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BEFORE THE  
SUBCOMMITTEE ON ENERGY AND ENVIRONMENT  
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The Electric Drive Transportation Association (EDTA) is the cross-industry trade association promoting the advancement of electric drive technology and electrified transportation. Our members represent the entire value chain of electric drive, including vehicle manufacturers, battery and component manufacturers, utilities and energy companies, and smart grid and charging infrastructure developers. Collectively, we are committed to realizing the economic, national security, and environmental benefits of displacing oil with hybrid, plug-in hybrid, battery, and fuel cell electric vehicles.

Since the U.S. imports about 45% of the oil used in the transportation sector, there is a strategic and economic imperative to move toward domestically-generated electricity as an alternative to oil. Based on data from the beginning of the year, CRS estimates that the U.S. will pay \$451 billion for imported oil in 2012, \$30 billion more than 2011.

The need is already clear to the families and businesses who can't predict what they will have to pay for their essential transportation needs from week to week. For the average family that drives less than 40 miles a day – which is most families – driving electric can save \$1,400 a year. Put another way, travelling on electricity costs an average 2 to 3 cents per mile – compared to 15-16 cents for gasoline.

EIA projects barrel prices over \$100 through 2013 but geopolitical factors could bring that number even higher. Oil prices have consequences across the economy; every \$10 per barrel increase costs the economy approximately \$75 billion. There are also additional direct costs associated with oil dependence. For instance, a recent Brookings Institute reports the U.S. spends \$50 billion a year protecting oil shipments in Middle East shipping lanes.

Electricity is ample, affordable and available from diverse *domestic* sources. With electric drive technologies, hybrids, plug-in vehicles and fuel cells, electricity displaces oil - and reduces its stranglehold on our national security and our economy.

Building an electric drive industry also has competitive benefits for the United States. There is a global energy technology race and the United States has the ability to be the clear leader in developing and manufacturing the transportation solutions and jobs of the future.

We can achieve all of these benefits without sacrificing public health or the environment. Multiple studies have documented that in all U.S. regions, electric vehicles charged on the power grid have lower global warming emissions than the average gasoline-powered vehicle sold today. Even when

charging from a regional grid using only coal-based generation, a plug-in vehicle would still produce fewer emissions than the average new compact gasoline-powered vehicle.

## MARKET OUTLOOK

There are more than 40 hybrid vehicles, which have internal combustion engines as well as batteries that displace oil with on-board electricity, currently being sold in the U.S. Manufacturers are planning to increase available offerings of plug-in vehicles from seven this year to more than 20 – at multiple price points – in the next two years.

“Plug-in vehicles” include pure battery electric vehicles, which are propelled solely by electricity from the grid, and plug-in hybrids, which run on electricity (the distance varies by vehicle and battery size) and then are propelled by a conventional engine when the battery is depleted.

Last year, more than a quarter of a million plug-in electric and hybrid vehicles were sold in the United States. In the first two months of this year alone, Americans bought another 62,000. That’s more than 1,000 vehicles per day, a 30 percent increase over the sales rate from the same period in 2011.

Fuel cell vehicles, which are also zero emission electric vehicles, are being proven on the roads today and will enter the commercial market in 2015. Deutsche Bank has estimated that by 2015, one in ten vehicles sold in the United States will be an electric drive vehicle.

Internationally, steady growth is also projected. Industry analysis shows hybrids, battery electric and plug-in hybrid vehicles comprising 35% of automotive sales by 2025.

Electric drive is an area of fierce global competition and many countries are investing tremendous public resources to gain dominance. Countries such as Japan and South Korea have been building capacity to serve this market for some time. France and other European countries are making multi-year investments in technology and market development. China has also made a reported \$15 billion commitment to developing electric drive technologies.

The electric car charging market is also growing. The U.S. Department of Energy has documented more than 4,000 public charging stations. According to Pike Research, the worldwide electric charging station market in 2010 was nearly \$70 million and is expected to grow to more than \$1 billion by 2013. Pike predicts that, by 2017, there will be more than 1.5 million locations to charge electric vehicles in the U.S.

Another significant part of the electric drive supply chain is advanced batteries. Lithium ion battery performance is being enhanced and costs are coming down. It is estimated that the global market for lithium-ion batteries used in the transportation sector will grow more than 700 percent to annual revenue of \$14.6 billion by 2017.

It is also important to appreciate that electricity as a transportation fuel is not limited to cars. Electric drive vehicles are being introduced into the market place in numerous configurations, including commercial trucks and buses, tractors, as well as ground support and other mobile equipment.

In the United States, there is growing foothold for electric drive components and vehicle manufacturing, with attendant growth up the supply chain in materials and equipment and employment. A few examples include the expanding production of electric drive motors in Maryland, and of batteries and vehicles in Michigan and California, Tennessee, Missouri and North Carolina.

