

# ALLIANCE

FOR THE

# **CONSERVATION**

OF

**FUTURE** 



#### **INTRODUCTIONS**

Terry Allread . Thor Bailey . Peter Mowery . John Busch Scott McNall . Jennifer Ryder Fox . Paul Derucher . Joe Greene

#### AG BIOMASS ALLIANCE

Applied Biomass Technology . Green Capital Network Western Energy Systems . California Biofuels BioMethane . Stewardsmith

# **PROJECTS**

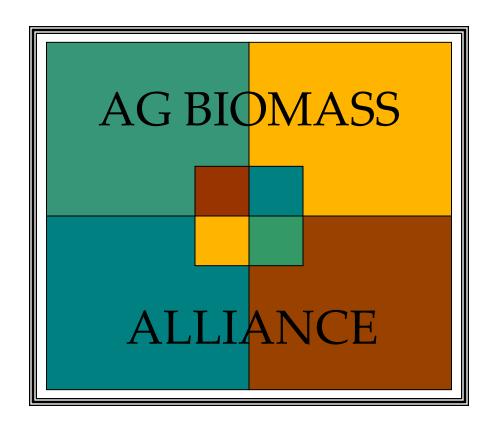
Rancho Esquon, Durham . Greenwood Dairy, Orland SunWest Milling, Biggs . California Biofuels, Oroville Covanta, Oroville

#### **CSUC OUTREACH**

Grant Writing/Management . Intern Programs Community Leadership . ABC Director/Liaison

#### **ADDENDUM**

PIER Renewables Program Grant Solicitation BioEnergy Action Plan for California



# **CURRICULUM VITAE**

APPLIED BIOMASS TECHNOLOGY INC

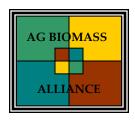
GREEN CAPITAL NETWORK LLC

WESTERN ENERGY SYSTEMS INC

CALIFORNIA BIOFUELS LLC

**BIOMETHANE INC** 

**STEWARDSMITH** 



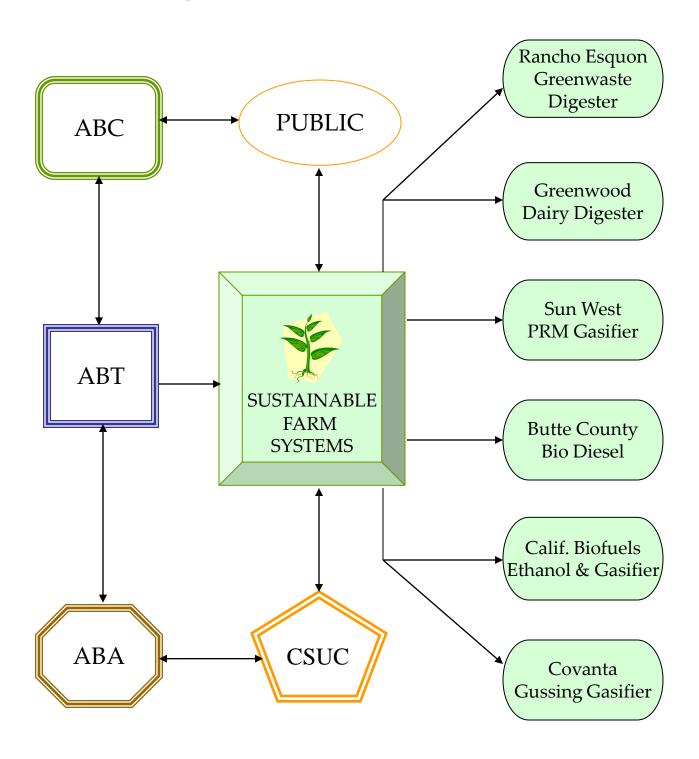
The AG BIOMASS ALLIANCE (ABA) is a collaborative network of farmers, feedstock managers, engineers, scientists, technology providers and business development executives with diverse backgrounds in biomass conversion technology systems.

