

Agreeing on standards is a key to electric vehicles

February 16 2015, by Stephen King



Tesla S

Standards are a key part of technical progress and for the increased use of renewable energy.

Solar power provides an obvious example. If a photo-voltaic unit is used to put power back into the electricity grid, then the power needs to satisfy the [standards](#) for the grid in terms of voltage, cycles-per-second,

and so on. These standards have been established for traditional generation and transmission and will continue for solar systems and local battery storage.

However, some [new technology](#) will not be able to rely on existing standards. A simple example is [electric vehicles](#) and recharging stations.

Standards will be a key to the success or failure of all-electric vehicles. An electric vehicle may be used simply for urban travel with overnight charging. But the vehicle is a lot more useful if it can be used over long distances and can be easily and rapidly charged at convenient locations during a journey.

Currently hybrids are used to solve this problem. A traditional petrol engine is used to back up (and potentially recharge) the electric engine. But hybrids are more like fuel-efficient traditional cars, not electric vehicles.

All electric vehicles will only push out traditional petrol cars if they have a longer range and can access a network of recharging stations.

Unfortunately, building a network of recharging stations is an expensive up-front investment. It is only useful (or profitable) to build a network of recharging stations if they are compatible with a wide range of electric vehicles and there are enough of these vehicles in use.

This 'chicken and egg' problem brought down Better Place. It will guide – or undermine – electric vehicles more broadly.

Economics has long analysed the problem of standard setting, and there are a range of potential solutions.

A government can simply mandate a particular standard and require that

manufacturers selling in their country use that standard. That solution can lead to a uniform standard if other countries follow. However, governments can easily choose standards that turn out not to be the best for manufacturers or consumers. And if the rest of the world does not follow the lead country then it can be left behind.

For example, if you get annoyed by having to use adaptors for electric appliances and being careful about the voltage while travelling overseas, then thank the governments who set different standards. Similarly, if you ever wondered why railways in NSW, Queensland and Victoria all have different widths (or gauges) thank government standard setting. The colonial governments all set different standards, ruling out a national railway network.

Alternatively, the standard setting can be left to the market. Products battle out until one emerges as the dominant standard and the others are driven out. But this has three problems.

First, there is waste as consumers get stuck with the 'wrong' product that becomes obsolete. (Do you or your parents have a Betamax video player sitting in a broom closet somewhere?) Second, it can lead to good products failing, as consumers wait to see which standard wins before they are willing to buy any product. Third, the winner may not be the best standard.

Finally, a consortium can try and set the standard across a number of businesses or countries. This approach is used in mobile phones. However, standard setting organizations controlled by business may not necessarily choose the best standard. Each member will be keen to promote a standard that uses its own intellectual property. And, if successful, the companies may choose to profit from their patents by charging monopoly prices. [China recently fined Qualcomm](#) for exactly that behaviour.

Standard setting organizations cannot ignore business. After all, it is the individual manufacturers who need to adopt a standard and incorporate it into their products. A standard setting body purely based on government and high-minded engineers may choose a high-cost standard that is impractical and no one wants or uses.

Put simply, there is no easy answer to the best way to set standards for new technology, including recharging stations for electric vehicles.

But we need to work out an approach soon. The alternative will be a range of ad hoc and inconsistent approaches adopted around the world.

For example, China has gone with a government-set standard. It has built a series of [fast recharging stations](#) every 25 kms from Beijing to Shanghai.

But the standard used by the recharging stations means that, at present, they can only be used for four types of vehicles. Unsurprisingly these are all vehicles either produced by Chinese companies or by international firms that have joint ventures with Chinese companies. The recharging stations use a standard that is incompatible, for example, with Tesla and BMW electric vehicles.

China may hope that its 'first mover' approach forces other countries to adopt the same standard. It may be right. But history is littered with first-mover losers in standard setting (for example, the standard set for analogue televisions).

The major manufacturing countries could get together at a government level to try and establish a standard. This may take some doing. The US and EU appear to rarely agree on anything when it comes to economics and technology. Add in China, with a vested interest in protecting its existing system, Japan and others, and I suspect we will still be waiting

for agreement on a standard when cars (and possibly people) have become obsolete.

Alternatively, government could facilitate a manufacturer-based standard-setting organization that includes the major producers of electric vehicles such as Tesla, BMW, Honda and GM. 'Traditional' car makers will not be invited.

This approach may not lead to the best standard. It may lead to potential abuse of market power and future competition cases. But the manufacturers themselves have the greatest interest in quickly developing a global standard for recharging. This will mean they can sell more electric vehicles and make more profit. And this is a situation where the profits of the makers of electric cars, the interests of the public in more usable electric cars, and a better environment, are all aligned.

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