

**Better Place's Contribution to the European Union's Consultation on accounting methods and conditions for the 10% renewable energy in transport target – and on the need for additional types of biofuels being listed in Annex III of the Renewable Energy Directive**

***June 2011***

Who we are and what we do

Better Place is the electric car network that makes driving more affordable, convenient and sustainable through a revolutionary switchable battery model. Better Place is building the infrastructure and intelligent network to deliver a range of services to drivers, enable widespread adoption of electric vehicles, and optimize energy use. The Better Place network addresses historical limitations to adoption by providing unlimited driving range in a convenient and accessible manner. The company works with all parts of the transportation ecosystem, including automakers, battery suppliers, energy companies, and the public sector, to create a compelling solution. Based in California and privately held, Better Place has operating companies in Israel, Denmark, and Australia.

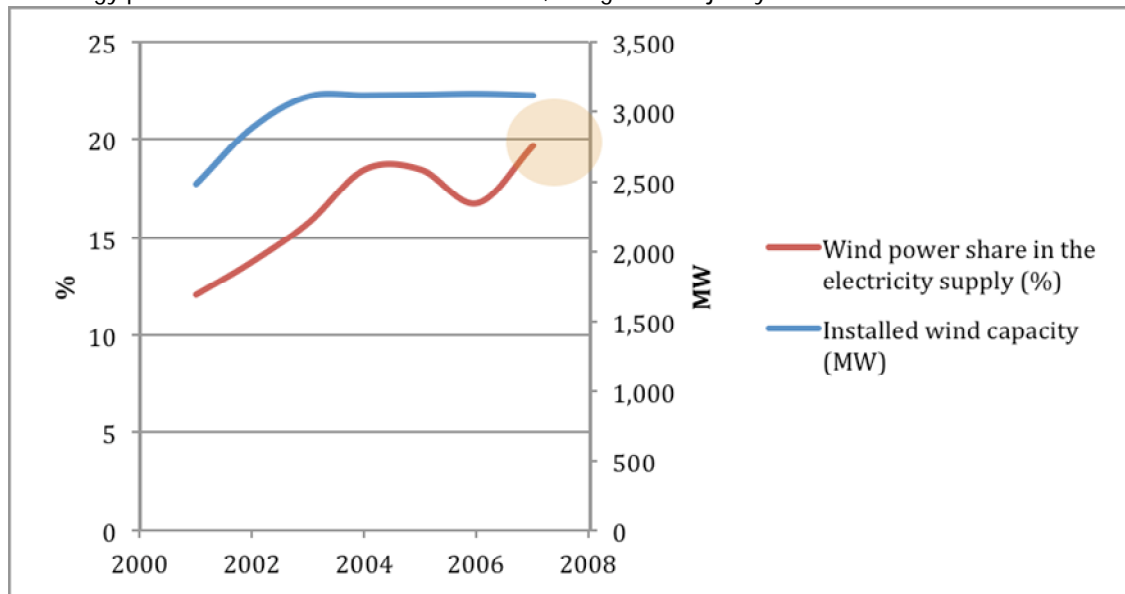
EVs and the 10% Renewable Energy Target of the EU

Better Place welcomes the European Commission's initiative to require 10% of the energy of the transportation sector to come from renewable resources by 2020. The opportunity to offer comments regarding the implementation of said rule is very much appreciated.

