Chesapeake Cellulosic Biofuels Project

Leading the Nation in Sustainable Next-Generation Energy

PROJECT FACT SHEET

BACKGROUND

Cellulosic ethanol and other fuels derived from cellulose hold much promise for supporting the nation's energy needs while helping to advance environmental goals. First-generation ethanol—derived from corn, barley and other grains—can degrade water quality in rivers, streams and the Chesapeake Bay unless aggressive best management practices are put into place. On the other hand, cellulosic ethanol and other advanced biofuels use plant material for feedstock, such as perennial grasses, woody material, and corn stover, which can potentially help meet the nation's fuel needs while actually helping to protect water.

Most experts agree that a cellulosic biofuels industry is only a few years away. In response, Pennsylvania Governor Ed Rendell and the Chesapeake Bay Commission stepped forward at the 2007 meeting of the Chesapeake Executive Council to jointly champion the *Chesapeake Cellulosic Biofuels Project*. This project and its associated publications and events represent the culmination of a year-long effort that has directed regional expertise toward achieving the dual goals of proceeding in a manner that maximizes the economic opportunities of this emerging technology while also protecting our natural resources.

The Commission and the Commonwealth appointed a 22-member Biofuels Advisory Panel, comprised of experts from the public, private, and academic sectors across the watershed, to provide substantive and political guidance throughout the process. Maryland Delegate Jim Hubbard, who led the Commission's earlier biofuels investigations as 2007 chairman of the Chesapeake Bay Commission, was appointed chairman of the panel.

The Chesapeake Cellulosic Biofuels Project was staffed by the Chesapeake Bay Commission, assisted by a talented team of consultants.

A Coordinating Committee was also named, consisting of state agency representatives from the watershed, to help ensure transparency and a constant flow of information. Via face-to-face meetings and extensive e-mail exchanges, the Advisory Panel and staff team drew upon input from farmers, forest landowners, biofuel developers, environmental and conservation representatives, rural development advocates, agricultural and wood product and petroleum industry representatives, as well as academic and government partners, to develop the policy recommendations presented in the Project's report.

FINDINGS & RECOMMENDATIONS

Three major areas of action were identified to make the Bay region a national leader in the evolution of cellulosic and advanced biofuels:

- *Feedstocks:* The Chesapeake region is blessed with the land and climate to produce a significant amount of cellulosic biomass. To establish this promising industry, we must assure the production of a large, reliable and accessible supply of biomass.

- *Natural Resource Protection:* As shown in the Chesapeake Bay Commission's *Biofuels and the Bay* report, the production of certain biomass crops has the potential to not only sustain water quality but improve it. However, that potential depends on the types of biomass used, where they are grown, and the best management practices that are put into place.

- *Marketing and Infrastructure:* With no existing commercial biofuel plants in the Bay region, there are both opportunities and challenges for production capacity, distribution of feedstocks and biofuels, and marketing of biofuels and their co-products.

The recommendations below are suggestions for sustainable cellulosic biofuels policies that make sense for the Chesapeake Bay region at this time. Some are best dealt with in the near term, while others set out long-term objectives for the region. Because individual recommendations may address more than one of the above subject areas, they are instead categorized by those actions that require regional cooperation or could be taken within individual states.

Recommendations for Regional Action

1. Coordinate regional action to secure funding from the federal Food, Conservation, and Energy Act of 2008 ("the Farm Bill"), the Energy Independence and Security Act of 2007 ("the 2007 Energy Act"), and the Energy Policy Act of 2005 ("the 2005 Energy Act").

Sections of the two Energy Acts and of the Energy and Conservation titles of the Farm Bill provide opportunities to facilitate the development of next-generation biofuels. But their complexity and funding status as authorizations, mandatory programs and programs needing appropriations all call for ongoing cooperation among the states of the Chesapeake region to assure maximum access and utility of the funds. Bay states should establish a cooperative group to sort through the various provisions and work together to secure funding for biofuels development.

2. Coordinate regional input on U.S. Department of Agriculture (USDA) conservation programs to promote sustainable feedstock production and harvest.

States should ensure that areas under USDA Conservation Reserve and riparian buffer programs may be used for biofuel feedstock production where it is possible to guarantee that the conservation purposes of those programs remain in effect.

3. Discourage use of invasive non-native feedstocks.

States in the Chesapeake region should agree to a long-term protocol that discourages the introduction and use of invasive non-native species as feedstocks for the next generation of biofuels.

4. Encourage local or on-farm use of biomass.

The use of biomass for combustion and gasification at the local or farm level should be encouraged. This sustainable practice, valuable in its own right for meeting energy goals, also helps build the market and infrastructure for next-generation biofuels from the same types of feedstock.

5. Develop a regional carbon trading strategy that addresses the role of biofuels.

A regional strategy should be developed to maximize opportunities from a federal carbon trading protocol and provide guidance for the role of biofuels in the carbon trading market. The strategy should be advocated to the region's Congressional leaders.

6. Coordinate as a region to affect national energy policy.

National policy must establish an even playing field for advanced cellulosic biofuels, and regional leaders should work with their Congressional delegation to ensure this is a priority. Similar work should occur with state legislatures to achieve such fairness in state laws. Particular attention should be paid to even-handed treatment for all fuels.

