries?**

From our network perspective, these batteries are much smaller and their installation is a lot more agile than the larger neighbourhood batteries or big grid batteries that are also being developed at the moment.

The benefit for UE customers is that we can roll them out in locations where we know there are constraints on our network, particularly on days when electricity demand is high. For example, in hot days in summer.

What that means for customers serviced by these batteries is that we can help ensure they receive the 99.99% reliability of power supplies that other UE customers also receive.

### **How is this being funded?**

The \$11 million trial is funded by both the Australian Renewable Energy Agency (ARENA) which is providing \$4 million and United Energy which is funding the remaining \$7 million.

### **What impact will this investment have on customer bills?**

Our network charges are just one part of customers' electricity bills that they receive from energy retailers.

There will be no increase on our network charges as a result of this project. In fact, over time, we expect the batteries will actually help reduce network charges for all customers.

Deploying these batteries in areas where our networks are constrained replaces the need for us to invest in upgrades that across 40 sites, would cost substantially more than what is planned under this project.

This is one way that all UE customers can benefit from the batteries.

### **How do the batteries work?**

The batteries will charge at times of the day when there is low electricity demand or when local rooftop solar systems are exporting into our network.

Power from the batteries can be used later in the day when demand is high and solar systems are no longer generating. The peak times when most people are using power from our network are between 3pm and 9pm, Monday to Friday.

### **How long is the trial?**

It's a three-year trial. We expect to have all 40 batteries installed within two years. Then we will monitor and assess their performance in the remaining year.

### **How long do the batteries take to install? What impact does this have on customers?**

The installation process is generally only a couple of days. This depends on whether the pole a battery is going to be installed on needs to be replaced first.

The impact of this installation is low but it will include a short power outage so our team can work safely around the power lines and connect the battery into our network. We carefully plan power outages like these to ensure we minimise the impact on customers as much as possible. Customers that will be affected by any outages will be notified well in advance so they can be prepared.

### **How will success be measured in this trial?**

We'll evaluate how these batteries have delivered crucial grid services, reducing demand on these areas of the network in peak times, providing benefits for our customers, but also value for our retail partner, Simply Energy.

## **BATTERY DESIGN**

### **How large are the batteries – in physical dimensions?**

Each battery is two metres high and one metre wide. They are similar in size to other pole-top assets people can see on our power poles.

### **Why do you mount these batteries on poles?**

Quite simply, it's a good use of our infrastructure and it means we don't need to occupy land.

### **How much energy is stored in them?**

These are 30kW batteries. It means they have the capacity to power up to around 75 homes for two hours (or deliver 66kWh of electricity).

### **Are the new batteries the same as the ones in Black Rock and Highett?**

The new pole top batteries are similar to the existing ones but we have taken learnings from this initial trial to make them even better. For example:

- The design has changed from being a rear mounted battery to one sitting flat against the pole and on a bottom mounted platform. This makes them easier to install.
- We've also changed the internal configuration to make it easier for our people to service and maintain the units.
- We've strengthened the safety aspects in relation to noise and fire protection.

### **What colour will the boxes be painted?**

Our first batteries in Black Rock and Highett are painted a 'eucalyptus green' colour to blend in with their surroundings. These batteries will be similar.

### **Are these batteries Australian made? Or imported and assembled locally?**

These batteries are assembled by Thycon in their factory at Coburg North from local and imported components.

### **How much do the batteries weigh?**

These batteries each weigh about 1,950kg, which fit within the limits of our standard poles across the network. Most of our poles are able to easily carry that weight.

But depending on the age and condition of the poles in the location selected for the pole-top batteries, there may be times when we need to replace the power pole as part of the installation process.

### **What is the lifespan of the batteries? What happens when they reach the end of their useful life?**

The batteries have an expected life of around 15 years so will help support customers in the area for a long time to come. At end-of-life, United Energy will look to repurpose or recycle the units.

## **LOCATIONS**

### **Have locations already been chosen?**

We have identified 40 areas within nine Council areas where batteries would deliver the benefits we are targeting. The first will be installed in November 2021, with a further nine to be installed from January to March 2022.

All other locations will depend on the outcomes of further consultation with communities to ensure we are capturing all the criteria appropriate to position the batteries in the best locations to benefit customers and the network.

### **How do you decide where the batteries are located?**

In 2020, we installed our first two pole-top batteries in Highett and Black Rock. Working with customers in these areas has guided the criteria we are currently using to decide where to put the pole-top batteries as part of the Electric Avenue project.

Our criteria were developed to ensure the pole-top batteries have minimal impacts on customers.

