

<p>S. Joe Bhatia President and CEO American National Standards Institute</p>	<p align="center">U.S. National Electric Vehicles Safety Standards Summit Detroit, MI</p> <p align="right">Keynote Address</p> <p align="center">“Driving the Safe and Effective Implementation of Electric Vehicles: Standards and Conformance-Based Solutions”</p> <p align="right">October 21, 2010 – 8:15 - 8:45 a.m.</p>
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Good morning, everyone.

My name is Joe Bhatia, and I am president and CEO of the American National Standards Institute.

I am very pleased to be part of this Summit, and provide a keynote address on how standards and conformance will help to drive the safe and effective implementation of electric vehicles.

For those of you who don't know us, ANSI is a non-profit organization that coordinates the U.S. private sector standards and conformance system – a system that relies upon close collaboration and partnership between the public and private sectors. I am here representing thousands of member companies, organizations, and individuals who rely upon standards and conformance to increase efficiency, create market acceptance, improve competitiveness, and foster international commerce.

For more than ninety years, ANSI and its members have worked to demonstrate the strength of private sector-led and public sector-supported, market-driven, standards-based solutions that are characterized by consensus, openness, and balance. SAE and NFPA are two of ANSI's most active and engaged members, and I am proud to continue our positive partnership through timely, constructive events like this summit.

With my background as an electrical engineer, I have long been intrigued and impressed by advances in electrotechnology, and the ways these advances have changed how we communicate, travel, and do business.

And in recent years, few technological innovations have captured as much attention as hybrid and electric vehicles.

- In 2003 the first mass-produced hybrid, the Toyota Prius, was introduced to great acclaim all over the world. I think at this point, if you don't own a Prius you at least know someone who does!
- When Tesla went public back in June, their stock opened higher than anticipated, fueled by enthusiasm for its sleek, dramatic Roadster. Tesla reports that they plan to make use of the same innovative systems in other vehicle types, including a sedan and an SUV.
- A few hundred lucky drivers in Los Angeles, New Jersey, and New York have been field testing the Mini E, an all-electric version of the BMW Mini.
- The Chevy Volt is coming to market in just a few weeks – a plug-in hybrid electric vehicle with a "range extending" gasoline-powered engine.
- And the Nissan Leaf is nearly to market as well. An all-electric vehicle, Americans can buy the Leaf for as low as \$25,280 after tax credits.

What is driving this keen interest in electric vehicles? In part, I believe we can point to consumers, who are more eager than ever to demonstrate a commitment to the environment and an end to our nation's reliance on foreign oil. A recent study by Nielsen found that the majority of consumers in the U.S. would consider buying an electric car. But 65 percent said they wouldn't pay more for it than for a standard vehicle, and 51 percent said they wouldn't pay more than five thousand dollars above the average price.

I think we can also point to the government's efforts to spur electric vehicle development. President Obama recently announced that more than six billion dollars would be invested by the government on electric vehicle research and infrastructure. This is on top of the 2.4 billion already handed out to automakers, startups, and battery manufacturers since August 2009.

With both the Obama administration and consumers pushing for electric vehicle technology, those of us in the standardization community have an absolutely critical job to do. We need to make sure that the technologies and infrastructure are effective, safe, and ready to accommodate this major shift in our national automotive landscape. Our number one goal is the safe implementation of electric vehicles – and that is where standards and conformance come into play.

Over the course of this conference, the participants will work together to look at ongoing standards development activities in this area – in terms of the vehicles themselves and the infrastructure needed to support them.

We will work to identify potential content gaps in existing standards, and no doubt we will find some areas where new standards need to be developed or the existing ones need to be updated.

We will develop an action plan for where to go next in terms of standards development and conformity assessment activities.

And we will work together to determine which organizations will take up the mantle in these new areas of activity.

Alongside of all of this activity, we face another challenge. We also need to combat the misrepresentation of standards development as an arduous, slow process. I believe that the standards community can come

together to work very quickly when there are clear sets of goals and clear timetables that need to be met, as well as a commitment from the policy makers and the involved participants and affected parties.

Truly this is a unique opportunity for collaboration – not just for NFPA and SAE, but for any organization, company, or government agency – federal, state or local – that has a stake in the world of electric vehicles.

Standardization needs for electric vehicles reach far beyond the driver's seat. We need to think about and address many issues.

We need to think about charging stations, both at home and on the road. We need to think about power loads for those stations. And we need to think about compliance with the National Electric Code and infrastructure maintenance of charging stations.

We need to consider municipal garages, especially those in major cities where parking is at a premium. Will all garages have charging stations, or only some? What will pricing schemes look like for these charging stations, and how will that information be communicated to consumers so they don't get gouged?

