

STATEMENT OF
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U.S. DEPARTMENT OF ENERGY
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COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

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Mr. Chairman and Members of the Committee, thank you for the opportunity to provide comments on improving our Nation's renewable fuels infrastructure to accommodate the increasing volumes of renewable fuels in the transportation sector. As we continue to intensify our national effort to develop renewable energy options for transportation, it is vital that we focus on ensuring the infrastructure necessary to support our national vision of a domestic clean fuels industry.

The large-scale introduction of biofuels into consumer markets poses significant challenges throughout the production, supply, transport, distribution, and utilization cycle. These challenges must be effectively addressed to support the successful achievement of the President's *Advanced Energy Initiative* and the "Twenty in Ten" goal for reducing our dependence on oil. The "Twenty in Ten" goal aims to reduce our gasoline use by 20 percent within the decade. To help achieve this, the President has called for a robust Alternative Fuel Standard (AFS), requiring the equivalent of 35 billion gallons of renewable and alternative technologies in 2017. Encouraging the broadest range of alternative fuel technologies is critical to the type of transformational change necessary to improve our Nation's energy security. Creating certainty by establishing a durable, predictable AFS for the Nation will be an important first step necessary to stimulate more investment in infrastructure.

Recent developments have strongly accelerated the growth of biofuels in this country, and we recently have been adding more than a billion gallons capacity of ethanol each year (source: Renewable Fuels Association, <http://www.ethanolrfa.org>). Our strong investments into cellulosic ethanol research, development, and demonstration activities will further increase the biofuels growth rate. In the last year, the Department has announced the availability of nearly \$1 billion for biofuels R&D, subject to appropriation, over the next three to five years, including:

- Up to \$385 million for the construction of six cellulosic ethanol biorefineries over the next four years. Once up and running, the facilities—located in California, Florida, Georgia, Idaho, Iowa, and Kansas—are expected to produce more than 130 million gallons per year (mgy) of cellulosic ethanol;
- \$375 million awarded to three new Bioenergy Centers to advance understanding of how to reengineer biological processes to develop new, more efficient methods for converting the cellulose in plant material into ethanol or other biofuels serve as a substitute for gasoline;
- Up to \$200 million to support the development of cellulosic biorefineries at ten percent of commercial scale that produce liquid transportation fuels such as ethanol, as well as bio-based chemicals and bioproducts used in industrial applications;
- Up to \$23 million in Federal funding for five projects focused on developing highly efficient fermentative organisms to convert biomass material to ethanol.

The Department's investments into cellulosic ethanol research, development, and deployment are focused on achieving the goal of cost-competitiveness by 2012. This projected increase in ethanol use will challenge our existing liquid fuels infrastructure. We expect the market's ability to absorb gasoline blended with up to 10 percent ethanol, which can be distributed through existing infrastructure, to reach its limits in the near future, possibly even the next 5 years. This reality will require multiple pathways to continue growing our domestic renewable fuels industry. These pathways need to be immediately addressed in parallel.

While much of the national debate has focused on the production of renewable fuels, much less public attention has been directed to the challenges of infrastructure. To address the important link between biofuels production and biofuels distribution and consumption, a recent report by the Government Accountability Office called on the Department of Energy to develop a strategic approach that coordinates the expansion of biofuels production with distribution infrastructure and vehicle needs. The National Petroleum Council's July 18 draft report, "Facing the Hard Truths about Energy," similarly highlights transportation infrastructure as a concern for biofuels – constrained capacity on our roads, rail, pipelines, and waterways pose a substantial barrier to encouraging alternative fuels.

The Department is sharpening its focus on the issues highlighted by GAO and the National Petroleum Council and is targeting infrastructure barriers to biofuels growth by forging strategic cost-shared partnerships with private industry, collaborating with other agencies, and working with the different regions of our country to bring the promise of large-scale biofuels distribution to fruition.

Mr. Chairman, I am pleased to report to you that the Department's focus on enabling the development of a domestic biofuels industry is already showing results. We have developed, in the Office of Energy Efficiency and Renewable Energy (EERE), a biofuels infrastructure team. This team connects, for the first time, the Vehicle Technologies Program and the Biomass Programs to promote a comprehensive and coherent approach to the biofuels industry. DOE recently completed testing on the BioPower sedan produced by SAAB (a subsidiary of GM) to validate E85 engine optimization technology, confirming the ability to meet EPA emissions standards and increased performance.

The Department is coordinating pipeline work with DOT, which has responsibility for setting standards for pipeline transportation and ensuring that these products can be safely handled, and working to examine the compatibility of intermediate blends (such as E15, E20, and other lesser blends than E85) on the existing vehicle fleet with the EPA, which has responsibility for testing the emissions impacts of fuels and vehicles, and registering and certifying fuels and fuel additives before they can be used in the transportation system. Finally, we have elevated the level of activity and engagement of the Interagency Biomass R&D Board, an interagency coordinating group, to ensure a comprehensive approach to addressing key infrastructure barriers, such as feedstock availability and infrastructure development. These efforts, both internal to the Department and externally throughout the Executive Branch, are focused on reducing duplication, accelerating research, development, and commercialization activities, and ensuring a comprehensive approach to domestic biofuels deployment in a timeframe that is consequential.

As I have testified many times before, Government funding alone will not be sufficient to meet the substantial challenges of changing our Nation's energy portfolio. The deployment of pumps, vehicles, and other infrastructure must increase rapidly over the next decade, so that consumers have access to domestic renewable fuel sources.