7. Establish a regional analytical framework for biofuels development.

A regional biofuels analytical framework is needed to estimate how the industry will evolve, with regular updates that address regional feedstock capacities, competing uses, potential limitations such as water supply, economic diversity, infrastructure needs, and the potential benefits to the economy and state revenues. An advisory group of outside experts should be established to support this effort.

8. Establish a regional strategy to encourage greater use of higher blends of biofuels.

As higher blends of biofuels become available, states in the Chesapeake region should work with the private sector to maximize their availability and use. The strategy could include incentives and warranties to encourage sales of vehicles that use higher blends, the installation of blender pumps and the guarantee of access to higher blend biofuels along major interstate highways or within heavily-populated areas.

9. Establish regional research priorities.

A regional agenda of research priorities should be developed with the participation of private sector biofuel interests, the regional biotechnology industry, government and the university-based biofuel research community.

10. Implement a regional outreach effort.

A coordinated regional outreach effort should be established to ensure that the national and worldwide biofuels markets are fully informed about the natural assets and advantages of the Chesapeake region for the next generation of biofuels, namely:

- *The climate and soils to grow a wide diversity of feedstocks;*
- *Great variety in landscapes and land types for growing feedstocks;*
- *An underutilized forest products capacity;*
- *A reliable supply of municipal solid waste;*
- *The potential for refining facilities of all scales located near feedstocks;*
- *Ready integration of biofuel production with animal agriculture;*
- *Close proximity to petroleum blenders and markets;*
- *A thriving biotechnology industry; and*
- *An excellent university-based biomass research infrastructure.*

Recommendations for State Action

1. Proactively communicate consistent messages about the benefits of next-generation biofuels, including cellulosic biofuels, and the importance of their sustainable production.

Convey an awareness that biofuels are happening now, and that their development can happen in a way that maximizes the benefits to farmers, foresters, the general public, the state, and the environment.

2. Encourage winter biofuel crops as first-generation feedstocks during the transition to advanced biofuels.

Traditional and newly-developed winter crops, such as hulless barley, should be encouraged as biofuel crops that support existing combustion, grain-based ethanol and biodiesel technologies. They can also be managed to provide many of the benefits of cover crops, including erosion control and absorption of excess nutrients from previous row crops.

3. Assure broad and effective use of best management practices for growing and harvesting feedstocks.

Geographically-relevant conservation best management practices (BMPs) should be established for the planting and harvesting of biofuel crops, including crop residues and forest crops.

4. Establish or update state removal guidelines for crop residues and forest slash and provide incentives for their adoption.

Crop residues such as corn stover and forest slash hold great promise as feedstocks for cellulosic and other next-generation biofuels, but there are concerns about the effects of their removal on long-term soil quality, erosion control, wildlife habitat and nutrient loadings to streams and the Bay. Consequently, removal guidelines should be established to reflect soil type, climatic conditions and land configuration, among other factors. In cases where existing guidelines were established before the demand for biomass feedstocks was a factor, such guidelines should be updated.

5. Provide incentives for creating and implementing forest management plans.

The owner of any forest that provides biomass or fast-growing trees for biofuels feedstock should develop and implement a forest management plan. Special and unique forests with important conservation, historic and social value should be preserved from replacement with biofuel feedstocks, including fast-growing trees.

***6. Encourage the sustainable production of next-generation feedstocks on abandoned or underutilized land**.*

States should encourage the establishment of sustainable, next-generation feedstocks on abandoned lands (such as previously mined or farmed areas) as well as on reclaimed mined areas and other underutilized or lower value lands.

7. Ensure the nursery and seed industry has adequate supplies of seed and plant stocks.

States should share information about the development of biofuels policy with the nursery and seed industry to ensure that there is an adequate supply of seed and plant stocks to address the anticipated growth of biofuel crops.

8. Facilitate the production and purchase of biofuels through consumer incentives and infrastructure development.

In order to create a viable biofuels industry, sufficient infrastructure must be in place to deliver feedstocks to refineries and biofuel products to blenders and the ultimate consumer. Additionally, states should assist in the development of consumer demand for next-generation biofuels by establishing purchase requirements and incentives that range from internal state policy to public tax incentives.

***9. Utilize state economic development programs**.*

States should make creative use of their economic development programs to support the development of feedstocks and refining facilities for next-generation biofuels.

10. Focus facility support on small, first-stage operations.

States should give priority support to small, first-stage pilot plants for advanced biofuels.

CONCLUSION

The Chesapeake Bay region is well positioned to take leadership in the revolutionary shift to greener, renewable fuels, and is well positioned to enjoy its economic and environmental benefits – a number of diverse feedstocks can be grown in the Bay region as sustainable crops for cellulosic biofuels throughout the year and transported at low cost to major East Coast energy markets, a large number of universities and research institutes in the region are already working on cellulosic biofuels, and many private companies are willing to partner and develop competitive technologies.

As co-champions of this effort, the Commonwealth of Pennsylvania and the Chesapeake Bay Commission offer the preceding recommendations to policy makers, opinion leaders, energy providers and consumers for consideration and adoption, so that the legacy of biofuels in our region will be one of economic prosperity, environmental sustainability and resource restoration.