Testimony by
Shai Agassi
Founder & Chief Executive Officer
Project Better Place

United States House of Representatives

Select Committee on Energy Independence and Global Warming

Hearing on

"$4 Gasoline and Fuel Economy:
Auto Industry At a Crossroads"

Thursday, June 26, 2008

Introduction

Mr. Chairman, Congressman Sensenbrenner and other Members of the Committee: Thank you for your leadership on this critical issue. And thank you for inviting me to testify before you today.

This Committee meets at a moment when the United States and its elected representatives stand at a crossroads. We face two starkly different paths, and a moment of profound choice for our energy and transportation future. The choice that is made will answer the question of whether this young century will be another American century, as was the last.

The world needs that answer to be "yes". The essential step towards ensuring that it is lies in ending the complete dependence of our transportation system – and thereby our economy as a whole – on oil.

Because of this dependence, during the next President's first term, we will spend some $3 trillion on oil – nearly as much as the entire federal budget. This year, by some estimates, we will also export some $400 billion for oil –about two dollars spent on oil for every three dollars we will spend on national defense.

Because of this dependence, we are also affecting a wealth transfer of historic proportions – giving away an enormous chunk of our economy every year. Some of that money flows back into our economy, but some in the form of sovereign wealth funds scooping up stakes in our major companies and some of our most iconic assets, New York's Chrysler Building being but the latest. The next such purchase could well be Chrysler itself. In fact, the U.S. will spend more on imported oil this month than the market value of its entire automobile industry.

But our citizens still need to get to work, and still need to take the kids to school. So they pay $4 per gallon – and if Europe is our guide, they will pay $9 if they must. That leaves them substantially less money to spend on other things that drive our economy, and we know that the consequence of the driving they do is more and more tons of CO2 in the atmosphere.

Better Place sees a different path – one that makes a rapid transition from gasoline cars to zero-gas, zero-emissions ones very practical. And since we no longer have time for science experiments, our path invents nothing new – it is based on integrating proven technologies that are here and now.

At the heart of this plan is breaking the stranglehold that gasoline fuels have on the vehicle market today. Instead, we create a platform for cars to operate on much more efficient electric power, capturing enormous savings over the life of the vehicle. Then, we ask the driver to continue to pay in electricity charges what they are already paying for gasoline – and in fact we refund a large part of those savings up front. In some instances, that refund can pay for the whole car.

Therefore, we rely not on a premium-priced new car model available only to a small part of the driving public. Instead, we offer a free or nearly free car and charge current operating costs on an ongoing basis – enabling all car owners to make the gasoline to electricity transition.

For the price of two months worth of oil, some $100 billion, we can put in place the infrastructure needed to power the nation's cars and end this oil dependence. Of that $100 billion, moreover, some $80 billion will go into jobs that, by their nature, can only be performed in the United States – the construction of the infrastructure itself.

For the price of one year's worth of oil, some $500 billion, we can go even farther – creating fully renewable electrical generation sufficient to power all of the nation's vehicles. In so doing, we will again create jobs that can only be performed in this country, and we will give a much broader stimulus to the renewables energy market.
The Better Place Solution

This is not a moment for incrementalism, but for transformative thinking. Instead of exclusively oil, let's enable our cars to run on electricity generated from a diversity of sources – and at the same time enable much greater flexibility in the grid by growing energy storage that can bridge intermittent renewable sources like solar, wind and tidal. How do we make these diverse energy sources relevant to transportation? We find a formula to get our automobiles onto the grid.

The operating cost of an electric car, including the depreciation of the battery, is now about 6 cents per mile. The average American, getting 25 miles per gallon and paying $4 per gallon, is paying 16 cents per mile. Those getting less than 25MPG pay more; those in Europe pay two to three times that amount.

So if our operating cost is a third or less than that of gasoline-powered cars, why hasn't an industry taken off? Just as gasoline cars would be useless without ubiquitous distribution of refined gasoline, and cell phones would be useless without towers and network operators, so it is with electric vehicles. Electric cars are not relevant to the public until there is a battery charging infrastructure in place that makes them a practical and convenient choice.

