

CAL-FARM ENERGY / ECONOMIC DEVELOPMENT

A Public Benefit Program

Retain Family Farms
Improve Air & Water Quality
Create Jobs
Increase Local Revenue
Decrease Fire danger

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Agriculture and Urban/Forest Green Waste Utilization

What is Green Waste?

Green waste equals biomass. Biomass is energy resources coming from organic matter of all kinds including agriculture and animal waste, forest and urban wood waste, orchard prunings, etc.

Gasifier

Wood waste can be burned producing heat energy within a small, local gasifier (or a huge cogen plant).

Gasifier By-Product

1. Electrical Energy
2. Thermal Energy

Digester

Organic substances may be put through chemical processes within a digester. One combination in the north central valley could be dairy manure and/or food processing plant residues combined with rice straw.

Digester process by-products

- 1) Methane gas, which is captured and turned into electrical energy for use on the farm, business or in the community or sold on the grid;
- 2) Organic soil amendment for rebuilding the soil, to be used on farms, in gardens and green houses.
- 3) Animal bedding

Agriculture and Green Waste are Piling up in California's Landfills, Forests, Communities & Farms Causing Fire Dangers and Pollution

1. Biomass is piling up everywhere. There are mandates to eliminate putting green waste in the landfills. CAFO's are being shut down due to pollution of land, water and air. Rice growers are forbidden to burn their straw. Food processing plants have tons of food waste.
2. The very real threat of forest fires calls us to clean up our forests, roadside and to create a "defensible space" around each home by decreasing the amount of combustible materials. Yet we have neither collection method nor a place to put the biomass if we did pick it up.
3. The residents being dependent on power from a few huge power plants means people's lives are vulnerable to their success or failure, be it by acts of terrorism or bankruptcy such as the Enron debacle.
4. Burning biomass, in open air be it rice straw, orchard prunings, or forest materials decreases air quality and is quickly coming to an end.

5. We may miss opportunities for economic development by not creating jobs at a local level. Small, local biomass facilities create many jobs as people collect, transport and process the materials.
6. Communities lose out on the money more businesses would bring into the economy.
7. Communities lose the opportunity to create their own energy supply and be self-sufficient.
8. We miss out on the contribution to the total supply of energy in the state of California
9. Subsidies are concentrated on the huge companies, which really don't need the money to keep the business running and the money goes out of state. Therefore, local people miss out on the financial help to create businesses in the community.

Part of The Problem is Perpetuating The Consumers' Misunderstanding of Power Supply

It seems obvious there are many ways to produce power, however in the consumers' mind major power plants are the perceived method of receiving electricity for homes and businesses.

Let's be honest and admit that to keep the "big guys happy"

We've kept from the consumer the truth that:

1. A power company is generally a stock company driven by demand for a short-term return on their investment.
2. If we don't pay our power bill, they turn off the switch; the power company is **not** there to serve the customer.
3. There is no law that says you have to buy energy from a certain power company.

Let's Be "Solution-Driven" Rather than "Investment-Driven"

The biomass industry is solution-driven.

The energy business is investment-driven.

Historically this process has competed with other energy sources, the primary one being natural gas because biomass, strictly as an energy source, is expensive to produce, transport and convert into energy. We acknowledge there is a need for large, efficient sources of energy for the wholesale market.

California's energy crisis has resulted in the funding of huge natural gas projects. While this has reduced the price of energy to the consumer, in the long term much of the money given from the state is now being spent out of the state. Why? Because the large companies owning these natural gas companies are not based in California.

California's energy crisis has resulted in biomass plants closing. The prices paid to those who collect, transport and process biomass has historically been so low that any drop in price paid for the material forces the company out of business. This is what happened again recently.

This has long-term consequences, which aren't immediately apparent. To the consumer it seems that reducing prices for power is the most important thing. However, by looking closely at the wide ranging issues, and thinking of the future of this great state and its constituents, we find that the closing of biomass plants has many disadvantages.

What is the key to co-existence between the conglomerates and the small, local plants? What is the key to environmental and consumer protection? Parity - if you are going to subsidize one form of energy production, subsidize them all. We need them both! In planning for the future, California needs to insure that there is equality in the incentives given so the making, collecting, processing and distribution of biomass feed stocks is economically possible. Then we all reap the great environmental and economic benefits.

