



**Advanced Alternative  
Energy Corp.**

**[www.aaecorp.com](http://www.aaecorp.com)**

**Feb. 11, 2010**

**City Manager  
Lawrence Kansas**

**Dear Mr. Corliss,**

I am the President and CEO of Advanced Alternative Energy Corp.

I am seeking collaborators, alliances and/or investors in our biomass conversion technology. AAEC is a forward thinking company looking to demonstrate and validate our novel biomass energy conversion technology.

With this message I am proposing the City of Lawrence refer this sincere proposal to the City's Sustainability Board for review and input. With their approval AAEC will enlist an appropriate and experienced engineering firm to join the project.

Any town, city or county in the United States may become the owner/operator of an Advanced Alternative Energy system - based on our patented technology - and any sizeable company that might want to set up to manufacture or be involved in the manufacture of new concept advanced distributed renewable energy systems would be a likely collaboration candidate as well.

What I'm looking for in this proposal is simply a willingness to collaborate (but not finance) this project. We would like to find that Lawrence is a city willing to assist us in finding the pathway to a demonstration of our patented technology. Financing for the proposed project we believe will be made available via a government backed loan guarantee to AAEC. The City's primary input for this project I believe will be that a suitable site for a demonstration of concept be made available on a temporary basis. This site I believe could be on the east side of Lawrence near where the city currently processes yard waste.

Please understand I am not expecting or asking anyone else to explain, demonstrate, or market our technology as I believe we are the ones who can explain it, demonstrate it, and work out all details with interested entities.

*Les Blevins*

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<http://aaecorp.com/ceo.html>

# **Proposal For Local Public-Private Partnership to Focus On Renewable Energy Research**

## **Lawrence Community Conversion and Utilization of Biomass with Municipal & Industrial Wastes as Feedstocks in Power Generation and Biofuels Production**

Somewhat like a multi-function food processor, a Kansas invention is in reality a multi-fuel and multi-process capable fuels processor, and AAEC's President Les Blevins is looking for collaborators, backers and investors for his technology.

A blender or food processor is a kitchen appliance that one can use to produce results of their choice. Depending on what one puts into the blender and what button is pushed it can produce a nutritious drink made of veggies, or a tastier 'smoothie' drink made of juice, fruits and yogurt.

The AAEC Sequential Grates fuels conversion technology is similar in concept in that its users (towns, cities & counties) can get widely varying results depending on exactly what fuels are available and being processed and what fuel conversion and processing option is selected.

Like a food processor or blender; the AAEC Sequential Grates <sup>TM</sup> fuels processing technology has an opening at the top and several operational choices for selecting the desired fuels conversion process and end products. Available fuel conversion processes run from the choice of clean coal use via gasification at one end of the scale to advanced thermal biomass and waste conversion modes at the other end. End products available are cleaner heat power, chemicals and biofuels.

Les Blevins proposes the better way for managing municipal wastes, keeping the consumption and cost of oil in line, keeping a lid on carbon emissions, producing electric power and liquid and gaseous biofuels, using our own abundant biomass resources along with coal, is in clean, green energy and fuels conversion systems based on AAEC's advanced Sequential Grates <sup>TM</sup> system.

## **Opportunities exist in clean alternative/renewable energy.**

Emerging growth companies delivering new clean-technology products and services now represents the next wave of technology innovation. Over the last several years, venture investments in the entire sector have increased from less than 1 percent of total venture investments to nearly 10 percent.

Astute companies and investors are realizing the opportunity to capitalize on innovative new solutions that serve the needs of industry, government, and society with technologies that compete on price and performance while reducing pollution, waste, and resource use.

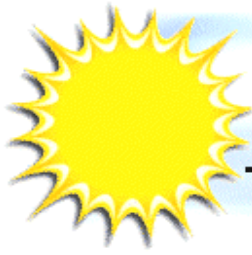
Many financially stressed entities like home, farm and business owners, incorporated towns and cities, counties, states, institutions, etc. are throwing away energy when they throw away their mixed wastes and trash. Converting these low or negative value liabilities into higher value end products makes good sense as economists point out.

Advanced Alternative Energy Corp. seeks to secure investment in new concept fuels conversion systems AAEC has developed and patented. The AAEC technology is capable of conversion of both fossil fuels and alternative biomass fuels and acting as a combustor, gasifier or pyrolyser to recover as much value as feasible from biomass and municipal wastes in a clean and appropriate manner, and in so doing it will empower the return of valuable products to homes, villages, towns or cities where such diverse materials originate. The AAEC Sequential Grates™ Fuels Conversion System is a manually or automatically auger fed or batch stoked system intended for and capable of ingesting nearly all forms of bulky biomass and waste fuels.

