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# The secret to healthy public charging infrastructure:

Leave the 'project' mentality behind and give it business model vision.

The critical path to healthy public charging infrastructure is planning for all aspects of experience and operation. Most unforeseen challenges can be overcome with the right formula from the start.

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ABB has been developing and deploying thousands of advanced EV charging systems for nearly a decade.

Charging infrastructure should never be viewed as just a procurement and installation project; and healthy public charging infrastructure planning should always be viewed through a business model lens. With the right planning and vision, it can be a great enterprise, but it demands attention to some key success ingredients.

How EV drivers need to engage with charging infrastructure, beyond the delivery of electrons to batteries at varied rates, shouldn't be a secret. Fortunately, ABB is several years into many EV infrastructure deployments around the world, and we have learned some very key things along the way.



It may sound odd coming from a large hardware manufacturer like ABB that charging infrastructure is much more than hardware, but we absolutely see it that way. The adage that 'the whole is greater than the sum of its parts' holds extremely true when it comes to EV charging infrastructure.

Don't misunderstand, choosing the best hardware is the first foot forward. Bias notwithstanding, ABB makes fantastic, future-proof equipment and we have crafted intelligent software for the most advanced, connected DC fast charging technology available anywhere in the world. But no equipment nor software will do well with unengaged site hosts, or non-solvent, reactive network operators; nor will it be as healthy on closed, proprietary networks that lock-in owners and sites with no flexibility to choose the best possible solutions.

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#### **Examine 360 degrees around the charger**

What's all part of that 360 degrees? It's the overall business vision, siting, connectivity, reliability, user experience, services, maintenance, site engagement and partner solvency. All of these aspects stack up and equate to a positive driver experience. These pieces of the puzzle will draw in multiple entities working harmoniously to achieve the same positive outcome:

- the hardware manufacturer who engineers the charging technology and connectivity solution
- the network operator who will be the face to the consumer, enabling the payment interface and perhaps membership plans
- the charging equipment owner, who may sometimes also be the network operator and sometimes the site host
- the automaker who works closely with hardware and technology providers to ensure compatibilities; and may work with dealers and networks to promote consumer engagement
- the local utility is a critical partner for connecting charging stations to the grid; but also may also support the installation, and work closely with owners and sites on issues of managing demand; the utility may also be an owner and/or operator in markets where utilities may engage that business model
- the maintenance and service team(s) who may be affiliated with any of the aforementioned players; or a contracted specialist of the owner; either model can be equally effective
- the site host who may support all of these companies with the location's administrative support, as well as general consumer and driver-specific engagement

We've seen projects that start with a 'build it and they will come' planning philosophy. The good news is that yes, they will come. EV drivers are increasing every month with hockey stick projections over the coming years. But when they arrive, what will they find? A station that is well managed on a healthy, player-engaged network with a 24/7/365 philosophy for driver satisfaction? Or a station managed by a host who figures out that he or she doesn't want to deal with a 24/7/365 business? Or a network operator that only cares about collecting payments, while relying solely on warranties rather than proactive planning, maintenance, parts and systemic operations?





### Interoperability means choice

Interoperability is a major key to infrastructure health, especially in the DCFC deployment game. One should never agree to be locked into a single vendor or a single technology. Industry accepted best practice protocols such as OCPP allow deployment planning that can leverage the best fit among hardware, networks, back-office systems, consumer payment experiences, data ownership philosophies and site management options.

Any company that says, “We can do it all for you but we choose everything for you,” is not a future-proof partner for infrastructure planning. Beware of the company that claims to be good at everything, as the list of players in the charging infrastructure value chain comprises varying disciplines and specialties.

For example, being the best at charging technology, safe, grid connected systems and device connectivity does not make a hardware company good at developing consumer-facing payment systems. Likewise, the experts on back office accounting systems, app development or consumer membership engagement are rarely going to be electrical engineering powerhouses. Even the most ubiquitous real estate entities may not have the on-site staff at every location for maintaining sophisticated electrical equipment.

This is not to say that there can't be areas of specialty overlap with potential. When an owner is also an operator, we have seen very successful models where capital investment and operational plans are intrinsically tied to consumer engagement and success. Still, the principle of interoperability among all these layers of value gives rise to the most market choice, as well as the most future-proof, competitive and healthiest systems seen in the market.