Dedicated to providing project development solutions that address the broad array of environmental mitigation and resource conservation issues facing the Agri-business community today, the group collectively represents all of the core competencies necessary to design, build, manage, and maintain biomass conversion facilities that will meet the specific needs of any client project.

Working together, or individually, based on project requirements, the group represents some of the best project developers and managers available. All working relationships and consulting work are agreed upon in advance and contracted on a right of first refusal basis. Core competencies include the following disciplines:

- ➤ ADVANCED ANAEROBIC DIGESTION SYSTEMS (AADS)
- ➤ DAIRY DIGESTERS / WATER & NUTRIENT MANAGEMENT
- ➤ ORGANIC SOIL SCIENCE / COMPOST NUTRIENTS
- ➤ WOOD FUEL PROCESSING & DISTRIBUTION
- ➤ BIOMASS GASIFICATION & COMBUSTION
- > ETHANOL / BIO-DIESEL PRODUCTION
- ➤ HEAT TRANSFER & COOLING SYSTEMS
- > FACILITY OPERATION & MAINTENANCE
- ➤ GOVERNMENT REGULATIONS & PERMIT PROCESS

# ALLIANCE PROJECTS & RELATIONS





APPLIED BIOMASS TECHNOLOGY INC (ABT), incorporated in 1999, brings together ABT associates with 300+ years of industry-recognized experience, focused on solving the most complex technological issues impacting Agriculture today. There are currently 32 shareholders, located throughout California, with core competence in Feedstock Production, Soil Science & Soil Amendments, Aerobic Composting, Anaerobic Digestion, Ethanol, Bio-Diesel, and Wood Gasification. ABT is targeting for profit venture opportunities where contracts can be negotiated for:

- ➤ PROJECT DEVELOPMENT & MANAGEMENT SERVICES
- ➤ ADMINISTRATIVE & FIELD DATA MANAGEMENT SERVICES
- > SYSTEMS DEVELOPMENT TO COLLECT/DISTRIBUTE BIOMASS FEEDSTOCK AND SOIL AMENDMENT PRODUCTS
- ➤ EMPLOYEE TRAINING & EDUCATION FOR FACILITIES, PLANT MAINTENANCE & EQUIPMENT OPERATIONS
- ▶ DEVELOPING MFG & SERVICE CENTERS FOR DESIGN/DEVELOPMENT OF UNIQUE AG PROCESSING EQUIPT

<u>Business Model:</u> ABT will develop, secure and manage funding for small scale biomass conversion projects where agri-business operations, obsolete technology, or failed policy has resulted in economic opportunity. We will identify and select the requisite technological, regulatory and economic development partners necessary to insure project success, while endeavoring to facilitate local civic, education, and commercial cooperation through local California State University and Community College system partners providing agricultural, economic, social and environmental knowledge resources.

<u>Disruptive Intellectual Application:</u> As the concepts of Just-In-Time, Kanban, and Lean Manufacturing have been adopted worldwide to revolutionize process efficiencies and eliminate waste, ABT through the concepts of "local area processing", "closed-loop power/by-products systems" and "green urban credits" is revolutionizing a movement to develop *local* solutions for a renewable environment that uses the historical knowledge of our failures, understands the gridlock of our current policies, and applies modern day emerging technologies to overcome them all.



**GREEN CAPITAL NETWORK LLC** is headquartered in Fresno Ca. Three organizations, Applied Biomass Technology (ABT), Pacesetter Energy Systems, and Kidd Financial Services, realized there was an opportunity for a specialized funding source to profitably develop and support the long term risks and reward of the Ag biomass renewable energy arena. Founding membership of GCN includes:

**WILLIAM KIDD** - Bill has an extensive background in finance and agribusiness management. Presently a registered financial planner, he supplies related services to clients in the Fresno area. Prior to that Bill spent 12 years as GM w/Fresno Equipment, a leading AG equipment provider.