We need to think about metrics for energy efficiency. We know that electric motors can achieve up to 90% energy conversion efficiency, but how do we communicate that data to consumers? What about regenerative braking systems, which can convert movement energy back into stored electricity? No doubt this technology will benefit city drivers, who are used to the negative effects of start-and-stop driving on traditional gas-powered engines.

We already know that electric vehicles are quiet, smooth, and have less noise and vibration than internal combustion engines. While this is a desirable attribute, there is also concern that a near-silent vehicle poses a danger particularly to the blind, to children, and to the elderly. Manufacturers are already developing

audible warning systems, but these should be standardized and recognizable. Even with your eyes closed, you know what the “beep-beep-beep” of a truck in reverse means. Let’s make sure that the same level of safety and uniformity is applied to electric vehicles.

We need to consider manufacturing and large-scale assembly requirements. And what about the bulk transportation of the powerful batteries needed for electric vehicles? Are there special precautionary steps that we need to take to mitigate the risk of fire and other safety risks?

We need to think about emergency services, first responders, and tow trucks. Do these response workers have the knowledge they need to safely work with electric vehicles? How can they tell if the car is running? Are the batteries designed to be disabled easily and safely? What if the battery is compromised in a collision?

So far, the guidance we can offer is to follow the recommendations of the battery manufacturers, but these recommendations can vary widely. As a community, I believe that we need to come together for greater safety. Perhaps we can color-code labels and wiring across all battery manufacturers, so that first responders can tell immediately how to disable a vehicle in an emergency.

And speaking of emergencies, let’s say there is some kind of disaster and the power is out. How will electric vehicle owners travel? If only some charging stations are operational during an emergency, who will decide the priority level for whose car gets charged? Many of you remember the gas lines of the 1970s, I am sure.

We also need to think about the user perspective. Is the car easy to operate? Is it intuitive despite being a complete departure from traditional combustion engines? Standardizers have worked for years to bring international harmony to the dashboard lights. What are the new icons that are needed for electric vehicles?

We need to think about vehicle maintenance and service. Internal combustion engine vehicles have consistently evolved over the years, but mechanics always had the same fundamental pieces of the puzzle to work with. Now, we are talking about a completely different landscape under the hood.

How can an average consumer be sure a mechanic is qualified to work on his Leaf, his Volt, or his Roadster? Are there new workforce credentials that will arise from this need? And if so, how will consumers be able to tell a quality credential from a bogus one? Perhaps third-party accreditation of credentialing programs can play a role here.

We need to think about car insurance. What will premiums look like for electric vehicles? Will they be higher or lower, and why?

We need to think about marketing, promotion, and labeling. As green products and technologies have packed store shelves in recent years, the proliferation of eco-labels has left consumers feeling confused and even jaded. Let's not allow this to happen with electric vehicles, too!

I know that the EPA has proposed changing the labels on all new cars to address hybrid and electric vehicles. I believe they are considering assigning an overall letter grade instead of today's mile-per-gallon ratings, which will be quite confusing when we are not talking about gallons anymore. But the EPA proposal is not expected to take effect for another year at least.

So, I have outlined some of the challenges facing us. And I am sure there are many, many more out there. Above all, we need to consider our overall approach to standardization for electric vehicles. Do we want to focus on domestic standards for domestic use, or do we want to think about globally relevant standards?

The U.S. standards system acknowledges that there are multiple paths to global relevance. Whether we are talking about work done through ISO and IEC technical committees, or the many standards developing

organizations and consortia that operate on an international scale, what matters is that the standards were developed according to the principles of the WTO Technical Barriers to Trade Agreement, which are also consistent with ANSI's *Essential Requirements*. The process must be consensus-based, open, with balanced participation – and include all other elements that are the hallmarks of our standards system in this country

Some would suggest that we take a global approach. The implementation of electric vehicles is both a national issue – and a global challenge. Here at home we see the challenges associated with the introduction of electric vehicles as a component of the NIST Smart Grid Interoperability Project. We also see organizations like ISO, IEC, and other regional and national standards bodies that have already established standards development activities that aim to support this industry's rapid growth. And ANSI's role as the U.S. member body to international and regional standardization organizations is already enabling the participation of American technical experts in related activities the world over. This includes ISO TC 22 / SC 21 on electrically propelled road vehicles, and IEC TC 69 on electric road vehicles and electric industrial trucks.

