

better place



March 15, 2010

Mr. Philippe JEAN
Head of Unit F1
DG ENTERPRISE & INDUSTRY
45 Avenue d'Auderghem
1040 Brussels

Dear Mr. Jean,

In reply to the Commission's request for input on the "European Strategy on Clean and Energy-Efficient Vehicles", please find below our response along with attached relevant public research.

We remain at your disposal should you need additional information.

Sincerely,

Marianne Wier

Better Place Denmark A/S

The Switch to Electric Transport is Inevitable

As we presented at the public hearing on 11th March 2010, we believe that the switch to electric transportation is inevitable and that Europe has the opportunity to lead the transition.

Today, there is a conservative estimate of approximately 700 million internal combustion engine (ICE) vehicles globally. Each tailpipe on average emits approximately 3 tonnes of CO₂ or more annually. We consume 85 million barrels of oil per day and our fossil-fuel cars emit approximately 2.1 billion tonnes of CO₂ annually. Europe's estimated 231 million cars emit approximately 924 million tonnes CO₂ annually.

Of the 700 million tailpipes, if we estimate that Europe, the US, and China each represent about one-third of the total market today, we see that China is now outpacing the world in the domestic consumption of cars.

At a compound annual growth of just 5% globally, the total tailpipe population will reach one billion tailpipes by 2020, increasing the world's dependency on oil while simultaneously increasing the amount of CO₂ released by the auto sector.

Without a doubt, in the past two years alone, the industry has seen automobile manufacturers announce major EV programs. At least 20 auto OEMs are planning for at least 24 EV models to hit the market in 2012.

Market research by Deutsche Bank, Merrill Lynch, HSBC and others forecast EV market penetration of total global sales reaching at least 17% by 2020.

HSBC recently concluded, "We think electric vehicles will revolutionise the auto industry and bring the era of cars with internal combustion engines to an end.

Technological problems and high costs are the main obstacles preventing a breakthrough for now. Sooner or later, those issues should be resolved, then the revolution can begin."

By the year 2050, worldwide energy demand is projected by the World Energy Council to be at least double its present level. Earlier this month, *The Wall Street Journal*, in an interview with Royal Dutch Shell CEO Peter Voser, reported: "[T]he world will need many sources of fuel, including oil. He [Voser] predicted electricity would be needed to power 40% of the world's automobile fleet by 2050, when he predicted it would double to two billion vehicles from one billion."

As Deutsche Bank recently remarked, "This is the end of the 20th Century of Oil; we are entering the 21st Century of Electricity."

Europe Risks Losing the Sustainable Mobility Race to Other Regions, notably China

Europe has the opportunity to lead the market transformation toward sustainable mobility both as a stimulus for domestic economic growth, export opportunities and environmental leadership. However, Europe must recognize the aggressive steps that a command economy like China is taking to leapfrog ICE cars and go electric.

Why? Because only 2% of China's population today own ICE cars versus 48% in the US, 40% in Japan and 47% in EU. China recognizes that it stands on the verge of an enormous environmental and economic catastrophe if it doesn't reduce its dependency on oil through the electrification of transport.

In the past 16 months, China has raced ahead the US – and threatens Europe's lead – by making EVs (along with clean energy) one of its seven strategic industries for sustainable development in 2010 and beyond. Chinese industry views EV as a leapfrog development opportunity to get rid of its technical dependence on the US, Japan (petrol engines) and Europe (diesel engines).

In this short period of time, China has taken the following steps:

- Set an EV manufacturing capacity target of 500,000 vehicles annually by 2011;
- Mandate of 5% of total domestic sales of passenger autos be “new energy” vehicles must reach by 2011;
- Establish the EV component supply chain and energy infrastructure by 2011;
- Identified 13 cities for EV projects and will name seven additional cities in 2010;
- Set a subsidy of 60,000 RMB (approx. 6,414 EUR) per EV subsidy for government and corporate buyers of EV; and
- In 2010, the government will choose 5 cities to be the pilots to extend this subsidy to private buyers.

While EU nations including France, Spain, Denmark, the Netherlands, Portugal and others have adopted favorable EV policies, a pan European policy and regulatory framework is needed now to ensure that Europe captures the leadership position for a global market transition poised at displacing an estimated \$3 trillion oil industry.