Just one niche market;

An investigation reveals that refuse collection trucks are available in 18, 20, 25, 27, and 32 cubic yard capacities. AAEC proposes to produce the AAEC Sequential Grates™ System in various sizes that can accept feedstock batches of up to 35 cubic yards, and convert the negative value waste materials into heat, power and biofuels. AAEC will proceed in steps (or phases), in the development of the Sequential Grates Fuels Conversion System (based on the unit as is depicted at <http://aaecorp.com/ceo.html>

AAEC will develop, market and license the AAEC Sequential Grates technology after it is validated for the above use in the 2 cubic foot per batch scale. Our intent is to first demonstrate and validate a solid fuels combustor/pyrolyser/gasifier as the platform for a complete turn-key system for production of an engineered synthesis gas and/or producer gas that can be scaled up or down and replicated to produce high value products (heat power and biofuels) by extraction of these from low value biomass and municipal wastes.



# Advanced Alternative Energy Corp.

[www.aaecorp.com](http://www.aaecorp.com)

## **AAEC Sequential Grates™ System** **A Revolutionary New Energy Delivery System Technology**

Imagine a technology that can mass produce energy that

1. Produces more and lower-cost energy and improves the global environment
2. Produces more and cleaner power and oil and works toward resolving future oil shortages
3. Produces cleaner energy for industrial applications for coal and oil at a fraction of the cost \*\*\* Around \$15 to \$20 vs. \$60+ per barrel of oil \*\*\*

Advanced Alternative Energy's Sequential Grates technology provides users (companies, villages, towns, counties, cities, etc.) a means to process a wide variety of biomass and waste fuels, to provide electricity and biofuels. This helps reduce our dependence on finite fuels as well as reduces the wastes now going into our landfills. By starting at the local level we can ignite this revolutionary new multi-fuel conversion concept and bring it to national awareness, and ultimately to a national "green energy movement".

### **WHAT IS BIOMASS AND HOW CAN WE USE IT?**

Biomass includes diverse biological in origin materials such as trees, plants, and various agricultural and municipal wastes. Using combustion, gasification and pyrolysis, biomass can be transformed into heat, chemicals, biofuels and electric power.

### **WHAT ARE THE BENEFITS TO USING GASIFICATION?**

Gasification is the preferred process. It converts solid fuels (biomass, coal, etc.) into gaseous fuels that can supply heat, electric power, and ultimately liquid and gaseous biofuels like hydrogen gas for fuel cell applications. This approach:

1. Reduces demand for finite fossil fuels potentially lowering their price
2. Reduces carbon dioxide emissions (the primary greenhouse gas)
3. Creates additional cash crops for farmers and spurs rural rejuvenation

This clean "green fuel" produced via the AAEC SG system can be used much like oil for:

- ✓ Transportation fuels (jet, diesel, gasoline)
- ✓ Key agricultural compounds (fertilizers)
- ✓ Industrial products (oil, lubricants, synthetics)
- ✓ Consumer products (plastics, packaging)



AAEC can assist on a city or county scale to set up distributed plants to produce biomass-based alternative heating, power and biofuels that are cost effective and environmentally friendly. Lawrence can be first to pave the way for the future by using all locally sourced diverse biomass and waste materials as an alternative energy source.

# **The US can benefit from both coal and biomass fuels**

By Lisa Gibson

Liquid fuels from biomass and coal could reduce petroleum use and carbon dioxide emissions in the U.S. over the next 25 years, according to a recently released report, but producing the alternative fuels in an environmentally conscious way requires significant research, development and commercial demonstration.

'Liquid Transportation Fuels from Coal and Biomass: Technological Status, Costs and Environmental Impacts' looks at reducing the nation's dependence on foreign oil by transitioning to coal and biomass liquid fuels. The report, the first in a series for the National Academies' America's Energy Future project, discusses existing and future technologies, environmental impacts, associated costs and barriers to deployment. The report also estimates potential deployment on three timelines: less than 10 years, from 10 to 25 years and beyond 25 years.

"We suggest that the mixing of biomass and coal be explored," said David Tilman, professor at the University of Minnesota-St. Paul, and vice chair of the Panel on Alternative Liquid Transportation Fuels. "It can actually be a carbon-neutral or carbon-negative fuel."