**MILT PACE** - Milt is a Farmer and Ag Engineer from UC Davis. He presently is expanding his 600 acre pistachio farm and has been extensively involved in San Joaquin Valley air quality management issues for many years.

**THOR BAILEY -** President of Ag Biomass Council, Thor has 30+ years in Farm management, manufacturing, and renewable energy production.

**BOB DUBOSE** - A long-time organic farmer in Durham, he is the owner of Tink Manufacturing and pioneered development of the first down the row orchard pruning collection systems in California.

**MELVIN MORRIS** - Melvin farms organic walnuts, prunes and raises beef cattle. He also owns/operates a trucking business hauling Ag residues to power plants in northern CA.

**JOHN TOTH** - John has had over 25 years in sales, marketing and business development, most recently as Manager of Bioenergy Products Discovery Group, and as the founder of Ag TEaM Solutions.

Green Capital Network currently has a proposal to Pacific Ethanol Inc. in Madera, CA to site a 7 megawatt Gussing gasifier supplying heat and power to their recently completed 50 million gallon / year ethanol facility.



GARRETT SMITH is the West Coast marketing representative for GE Energy's gas engine business (GE Jenbacher), one of the world's leading manufacturers of gas-fueled reciprocating engines, packaged generator sets and cogeneration units for Combined Heat & Power (CHP). GE Jenbacher is one of the only companies in the world focused exclusively on gas & specialty gas engine technology. The year **2007** will mark the **50th Anniversary** of exclusive gas engine manufacturing at the Jenbacher, Austria factory which, since GE's acquisition of Jenbacher in 2003, serves as GE's *Global Center of Excellence* for high-efficiency and specialty gas engine products.

Since 1957, Jenbacher has manufactured the world's most efficient gas-only engine generators. Today, GE Jenbacher engines exceed 43% electrical efficiency and 90% overall efficiency when operated as a CHP system. GE Jenbacher engines range in power from **0.3** to **3.0** MW and run on either natural gas or a variety of gases from bio-gas, landfill gas, sewer gas and synthetic industrial waste gases in order to serve these niché markets.

A broad range of commercial, industrial and municipal customers use GE Jenbacher engine products for on-site generation of power, heat and cooling. Patented combustion systems, engine controls, and monitoring enable its power generation plants to meet the strictest international emission standards, while offering high levels of efficiency, durability and reliability. Low total life cycle costs result from industry leading mechanical-electrical operating efficiencies, low fuel consumption (heat rate) and high quality, durable engine components.

#### **Signature Characteristics**

- ➤ Unequalled fuel diversity & experience
- > True gas engine not diesel derivative
- ➤ LEANOX® emission control technology
- ➤ DIA.NE control system
- ➤ DIA.NE WIN communication system
- Cross flow cylinder heads
- ➤ 36-43% electric efficiency
- > 90%+ overall system efficiency
- ➤ 60,000 hr major overhaul intervals





**CALIFORNIA BIOFUELS LLC (CB)** was formed by a group of 8 fruit growers in Northern California. One of the key objectives is to facilitate solving waste issues facing the cannery industry, with a local farmer supported approach. Changing regulations demand more efficient methods of disposal to address primary issues of:

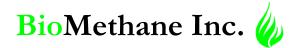
### WATER QUALITY - AIR EMMISSIONS - TRUCK TRAFFIC - PERMITS

The following are founding fruit grower members:

- MORRIS FARMS INC Live Oak, Ca.
- > TAYLOR BROTHRS FARMS INC. Yuba City, Ca.
- TAYLOR PACKING COMPANY Yuba City, Ca.
- C. MONDAVI & SONS Napa, Ca.
- > SOWDEN BROTHERS Live Oak, Ca.
- > TINK FARMS Durham, Ca.
- > VALLEY PRUNE Corning, Ca.

CB received a grant from USDA to perform a feasibility study for large scale sugar based ethanol production and to develop new markets in the farm community. The grant study has been recently completed and is recommending a smaller demonstration facility in Butte County be built to manage the sugar waste streams in the North-state. The next step is to locate a property large enough to accommodate the distribution and crop consumption of water.