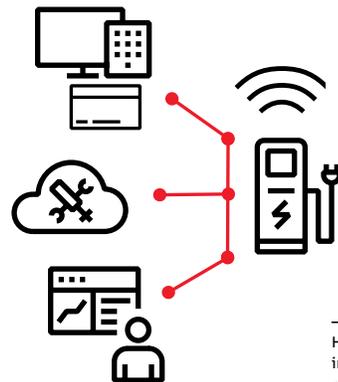


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### Healthy versus unhealthy public charging

There are key issues in the public EV charging space that are of high interest. Sometimes they are heatedly debated for a reason: because they really do impact EV drivers and consequently, EV adoption. These points of consideration that point to best EV charging deployment practice include:

- Hardware
- Business models
- Deployment philosophy
- User experience
- Data management
- Service models



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Healthy charging infrastructure is open, connected and maintained by its owner and operator.

## Healthy Infrastructure

## Unhealthy Infrastructure

	Healthy Infrastructure	Unhealthy Infrastructure
Hardware	Charging stations built with the <b>highest quality</b> hardware in materials and redundant architecture; with safety and serviceability in mind for highest uptime and lowest cost of ownership.	Cheaper hardware, usually thinner materials not robust for all climates and environments; non-redundant architectures, higher maintenance, lower uptime and shorter life.
Business models	Charging networks deployed with <b>business model vision</b> , and operational health as part of overall plan.	Deployed as a finite 'hardware and installation' project as the only cost considerations; not viewed as a business.
	<b>Interoperable</b> solutions with interchangeable choice of hardware, operations and services, with access to all current and potential technologies.	Non-interoperable solution where owners and sites have no choice in hardware, payment models, prices or services.
	<b>Solvent</b> deployment partners with healthy balance sheets that are serious and committed to the operational life of the charging infrastructure.	Deployment partners with precarious financial backing, or those driven more by passion than vision; untested solutions and/or unknown companies.
Deployment philosophies	Charging technology mix that is <b>right-sized</b> for the driver; such as DC charging at quick stops and AC charging at workplaces.	Charging technology that doesn't fit the driver use case, such as slow AC at a grocery store or fast chargers for overnight hotel guests.
	<b>Multiple charging points</b> at a single site to fully leverage a site installation as well as serve driver convenience.	Single unit sites that create wait times, lack operational redundancy and frustrate drivers.
	<b>Seasoned siting</b> partners who have deep knowledge of ADA, permitting, vehicle orientations, safety certifications and driver comfort.	Installers with no EV experience who are just tasked with finding a decent place to run conduit.
User Experience	Centralized, <b>integrated</b> operation, with uniform driver interaction and payment methodology (ex. 50 chargers with common owner/operator model).	Fragmented ownership and operational model (ex. 50 owners with 50 different consumer experiences and 50 ever-changing site management contacts).
	Harmonized <b>customer service</b> point of contact for drivers.	Each site has an inconsistent and not always present point of contact for drivers.
	<b>Flexible payment</b> options that accommodate both in-network and roaming customers.	Proprietary network membership and payment methodology reliant upon a single app or membership card.
Data availability and management	Complete <b>access to data</b> for insights into usage, telematics, commercial and other charging data.	Limited or selective access to data; closed/proprietary model for data ownership.
Services	Owners and networks with <b>proactive service</b> and operational planning; work cooperatively with technology providers, owners and site hosts.	Reactive network operators with no plan nor process for preventive services, maintenance and parts planning; rely solely on warranties for uptime.

— Key points of infrastructure planning will set the tone for success or failure for any charging deployment.

### Recipes for success

There's no single, precise recipe that will hand anyone an automatic win, guaranteeing that session revenue will roll in without any operational cares in the world. Yet understanding what should be embraced and what can be avoided early on will give infrastructure developers a significant head

start against the worst outcomes. Successful charging enterprises then also benefit the whole EV industry. As EV adoption grows, drivers will rely more and more heavily on public infrastructure for range enablement and consumer confidence. Done the right way, everyone can benefit from a bigger and more economically sound electrified transportation future ahead.





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