

# Webinar Q&A

## The Coming V2G Evolution

On December 15, 2022, QualityLogic hosted a webinar to help the EV community understand the purpose and value of IEEE 1547 and to help the utility community understand the nuances and standardization needed for an efficient, interoperable V2G infrastructure in the U.S. The following is a revised transcript of the answers to questions that came from the attendees.

**How involved are the automotive OEMs in the workgroups for 1547 / SAE 2030.5 / SAE J3072 to ensure appropriate information exchange takes place? In the EU auto OEMs have heavy involvement with CharIN ISO 15118 efforts.**

The Automotive engineers are of course involved in any SAE standards. The bigger question is their involvement in the UL standards for V2G. In the UL 1741 SC working group there are 5 EV OEMs that attend occasionally. The leading EV OEMs are involved in other V2G activities such as the SCE Technical Advisory Board for V2G.

*\*This is a correction from an earlier answer provided during the live webinar.*

**It seems the EU is focusing on vehicle-grid integration from vehicle to grid approach and North America is grid to vehicle approach (ISO 15118). Any thoughts on pros and cons or gaps to either approach?**

So there's a lot of history there. That's one of the reasons we put the V2G Forum and this webinar together because there are really a couple of different

approaches. And they're colliding here in the US. We need to sort that out so that we can get a V2G infrastructure in place.

The European model grew out of a pretty simple need, which was to get vehicles charged, right? End of story, the idea of using vehicles as grid resources was not really on the radar when the DIN SPEC 70121 and 15118 and OCPP were developed. They were focused on how do you do a good job of charging. And I have to say, if you look at the reliability of charging today, and the standardization, and interoperability OCPP, there are problems. They've been recognized by the Alliances, the State of California and the US Department of Transportation. There's a lot of time and money going into solving the charging interoperability problems.

In the US, we've got a more holistic view, where V2G has been around for a long time as a thought process. And a lot of work that's gone on for years to demonstrate V2G capabilities and the viability of it. Now we're at the point where it's been proven as valuable enough that in order to scale it, we need to standardize it. And so that's what we're working on. The US is charging down the road (no pun intended)

to standardize and implement a national charging infrastructure, without giving enough thought, in my opinion, to how that's going to support V2G infrastructure. I can share a lot more thoughts on the different approaches, and how we're going to get there, but come to the V2G Forum, if you want to learn more and help solve the challenges of V2G scaling.

### **Does OSCP / OCPI support grid support function?**

I don't know those standards very well. But I seriously doubt it, because the Open Charge Alliance's focus is on the standards you need to enable an efficient, scalable charging infrastructure. I know OCA is definitely discussing and planning to do some serious work on supporting 1547 functions, but it's not clear how soon that will be in place.

### **When do you believe that V2G support features will include inertial response?**

So I'm not an electrical engineer, but the 1547 requirements? I don't believe that 1547 handles that area. That may be the next revision of 1547. Or maybe just not something you expect out of the DERs.

### **The charging station must be certified to UL1741 SC and the onboard inverter is certified to SAE J3072. Right?**

Correct for a V2G-AC application when the inverter is on the vehicle itself. We don't have any way of doing certification yet, because we haven't finished the 1741 SC standard, though we're meeting twice per week to work on it. But when that's done, we can expect at least California utilities will ask for a UL 1741 SC certification for V2G-AC. And then the J3072 for the vehicle is a really interesting question, because no one's actually developed a test standard for that yet. The vehicle manufacturers typically haven't been subject to third party certification testing. So that's a whole discussion on itself.

### **What are the applications of V2G?**

So there are a lot of applications. Some are the same applications as interconnected solar or battery storage. Rooftop solar is to generate energy and sell it back to the grid. There are some programs emerging to pay for energy coming from batteries. So that's one obvious use case. The other ones that we've talked about are supporting grid stability and reliability with the 1547 functions. California did a couple of rounds of what they call the VGI, vehicle grid integration, working group, trying to understand this. At the last working group, they had over 2,500 use cases they identified. Many of them were V1G, but there were a lot of them that were V2G also. So if you really want to see all the use cases, they published a pretty good documents (see [GW\\_VehicleGrid-Integration-Working-Group.pdf](http://gridworks.org) ([gridworks.org](http://gridworks.org))).

### **What's the big picture for moving inverters to the EV?**

There are some companies building vehicle specific inverter technology, and putting it in the vehicles, it's quite a process, because you're taking something that's been designed as a standalone inverter system where weight and real estate are less critical and now you're putting it in a vehicle that's with concerns about weight, and about space, and you got to put in all those electronics and other components. So, it's a challenge, but certainly there are a number of EV manufacturers that are already doing it. And one of the main motivations is that their customers would like to have power sources that are mobile. So, that's as close as I can get I think to the big picture.

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