Melvin Morris is the interim manager and also the motivating force behind the organization of CB. Once the site feasibility study is completed a full time management team will be put in place. The key to success is partnering with a dedicated group of local and qualified engineers and feedstock managers. California Biofuels LLC (CB) is associated with many farmer friendly engineering and business managers in the Central Valley. CB believes the best approach is for the waste processing plant to control the recycling system through a joint venture.



Mr. Peter Mowery is the founder and Chief Executive Officer of BioMethane Inc., based in Seattle, and has over 35 years of business experience. A graduate of The Stanford Graduate School of Business, he worked for over 20 years in the business consulting division of Deloitte. Recently he was Director Commercialization for the Spokane Intercollegiate Research and Technology Institute. In this role, he worked with multiple inventors and entrepreneurs bringing his business expertise and personal passion for technology to the task of building businesses and raising early stage angel and venture equity capital.

BioMethane Inc. seeks to develop high volume biomass-to-methane plants, using a patented design for an advanced anaerobic digester. An anaerobic digester uses biological processes to digest biomass, producing two products; a "biogas" which is mostly methane and CO2, and bio-solids that are equivalent to compost or peat moss.

The BioMethane Inc. digester design is highly efficient and cost effective. Both optimized for high volume biogas production and lower capital and operating costs, the design addresses both efficiency and cost issues. digester also produces bio-solids that require no further treatment to be used as compost or peat moss. The design accomplishes this by using an inherently low cost design alternative that is well-proven in dozens of existing digesters, termed a "plug-flow", and uses both multiple design enhancements and industrial computer control systems to very tightly control and maintain the environment inside the digester at optimal conditions for biodigestion. Used by many farms because of the low construction and operating cost, the digester fundamentally runs on a simple and relatively low cost pumping system to push the biomass into and pull the composted bio-solids out of the digester. Finally, the digester design offers a highly effective and very low cost method of separating the inorganic ("non-digestible") fraction of an incoming waste stream from the organic ("digestible") portion, allowing the design to cost effectively process mixed municipal solid waste and access to these extremely large streams of available waste biomass.

BioMethane Inc. partners with multiple organizations and seeks regional operating partners and sublicensing opportunities for smaller plants, and will consider various operating structures for larger scale plants.



Intelligent Integration of Globally-Proven Technologies Converting Manure & Everyday Agricultural By-Products into sustainable ENERGY + ORGANIX Soil Amendments

Hundreds of anaerobic digesters provide organic waste management in Europe, dozens operate on domestic farms, and virtually every municipal wastewater treatment plant has utilized similar technology for decades. However, no domestic business entity to date has captured the full array of benefits (renewable fertilizers + energy production) of these proven systems that are ideally suited for duplication on commercial dairies, piggeries and chicken ranches, in addition to the myriad food processing facilities whose organic wastes remain a grossly underutilized resource.

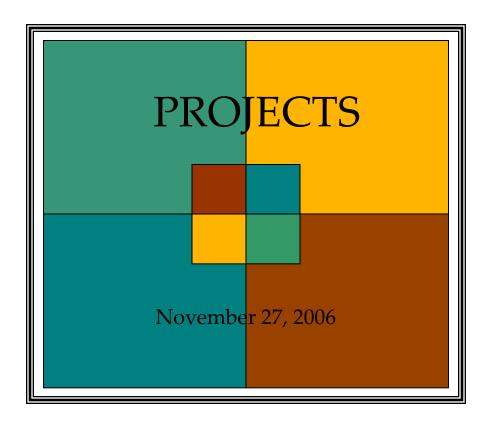
STEWARDSMITH (Portland, OR) was formed to stand in the gap by optimizing the cooperation of the leading global subsystem providers in order to define a comprehensive, proven, efficient, and simplified approach to the production of BOTH clean renewable energy AND organic soil amendments for profit. By integrating ONLY globally-proven and robust technologies to pioneer the joint commercial production of clean Renewable Energy AND Organic Fertilizers from common organic waste feedstocks, STEWARDSMITH envisions the mitigation of serious environmental, air & water quality and odor problems while converting otherwise problematic wastes into valuable commodities to be sold into established and sanctioned markets.