Better Place proposes to take the burden of battery cost and management upon itself by deploying a ubiquitous network of charging spots. We will bring the "plug" that last, essential mile to the car – whether it is parked at home, at work, at retail or downtown. That makes the electric vehicle relevant to our everyday driving. In fact, based on this infrastructure alone, of the average 2.6 cars per U.S. household today, there is no reason that one of them can't be all electric for use on every trip of 120 miles or less.
Better Place will also deploy range extension for long trips in the form of battery exchange stations — automated, mechanical battery swap points – on major arteries linking urban areas. That makes the electric vehicle just as relevant for our longer driving trips.

Finally, Better Place will bring an entirely new business model to the area of car ownership, one that will have the effect, in some cases, of making the cars themselves free. That will ensure that electric vehicles are not only relevant to all of our driving needs, but are affordable as well.
By solving the consumer's concerns — how much will it cost? Will it be convenient to use? -- we will be able tilt the market away from oil towards a rapid changeover to electric cars.

Allow me to retrace briefly how Project Better Place arrived at this point. Three years ago, I was told I was to become the next CEO of SAP, the largest enterprise software company in the world. SAP had bought a company I had founded several years earlier, and becoming SAP's CEO was what I thought was my dream and my destiny.
Something funny happened on the way to the CEO suite. I was inspired by my peers in the Young Global Leadership of the World Economic Forum to think of how to make the world a better place. Quickly I found the biggest problem to solve: oil.
The world's transportation system is almost entirely dependent on oil. As all of you know, the emissions from burning this oil in billions of vehicles pollutes our air and can impair our health, and now we understand it also causes the planet to warm, endangering our very survival.

What's more, many of the governments to which oil revenues flow actively oppose many of the free world's values – and as the price has risen we are witnessing an unprecedented transfer of wealth from developed countries to these governments.
After spending many months researching and speaking with experts, I felt that I had the basis of a framework that could move a country's transportation industry entirely off of oil in relatively short order. I wrote a paper describing my idea and shared it with officials from many governments.

Shimon Peres, who was not yet President of Israel, called me. He said he was intrigued. He said he thought the plan was workable. But he also said he thought it required private industry to be the catalyst, not the government. When I said he should find someone to start a company, he challenged me to abandon one dream and start another. When I recognized the consequences of allowing this problem to go unsolved for the world I would leave to my children, I announced my resignation from SAP.

Within six months, I had raised $200 million from private investors to form Project Better Place. Three months later, on January 21, 2008, Israel's Prime Minister announced that country's intention to be free of oil within a decade using our model. Standing with him were Carlos Ghosn, representing the manufacture of 8 million cars per year through the two companies he runs, Renault and Nissan, and myself. Two months after that this scene played out again in Denmark, where Better Place, Renault/Nissan and DONG Energy are partnered to create an electrical vehicle infrastructure powered by wind energy.

So what is the Better Place formula? I can tell you it is not an invention. There is no time for science experiments. Our plan takes existing, proven ingredients, and integrates them in a new way.

It is best thought of as an analogy to the cellular phone industry. Who would have predicted 20 years ago that the phones that dominated our lives so soon thereafter would be mobile devices? Entrepreneurs, from sheer imagination, have brought us this new world of cellular communications.

We intend to build the first company that will be the equivalent of a mobile operator for cars. What does that mean? It means that electric cars are cheaper to manufacture, and orders of magnitude cheaper to operate. But one thing has prevented their widespread adoption: the lack of infrastructure. We will build and operate that infrastructure, allowing customers to purchase "miles" from us just as they do "minutes" from cell phone operators.

What is this infrastructure? It has three parts.
The first is batteries. Batteries are proven, but they are an expensive up-front cost that car companies have been afraid to ask their customers to bear. We solve that problem by owning the batteries ourselves. For the first time, we treat the battery not as part of the car, but as part of the infrastructure.

