ADAVANCED BIOFUELS COALITION
MICHAEL MCADAMS, EXECUTIVE DIRECTOR

TESTIMONY BEFORE THE SUBCOMMITTEE ON ENERGY AND ENVIRONMENT COMMITTEE ON SCIENCE AND TECHNOLOGY

JUNE 14, 2007

A PATH TOWARD THE BROADER USE OF BIOFUELS: ENHANCING THE FEDERAL COMMITMENT TO RESEARCH AND DEVELOPMENT OT MEET THE GROWING NEED

Mr. Chairman, Ranking Member, and members of the Committee, my name is Michael McAdams, and I serve as Executive Director of Hart Energy's Government Affairs Group. I am testifying on behalf of the Advanced Biofuels Coalition.

It is a great privilege and responsibility to appear before you today to share how the members of the Advanced Biofuels Coalition are contributing to meeting our energy and environmental improvement goals. I am delighted to join such a distinguished panel, some of whom I have worked with for years in the area of fuels policy.

The Advanced Biofuels Coalition is a group of companies whose second and third generation technologies hold great promise. These companies, working with the federal government, have the potential to provide the American public with abundant volumes of high quality, no-compromise renewable fuels. The fundamental objective of the coalition is to educate policy makers on the ability of these technologies to deliver significant volumes of lower carbon fuels today and in the near future. For these companies to be able to achieve this goal, they need your support in adopting policies at the federal level which are technology and feedstock neutral.

We applaud your efforts to provide a path to broaden the use of "advanced biofuels." The legislation before us today we believe can make a significant contribution to America's fuels market place. Our members recognize the tremendous contribution and the path traveled which first generation fuels have made already and will play in the future of this effort. But we believe that the future of energy policy will require contributions from many sources. As one Governmental official recently suggested this is a matter of "silver buckshot not a silver bullet".

Members of the Coalition have reviewed your legislation and agree that many of the provisions would be helpful in moving the market forward. Specifically, we are most interested in your section regarding infrastructure, and would encourage that you consider the benefits that second generation fuels would have in terms of reducing overall infrastructure cost to the county.

If a picture is worth a thousand words, then with the remaining portion of my five minutes I want to present to the committee several slides that illustrate the potential of

second and third generation technologies which use existing biofuel feedstocks. The first slide depicts various technology pathways and the potential fuels which they could produce.

The second slide presents the suite of technologies currently available or under development. As you can see, there are a range of different technologies on the slide, all of which are renewable.

The third slide briefly depicts where many of these technologies are currently being deployed around the world. To the extent we do not make technology neutral policy choices, many of these technologies may not find their way to the United States.

The fourth slide is a comparison of biodiesel product quality as it compares to several technologies. You can see from this slide that there are significant quality differences, not to mention the fungibility benefits, associated with the second and third generation technologies. The fact that the basic chemistry of these products is fundamentally different from first generation biodiesel provides the opportunity that jet fuels may be produced in the near future from some of these renewable based processes.