## CHALLENGES AND INNOVATION

We are making great strides in standing up the electric drive supply chain and opening new markets for vehicles that use electricity to displace oil. However, transforming the fleet won't happen overnight. There are growing pains for every new industry and we will not be an exception. Those should not overshadow the real story, which is our success in launching a new market and supply chain- in just a few short years – and the enormous potential of the technology and the market that we are just beginning to realize.

As an industry, of course we would like to see it grow faster. Across the diverse materials, components, electricity and vehicle manufacturing businesses that comprise the “electric drive industry,” we are working to accelerate the adoption of electric drive by investing in research, development and deployment strategies for electric drive.

Our efforts are enhanced by partnering with federal, state and local entities to help advance technology and promote deployment of vehicles and infrastructure.

For instance, the higher initial cost of electric drive, in large part attributable to the advanced battery systems, is a market challenge that we are working to mitigate. The Department of Energy, through its Vehicle Technologies program has been an effective partner in the industry's effort. The cost of lithium ion batteries has dropped by a third since 2008 and we are investing in research and development to achieve even greater cost reductions while expanding the range potential of advanced energy storage systems. The program also includes activities that are advancing next generation charging, systems integration, and codes and standards for vehicle to grid communication.

The Vehicle Technologies program also conducts critical research and development activities to advance electrification of medium and heavy duty fleet vehicles, including hybrid, plug-in hybrid, battery, and fuel cell electric trucks and buses, which have great potential for fuel savings and emissions reductions from commercial fleets.

The Department is also partnering with industry in advancing fuel cell vehicles, which are critical assets in the advanced vehicle portfolio through the Hydrogen and Fuel Cell program. Fuel cell cars, trucks and non-road vehicles will provide “zero harmful emission/zero petroleum” options that are integral to meeting national goals for energy security and reduced pollution.

The fuel cell industry is meeting aggressive cost, performance and deployment milestones as it pushes toward commercialization in 2015. The ongoing partnership with the Department of Energy has already yielded substantial component cost reductions including reducing the cost of automotive fuel cells by more than 30% while doubling their durability.

Beyond technology advances, cooperative deployment initiatives are helping to establish new markets at the end of a new supply chain by making it easier for consumers and communities to acquire vehicles and infrastructure.

There are numerous state and local efforts involving utilities, manufacturers, local business and city planners who are helping to coordinate planning and promote investment, including initiatives in cities such as Houston, Atlanta, Raleigh and Charlotte, Chicago, San Diego and Sacramento. There are also state and regional efforts in Oregon, Washington, New York, California and the Northeast Electric Vehicle Network, which includes 10 Northeast states and the District of Columbia. Across the country, states and localities like these are putting policies in place to encourage advanced transportation options, such as access to High Occupancy Vehicle (HOV) lanes, streamlined permitting for recharging infrastructure and preferential parking incentives.

At the federal level, programs like Clean Cities, which works with more than 100 regional coalitions to help deploy alternative fuel vehicles and infrastructure, are effective in addressing initial market hurdles while displacing oil consumption. Since its inception in 1994, Clean Cities has saved more than 3 billion gallons of petroleum. By helping consumers and communities expand access to oil-alternatives, these programs encourage expanded infrastructure investments and reinforce markets by increasing consumers familiarity with new technologies and their benefits.

## CONCLUSION

This is not a complete survey of federal policies that can advance our national energy goals, but it does highlight where critical efforts are making inroads into the one of the largest and most intractable problems we face as a nation.

We need to see past the daily *price* of gas and calculate the true *cost* of oil dependence. The dollars spent on imported oil, the economic and security challenges created by a transportation sector almost entirely dependent on a single fuel, as well as the environmental impacts are all costs that we, as a nation, have been paying for too long. To effectively pursue other options for transportation, the public and private sectors will need to work together to accelerate large scale advances.

The American Energy Innovation Council, a group of U.S. industry leaders working to “foster strong economic growth, create jobs in new industries and re-establish America’s energy leadership” concluded in their 2011 report that federal participation in energy innovation was imperative because “ready access to reliable affordable forms of energy is not only vital for the functioning of the larger economy, it is vital to people’s everyday lives and significantly impacts the country’s national security and environmental well-being.”

Electric drive is integral to our national effort to reduce our dependence on imported oil while also boosting the American economy. Our members are investing in the hybrid, plug-in and fuel cell technology advances and market development that are needed to move new technology into

the mainstream. Federal, state and local partners leverage these investments and accelerate the development and availability of real transportation options.

The return on the public investment is a nation that is less dependent on foreign oil, spends its energy dollars domestically and competes effectively in the global market for advanced technologies.

I thank you for the opportunity to appear before you today and I look forward to your questions.