There are approximately 170,000 fueling stations in the U.S., of which only 1,183 offer E85. In order to make E85 readily available, the Department estimates that approximately 50,000-60,000

stations must exist and operate simultaneously to fully implement an E85 infrastructure (similar to the current number of diesel stations). On average, retrofitting an existing fueling station to offer E85 is estimated to cost \$60,000. The 2005 Energy Policy Act provided tax incentives that can defray up to \$30,000 of the total cost. While it is not the Department's role to pay for the installation of biofuels infrastructure, the Department can provide technical assistance, training, and small grants that can be leveraged by State, local, and private sector funds. In 2006, the Department, through its Clean Cities program, announced selection of alternative fuel infrastructure projects that will result in 182 pumps installed by the end of 2008. In the last 12 months, there were a record number of E85 pumps installed nationwide: 440. At this rate, it will take 110 years to reach critical mass in E85 infrastructure. The current rate of deployment is insufficient to support our national vision of domestic biofuels production, deployment and use.

The Department believes that an E85 delivery system is an important goal of an alternative fuels infrastructure, but that intermediate blends (e.g., E15, E20) may offer an alternative approach to balance fuel production and use in parallel in order to enable continuous uninterrupted growth in production. In fact, intermediate blends may provide for more rapid absorption of renewable fuels into consumer markets in the near-term.

Flexible fuel vehicles can readily and easily accommodate any biofuel blend up to and including E85. Currently, there are more than six million flexible-fuel vehicles (FFVs) on the road in this country, but still a relatively insignificant number representing a small percentage of the approximately 225 million light duty vehicles in the U.S. Domestic auto manufacturers have pledged to the President to make half of their products flex-fuel capable by 2012, and we are hopeful that this trend will be maintained and even be accelerated. It is important to note that this commitment is contingent of the availability of the physical presence of E85 infrastructure.

During my first week on the job, I traveled with Secretary Bodman to Detroit, where he addressed the leaders in the automotive industry with a direct challenge, calling for more flex-fuel vehicles on the market for all vehicle types and classes, available from all manufacturers who serve the U.S. market. We see no technical reason why flex-fuel vehicles can not be more uniformly ubiquitous across all markets. Nor do we see any technical reason that at least the option of flex-fuel could not be offered to all consumers at a relatively low price.

CODES AND STANDARDS

The widespread deployment and use of biofuels will depend in large part on the harmonization of existing codes, standards, and regulations, and the development and promulgation of new codes and standards where they are deemed necessary. This will ensure consumer confidence, safety, environmental protection, and the integrity of our Nation's fuel supply, distribution, and utilization infrastructure. EERE has initiated an effort to engage international collaborations to address fuel standards, data sharing, and other common interests. Establishing harmonized codes and standards is critical and time sensitive since the market is expanding rapidly. For example, a standard that addresses fuel quality would directly affect production plant design and cost.

The Department has been working with industry to sponsor work in codes and standards development for many years. These efforts have helped to accelerate the development of codes and standards for alternative fuels and establish mechanisms to distribute information to relevant

stakeholders. Similar efforts are now underway to work with industry stakeholders and other Federal agencies to promote biofuels codes and standards.

The Department is working with automotive manufacturers and E85 dispenser manufactures to establish Underwriters Laboratory (UL) safety certification procedures for E85 fueling equipment on an accelerated schedule. DOE provides technical guidance and coordinates with standards organizations such as the American Society of Testing and Materials (ASTM), the National Fire Protection Association (NFPA), the American Petroleum Institute (API), the American Society of Mechanical Engineers (ASME), and the Society of Automotive Engineers (SAE). We also work with the National Institute of Standards and Technology (NIST) and the Internal Revenue Service (IRS) on metering issues. It is worth noting that all pumps are tested and certified to accommodate up to E15. Variable pumps that allow consumers to select the most appropriate blends will soon be available to allow more choices and a more rapid absorption of biofuels in the marketplace.

OUTREACH

Our vehicle technology deployment efforts, including Clean Cities' activities, facilitate training of state and local public safety officials (e.g., local fire departments, construction and permitting officials, fire marshals, and first responders) which is critical to assuring the smooth and continuous expansion of biofuels markets. Though ethanol, either as E85 or as a blendstock in gasoline, garners most of the publicity these days, DOE also works on infrastructure issues which are associated with other current biofuels, such as biodiesel, and monitors the development of other biofuels which may be important in the future.

In the biodiesel arena, DOE is engaged, along with our partners in the National Biodiesel Board, in important revisions to that fuel's ASTM standard. This work has enabled broader application of biodiesel and increased the confidence of Original Equipment Manufacturers (OEMs) and vehicle owners that the use of biodiesel blends are compatible with existing engines.

CONCLUSION

The President's "Twenty in Ten" goal holds the promise of accelerating penetration of cellulosic ethanol and other alternative fuels into the marketplace and bringing the benefits of a clean renewable and alternative energy source more quickly to our Nation. Providing the necessary infrastructure is a critical part of reaching that goal, and we are mindful throughout our programs of that imperative. A comprehensive effort is underway to meet the challenges of a growing renewable fuels industry in transportation.

In order to meet the target of 20 percent gasoline reduction in a ten-year span, it will require change in the status quo and agile capacity to adopt fuel delivery systems, codes and standards, and the national vehicle fleet. . The President's "Twenty in Ten" initiative outlines how this would be achieved through pursuit of technology advancements and policy incentives. In addition, voluntary market decisions must take place at a rate and scale that is consequential within a timeframe that matters. The Department appreciates the interest and support of the Committee in this critical area. This concludes my prepared statement, and I would be happy to answer any questions the Committee members may have.