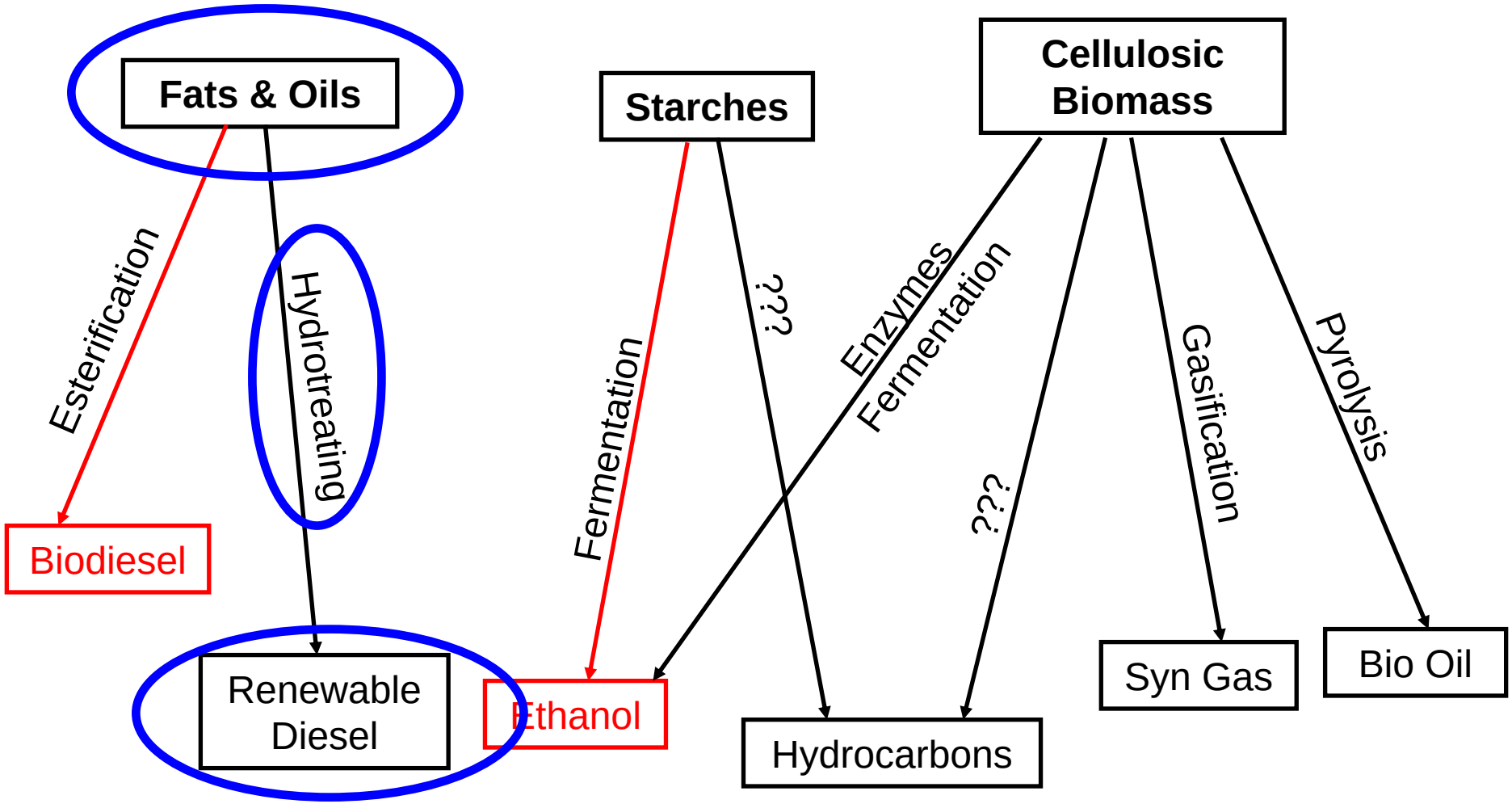
The fifth slide attempts to show the potential of scalability of the various technologies. As you can see, the second generation fuels which are sugar- based and biomass- based give the country significant opportunity for large volumes.

The last slide depicts several second generation alcohol products, as they compare on energy density, volatility and octane with ethanol.

The last point I would wish to make to the committee concerns the desire by many in this Congress to develop a Low Carbon Fuel Standard. Depending on its specific process, feedstocks, and products, an individual biorefinery may have a wide range of life-cycle carbon emissions. Should the Congress seek to mandate a specified biofuels target, it should provide sufficient flexibility to allow both the objective of hitting a renewable gallon target and the objective of having a lower carbon fuel supply to both be achieved and not be in conflict.

In conclusion we appreciate the opportunity to testify before you today and stand ready to work with the committee on the legislation before us.