Cleaning Up The Environment is One of California's Priorities! Some of Possible Results of Utilizing Biomass:

- Developing local economies by providing jobs.
- Accomplishing environmental objectives.
- Improving Air and Water Quality
- Eliminating Green Waste in Landfills
- Reducing Fire Danger
- Local Energy Sources Contributing to California's Energy Supply

Policies could be focused on creating markets for the valuable agriculture by-products of the conversion process and recognizing that consumers will benefit by an improved environment and more jobs. Farmers are local, they feed people, and money could go to feed the community. Somewhere, sometime, someone has to foot the bill to cover the costs to do the hard part, which is collection, transportation of these waste materials, which have now become everyone's problem.

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Being "Solution Driven" Creates New Local Investment Opportunities

Creating a Thriving Biomass Industry

Developing A Stronger Local Economy

We are not alone in our views. These principles were publicly announced and solutions suggested in an article entitled, Revitalizing The Farm Economy Via Renewable Energy Development, which appeared in the October 2001 issue of **BIOCYCLE** magazine. It is actually an excerpt from the Environmental and Energy Study Institute (EESI) Policy Report. A full version of this report is available on their website www.eesi.org/publications/farm_bill_policy_paper.pdf. Any quotes in the following were taken from this magazine article.

Written by Carol Werner, Executive director and Jeremy Ames with EESI in Washington, D.C. this article recognizes that a new economy can be built utilizing the various waste streams from farms, and

"farms can be in the forefront of this revolution; utilizing the commodities they grow, and even the waste streams they now must dispose of, in innovative new ways to produce power, transportation fuels and a new generation of biobased products and chemicals."

The article goes on to say there is over one billion tons of waste produced annually by the farm sector. In a review of biomass conversion technologies mentioned, anaerobic digestion of animal manures is listed for its many positive by-products, "...methane which is captured and burned to produce on-farm heat, and in larger scale operations, electricity that can be sold on the grid. The solid by-products of anaerobic digestion are ideal for fertilizer or for the production of biobased fuels."

EESI's extensive recommendations speak to their belief in the wide range of benefits to America by utilizing biomass. They propose the funding of several new programs in the 2002 Farm Bill: *Renewable Resource Assessment; Renewable Portfolio Standard; Renewable Fuels Standard; Carbon Sequestration Pilot Projects; Establish Federal Purchasing Programs.*

Their extensive recommendations are given for the following existing programs:

- State & Local Governments team up with Universities
- The Conservation Reserve Program
- The Rural Business Cooperative Service
- The Natural Resource Conservation Service
- Biomass Research and Development Initiative
- Land-Grant Universities

Ames, Jeremy; Werner, Carol, (October, 2001). BioCycle "Revitalizing The Farm Economy Via Renewable Energy Development".

To Make This a Reality We Need Legislative Changes:

Instead of providing subsidies to large power companies - the state can provide a tax credit to the utility for wheeling the power and supplying the interconnect equipment.

Limit the availability of tax credits to companies based in California in order to maximize the revenue that would flow back into the state economy.

Include recycling agricultural residues in the requirements and objectives for power plant operations.

Set up the same certification process for fertilizer companies as for soil amendment companies.

Create incentives to facilitate the sale of soil amendment produced by converting biomass.

Suggested Parameters For the Biomass Power Plants

Ceiling of 300 Megawatts

- 100 megawatts of the existing wood waste power plants in the central valley
- 100 megawatts for future small scale wood waste power plants
- 100 megawatts would come from surplus power from the dairy and rice straw digester projects

Ten-year program implemented for the life of the non-profit to see what happens - after that time energy prices could support it.

How Can You Begin?

...A Community Can Direct A Task Force to Collect & Transport Waste Materials.

...Farmers/Dairies Can Install a Small Digester on Site or Join with Other Farms to Install a digester.

Research Having

A Gasifier installed in a county or town to handle the dry wood waste from orchards, community green waste collection and from forests.

OR

A Digester installed on dairies or near industrial parks to handle manure, rice straw, manure and rice straw combination, or manure/green waste combination or food processing waste

Get support from companies able to bring these technologies to you. They must be able to help you meet all of your permitting, installation, management and financial assistance needs.