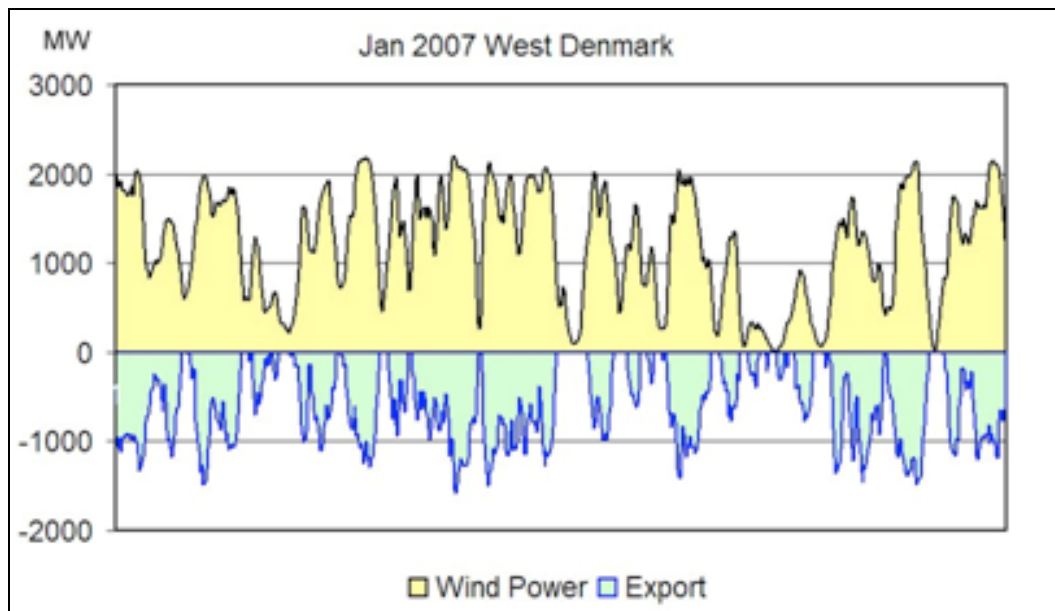
The electrification of transportation offers the energy sector either a great opportunity or an eminent threat, depending on the way it is planned and executed. EVs offer renewable energy a huge advantage, when adopted and managed properly: When charging infrastructure is managed properly, EVs not only shave-off demand peaks and fill-in demand valleys, but they enable the use of more intermittent renewable energy, which would otherwise go to waste. On the other hand, if charging control is unavailable, mass charging could have a destructive effect on the grid, would require added capacity and transmission infrastructure, and may even cause it to collapse. It is crucial that the former is implemented rather than the latter.

This situation is especially important for the wider adoption of renewable energy, in light of its intermittent nature: most of the renewable resources (with the exception of geothermal and hydro), namely solar and wind energy (but also tidal energy to some extent), suffer from an inherent constraint – they are intermittent. Since there are always cloudy days, still afternoons, and lower tides, these sources of power are generally viewed by the energy sector as unreliable and invaluable without the added storage or transmission capacity, necessary to enable the full realization of their potential. However energy storage capacity and transmitting grids are very limited and require substantial investment in order to be set up. Under the current market conditions, in many cases it makes no economic sense to invest in renewable power production. Thus, EVs, with their built-in storage capacity, offer a tremendous opportunity, and enable the wider adoption of renewable energy on the grid, when charging smartly.