Biomass To Biofuels



Source: Advanced Biofuels Coalition

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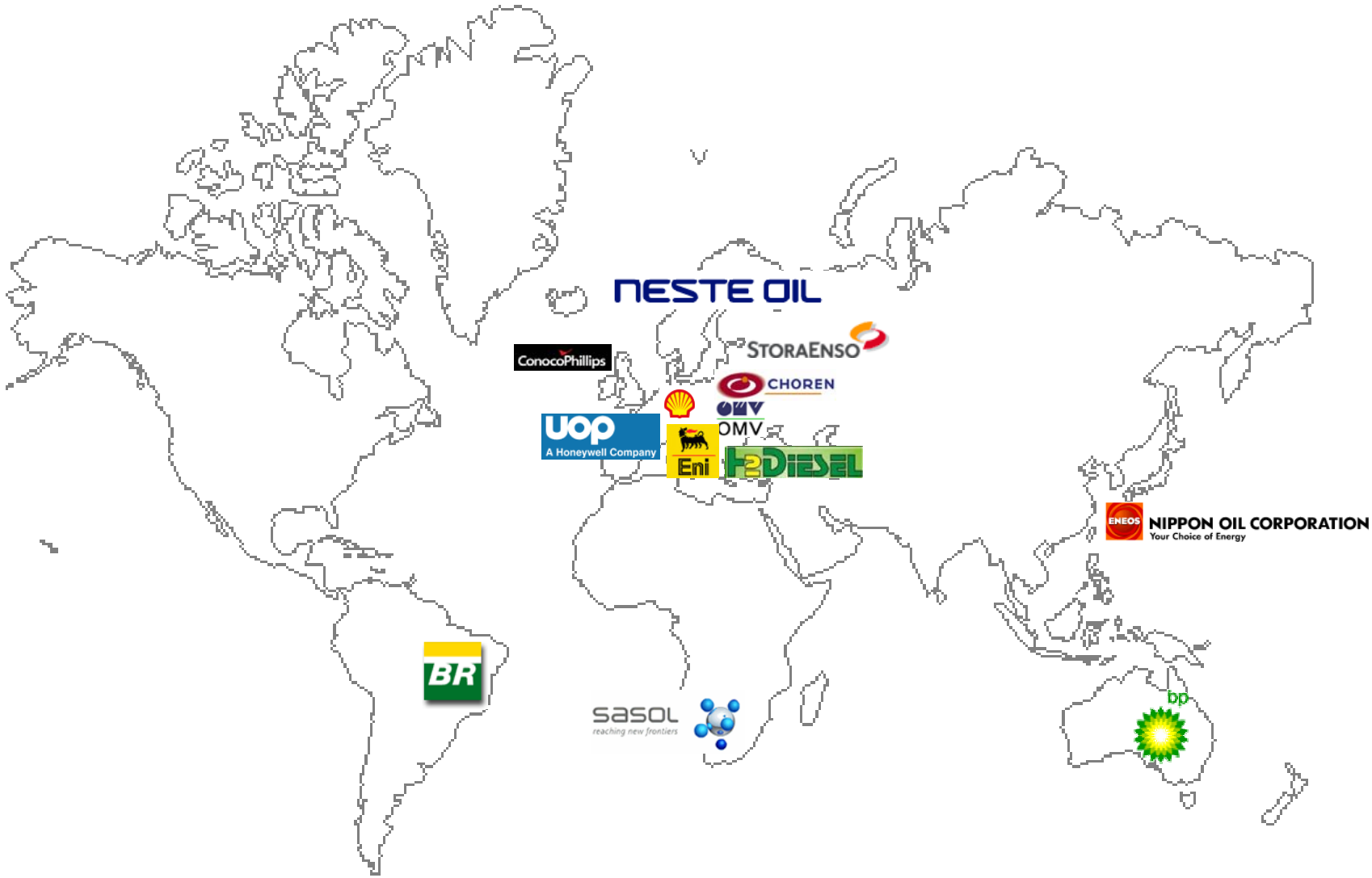
Renewable Diesel Alternatives

Feedstock Preferred	Product	Application	Timeframe
Vegetable oil	Biodiesel (methyl-ester)	On-road diesel (splash blend, 2% blend)	Available Today
Animal fat	Renewable Diesel (uncatalyzed TDP)	Bunker fuel, heating oil	Available Today
Animal fat	Renewable Diesel (co-processed catalyzed TDP)	On-road premium (pipeline, 10% blend)	Available Today
Animal fat	Renewable Diesel (stand alone catalyzed TDP)	Jet fuel, DoD, on-road premium (pipeline, 100% bio)	Available Today
Sugar (corn, sugar cane, cellulose)	Renewable Diesel, Blending component (fermentation)	On Road High Cetane, Jet Fuel (pipeline)	2010
Animal fats and oils	Diesel Substitute (Emulsion)	Heating oil, distillate, and Marine diesel, (100%)	Available Today
Biomass (animal fat, vegetable oil, litter, wood chips, etc.)	Renewable Diesel (BTL)	Jet fuel, On-Road high cetane (pipeline)	2010