Further, the European EV supply chain already is coming together with battery production in France and Portugal, EV production in France, and infrastructure projects underway in Denmark, France, UK and the Netherlands. National policies have signaled to industry that EV represents a market opportunity with societal benefits. Unless the EU comes up with a supportive strategy and action plan, we are risking more than one billion EUR already invested and may cede the market to China and potentially the US, Canada, Japan and Korea, which are mobilizing industry behind EV.

High Mileage EV Drivers Are Key to Grid De-Carbonisation

Electric vehicles represent the greatest opportunity for de-carbonising the grid by eliminating tailpipe emissions and enabling more sources of renewable generation to come online. Moreover, the longer the range for the electric vehicle, the more contribution made to de-carbonisation.

Batteries in electric vehicles represent distributed storage for utilities to harness additional renewable sources to charge the batteries when cars are parked.

Unmanaged, EVs add to peak load and impact distribution systems. When intelligently managed, no new generation of distribution system is needed according to studies conducted by Energinet.dk of Denmark and Israel Electric Corp., thus reducing the need for additional fossil fuel-based smokestacks.

Moreover, as electric vehicles and batteries scale, utilities are able to harness additional amounts of renewable generation by either using the flexibility in the charging schedule from the EVs as well as store it in the batteries. At scale, this distributed storage of renewable generation stored in batteries also will serve as a reserve energy base for when utilities need to plan for spikes in demand, again reducing the need for firing up smokestacks.

At the city level, the World Health Organization and the American Lung Association of California, among others, have estimated a dramatic decrease in urban pollution and respiratory disease when the tailpipe is eliminated.

In its March 2008 report, the American Lung Association in California concluded:

“Converting the automobile fleet from gasoline to completely zero emission technologies would save \$142 billion in the 2010 – 2030 timeframe, or \$96 billion more than relying on the cleanest gasoline technologies. This savings includes savings from reduced air pollution health impacts and reduced global warming impacts to the society (including impacts to air, water, energy forests and other sectors). The conversion to ZEV technologies would also provide California with a significant portion of the emission reductions needed to meet AB 32 (Nunez/Pavley) greenhouse gas reduction targets in 2020 and the long term greenhouse gas reduction targets set by Governor’s Executive Order S-3-05 for 2050.

“The study also found that California can avoid at least \$2.2 billion per year in health costs from exposure to directly emitted fine particulate matter (PM 2.5) by converting the motor vehicle fleet to ZEVs instead of relying on cleaner gasoline technologies, in addition to reducing exposure to other pollutants. Three hundred cases of premature deaths could be avoided annually or a total of 6,000 premature deaths could be avoided by 2030 by

a complete transformation to zero emission vehicles. In addition, over 260 cases of chronic bronchitis, over 7,000 asthma attacks and over 18,000 cases of upper and lower respiratory symptoms could be avoided each year by a complete transformation of California's motor vehicle fleet to zero-emission vehicles."

Citigroup Global Markets also concluded:

"One of the greatest threats to supportive policy is the environmental integrity of the shift of road transport to electricity from petrol and diesel. Whereas electric cars are highly efficient in their tank-to-wheel usage of fuel (electricity), the traditional petroleum industry is highly efficient in delivering gasoline and diesel to car tanks worldwide. Indeed, if we consider the whole emissions chain from generation to driving, emissions of hybrid cars like the Toyota Prius and small diesels rival full electric vehicles that take their electricity from power grids, as currently operating in Germany and the UK.

"However, by charging on power grids with a higher percentage of low-carbon generation such as nuclear, wind, hydro or gas, such as in France, Portugal and Italy, electric driving has a positive impact in overall emissions. This impact will increase over time as power grids introduce more renewables, nuclear or other low-carbon generation to remain within the limits of the 2020 cap set by the European Emissions Framework. Furthermore, conventional cars are getting closer to the limits of the theoretical efficiency of combustion engines and are unlikely to improve much further. Electric cars emit marginally less CO₂/km than highly-efficient hybrid gasoline and diesel vehicles if charged by current European Grids...

"A final approach when considering the emission benefits of a shift to electric vehicles comes from the transfer of CO₂ point source emissions into the EU Emissions Trading Scheme. Every car which genuinely makes the shift from fossil fuel to electricity (i.e. is not replaced by a gas guzzler) could be considered a 100% reduction in CO₂ due to the absolute cap on power generators' emissions, which will not rise in response to increased electricity demand to 2020. This is a clear win for national governments struggling to meet regional headline targets. Simply converting cars to electricity removes them from the headline emissions total in the eyes of policy makers."

All told, the more electric vehicles win mass-market adoption in the European Union, the more the industry will contribute to achieving the EU's 2020 goals and support green growth for the EU region.