The second is ubiquity of electric charging. This means allowing cars to plug in wherever they are parked, enabling every trip to have a range of about 120 miles.
The third is distance. For those drivers for whom extended trips are either a necessity or desire, we will develop exchange stations for batteries that allow drivers to swap a used battery for a fresh one in less time than it takes to refill a tank of gas.
For the subscriber, just as with cell phone calling programs, there will be a menu of plans to suit different driving habits.

Let us consider for a moment the commuting class, generally consisting of people who drive long distances daily to reach their jobs downtown from the affordable ex-burbs. These drivers often travel 20,000 miles per year or more, and sometimes drive old, very inefficient vehicles. At $4 per gallon, assuming 20 miles per gallon, they are now paying 20 cents per mile, or about $350 per month. If they continued to pay that $350 to us, and signed a contract of five or six years, there will come a point where we can actually give them the car for free.

Our Progress to Date

Zero gas. Zero emissions. A subscription model in which the driver pays not for gas, but for the electrical charge needed to travel the miles he or she needs or wants to drive. And – just as cellular handsets are now largely a commodity sold at drastically reduced prices in order to attract subscribers – we drastically lower, possibly to zero, the cost of vehicles to the consumer.

So what has been the response to the Project Better Place proposition?

As I have mentioned, the governments of Israel and Denmark have already announced their intentions to adopt the Better Place model. Both are confident that they will turn over their vehicle fleets from gas to electricity within a decade.

We are in active discussions with more than 30 other countries, and with dozens of regions, provinces, states and large cities. Many of those discussions, both in the US and globally, are well advanced.

We anticipate that four to six other countries or regions will – in the coming months – announce their intentions to take up the Better Place model, just as Israel and Denmark have done.

There is no doubt that this progress has been helped along by the anxieties arising from the spike in oil prices. But our progress is not dependent on high gas prices. The Better Place model happens to have even greater appeal in a world of $4-per-gallon gas. But the model works – even when prices are drastically lower.

And just as it will work for Israel, Denmark and the other regions and localities we expect to come on line soon, it will work for the United States. Across this country, countless localities and regions present the same characteristics that make the model an appropriate fit elsewhere: density of population, reliance on personal vehicles, mature traffic infrastructures, all leading to in-built congestion. And as these localities and regions are built out, connecting them into a truly national grid becomes more and more feasible.

Security and Environmental Benefits

In addition to working economically, the Better Place model holds the prospect of decisive improvements in two areas critical to the nation’s, and the world’s, future: greenhouse gas emissions and energy security

While we have focused so far on the short-term economic questions entailed in building out Better Place in the U.S., the real value of such change lies in the massive reduction in greenhouse gas emissions that will be achieved. An average car produces 4 tons of CO2 every year. Certain high-traffic fleets (such as taxis or delivery vehicles) can produce 20-40 tons per vehicle.

The developed economies seek to mitigate these numbers through the use of new catalytic converters and other emissions control technologies. But the emerging middle classes in China and India are racing towards the chance to buy their own first car, especially as car prices in those markets fall dramatically. These cheaper cars will not use the latest engine improvements, will drive on increasingly congested roads, and, in so doing, will raise average vehicle CO2 emissions across the world, as well as NOX levels in major population centers.

Just as importantly, we will shift the transportation energy market from dependency on fossil fuel reserves that are present only in certain locations around the world to a footing in which energy can be manufactured anywhere in the world, using renewable resources. Doing so fundamentally shifts the trade balance across countries and regions; some of that shift will be away from governments that are not fully democratic, do not share our values, and have used their oil wealth in ways that harm our interests.

Some oil-producing countries have begun to realize that recent price increases do not reflect simply one more cycle in the oil boom, and that this is most likely the last such boom the industry will experience for a very long time. While it may take time for the market to tip (on the order of 10-15 years), some governments have already started to invest their current windfall in a diversified, post-oil portfolio of economic growth drivers. The United Arab Emirates, for example, still has abundant oil, but all of its oil profits are re-invested in industries such as tourism, financial services, media, education and alternative energy.