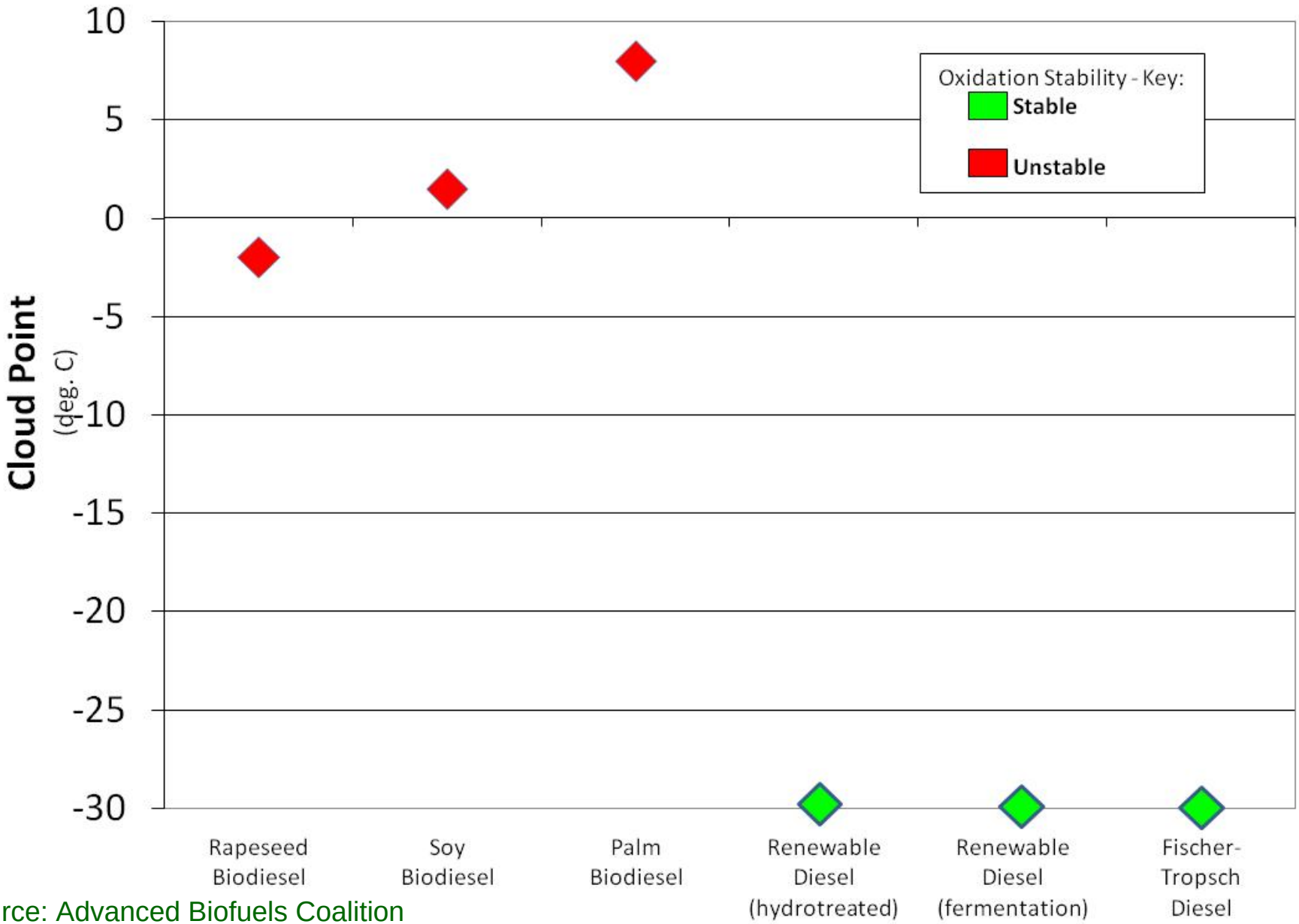
Geographic Introduction of Second Generation Biodiesels