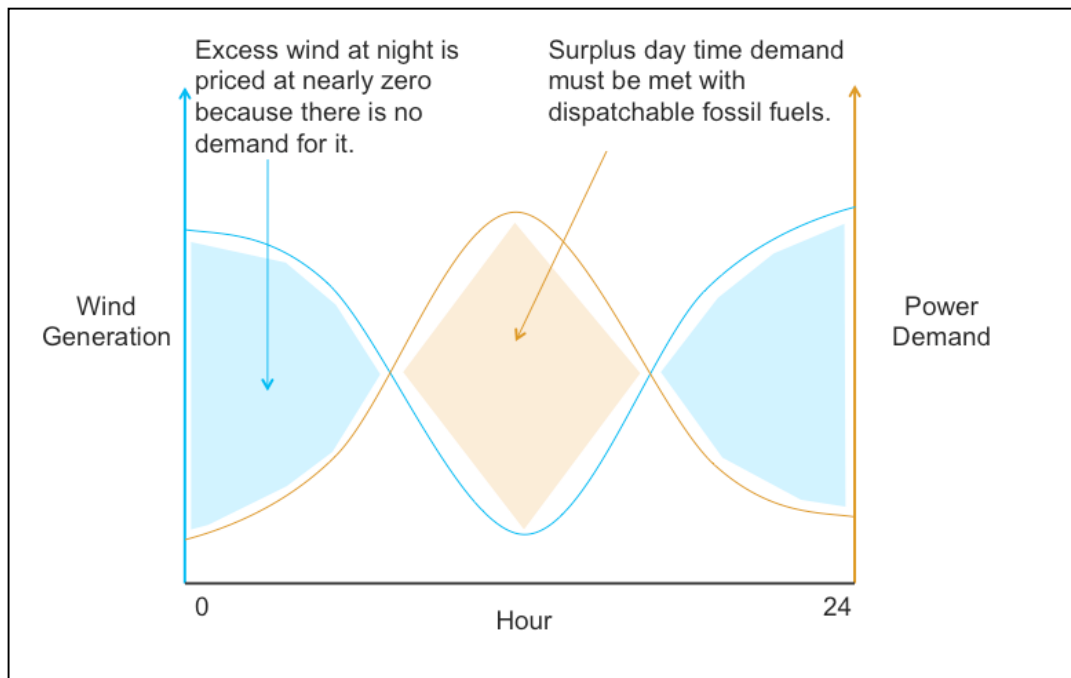
Denmark is a perfect showcase for the opportunity. Today Denmark already has 20% of its energy produced from renewable resources, the grand majority of which is wind:



Supply is leveling off mainly due to the lack of storage capacity for the excess nighttime power, when the wind blows hardest. Thus most of that power is exported at a loss:

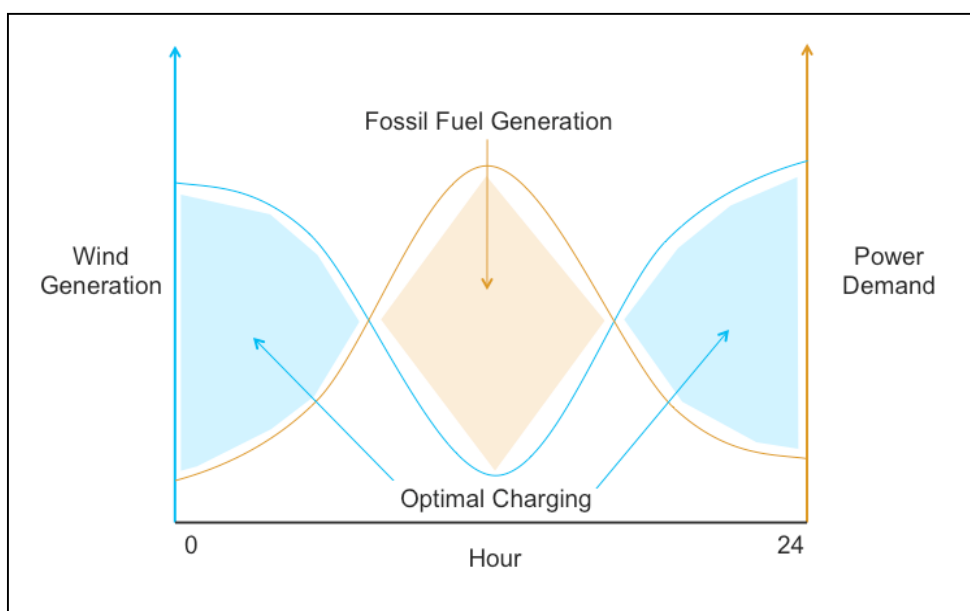


The situation is therefore such that does not promote energy efficiency:

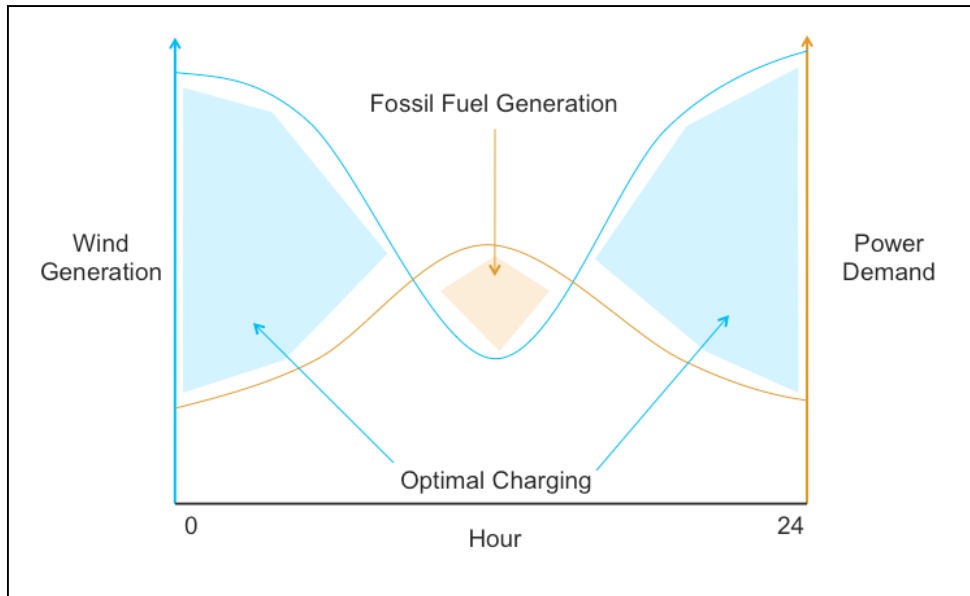


A fleet of EVs which is not managed using smart charging would create a greater burden on the grid, and a wider disparity between demand and supply. This is because most EVs would be plugged in during the day, while their owners are at work, as well as during the evening and night, while their owners are at home. However the access capacity coming from wind energy is mostly at night, by which point the majority of the EVs will have already been charged.

Alternatively, centrally managed EV fleets that have smart charging, can be managed to match charge times to availability of wind – charging mostly at night hours when cars are in the garage anyway, and when there is ample renewable energy supply :



Thus more EVs will actually enable more wind capacity , which in turn displaces more fossil fuel generation because wind is cheaper on the margin:



In essence the efforts to promote renewable energy are not only served by the mass adoption of EVs, the mass adoption, when managed correctly, actually enables the wider use of renewable energy on the grid.<sup>1</sup>

In light of the above, it is crucial to promote smart charging for EVs, rather than simply promoting EVs. For smart charging to work at scale there are a number of elements that are pre-requisites: Two-way communication between the socket and/or the EV (BMS) ; Real-time, flexible control over the socket or BMS (to be able to “valve” the energy flow up or down) ; and network operating center that can aggregate the sockets (and associated load) and coordinate charging with utilities and grid operators. In fact, countries around the world are now coming to this realization and are considering making smart charging or real time load management a legal requirement. Perhaps the leading country in this respect is Israel, when the government recently announced smart charging as a requirement for all EV charging infrastructure.<sup>2</sup>

The proposal to permit, subject to certain conditions, the whole amount of the electricity used to power electric vehicle to be counted towards the 10% target, is therefore counter productive to renewable energy, unless it is matched with a condition requiring smart charging. Without this precondition, EVs will not only create a bigger burden on the grid, but their charge when plugged in, would work against renewable energy. Alternatively, it would be justified to count the whole amount of electricity in electric vehicles as renewable if there is

<sup>1</sup> For more on this matter and other assessments relating to grid load management see <http://www.edison-net.dk/Dissemination/Reports/D3.1.aspx>

<sup>2</sup> Israel Ministry of infrastructure Government Decision, December 6<sup>th</sup>, 2010.

either a supply contract or a tradable certificate showing that the said amount of renewable electricity was indeed generated.

We would therefore suggest that smart charging be added as a condition, without which one would not be able to count the whole amount of the electricity consumed by EVs towards the 10% goal. Alternatively, we would suggest that a supply contract or a tradable certificate be required.