The research team made three important findings: an adequate supply of biomass exists—an estimated 550 million tons annually by 2020—without running into direct and indirect land-usage issues; a mixture of coal and biomass, when gasified with carbon capture, is likely to provide more cost-efficient and greenhouse gas effective fuels; and maximizing carbon capture and sequestration is vital, according to Tilman. Geologic carbon storage is a high priority, he added, as it needs to be proven viable and safe on a commercial-scale before deployment of coal and biomass liquid fuels.

## **Why Biorefining?**

The United States and world economies depend on fossil oil, a finite and nonrenewable energy and chemical feedstock source. Though the exact timing of fossil oil running out is debated, it is inevitable that supplies of fossil oil will decline in the future and will become more expensive. This puts tremendous pressure on already existing shortages and rising retail prices of energy sources, growing interest in national energy security, and concern about the diversity, health, and sustainability of our global ecosystems. We must find alternative energy and chemical feedstock sources to supplement the fossil oil supply in order to maintain sustainable economic growth and reduce our dependence on imported fossil oil.

One viable option is to derive energy, materials, and chemicals from biomass - an infinite and renewable source. A new concept "Biorefinery," which is equivalent to a petroleum or oil refinery, is being widely accepted throughout the world. This concept suggests that a wide range of products such as fuels, materials, chemicals, etc., which are traditionally derived from fossil oil, can also be produced from biological resources.

### **Benefits of a Biobased Industry**

The benefits of biobased products and bioenergy are summarized as follows according to "The Biobased Products and Bioenergy Roadmap" created in December 2002 by the USDA and DOE Biomass R&D Technical Advisory Committee:

- Enhanced national energy security
- Improved environmental protection
- Rural economic growth
- U.S. leadership in global markets

In addition, promoting the non-food area of agriculture biorefining will boost a new, diversified biobased economy where ever the concept is adopted.

### **Is it feasible?**

Trends supporting the emergence of biobased products and bioenergy are identified as:

- Rapid progress in biotechnology
- Increasing potential of biobased products and bioenergy
- Growing interest in distributed production
- Emerging technologies for efficient biorefineries.

In the past two decades, tremendous efforts have been made to produce biological substitutes for petrochemical feedstocks. Some technically feasible approaches are available to convert biomass to fuels and biopolymers. However, no large-scale commercial facility is operating to date. This situation can be attributed to a combination of the following three factors: technical inadequacy, economic noncompetitiveness, and lack of understanding of the industrial need. Biobased production, or biorefining, is still largely unexplored territory where there are many business and research opportunities.

**For more information please contact;**

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## **Public-Private Partnership Being Formed in Wash. Focuses On Renewable Power Research**

Sept. 9, 09

A public-private partnership is being formed in Washington state to focus on renewable power research and job creation.

Kittitas County, Central Washington University, the Economic Development Group of Kittitas County, Puget Sound Energy and enXco, a renewable energy company, are joining together to create the Central Washington Resource Energy Collaborative.

The partners have committed \$1.2 million in financial support and in-kind services during the next three years to the group.

"Led by the collaborative, we have a unique opportunity to build renewable power into a leading economic engine for the county and state," said Kittitas County Commissioner Paul Jewell.

Contact Waste & Recycling News senior reporter Jim Johnson at 937-964-1289 or [jpjohnson@crain.com](mailto:jpjohnson@crain.com)



# One man's trash... is another man's energy-rich biomass

March 22, 2007

The idea sounds so outrageous that one is tempted to dub it Fitch's Folly.

Warrenton VA Mayor George Fitch has set a new goal for himself: To make his town "energy independent" within the near future.

Fitch wants to create ethanol and generate electricity using biomass as a feedstock and fuel. What kind of biomass? All kinds. The waste that goes into the county landfill. Tree clippings from forest maintenance. Corn husks and switchgrass. Wooden construction debris. Old tires. Sewage sludge.

Virtually any organic waste that can be rounded up from within a 20-25 mile distance from town that other people would let rot or, better, pay to get rid of.

After extensive research, Fitch has conceptualized a project that would cost about \$30 million. It would generate about five megawatts of electricity for sale into the electric grid, enough to power about 5,500 households, and would yield 10 million gallons a year of ethanol.