Source: Advanced Biofuels Coalition

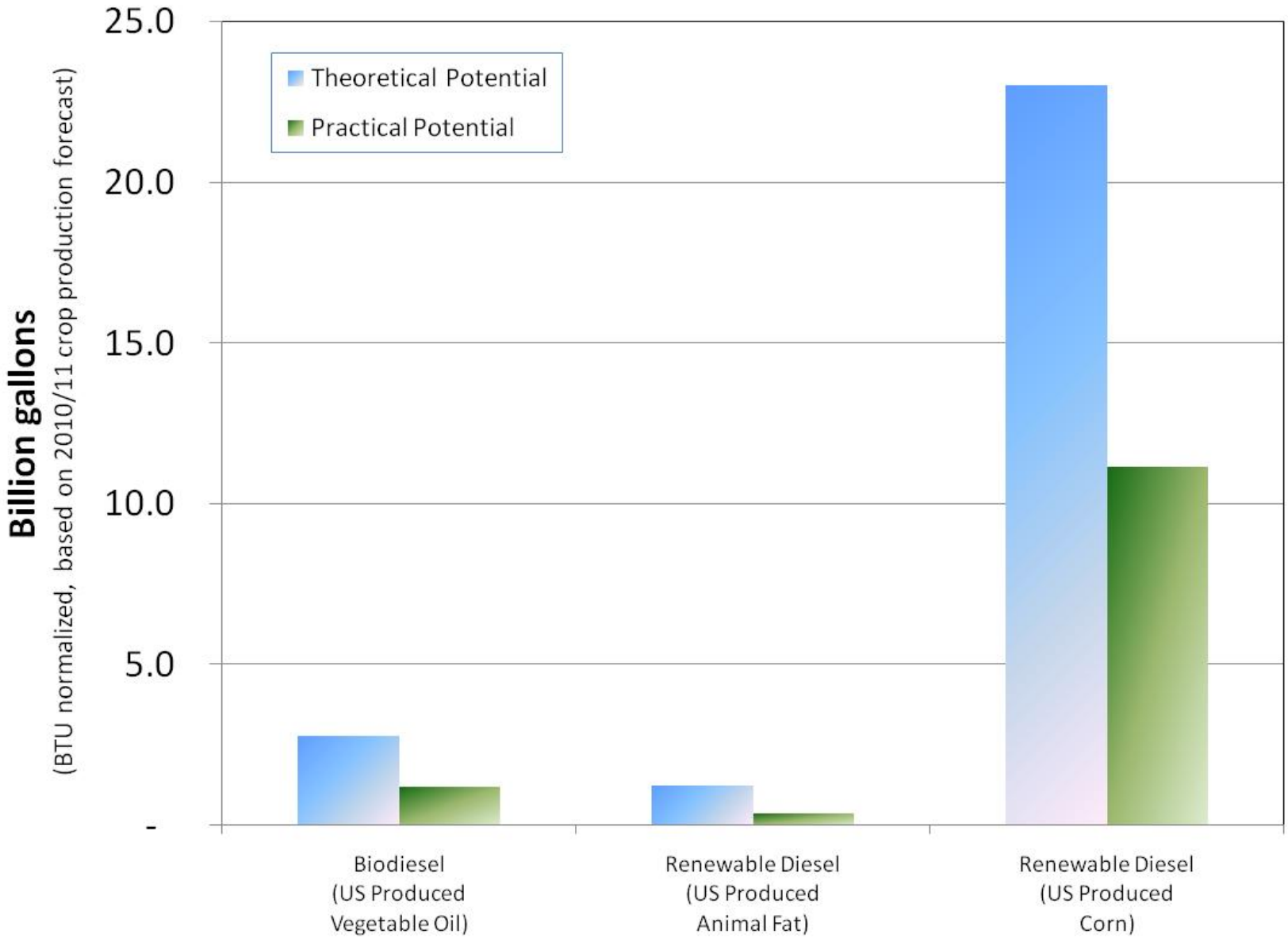
Next Generation Technologies Result In Improved Product Attributes