Consumer Choice Is Paramount

Consumers should have a choice of make and model of electric vehicle and service provider and be able to seamlessly “roam” across charging networks.

The EU should encourage competition among all players so that consumers benefit from more choices, lower prices and innovative services.

Any EV industrial policy should promote “interoperability” of network standards and interconnection points and adherence to international standards so that drivers have non discriminatory access to all charging infrastructure.

Better Place is actively working with the international standards bodies and is building our network on industry-standard building blocks and in discussions with many of the major auto OEMs to ensure that consumers have the ability to choose and roam seamlessly across networks. However, the EU could help advance the EV standards agenda.

Better Place welcomes the European Commission’s decision to issue a mandate to CEN/CENELEC in 2010.

EU Action Is Needed Now

EU action is needed now for a top-down policy and regulatory approach versus a bottoms-up approach, which will fragment the internal market and cede the leadership position to centrally commanded economies like China.

EU policy must remove the remaining obstacles for electric vehicles and propose guidelines for national, demand-side measures to achieve greater market uptake.

Other nations around the world – Japan, Korea, Australia, US and Canada – are mobilizing industry to ensure a competitive leadership position in the EV race.

About Better Place

Better Place is six months away from testing our complete solution for charging infrastructure for Renault electric vehicles and 15 months away from commercial launch in Israel and then Denmark.

We are currently in a development cycle of our charge spot infrastructure charging fixed battery vehicles with a variety of OEMs in Copenhagen.

In April, we will begin the next stage of our development cycle of our battery switch technology applied to taxis in Tokyo at the request of the Japanese government.

Later this year, we plan to test all components of our entire system in Israel.

We are evaluating European partners to build and deploy the first 100 battery switch stations.

Our first commercial launches occur next year in Denmark and Israel where we will have nationwide networks of charge spots and battery switch stations so that consumers can drive from one end of the country to the next.

With our recent \$350 million of Series B financing from HSBC, Lazard Asset Management and Morgan Stanley Investment Management, we are formulating our plans for future growth with a clear focus on Europe.

After its recent visit with Better Place in Israel, Deutsche Bank concluded, “We see Israel as one of the test beds for mass market EV penetration. We visited Better Place in Israel last week and note that the company expects to have completed deployment of its first 30,000 Charge Spots and 70 Battery Swap Stations by the late next year (Denmark will have 20,000 BP Charge Spots deployed by next year).

“This contrasts sharply with the much more limited EV Infrastructure activity that is occurring in markets such as Germany, Portugal, the UK, and the U.S., where governments are interested in adopting EV-friendly policies, but where there is no private sector company singularly focused on infrastructure deployment.”

Better Place invites the European Commission as well as Member States representatives to come to Israel, our first market, to see a sustainable transportation network being rolled out today.

The company is diligently pursuing an expansion strategy with Europe at the forefront, however, the EU and its Member States need to strengthen the EV policy signal sent, not diffuse the signal, in order to protect investments made to date and more importantly, encourage more investment in green job growth and economic opportunity.

Better Place Answers to DG ENTR Questions

1. Should the vision agreed in the CARS 21 mid-term review be now adjusted (i.e., 2020 perspective of improved combustion engine’s market dominance combined with growing market penetration of electric and hydrogen vehicles and hybridisation conceived as the bridging technology and 2050 perspective of transport decarbonisation) ?

Yes. Better Place thinks that the vision in the CARS 21 mid-term review report should be adjusted so as to include the growing market penetration of EVs. In a report from October 2009 on *Hybrids and electric vehicles: hype or sustainable investment? The truth about market potential and investment ideas*, HSBC Global Research notes that “electric vehicles will revolutionise the automotive industry and bring the era of cars with internal combustion engines to an end.”

The vision needs to reflect the following factors:

1. The uptake by nearly all of the auto OEMs to produce EVs; as way of example, since the Paris Motor Show in September 2008, electric cars have been the theme of nearly every major auto show since then;
2. A Deutsche Bank report has a complete list of upcoming EVs , PHEVs and HEVs at page 105, which indicate that plenty of models will be launched the upcoming years;
3. Less than two years ago, oil reached \$147/barrel, causing a spike in retail petrol prices that impacted both food and fuel costs; government and industry were ill prepared to ease the pain inflicted on consumers and there is a real opportunity today to inoculate against future oil shocks through the electrification of the transport sector;
4. Hydrogen fuel cell technology continues to remain “10-15 years away” despite decades of research and last year, US Secretary of Energy Stephen Chu dramatically reduced DOE funding on hydrogen programs, saying, ““We asked ourselves, ‘Is it likely in the next 10 or 15, 20 years that we will convert to a hydrogen car economy?’ The answer, we felt, was ‘no’.” In the same report mentioned above, HSBC Global Research concludes that “today, fuel cells seem to be no real competitor to the electric car.”