Gasifier or Digester Benefits To At Your Location:

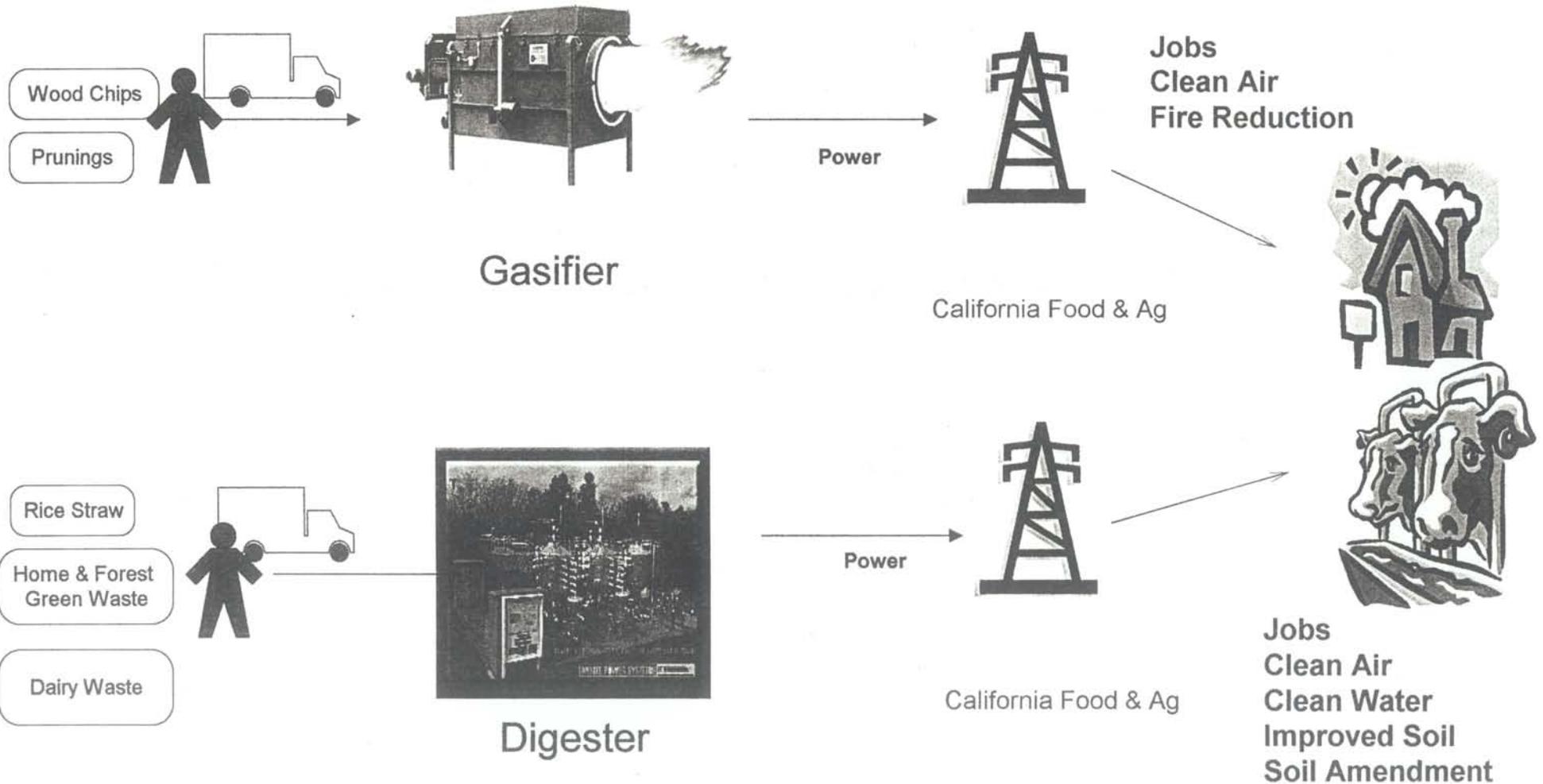
These Technologies, properly understood, installed and managed create by products. Some of these by products are saleable; some are environmentally mandated, some are usable on your own facility:

High Value Soil Amendment
Electrical Energy
Heat & Steam
CO₂
Clean Air, Soil & Water
Fire Safety

To Summarize - Supporting The Effective Utilization of Biomass:

- Cleans Up The Environment.
- Produces organic soil amendment to apply to fields or to sell.
- Supplies energy to use at the facility or to sell to the grid.
- Creates jobs collecting, trucking and managing the waste material.
- There's enough money to pay people to do the above.
- There is enough money to pay a living wage giving their families stability.
- Greater Benefit to the local Economy

CAL-FARM ENERGY ECONOMIC DEVELOPMENT PROGRAM



Grant Economic Development Opportunities Chart