In addition to network design factors, we take into consideration:

- Density: The density of housing around the area, set-backs from the road and distance from the kerbside power poles
- Visual amenity: The potential for impacts to views, outlooks or just neighbourhood vistas
- High traffic areas: The distance from areas like school zones or child-care centres.
- Vegetation: The amount of trees and shrubbery in the area that can help shield the visual impacts
- Cumulative impact: Whether there is other infrastructure already in the neighbourhood such as mobile phone towers (in which case adding batteries might create a cumulative effect on visual amenity)
- Proximity: Location of poles based on the width of the street, proximity to private driveways, or other essential infrastructure like traffic lights.

### **Will you consult with customers about the final locations? Do customers get a say?**

We are interested in working with local communities to ensure we are capturing all the criteria appropriate to position the batteries in the best locations to benefit customers and the network.

## **SAFETY**

### **Will these batteries make noise?**

Like many electrical appliances and infrastructure, the batteries emit a low-level noise. The noise is like a low 'hum' - similar to the noise that a refrigerator or freezer makes. It's one of the reasons why the locations we select prioritise sites where there is an appropriate distance to homes.

As part of our focus on building safety into the design of our infrastructure, we have done a lot of work with the battery manufacturer, Thycon, to make sure this noise is low. It has been fully tested to ensure noise levels are within all relevant guidelines and requirements set by the state's Environment Protection Authority (EPA).

### **Will these batteries emit EMF?**

Like everything with an electrical charge, our pole top batteries do emit low-frequency electromagnetic fields, or EMF. Microwave ovens, mobile phones and our powerlines also send out this form of low-level EMF.

As part of our focus on building safety into the design of our infrastructure, there are two key steps we have taken to ensure the EMF exposure of communities is low:

1. the batteries are clad in a casing which greatly reduces EMF from being emitted
2. the batteries will be positioned 3.6 metres high on the power poles which also reduces any exposure to EMF at ground level.

It is important to understand that electromagnetic fields reduce in intensity with distance. The further you are from the source, the lower the intensity of the field. To find out more, please see our factsheet on EMF on our website at: [https://media.powercor.com.au/wp-content/uploads/2021/08/16151136/CHED0251\\_EMF\\_FactSheet\\_A4\\_v4\\_DIGI.pdf](https://media.powercor.com.au/wp-content/uploads/2021/08/16151136/CHED0251_EMF_FactSheet_A4_v4_DIGI.pdf).

### **What's the fire risk with these pole top batteries?**

We believe the fire risk is very low. But it is an important area of study that is very well advanced as part of our planning for Electric Avenue.

Our team has already worked closely with Fire Rescue Victoria (FRV) and other agencies to develop a comprehensive approach for the batteries. In regular meetings with FRV on our Emergency Response Plan, they have confirmed procedures are already in place for how their crews will respond.

We have also had our designs reviewed by an independent specialist consultant. Recommendations for safety in design for the batteries include:

- ensuring the components of the battery are contained in fire rated panels
- installing tilt sensors to disconnect and isolate the battery if the power pole is hit by a vehicle
- ensuring the sites where batteries are installed are at least 6m away from any homes or buildings.

### **In the case of vehicle collisions with poles, which are routine in Melbourne, is there an increased risk of fire or explosion?**

We're confident of the action we have already taken to ensure the batteries are safe in all situations.

Our team has already worked closely with Fire Rescue Victoria (FRV) and other agencies to develop a comprehensive approach for the batteries. In regular meetings with FRV on our Emergency Response Plan, they have confirmed procedures are already in place for how their crews will respond.

As part of the design for the battery, we are also installing tilt sensors which will disconnect and isolate the battery if the power pole is hit by a vehicle.

### **Do these batteries restrict drivers' vision, from a road safety standpoint?**

We do not expect so. These batteries will be 3.6 metres high on power poles which is a similar height to other equipment already on our network. For example, we have more than 3,000 pole mounted transformers in the United Energy network and we're not aware of any visual impairment concerns for these.

## **SIMPLY ENERGY PARTNERSHIP**

### **How does the partnership with Simply Energy work?**

Simply Energy is our energy retailer partner on this project. Customers living in the streets supported by the batteries can expect to receive information directly from Simply Energy about how they can draw down power from the Electric Avenue battery.

The pole top batteries will become part of Simply Energy's Virtual Power Plant program. This enables opportunities to both trade the stored energy and deliver it to solar and non-solar customers.

We will be managing the flow of power in and out of the batteries. That includes discharging to provide extra power on extreme heat days when high temperatures encourage everyone to rely on their air conditioning.

### **How can customers access the power in the batteries? Is it automatic?**

Between 50 and 75 customers will be serviced by each battery.

Customers living in the streets supported by the batteries can expect to receive information directly from Simply Energy about how they can draw down power from the Electric Avenue battery.

They won't notice any difference in their electricity supply when the battery is operating.

### **Are only Simply Energy customers able to access the battery storage?**

Customers will have a choice as to whether to accept the offer made to get involved with the Simply Energy Virtual Power Plant.

Even if they do not participate in the Simply Energy program, they will still benefit from the reliability benefits of the battery and access to renewable energy when we discharge power from the battery to meet local demand.