STEWARDSMITH has taken a professional design approach to identifying the most common facility sizes (3,000-6,000 head dairies) and matching reliable equipment in order to establish a business model that is profitable (20-40% IRR with NPV equal to 2-4 times initial capital investment) and simplified.

Operations Optimization: STEWARDSMITH identified that 4 key tasks must be embraced by every biogas project in order to avoid the risk of underperformance. Those 4 keys are:

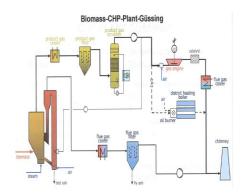
- ➤ Manure Management including Digestion
- ➤ BioGas Conditioning including dewatering & de-sulfurization
- ➤ High-Efficiency Power Generation using engines designed for biogas combustion
- Residual Solid Fiber Conditioning into valuable soil amendments

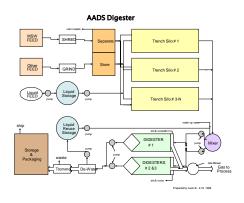
By transforming increasingly problematic by-products into valuable high-demand commodities, deployment of the Stewardsmith business model carries the unprecedented potential to restore crucial long-term value to the agricultural community; a beleaguered, but still proud and seminal sector of the United States.



The Ag Biomass Alliance companies are currently pursuing the following Development Projects. In addition each member performs independent research and project development feasibility studies throughout the western United States.

All information is considered Company Confidential.







# **PROJECTS**

# RANCHO ESQUON / PRO PACIFIC, Durham

The proposed commercial demonstration project will be developed in three phases.

#### **Phase – 1: Gas Production**

Install an Advanced Anaerobic Digester System (AADS) on approximately 5 acres located on the north east side of the Rancho Esquon rice farm. The design chosen has been developed by Leon Breckenridge of North West LLC and licensed through BioMethane Inc of Seattle. The size of the system and volume of gas produced will be determined by long term green-waste feedstocks available under contract in a 30 mile radius. The gas will be flared during start-up, quality testing, target efficiency and economics confirmation. It is estimated to take 90 days and will also allow for operator training.

#### **Phase – 2: Power Production**

Once all economic criteria and expectations are met; the gas will be piped ½ mile to the Pro Pacific cold storage distribution facility at Hwy-99 & Durham Pentz Hwy. The biogas will be converted into both heat and 300 kwh of electricity through a GE Jenbacher engine generator unit. Western Energy Systems of Portland will design, install and maintain the integrated cogeneration system.

#### Phase - 3: Feedstock and Soil Amendment

Sustainable Farm Systems LLC of Live Oak will manage the ongoing collection and delivery of the diverse feedstocks and market and deliver the soil amendment products produced by the facility. The majority of the soil amendments may be sold back to local landscapers and organic farmers markets. Any surplus will be distributed back to the local farming community.



# **PROJECTS**

# GREENWOOD DAIRY, Orland

The dairy has 2,500 milking cows and is located 4 miles south of Orland on old Hwy 99 W. The owner plans on expanding his herd and that may require an improved manure & waste water management system. Hill Enterprises a civil engineering firm in Redding is the project manager. The Stewardsmith integrated manure management system is being considered to solve several issues associated with herd expansion.

# SUNWEST MILLING, Biggs

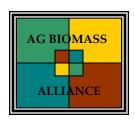
The SunWest Rice Mill is the largest, most modern plant in the US. They produce a sizable amount of rice hulls from their cleaning process and are considering turning it into power for their in-house use. A preliminary proposal has been presented and management has indicated interest. They are currently gathering additional engineering & design information from Western Energy Systems and Sustainable Farm Systems.