Diesel – Cold Flow & Stability



Source: Advanced Biofuels Coalition

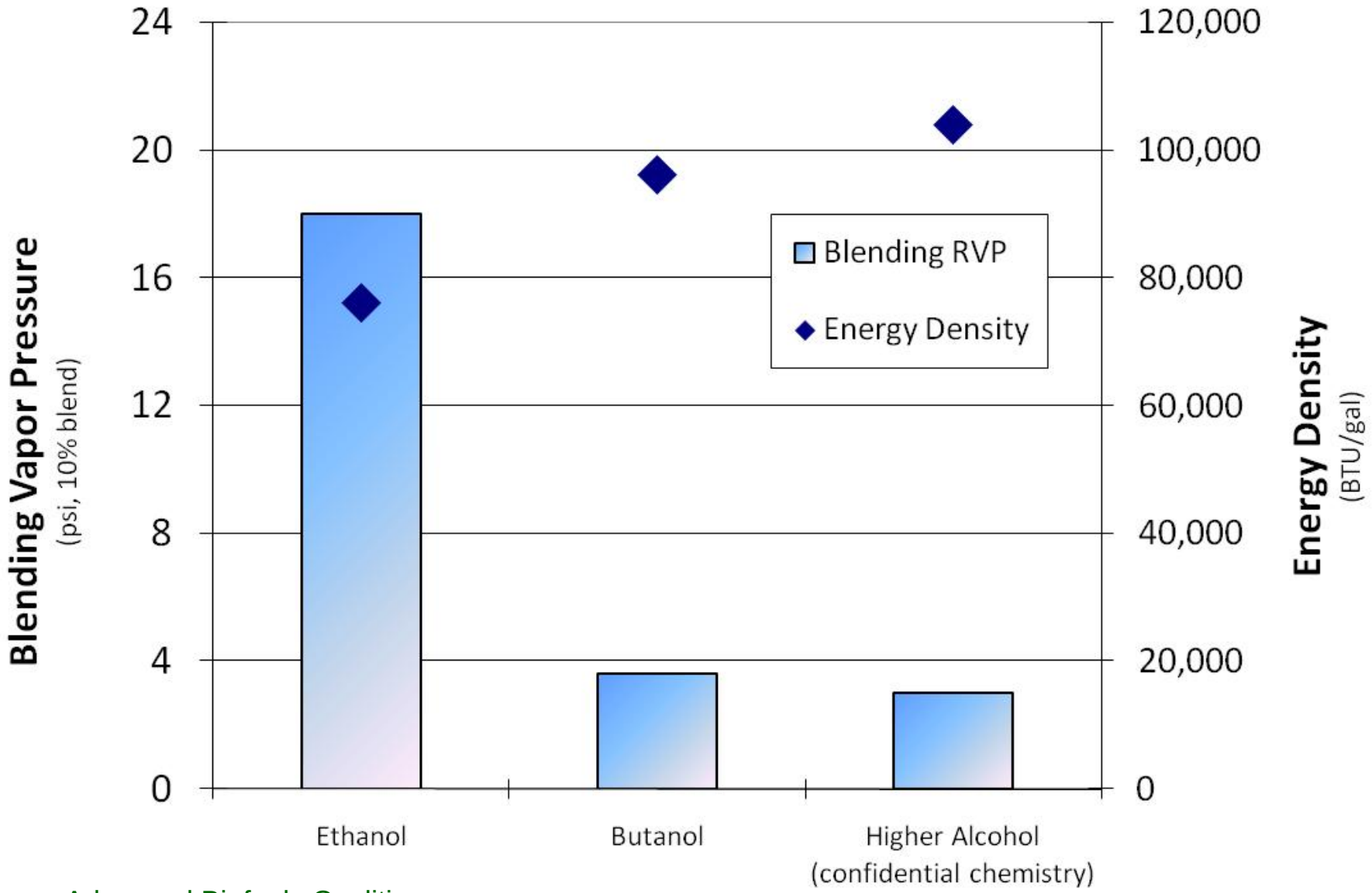
Next Generation Technologies Bring Increased Volume Potential



Source: Advanced Biofuels Coalition

Next Generation Technologies Result In Improved Product Attributes

Gasoline – Volatility & Energy Density



Source: Advanced Biofuels Coalition

APPENDIX

Questions from the Committee:

1. Is a greater federal investment needed in biofuels research? Are there specific areas that are in need of greater research focus? What feedstocks are presenting the greatest long term potential for development of biofuels? What are the technical barriers to realizing biofuels from diverse feedstocks?

