



BLUE FLAME
B I O P O W E R

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My name is Robert C. Casad, Jr. I speak in favor of the bill on behalf of my company Blue Flame Biopower which is based in Lawrence.

What is under consideration here is a platform whereby green investors from all over the country put hundreds of millions of dollars into Kansas counties to support development of sustainable agriculture and with it economic development of rural communities that have suffered a long drought. Kansas counties like Kingman, population 7,392, Harper, population 5,331, Ness, population 2,672. The passage of this bill will provide Kansas with an excellent opportunity to secure federal funds with which to erect this platform. Moreover, in securing these funds, Kansas can establish itself as the single best state in the country for small scale CO₂ sequestration, with tremendous economic benefits.

I want to emphasize from the outset that it is critical that this be a legislative rather than an administrative initiative. In any other circumstance, the question of “legislative intent” could bring delays that would prove fatal where “timing” is clearly of the essence.

As the principal author of the bill, I will endeavor here to explain its origins and how its passage will lead to these advantages.

I am a Ph.D. biochemist and patent lawyer who worked for the past 17 years in the Danish biofuels industry. A 6th generation Kansan, I returned here to actualize an undertaking which I conceived in Denmark whereby biomethane technology, which is in wide commercial use in Denmark, could become a primary driver of sustainable rural economic development in Kansas.

Biomethane also known as renewable natural gas (RNG) is obtained through fermentation of biomass of essentially any sort including agricultural commodities such as cover crops and crop residuals and of course manure. Raw biogas comprises CO₂ and methane. The methane is upgraded to pipeline quality leaving a byproduct stream of comparatively pure CO₂ which can easily be sequestered. When RNG is sold for use as transportation fuel, it qualifies for “renewable identification numbers” (RINs) which are issued by the EPA and which petroleum refiners are obliged to buy. These RINs are the primary revenue source for biomethane plants. RNG can be transferred via pipeline to an end user. Obviously it is not the same molecules per se, but this legal, documentary transfer of RNG is all that is required to earn RINs.

It is a testament to Kansas “home rule” principles that, under Kansas law, land owners (i.e., farmers) can petition county governments to have their land included within a rural improvement district. This is a political subdivision of county government that is empowered to issue tax free revenue bonds to finance revenue generating projects such as biomethane plants. Such an improvement district can organize a plant that creates a market for the farmers’ agricultural commodities, most notably including cover crops the cultivation of which is highly desirable from a soil health perspective. Moreover, net revenues from such a plant can be applied to subsidize farmers’ purchase of dual fuel pickups that can run on either compressed natural gas, i.e., RNG, or on liquid fuels. Note that there is a factory conversion kit available for every new model American pickup.

To the extent that such districts create demand for their own RNG, they can simultaneously support good jobs in their communities, create markets for their agricultural commodities, and provide sustainable fuel for their vehicles at reduced cost. Note that New Holland Agriculture is developing a line of compressed natural gas (CNG) fueled farm vehicles with the clear intention of offering these to farmers who make their own renewable fuel. Their RNG powered tractor is commercially available right now. Note also that use of RNG to drive irrigation pumps qualifies for RINs. Kansas has some 23,000 of these, the majority of which are powered by natural gas. I estimate that if every natural gas powered irrigation pump in Kansas was run on RNG, this would in its own right support as many as 43 district biomethane plants, each producing about 9000 gallon diesel equivalents of methane per day. Each of these plants would produce about 20,000 metric tons CO₂ per year the sequestration of which would earn federal subsidies of between

600,000 and 1.2 million dollars per year, depending upon whether or not tax free bonds were used for finance.

I organized initiation of a proto type district in Kingman county which is home to one of only three CNG fueling stations in all of Kansas west of Wichita. Kansas Sustainable Agriculture District #001 was formally incorporated by the Kingman county commission on February 7, 2022 after a petition was submitted by 41 landowners. In late December, 2022, District #001 applied for a USDA grant to support 25% of the cost of a biomethane plant based on cover crop grass silage and feedlot manure. I have attached as Appendix A to my written statement the project narrative of this grant application with financial details redacted.