Furthermore, Better Place reiterates its interest to participate in the meetings of the CARS 21 high-level group.

2. What is the potential of different clean automotive propulsion technologies (improved fuel efficiency, hybridisation and alternative powertrains) for contributing to decarbonisation objective in the short, medium and long term? What is the decarbonisation potential of the complementary measures in the short, medium and long term (e.g. guidelines on eco-driving, application of Intelligent Transport Systems) and how reliable are these potentials?

In the two plus years that Better Place has been working with Renault on electric vehicle and infrastructure technology, we have seen Renault announce four electric vehicles, two of which include switchable batteries for our networks in Israel and Denmark.

We have committed with Renault to a volume of at least 100,000 switchable-battery electric vehicles in Israel and Denmark by 2016, which will be the largest deployment of EVs ever in the world.

As we have articulated above, the mass market potential for EVs is enormous through the economic gain and positive impact on climate change and urban pollution.

For example, the University of California-Berkeley concluded in a macro-economic study conducted last year predicted the following net gains if the US transitioned to a fully electric transport model:

- A net gain of up to 350,000 new jobs by 2030 through electric vehicle adoption;

- Reduced emissions by as much as 62% from 2005 levels when electric vehicles are powered by clean sources of electricity, even over a scenario of improved fuel economy for petrol-powered cars;
- Savings of up to \$205 billion on healthcare costs associated with emissions from combustion engine vehicles; and
- A decline in oil imports of up to 3.7 million barrels per day, equivalent to the amount currently imported daily from the Persian Gulf region and Venezuela.

3. What are the implications of new propulsion technologies in a lifecycle analysis perspective as regards vehicles, and in a well-to-wheel perspective as regards energy supply chains?

As described above, Citigroup Global Markets concluded in its September 2009 report:

“One of the greatest threats to supportive policy is the environmental integrity of the shift of road transport to electricity from petrol and diesel. Whereas electric cars are highly efficient in their tank-to-wheel usage of fuel (electricity), the traditional petroleum industry is highly efficient in delivering gasoline and diesel to car tanks worldwide. Indeed, if we consider the whole emissions chain from generation to driving, emissions of hybrid cars like the Toyota Prius and small diesels rival full electric vehicles that take their electricity from power grids, as currently operating in Germany and the UK.

“However, by charging on power grids with a higher percentage of low-carbon generation such as nuclear, wind, hydro or gas, such as in France, Portugal and Italy, electric driving has a positive impact in overall emissions. This impact will increase over time as power grids introduce more renewables, nuclear or other low-carbon generation to remain within the limits of the 2020 cap set by the European Emissions Framework. Furthermore, conventional cars are getting closer to the limits of the theoretical efficiency of combustion engines and are unlikely to improve much further. Electric cars emit marginally less CO₂/km than highly-efficient hybrid gasoline and diesel vehicles if charged by current European Grids...

“A final approach when considering the emission benefits of a shift to electric vehicles comes from the transfer of CO₂ point source emissions into the EU Emissions Trading Scheme. Every car which genuinely makes the shift from fossil fuel to electricity (i.e. is not replaced by a gas guzzler) could be considered a 100% reduction in CO₂ due to the absolute cap on power generators’ emissions, which will not rise in response to increased electricity demand to 2020. This is a clear win for national governments struggling to meet regional headline targets. Simply converting cars to electricity removes them from the headline emissions total in the eyes of policy makers.”

On the discrepancies in measuring CO2 emissions for EVs, one of the most debated questions at the moment is connected to the various studies of the CO2-emissions of the EV compared to the ICE car. Many different numbers and several conclusions have been published regarding this question. A thorough analysis of the reason for these different findings is too extensive for this document, however, it is appropriate to outline some of the most common and obvious reasons for the discrepancies in the findings.

A key question in these studies is whether they are based on the premise that EVs are charged with electricity from the so-called “marginal production” or from the “average production” of power in the European grids. The marginal production refers to the electricity produced during late afternoon and early evening where the demand for electricity is highest and therefore primarily covered by coal-fired power plants. When using this power mix, EV emissions will be close to the most efficient ICE cars.