All of these are important drivers of modernization and sustainable growth. And unlike oil, these new industries are largely local in nature. They require local inputs in order to succeed. The post-oil era will stimulate an array of new – or in some cases newly invigorated – industries and services. This brings me to my final point: the broader economic benefits to the United States of the oil-to-electricity shift.

Economic Benefits Derived From Better Place

While the US has a large domestic oil production, much of our consumption is paid for in dollars that flow out of the US economy. Not spending that money on oil, and instead driving that money back into the local economy, can only affect it positively. And the Better Place model is intrinsically local.

It will depend on electricity generated in reasonable proximity to where it is used, driving electrical generating capacity demand across the full range of sustainable generating sources: solar, wind, water, and wave. It will necessitate a local infrastructure of battery-recharging and replacement stations in place of the existing infrastructure of gas stations.

In fact, the first-mover advantage in this market for early adopting car makers, component manufacturers, electrical grid operators, and indeed countries, may be as big a prize as has ever been seen in the history of economic development. The first car maker to field a workable electric vehicle at scale will enjoy benefits that dwarf the success of the Prius for Toyota. Countries that develop local expertise will see new companies emerge that positively affect their economy for decades, in a manner similar to Nokia's effect on Finland.

Our Recommendation

With these benefits in mind, what can public policymakers do to help secure this paradigm shift?

We want to emphasize that our model stands on its own without government support. However, the active involvement of the public sector can greatly accelerate the transition away from oil-burning cars. For example, the governments of Israel and Denmark promised us no financial support in building the infrastructure. They did, however, lock in place a policy which essentially excuses zero-emission vehicles from their already quite high excise taxes on new vehicles. Since the US has not severely taxed either cars or gasoline in the past, the levers at your disposal are fewer. However, given that there is a vested public interest in accelerating the deployment of the infrastructure to support mass adoption of electric cars, both because of its ability to move us off of imported, polluting oil and because of its ability to create domestic employment, it might be sensible to guarantee loans needed to support that infrastructure build out. With the government's balance sheet to fall back upon, we could borrow capital and vastly lower cost, and therefore deploy the infrastructure at a much faster clip.

Another possibility would be to offer tax credits to the purchasers of zero-emission cars. France recently adopted a "fee-bate" program that costs the government nothing, but uses taxes on the highest emitting vehicles to fund rebates on the lowest. And at zero emissions, the vehicles that our model would use are clearly in that latter category. Other ways for you to engage in this vision do not directly involve our effort, but center around two of our partner industries – cars and batteries. There is no need for me to remind you about the very difficult situation our domestic automobile industry finds itself today. We think if the right strategy was pursued, the US auto industry could successfully remake itself for the coming electric revolution. In Renault and Nissan, under the leadership of Carlos Ghosn, we see a company making the investments to lead this industry. There is no reason US automakers could not do the same — and if their efforts were aided by the Federal Government, there is every reason to believe they could return to their former greatness, and again play a central role in stimulating rapid economic expansion in the decades ahead. But for that to happen, the right incentives have to be offered from Washington, and the right decisions have to be made in Detroit.

Finally, the US is in danger of moving from dependence on Middle East crude oil to dependence on Chinese Lithium Ion batteries. As with so much else, economics are driving the manufacturing of advanced batteries to China — even for companies which have innovated here in the US. If our view of the world is right, the battery industry will

be one of the central economic drivers and it is certainly worth an investment in the right type of incentives to keep some of that manufacturing capacity here at home. All of you are in a much better position to evaluate how to do that than I am.

We stand ready to work with this Committee and the entire federal government to determine what the right policy mix should be, and we encourage the Congress to be bold in its thinking. There has been enough talk about ending America's oil dependence. The Better Place model presents an actual blueprint for doing so. It can save our environment, strengthen our national security, and retool our economy to a post-oil era of truly sustainable development. It can help to ensure that this young century is, in fact, an American century. And it is ready to roll today.

* * *