# BIO-DIESEL, Butte County

There are several different groups already discussing the development of biodiesel, including Chico State students, and ABA intends to assist if possible. The project the Alliance is closest to is, Energy Alternative Solutions Inc. of Watsonville. They have a grand opening for their first plant on Dec. 1<sup>st</sup> in Gonzales, Ca. SFS has discussed joint venturing with them to develop a facility in Butte County. Rancho Esquon may be a good location!

# CALIFORNIA BIOFUELS, Oroville

The project may be an integration of 3 different technologies. First is a small fruit sugar based ethanol plant. The second is a wood burner supplying heat to a steam boiler for ethanol production. The intent is to produce electricity with a Caterpillar bio-gas fueled cogeneration unit for the complete integrated system. A site location is currently under review.



# **PROJECTS**

# COVANTA, Oroville REPLACING COVANTA PLANT WITH GUSSING TECHNOLOGY

The Covanta 18 Megawatt power plant in Oroville, Ca. is 20 years old, operating with obsolete, inefficient technology and should be up-graded to significantly improve power production efficiency, enhance local economic development opportunity, and promote environmental mitigation benefits that will conserve our future resources.

There are three primary objectives for the proposed project. 1) demonstrate to State of California consumers the economic benefit of improved energy efficiency; 2) create markets that can support higher cost biomass fuels; 3) reduce biomass feedstock transport fuel cost and air emissions.

Proposal: Install the Gussing design, targeted to enhance operational efficiency to 70%, from the current plant that is 25% efficient. Build the plant, and once operating, tap the local Economic Development resources to attract a thermal energy user to the site, contingent on a new facility with a 20 year life. Finance the facility with socially responsible local investors, including farmers and fuel suppliers as part of investor pool.

By proposing Covanta as a statewide demonstration project, marketing the benefits of feedstock management & environmental mitigation programs, versus the traditional power subsidy approach, should enhance the dialogue with PG&E for success . The Ag Biomass Council is developing a coalition of high profile organizations to develop the marketing plan for presentation to PG&E. With project focus on efficiency demonstration, PG&E should be motivated to consider a power purchase contract at pricing that supports the capital cost/ROI of the facility, as they will gain green credits/positive public relations.

Applied Biomass Technology (ABT) is in the position to manage an integrated fuel supply support system and guarantee long term contracts by organizing the existing wood fuel suppliers and also develop additional higher quality sources that meet the required chip specifications of the Gussing facility. To accomplish this, the majority of suppliers under long term contracts will be motivated by the opportunity to participate in a profit sharing structure, with fuel prices targeted to be around \$40/ton for high quality feedstocks.



# EXPLORING AREAS OF COLLABORATION

# **Grant Writing**

# **Intern Programs**

Biomass to energy conversion economics

Proof of concept validation

Website development/maintenance

Data management/analysis

Agriculture Green Credits

Research

# Community Leadership/Outreach Marketing

Policy Makers

Farmers

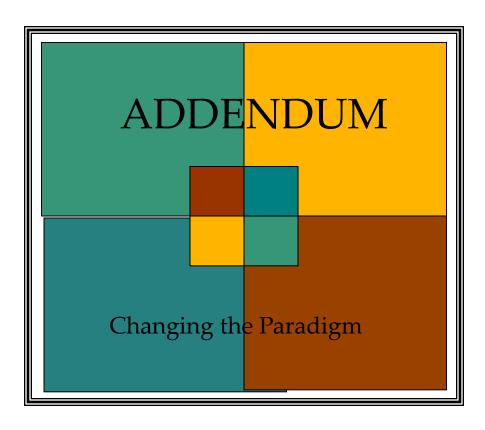
Utilities

**Potential Biomass Customers** 

Regional Economic Development Coordination

ABC Director/Liaison

Other Discussion



"Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it is the only thing that ever has."

### **Margaret Mead**

US anthropologist (1901 - 1978)