The average electricity output refers to the average “mix” of energy sources contributing to a country’s power supply. This mix will result in less emissions as it reflects the power output outside peak hours and reflect much lower emissions (around 40 – 60 % lower) than in ICE cars.

The argument for using the marginal production when calculating the EV-emissions is that the European drivers typically will connect their cars to the grid for recharging exactly in the peak hours when returning from work in the late afternoon.

Better Place agrees this is not the right way to go. An intelligent solution to charge the vehicles outside peak hours is not only necessary to reach the full climate potential of the EV, it is also necessary to avoid very expensive capacity upgrades of the European grids.

The Better Place solution – as well as many other smart grid solutions being developed throughout the world these years – yields a way to maximize the reduction of the CO2 emission through intelligent charging by making it easy for EV owners to charge optimally outside “marginal production” periods. Therefore, the argument can be made that an EV charged intelligently will likely be charged with electricity that has an even lower CO2 emission level than an EV charged at the average electricity output, thus lowering the emissions even further.

Therefore, Better Place argues that a comparison of the emissions from EVs versus ICE cars as a minimum must be based on the average electricity output.

Other important points to keep in mind when calculating EV emissions are what country’s energy production has been used for the calculations as the average electricity output varies a lot from country to country. Also, it is important to emphasize that all EU countries are planning to decrease the CO2 footprint in their power production significantly in order to meet the 2020 targets – this means that calculations based on today’s figures will not reflect the situation in the years to come but turn out in disfavor of the EV regardless of the marginal or the average electricity production is used as premise.

What are the resource implications in introducing innovative propulsion technologies?

Better Place believes that the key to unlocking mass market adoption of electric vehicles comes in breaking the age-old “chicken and egg” dilemma of which comes first – the cars or the infrastructure? We believe that the charging infrastructure must be in place and nearly ubiquitous across a region so that consumers never fear running out of a charged battery. To make it convenient, we believe that the key to extend range comes in the form of battery switching technology, allowing consumers to swap a depleted battery for a fresh one in less time than it takes today to fill up with petrol.

Finally, we believe that it is only a matter of time as other OEMs will not cede control of the switchable battery EV market to Renault alone. OEMs will not make the same mistake made by letting Toyota seize the market for hybrids for more than a decade.

As regards lithium reserves and recyclability, the mass production of electric vehicles (EVs) requires mass production of the batteries that power them. Now and for the foreseeable future, the state of the art is the lithium-ion battery, which has raised a host of questions about the availability of lithium.

A U.S. Department of Energy Lab has modeled lithium supply and demand out to 2050, and here is what they found: lithium supply will continue to be abundant, especially if recycling infrastructure is expanded. Current lithium production represents a tiny fraction of known reserves (in both brine and pegmatite) distributed around the world, including China, North America, Australia and Europe. Even with upper-bound estimates for EV penetration, demand for virgin lithium materials will peak around 2035 (though within supply constraints). After 2035, demand for virgin lithium materials will decline since overall demand will be met by supplies brought online through increased recycling.

Even if commodity prices increase significantly, lithium accounts for only 3% of the price of a lithium-ion battery and hardly introduces a risk of upward pressure on overall battery cost.

The geopolitical concern is also a non-issue. While Bolivia does have the world’s largest known reserves of lithium, it has no commercial lithium operations. The Electrification Coalition has questioned the economics of starting such operations in Bolivia due to disadvantageous salt ratios, weather, altitude, transport problems and lack of mining infrastructure, which should allay concerns of becoming dependent on the country’s lithium in the future. Another overlooked fact is that Chile and Argentina – both active lithium exporters – together have about the same lithium reserve base as Bolivia.

To sum up, experts agree that lithium is abundant even if Bolivia’s reserves never come online, and the recyclability of this natural element will ensure that supply will continue to keep up with demand for decades if not centuries to come.

4. What are the state of play and the future scenarios of technological developments in alternative powertrains (electric and hydrogen) and their market penetration?

As stated above, most of the major market research forecast an EV penetration rate of at least 17% by 2020.

As also noted above, last year, US Secretary of Energy Stephen Chu dramatically reduced DOE funding on hydrogen programs, saying, ““We asked ourselves, ‘Is it likely in the next 10 or 15, 20 years that we will convert to a hydrogen car economy?’ The answer, we felt, was ‘no.’”

We agree with Deutsche Bank’s assessment that, “This is the end of the 20th Century of Oil; we are entering the 21st Century of Electricity.”

