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A Cellulosic Ethanol Plan for Research Universities

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A cellulosic ethanol plant and revamped recycling program would provide the University of Georgia (UGA) light vehicle fleet with a cleaner burning fuel blend while decreasing streams of waste paper. This could serve as a model for research institutions across the nation.

The American transportation sector uses roughly 68 percent of the nation's oil, and 96 percent of the fuel used in the transportation sector is from petroleum products. One alternative to fossil fuels is cellulosic ethanol—a cleaner-burning fuel that is blended with conventional gasoline. A cellulosic ethanol research facility coupled with a stronger campus-wide recycling initiative to ensure consistent feedstock supply would increase the University's research and production of cellulosic ethanol.

KEY FACTS

- UGA vehicles consumed 313,317 gallons of gasoline in 2006.
- Ethanol can be blended with conventional gasoline for fuel usage in inexpensively adapted vehicles.
- Cellulosic ethanol has higher energy yields than does corn ethanol.

Additionally, by using this inexpensive, cleaner-burning ethanol in its light vehicle fleet, the University would mitigate its reliance on oil. Locally, this plan would promote ethanol use, relieve energy budget pressure, and provide licensing opportunities for researchers. This project would spur similar projects in other universities through dissemination of new science and technology.

HISTORY

Cellulosic ethanol is produced from biomass including logging residues, agricultural waste and municipal yard waste. Ethanol in all forms provided only 1.2 percent of all transportation fuels consumed in the United States in 2005, and cellulosic ethanol played almost no part in this contribution. Nevertheless, cellulosic ethanol has higher energy yields, produces fewer greenhouse gases, and requires less land compared to corn ethanol.

TALKING POINTS

- Cellulosic ethanol results in less environmental pollution than does burning fossil fuels.
- The use of cellulosic ethanol will reduce U.S. dependence on foreign oil.
- An improved recycling plan reduces paper waste and associated disposal fees.

Despite recent publicity and heavy investment, the cellulosic ethanol industry is relatively new and commercial application of the technology is essentially nonexistent.

ANALYSIS

The costs of such a program are difficult to determine due to the multitude of

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variables involved and the lack of existing models. Currently, there are no facilities at the pilot-scale stage that utilize wood products, such as paper, to serve as models. However, by working in stages, technological advancements can be tested and vetted without a wholesale, upfront investment in a pilot-scale facility. The infrastructure can be incrementally installed as needed and when warranted. Furthermore, newly developing advanced technology is rarely, if ever, inexpensive. We should not be deterred from developing cellulosic ethanol, but rather recognize the value of investing now in the interest of long-term energy independence.

AUDIENCE

Environmentalists, businesses, and university officials will all reap benefits from such a conversion. Though some may question the feasibility of a plant on such a scale, the incremental approach should alleviate doubts.

NEXT STEPS

The university should immediately improve its recycling program and form an investigative committee to address specific plant details. Within two years, the University should advance cellulosic ethanol technology, develop a comprehensive plan for staged development, and organize a funding framework focused on soliciting funds from the community, businesses, and government. Within five years, it should aim to have a pilot-scale plant fully functioning and all fleet vehicles running on at least a 20 percent blend. Other research institutions will then be able to adopt similar programs, having learned from this model.

SOURCES

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