Answer: Currently many of the new second and third generation technologies have begun in the laboratories from colleges and universities around the country. We would encourage the committee to continue to encourage and foster public private-partnerships with industry and governments to make the new discoveries in this area.

The type of technology and choices of feedstocks utilized by a specific processes determine their specific interest in any given research focus. In addition, the types of process will have a direct bearing on the view of which feedstocks may hold the greatest long-term potential for the development of fuels. Clearly for a company like Amyris, which leverages sugar containing feedstocks to create hydrocarbon fuels, the ability to utilize forms of low cost sugars from cellulosic processes may hold great promise. As for a company such as Velocys, which is developing a Fischer-Tropsch process, woody biomass or slash from trees provides a great opportunity forward.

Your last question inquires as to the technical barriers to realizing biofuels from diverse feedstocks. In most cases, whether it is gasification or biotechnology, scaling up the technology is one of the primary challenges. The government's ability to provide support for the demonstration of technology and the assistance in the testing of fuels to meet the specification for different engines could be particularly helpful to the smaller companies involved in this space. Additionally, food oils have a distinct tendency to make different products from different process applications and have different quality aspects even within the same process. This creates technical barriers to transportation and engine use of various technological applications and feedstocks for biofuels.

2. How will the business community benefit from better federal coordination and cataloging of information from federal research on the biofuels development process? Should databases and a centralized clearinghouse be created to make this information readily available?

Answer: To the extent the federal government is conducting its own research and development, and it would catalogue and provide transparent access to a wide variety of stakeholders, this could potentially lead to partnerships and shared technology developments that might not otherwise be forthcoming. Putting this information into the marketplace at a time of high investment in these types of areas does provide for the potential that new technologies may be picked up, combined and moved forward in a more expeditious fashion.

3. Can you comment on the need for research in the area of biofuels infrastructure? What should be included in such research?

Answer: There are many new technologies that hold the promise to bring fungible high quality diesel and gasoline components to the market on a cost effective basis. The legislation should explore the timeframes for these alternatives and include these fuel options in the studies for infrastructure requirements. It might be in the nation's best interest to sequence the requirements for certain volumes of renewable fuels until after the completion of these studies to afford the potential of significantly lowering any large investments which could be required to move massive volumes of first generation fuels.

4. Is standardization of biofuels, whether ethanol or biodiesel, needed to ensure fuel fungibility? Should this standard focus on blend stock optimization?

Answer: Various technologies make differing qualities of biofuels and as a result require different infrastructure. As a result of the biofuels' properties, the quantity of renewable fuel that can be added as a component to either diesel or gasoline also varies. This is further magnified by the warranty requirements of various engine manufacturers.

In the past we have seen certain technologies utilize standard requirements at state levels to attempt to block advanced biofuels with great potential from entering the market place.

The committee should be very cautious to not preclude the development of newer higher quality options for consumers in the market place. We appreciate the interest to creating a standard to optimize blend stock for those fuels with highly variable quality. However, depending on the technology and the product involved, the level and requirements needed to create a fluid system to deliver consistent finished product to an end point are extremely complicated and could have unintended consequences. For example, requiring U.S. refining in the system to make changes to their blends could require significant changes to the base stock and lower the optimization of the current refining system.

5. Is the current workforce adequate to meet the growing needs for trained personnel to develop and operate biofuels facilities? Is a comprehensive workforce training program needed?

Answer: Depending on the technology involved governs the type of workforce required. For most of our members, the existing personnel from either the ethanol or refining industries have provided adequate personnel requirements. However, support in working training programs is something we would welcome as a way to increase the supply of workers in the future with the knowledge to operate these new technologies.