

**Testimony to
Senate Committee on Energy and Natural Resources
Regarding S.987
Presented by
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Good morning to you Mr. Chairman and to the Members of the Committee. Thank you for the invitation to appear before you this morning. I appreciate the opportunity both to comment on the tremendous potential of cellulose ethanol and to offer our thoughts on S.987.

My name is Brian Foody and I am the President and CEO of Iogen Corporation. Iogen Corporation is one of the world leaders in the cellulose ethanol field. We are proud to have been selected as one of the winners of the recent Department of Energy cellulose ethanol grant solicitation and look forward to a successful completion of our negotiations with the DOE.

At Iogen, we have been producing cellulose ethanol in our demonstration plant in Ottawa since 2004. To attend this hearing, I drove to the airport in a cellulose fuelled E85 flexible fuel Chevy Impala. In fact, we have been producing sufficient volumes of cellulose ethanol – primarily from wheat straw – to fuel our own fleet of FFVs as well as the fleets of two Canadian government Departments.

Before commenting on S. 987, let me say a few words about the benefits of cellulose ethanol and its potential to help America achieve several important policy objectives.

There are at least three important government policy objectives that cellulose ethanol can help achieve.

- Energy security
- New economic opportunities for rural communities
- Reduced greenhouse gas emissions associated with operating our cars and trucks

Of these, the most pressing is energy security. So the question many of us are asking is, how much can the emerging cellulose ethanol industry really deliver on its potential, and how quickly can it be done?

In order to answer that, we need to start with the feedstock opportunity. The Department of Energy and the Department of Agriculture worked together on a study of this issue. Their findings, published in an April 2005 report now known as the “Billion Ton Study”, found that even with conservative assumptions about yields from crop residues and dedicated energy crops, the United States can annually produce in excess of one billion

tons of cellulose feedstock for conversion to ethanol and other bio-refinery products. That study is available online at http://feedstockreview.ornl.gov/pdf/billion_ton_vision.pdf.

At the current state of demonstrated efficiency, cellulose ethanol production facilities could convert that material into 30 billion gallons of ethanol. Now there are obvious hurdles between here and there that will greatly effect how much and how quickly ethanol can be produced from that feedstock material.

The first issue is commercial demonstration of the technology. This Committee's work in EPACT established both a grant and a loan guarantee program to accelerate the demonstration of conversion technologies, and likely you are familiar with the state of implementation of those programs.

Next will be the challenges of building large-scale production facilities – as large as or larger than current starch ethanol facilities – in the feedstock basins around America. These challenges are common to any new production facility. Sites will have to be chosen and permits obtained. Feedstock supply contracts will have to be entered into and delivery programs will have to be established. Offtake contracts will have to be reached, and the transportation of the finished product will have to be arranged.

These challenges are not insignificant, but neither are they likely to prevent the rapid deployment of any robust cellulose conversion technology that has been proven to the satisfaction of likely investors. Investors are eager for opportunities to diversify energy holdings when there is an opportunity for sustained profitability.

One illustration of investor interest in new energy technologies is in the recent, steady expansion of integrated oil sands operations. That sector has been adding roughly 10 billion gallons per year of addition capacity with few signs of slowing.

In short, cellulose technology continues to face important business challenges, but I have every confidence that each challenge is manageable, and that ethanol from cellulose feedstocks will be a significant component in this nation's fuel mix.

Regarding S.987, first let me say that it is an excellent bill and we fully support its passage. We congratulate the Committee on its' work in producing this vision for the future of American energy and economic security.

The bill creates a system that will allow cellulose ethanol producers to join the market in a way that does not undermine or conflict in any way with the established starch ethanol producers. That is critical because starch ethanol will remain the bedrock of the biofuels industry for some time to come. Without starch ethanol, the country would simply not be able to achieve the policy goals of this legislation.

Additionally, the bill sends a clear signal that the government is serious about a steady expansion of its commitment to cellulose ethanol. The goals of 3 billion gallons of advanced biofuels by 2016 and 21 billion gallons by 2022 are both ambitious and

achievable. These targets set the fundamental precondition to the development of an advanced biofuels industry by establishing a clear market demand for the product.

Establishing these targets will further energize the industry to complete the commercial demonstration of its technologies and begin deploying them. Furthermore, these targets will establish a basis for confidence among all participants in the value chain that business opportunity of cellulose ethanol is very real. That confidence is an essential precursor to the preparations, planning, negotiations, and other business activities needed to grow this industry.

If S.987 is enacted, farmers will begin to think seriously about the possibilities of selling their residues for profit, and managing their crops to enable them to do that. When the time comes for farmers to consider planting dedicated energy crops such as switchgrass, absent a clear signal that the market opportunity exists, they would be crazy to take such a leap. This legislation squarely addresses that need by creating clear targets for growth in the market.

The same is true of the capital markets that will be needed to support the deployment of cellulose ethanol production technologies. Investors will not risk capital if there is not confidence that the market will sustain adequate returns. This bill also squarely addresses that need.

Now some of your colleagues might ask why you need to offer market guarantees in this free-market system. My answer would be simply, that this is a case where we do not want the market to dictate the outcome unaided. The clear policy objective of this legislation is to secure for America the myriad benefits of a more diverse, and domestically produced, fuel supply. Left to its own, the market will not accomplish that outcome because absent a policy signal – such as S.987 – there is no means of valuing energy security in the marketplace.