Electric vehicles are a global phenomenon. I have just come back from the largest assembly of international electrotechnical experts ever hosted by a country. This IEC Annual GM in Seattle had almost 3000 participants from over 80 countries. Electronic vehicles and related issues were a hot topic. Major players in the automotive arena from Germany, Japan, Brazil, of course the U.S. and the newly emerging power – China – all addressed their unfolding initiatives and concerns in numerous technical and bilateral meetings.

As an example, let me focus on China. You may have heard that the Chinese government is determined to become a world leader in green technology. They plan to invest billions of dollars over the next few years to develop electric and hybrid vehicles.

Sixteen big state-owned companies have already agreed to form an alliance to do research and development, and create standards for electric and hybrid vehicles. Their plan? To put more than one million electric and hybrid vehicles on Chinese roads.

China is already the world's biggest and fastest growing auto market. Let's face it, they are the world's biggest market for a lot of things! There is no question that China is a very significant player in the standardization arena today. Though they hold only one vote in ISO and IEC, China's market share is huge and growing. Take ISO, for example, where Chinese experts have been assuming secretariats and chairmanships at increasing rates. In the long term, I think it is very possible that they will control the direction of many ISO and IEC technical activities, from older areas such as textiles to newer ones such as alternative energies and technologies.

Why is China likely to be so successful? Because the cost of participation is not as big of an issue for their centralized standardization system. Increasingly, whenever a U.S. expert retires or a program loses funding, we look to fill the void, and sometimes, regrettably, end up giving up the leadership position. Who are we to blame China for being ready and willing to take up the mantle?

You can do a lot when the central government has a 2 ½ trillion dollar surplus! According to some reports by state-run media, Beijing intends to invest nearly \$15 billion in their electric vehicle venture. If this is true, it would be one of the world's most ambitious attempts to develop more energy-efficient vehicles.

China is not the only nation with a strong commitment to seeking alternative energy solutions, combating pollution, and reducing carbon emissions. Let us make sure that the U.S. has a strong voice on these issues on the global stage – no matter which path we take to get there.

As the coordinator of the U.S. standards and conformity assessment community, ANSI is truly committed to fostering the partnerships that lead to the greatest advancements for all stakeholders across borders and

industry sectors. If there is one key element that is critical to developing the strongest solutions, it is broad participation. When all perspectives are present at the table, the most robust and effective standards and conformance solutions emerge. The U.S. Government is a critical player in this mix. A public-private partnership, once again, is what will do the job.

The U.S. Department of Energy's Idaho National Laboratory recently asked ANSI to convene a workshop on grid-connected electric drive vehicles. The end product of this workshop will be a report that considers the codes and standards needed to facilitate the successful introduction, acceptance, and deployment of plug-in hybrids and electric vehicles. We will be looking at U.S. domestic and international codes and standards already published or in development, determine the gaps, and provide recommendations on the need for additional standards.

The initiative supports DOE's Vehicle Technologies Program and its Advanced Vehicle Testing Activity. DOE has a need to fully understand what all the various groups are doing in support of electric drive vehicles. Because of ANSI's role as a neutral forum and coordinator of the private sector-led, public sector-supported U.S. standards and conformance system, and as a facilitator of our nation's public-private partnership, DOE sees this workshop as an opportunity to bring together the many diverse government agencies, companies, SDOs, and conformity assessment bodies to encourage coordination in their efforts across sectors. Of course, we plan to work closely with SAE, NFPA, and others to proceed in an inclusive manner.

A workshop is contemplated in the spring of 2011. We will be announcing more details on ANSI Online later this year, so stay tuned for more information. Many more similar activities will be needed to get the job done.

There was a time in our history when people marveled at electricity and its ability to enhance their daily lives. Today, its benefits are taken for granted and people stop and take notice only when the power goes

out and they are inconvenienced. The iconic achievements of early electrical pioneers such as Benjamin Franklin and Thomas Edison serve as continuing inspiration for contemporary scientists and engineers.

I encourage each of you to continue striving towards excellence and innovation in electric vehicle standardization.

With so many different technologies and industries engaged in this area, bringing all affected stakeholders to the same table is absolutely essential. A consensus-based decision process which is inclusive, participatory, and solution-oriented will ensure the optimum results.

In order to achieve our goal of the safe, large-scale implementation of electric vehicles in this country, we must rely upon a process that brings the full cross-stakeholder community together. Developing standards-based solutions in silos is not the answer. By coming together in a balanced and open process, technical experts learn from one another, benefit from each other's expertise, and develop more robust solutions.

The importance of consensus holds true not just within the U.S., but across borders. That is why I believe that our national engagement at the international standardization table is so critical.

We have a lot of work to do, but I know that we have the potential for tremendous progress and impact.

Thank you for your attention, and I look forward to any questions you may have.

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