What are major risks and opportunities associated for different stakeholders?

There is an estimated \$3 trillion “blue ocean” market opportunity for unbundling oil from the transport sector. Four of the top 10 Fortune 500 companies are oil companies. Three of the top 20 most profitable Fortune 500 companies are oil companies.

Against the backdrop of the global auto industry, there is an opportunity for the global auto industry to rebound – and for policy-makers to achieve climate goals – if industry rebuilds around sustainable transport for the 21st century.

As a private company, Better Place and its shareholders are assuming 100% of the risk of the private investment we will make in countries such as Denmark and Israel. However, we believe the opportunity to succeed in displacing oil for transport outweighs the risk.

After its recent visit with Better Place in Israel, Deutsche Bank concluded, “We see Israel as one of the test beds for mass market EV penetration. We visited Better Place in Israel last week and note that the company expects to have completed deployment of its first 30,000 Charge Spots and 70 Battery Swap Stations by the late next year (Denmark will have 20,000 BP Charge Spots deployed by next year).

“This contrasts sharply with the much more limited EV Infrastructure activity that is occurring in markets such as Germany, Portugal, the UK, and the U.S., where governments are interested in adopting EV-friendly policies, but where *there is no private sector company [like Better Place] singularly focused on infrastructure deployment [emphasis added].*”

What will be the economic, societal, employment and environmental impacts brought by these developments?

The University of California-Berkeley concluded in a macro-economic study conducted last year predicted the following net gains if the US transitioned to a fully electric transport model:

- A net gain of up to 350,000 new jobs by 2030 through electric vehicle adoption;
- Reduced emissions by as much as 62% from 2005 levels when electric vehicles are powered by clean sources of electricity, even over a scenario of improved fuel economy for petrol-powered cars;
- Savings of up to \$205 billion on healthcare costs associated with emissions from combustion engine vehicles; and
- A decline in oil imports of up to 3.7 million barrels per day, equivalent to the amount currently imported daily from the Persian Gulf region and Venezuela.

Better Place has asked Berkeley if the University would be willing to run the economic analysis using EU input data and the University is amenable to the idea.

5. How can a trade-off situation be avoided where electrifying the power train would reduce or reverse improvements made in conventional technologies in the framework of existing and upcoming legislation on the CO2 emissions of road vehicles?

Given the time imperative of reversing the negative effects of climate change, Better Place believes that “absolute zero” solutions such as zero emission vehicles represent the greatest opportunity for reducing the devastating effects that burning fossil fuels has on our economy and our environment.

Referring to the above mentioned EV market penetration, Better Place also thinks it is relevant to include EV as an important solution to reach the EU 20/20/20 climate goals.

6. What actions should be best taken at regional/ national /European or international level to promote technology development and market uptake of alternative power trains (electric and hydrogen)?

Firstly, Better Place understands that the EU can only propose actions in areas where these can have distinct added value and complement the actions taken by industry, national and regional public authorities.

Secondly, based on our experience working with municipal, provincial and federal public authorities and governments around the world, Better Place suggests the following favorable EV policies including:

- Binding, international standards for plugs and connectors between vehicles and infrastructure;
- Market model – private owned EV infrastructure;
- Interoperability and open access on non discriminatory terms among mobility operators to ensure competition among service providers both public and private;
- Regulate the smart grid components (technical requirements securing intelligent charging);
- Regulate the telecommunication interface to allow V2G and V2V (technical specifications);

- Regulate consumer related issues (security, privacy issues, roaming prices etc.); and
- Expediting permissions and site acquisition to enable mass market adoption for consumers.

At the same time, EU policy-makers need to:

- Provide local, regional and national governments with guidelines for the deployment of EVs infrastructure, thus ensuring that there will be no obstacles to the EU internal market;
- Propose coordination measures/guidelines to allow for a favourable energy taxation framework in the 27 Member States;
- Come up with legislation favouring the deployment of charging spots (e.g. ensure that every new building provides such facilities); and
- Prioritize medium and long-term R&D funding for EV solutions (large EU-scale demonstration projects should also be encouraged without delay).

With regards to Member States, they should:

- Adopt preferential regimes for consumers who buy electric vehicles (by way of example, the Danish government decided in February 2010 to extend a tax exemption on electric vehicles until the end of 2015), and
- Adopt measures exempting EVs from road charging and congestion charging schemes, allowing EVs to use bus lanes, and free parking in city centres.

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