As explained in the USDA grant application, an important feature of the Kingman county project which is readily replicable elsewhere in Kansas is that the byproduct CO₂ stream from the biomethane plant can be sequestered by the simple expedient of including it within the stream of petroleum production brine being used for enhanced oil recovery (EOR). I want to emphasize that we are NOT talking about so-called CO₂-EOR, which requires huge capital and operating expense to inject a stream of supercritical CO₂ at 7,000 psi pressure into an oil field formation. What we are talking about is simply injecting pressurized CO₂ into a petroleum production brine stream being used for EOR at a sufficient depth in the well where the hydrostatic pressure plus the applied pressure at the surface corresponds to the pressure of the CO₂ stream at, say, 500 psi, where it is in liquid form. Through this comparatively inexpensive process, significant federal subsidies for CO₂ sequestration can be earned that can support most of the payroll for a biomethane plant. Moreover, this same method of CO₂ sequestration can be used for a small-scale ammonia plant based on traditional Haber-Bosch process which also produces a comparatively pure CO₂ byproduct stream remaining after chemical conversion of pipeline natural gas to hydrogen. Through CO₂ sequestration, Kansas Sustainable Agriculture Districts can make local, county-scale ammonia plants and be able to offer farmers a sustainable end product at considerably lower cost than they are paying now for very un-sustainable ammonia produced in huge, centralized facilities.

The potential economic significance for Kansas of this possibility for CO₂ sequestration cannot be overstated. A map showing the distribution of "class II" underground injection wells in Kansas is attached as Appendix B to my written statement. A little more than 1/2 of these are EOR wells with the remainder used for "saltwater disposal." Note that Kansas is one of only three states in the country that have this possibility readily available. It is of profound significance that the regulatory jurisdiction over these wells resides with the Kansas Corporation Commission and *not* with the EPA. Until now, with the exception of EOR, CO₂ can only be sequestered by underground injection with a "class VI" permit issued by EPA. This is a lengthy and expensive permitting process at the end of which a large bond is required to be posted. The Kansas Geological Survey previously went to a lot of trouble and expense to get such a permit, but then could not afford the required bond. Realistically, for sequestration on the small scale of biomethane or local sustainable ammonia plants, "class VI" permits are not feasible. I hope and expect that EPA can eventually be persuaded to change its rules and permit small scale CO₂ sequestration not only in "class II" EOR wells but also in "saltwater disposal" wells under KCC jurisdiction.

For good order and full disclosure, I should explain that the business model of Blue Flame Biopower is based on acting as agent for Districts, providing technical supervision of their plant operations, distributing their RNG and perhaps most importantly brokering their RINs and carbon credits. Note that RIN brokers typically take on the order of 20% of sales price. Blue Flame Biopower proposes to provide that service and much more for Sustainable Agriculture Districts for a similar amount.

The pending bill would direct the Secretary of Agriculture to create a Division of Sustainable Agriculture whose purpose is to support Kansas Sustainable Agriculture Districts using funds obtained from the recently created federal "greenhouse gas reduction fund." This fund has 26.7 billion dollars to be spent before September 30 2024 in grants to states and to "eligible entities" for investments in greenhouse gas reduction. It is not yet clear what, exactly, EPA will consider to be an "eligible entity" within the meaning of the law. Conceivably, the Department of Agriculture

will itself be considered an “eligible entity” in which case section (c) of the pending bill will be unnecessary.

The bill specifically refers to support for the construction and commissioning of biomethane and/or sustainable ammonia plants with grants from the “greenhouse gas reduction” fund. The bill gives the Secretary of Agriculture discretion in how, exactly, to configure such grant requests. I would like to see a grant proposal aimed at getting the first few districts started with the simultaneous accomplishment of several tasks:

- (1). Support the completion of the District #001 proto type project in Kingman county with a grant covering some portion of the costs or with a loan, the repayment of which would provide budget going forward for the Division of Sustainable Agriculture;
- (2). Provide small start-up grants for Sustainable Agriculture Districts. If three landowners from some county who are prepared to serve as interim directors of a new District applied for support, they could receive assistance for costs associated with disseminating information and holding public organizational meetings;
- (3). Provide project-development grants for existing Districts. Before any District can reach the point of having organized a bond to finance a plant, there are considerable project development expenses, since biomethane technology providers and their construction contractors won't typically work for free;
- (4). Provide bond-cost grants for existing Districts. Once a project has reached the point of being ready to be financed, there will be need for attorneys and a financial analyst as well as for bond issue fees; and
- (5). Provide bond insurance for existing Districts. Since the Districts will be completely new entities, for their bonds to be marketable, there should ideally be bond insurance.

The proposed Kansas Department of Agriculture program to promote Sustainable Agriculture Districts that operate biomethane and/or local-scale ammonia plants with sequestration of their CO2 exhaust is, in my opinion, very likely to attract federal support.

Thank you for your attention.