Equally important, S.987 will provide the key to unleashing market forces that will otherwise lay dormant. Once the industry has confidence that a sustained market demand has been established, business will engage aggressively to not only supply that market, but to do so better, faster and cheaper than anyone else.

But if there is one message I would like to leave you with this morning it is that there are some key areas where added clarity and certainty could enhance the Bill and improve the likelihood that the fuel program it would create will be a thorough success.

It seems clear that to deliver on 21 billion gallons of cellulose ethanol – a number, by the way, that we think is quite achievable – there is going to be a need for assurances and predictability going forward.

For example, the government needs to concern itself about over-committing to cellulose ethanol. Some of your colleagues will ask what will happen if the technology cannot deliver the desired volume. But not only will you and your colleagues want assurances

that the cellulose ethanol industry can deliver, that delivery must come at reasonable cost. Nobody wants to commit the nation to buying ethanol at unreasonably high prices.

By the same token, the cellulose ethanol industry and its investors will need to know that, the significant investments needed to deliver the anticipated volume will not be stranded by future changes in policy. The private sector will need confidence that the Program can be relied upon not to disappear or change radically.

Some might expect that setting ambitious targets for cellulose ethanol will be sufficient incentive for capital formation. But mandates alone still carry risk to investors. Investors will ask, for example, how would policy makers respond if only 80% of the expected capacity can be on-line by the target dates in the bill? There is a waiver in the bill, but it leaves a great deal of discretion to the Secretary of Energy. Would there be pressure in such a case that would cause the Secretary to reduce the mandate below the level of already constructed capacity? Might the level of gasoline prices in the future lead to entirely suspending the mandate for cellulose ethanol? What happens if your appropriately ambitious goals cannot be fully satisfied for any reason?

In the investment community, these uncertainties will translate into risk premiums. That will drive up the cost of supplying the ethanol to meet your targets. Conversely, greater certainty will enable lower costs and, therefore, make the policy not only more durable, but also more popular.

So how do we manage these concerns? What mechanisms would we propose to ensure we can deliver 21 billion gallons of certifiable cellulose ethanol at reasonable price, and achieve the Senate's policy objectives?

Let me start by saying that we have given this question a lot of thought and we do not presume to have it all figured out. Having said that, it seems that enhancing the current safety valve in the bill – the Secretary's waiver authority – you could easily provide the certainty and confidence that both the government and the investors will require.

What we want to avoid is a situation similar to the California zero emission vehicle experience where laudable policy objectives were never achieved because the necessary safety mechanisms were not in place. In that case, there was clearly progress toward the goal, but not enough to sustain the program as originally envisioned. Those who invested based on the established public policy ultimately looked foolish, while those that chose not to invest in the new policy direction ultimately looked wise. Instead, public policy should reward and protect even incremental progress toward ambitious goals. At the same time policy should not hold the economy hostage when initial ambitions prove unreachable, because that creates political pressure to scrap the policy entirely.

Instead, it is important to create a safety valve that sustains the incentive to reach the overall goal – in this case 21 billion gallons of advanced biofuel – while at the same time temporarily backing off the target only to the extent that it is beyond reach. If the cellulose ethanol industry were to succeed only in producing 80% of your ambitious targets by a given date, that should not precipitate a crisis. Instead, appropriate – and

predictable – adjustments should be made that reward the progress and sustain the overall goal.

While exploring possible safety mechanisms to ensure success we have landed on some basic principles that could guide us. For example, we do not want to suspend market conditions within the market supplying the demand for advanced biofuels. We also believe that waivers should not reduce the Renewable Fuel Standard below current and planned production volumes unless additional volume can not come online at reasonable costs. Any safety mechanism should be both transparent and predictable. The waiver authority proposed in S.987 should be enhanced along these lines. Doing so would improve the certainty offered potential producers and investors. It would also make the overall goal more sustainable and less subject to future changes in political moods and priorities.

Another area where more clarity would assist concerns how grain derived ethanol and cellulose derived ethanol will be differentiated. That becomes a concern because once ethanol is ‘out the door,’ ethanol is ethanol. So it will be important to create a mechanism that allows the market to treat all ethanol the same, no matter the feedstock that was used to produce it, but at the same time, will enable certainty as the government attempts to track compliance with the dual ethanol requirements for blenders. This might most easily be accomplished by certification of individual cellulose production facilities as they come on-line and assigning specialized tracking numbers to the tradable credits generated by those certified facilities.

There is one other important topic I wish to touch on. The auto industry is a critical part of the transition that is envisioned by this legislation. It is critical that they be given equally clear and reliable signals regarding what fuel their products will be expected to run on. And there will need to be sufficient time to allow the fleet to transition to accept new fuel blends. No matter whether the Congress decides to pursue maingrade blends of ethanol like E-15 and E20, or alternative blends like E-85, if the cars cannot accept it, the suppliers will not be able to sell it. I would urge the Members of this Committee to give that issue the attention it deserves.

But let me conclude by going back to my theme of certainty. Clearly the more certainty in the Bill, the less risk to the private sector and hence the lower will be the price of delivering the 21 billion gallons. Conversely, uncertainty creates greater risk and higher prices.

The Iogen team would welcome the opportunity to work with the Committee to explore possible safety mechanisms to achieve the Senate’s desired outcome.

Again, thank you for the opportunity to address this Committee.