As long as the price of ethanol stays above \$1.25 a gallon (it's about \$2.25 right now) and the price of crude stays above \$38 per barrel (it's over \$60), he says, the project will be profitable.

"I'm a fiscal conservative," says Fitch. "Government shouldn't be wasting peoples' money. We have a landfill. We're taking garbage and burying it in the ground." That just doesn't make sense, he contends, when the garbage is loaded with BTUs that can be converted into electricity and liquid fuel.

Fitch is working to "tee up" the project, ensure a reliable supply of biomass feedstock, find a private-sector operator to take ownership, and lobby for federal loan guarantees to reduce the risk for investors.

His goal is to negotiate terms that would allow him to re-sell the electricity to Warrenton residents for about half of what Dominion charges.

"If my residents are paying 5.9 per kilowatt to Dominion," he says, "let's bring that down to three cents."

The gasification technology is well understood, although the engineering probably will need tweaking to accommodate the wide range of waste products that Fitch contemplates.

As the mayor describes it, the process entails heating the waste materials to an extremely high temperature in the absence of oxygen - as high as 2,000 degrees - then cooling it to 98 degrees.

The material would not burn, it would gasify, leaving about 2 percent of the original volume as residue to dispose of.

Waste heat from the cooling would be used to generate electricity, while the organic compounds in the gases would be converted into ethanol.

If the Warrenton project pans out, Fitch sees the idea spreading nationally.

There are implications for Virginia energy policy, too. The environmental community is pushing a Renewable Portfolio Standards bill that would require Virginia electric utilities to generate 12 percent of their power from renewable energy sources by 2020.

Although the legislation has been sidetracked while the General Assembly takes up re-regulation of the electric power industry, the issue is not likely to go away. Municipal projects built around local landfills across the state could make a significant contribution to that 12-percent goal.

Small-scale projects like the one Fitch proposes, are consistent with a "distributed generation" approach to organizing the electric power grid.

In theory, an electric grid consisting of many small producers located close to their consumers is more stable and less vulnerable to disruptive blackouts than a system depending upon massive power plants linked by equally giant transmission lines.

"If you drop in a five-megawatt plant and flow the power into the distribution grid, there's a range of benefits," says Brad Schneider, founder of Recovered Energy Resources, a Rappahannock County company that designs biomass-to-energy plants, who has advised Fitch.

Balancing the grid with locally generated electricity affects the harmonics and stability of the system.

For Warrenton and the northern Piedmont, grid harmonics are no small thing.

Dominion wants to run a transmission line through the region in order to wheel more electricity from the Midwest into Northern Virginia. Not only would a Warrenton power plant increase the supply of locally generated electricity, a better load balance in the region might enable the power company to increase the capacity of existing transmission lines.

Fitch has had conversations with oil giant Chevron, which wants to get into the field.

The next phase of the project is finding \$300,000 for design and engineering. That's more than Warrenton can afford, but Uncle Sam is handing out renewable-energy grants like bingo cards in an old folks' home.

Fitch thinks he has a shot at getting support. His argument: A successful demonstration of the technology in Warrenton could open up opportunities for municipalities across the country.

Fitch insists that his project would stand on its own merits. But as gravy for investors, there is a host of credits and incentives. There's a 51 cents per gallon credit for ethanol, plus an extra ten cents a gallon for small producers.

There's a credit of 1.5 cents per kilowatt hour for producers of "green" electricity, and

\$20 per ton for using agricultural/forest residue to produce energy. A loan guarantee from the federal government would eliminate any remaining risk for private investors.

Also working in Fitch's favor: The Kaine administration is eager to support renewable fuels in Virginia.

Although the Commonwealth has limited resources to devote to the sector, it can function as an intermediary between entrepreneurs like Fitch, academic resources and market opportunities.

Dr. Y.H. Percival Zhang at Virginia Tech has developed a promising biochemical process to convert cellulosic material (wood waste, corn stalks, and switchgrass) into ethanol in small-scale biorefineries.

Meanwhile, the Department of Mines, Minerals and Energy has spotted some potentially large-scale ethanol customers in the state - the oil refinery in Yorktown is one, military bases are another - to which local vendors could sell.

Fitch is bursting with enthusiasm at the potential for his project. He thinks he's got all the angles covered, although he's wise enough to temper his comments with a note of caution: "There's a huge caveat. Like most things new, you go through a trial-and-error process. You go up the learning curve."

Jim Bacon, of Richmond, publishes the Bacon's Rebellion Web site and authors the column of the same name.

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