All United Energy customers will benefit from the batteries.

### **What is the offer from Simply Energy and when will it be released?**

Our team is working with Simply Energy on all project planning. We'll release more information in the next few months.

## **CUSTOMER BENEFITS**

### **How will the batteries benefit customers with rooftop solar?**

For customers with rooftop solar, the battery will help them to get the most out of their investment. Household batteries are often installed so that excess solar energy can be stored to be used later in the day. For example, during the evening when the sun isn't shining and demand for energy in the home is typically high.

Electric Avenue enables solar customers to get the benefit of energy storage without having to pay for the battery. As more people in the UE network connect solar, it will also ensure we have the capacity in the network for them to export excess solar.

### **Are these batteries likely to impact property values?**

The batteries will be similar to other infrastructure already on the network, such as pole top transformers.

We hope communities will see them as an asset in their neighbourhood because of the benefits they offer to solar customers as well as people wanting to use more renewable energy and reduce their environmental footprints.

### **How do all UE customers get a benefit from this project?**

Our priority is to sustain reliable, safe and affordable electricity supplies while also building the capability necessary to offer quality services in the rapidly developing energy market.

While up to 5,000 customers will directly benefit from the 40 batteries, we expect this project will also deliver benefits for all UE customers.

By installing these batteries in network constrained areas, we are able to save money which otherwise might have been spent on upgrades to our networks. The cost of these upgrades in 40 locations would be substantially more than the \$7 million planned for this project.

As a fully regulated business, any savings we make are shared with our customers in the form of reduced network tariffs. Savings like these are one of the main ways we have been able to offer reduced network charges in our current regulatory period (2021-2016). United Energy is one of the most efficient networks in the National Electricity Market.

## **FUTURE PLANS**

### **Does United Energy have any plans to roll out even more of these batteries?**

We'll take the time to understand how these batteries can be used in larger numbers to provide those crucial grid services, but also value for our retail partner, before we make any future investment decisions.

But there's no doubt that there are a lot of possibilities with this technology and we're really excited to see what 40 of these batteries can do. We have interest on this project from local communities and our interstate network counter-parts.

### **Will United Energy introduce ground-mounted community batteries like other networks around Australia?**

Yes we are investigating larger, neighbourhood batteries. In conjunction with CitiPower and Powercor, UE was successful in receiving a grant from the Victorian Government to undertake a feasibility study into locations for neighbourhood batteries.

These batteries would be ground-mounted and able to support up to 280 homes.

The feasibility study involves 12 local government and alliance partners including four in the United Energy region: Bayside City Council, Mornington Peninsula Shire, Manningham City Council, Eastern Alliance for Greenhouse Action. We're looking forward to exploring the further potential for these over the next year with the final report due in June 2022.

### **Why do you think batteries are necessary?**

This is all part of the transformation that is happening in the electricity market. The growing use of rooftop solar on homes was the first part of the transformation that saw our network change from moving power in one direction – from generators to customers – to now be two directional – to include thousands of homes generating power and exporting into our network.

We expect the number of customers with rooftop solar to more than double in the next five years.

So batteries will help ensure these customers can get the most of their rooftop solar. And their neighbours can also share the excess solar power they produce and also participate in a cleaner energy future.

Over time, we expect more people will also invest in electric vehicles and get involved in other energy efficiency programs like demand management. So having a fleet of batteries will help us to accommodate more of these initiatives as well as greater solar penetration and exports.

We know many communities are concerned about their environmental footprints. If we can use more locally produced renewable energy, then we can help meet zero emissions targets.

### **Can a street/neighbourhood/household ask to have a battery installed in their area?**

Not for this trial, but it may be possible in the future if the technology is adopted on a broader scale.

## **PREVIOUS TRIAL**

### **How has the previous battery trial, at Black Rock and at Highett, performed?**

Our trials have been very successful. Both batteries have performed as expected or even better and we've used those insights into planning the current rollout.

The units performed particularly well during summer – both units were operational on the peak demand days. The units were successful in reducing the demand by between 10% and 20%.

This helped customers enjoy greater reliability from the electricity network, with reduced pressure on the network potentially avoiding network faults and unplanned outages.

## **UNITED ENERGY**

### **Who is United Energy?**

United Energy owns and operates the network that moves electricity to and from more than 700,000 homes and businesses in Melbourne's south eastern suburbs and the Mornington Peninsula. Our network of over 13,400 kilometres of wires, 215,800 poles and associated infrastructure supports a customer base of which 90% are households with the remaining business customers including the peninsula's popular tourism industry.

United Energy is playing a critical role in supporting Victoria's clean energy transition. More than 15% of our residential customers have connected rooftop solar to the United Energy network and we're investing in projects and trials investigating community batteries, smart charging for electric vehicles, microgrids and other community energy projects.