

Making Green Power Greener

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Recently there have been a number of excellent articles written on using biomass for the generation of green electric power. Today there are a number of alternatives to wind and solar available. In many cases, the additional benefits of biomass fuels can be much more valuable to an electric utility and independent system operator. This article explores some additional benefits that can make your project a winner!

Regardless of what green power source is used, it is only useful to the electric industry when it replaces traditional electric generation without sacrificing the system's reliability and flexibility. A good electrical generation project must start by looking at the desired end product. Once that is known, we can look for new innovative green sources. But, we cannot lose sight of the goal, to provide the nation with a new, greener source of electrical energy.

Today's electric grid is comprised of various key resources. Base load is often best provided by nuclear, hydro, or high efficiency coal plants. These plants provide the bulk of the electric power we use every day. But, the system would not last long if we stopped there.

Electric consumption patterns vary. Each area has its own distinct load pattern. They all vary. Some vary much more than others. So, each system is unique.

Each electrical system also needs an intermediate generation source. This source is cycled daily or in some other pattern to add load when needed and to reduce generation when demand decreases.

Finally, there are the peaking load needs. From hour to hour, sometimes minute to minute, the load can change. Peaking units need to be able to satisfy that variability. Whether supplied by natural gas or oil, generation units are needed to supply that last remaining megawatt of power when needed.

Value of a green power generation project can be enhanced by keeping this basic system outline in mind. Often, it does little good to generate additional power to the electric grid in the middle of the night and early morning hours or on weekends. Until we develop ways to store electrical energy on the grid economically, we need to produce power when needed.

Biomass generation plants can meet the electrical system needs well. Many plant designs can be fully dispatchable. Unlike wind and solar, these units can be nearly as responsive to load swings as natural gas peaking units. Reciprocating engine designs can come on line and be at full load in minutes. The electrical system needs must be met and successful plants will be designed to meet them.

Review of a typical Independent System Operator (ISO) web site defines ancillary services as; *ancillary services support the reliable operation of the transmission system as it moves electricity from generating sources to retail customers.* The ability to provide extra value to the ISO can mean more revenue for the project.

This ISO defines two valuable ancillary services as Synchronized Reserve and Regulation. It defines them as:

- **Synchronized Reserve** supplies electricity if the grid has an unexpected need for more power on short notice.
- **Regulation** is a service that corrects for short-term changes in electricity use that might affect the stability of the power system.

Building a project with reciprocating engines may require providing an additional engine or two to make sure you can generate contract committed power and allow for maintenance or repair. These “extra” engines might be able to qualify for “Synchronized Reserve” at times. Similarly, the ability to do load follow could also allow a project to collect additional revenue for “Regulation”.

These are additional revenue streams that wind and solar may not be able to provide. Biomass plants can, and should. If biomass is going to grow in the electric power industry, it needs to meet the market need!

But, meeting market needs does not just happen. It takes a carefully developed business plan. A project’s value does not stop with its technical engineering. It can be greatly enhanced with “financial engineering”.

An additional advantage that biomass plants have is their ability to go where the need for power is the highest. Perhaps projects can learn from that folk lore celebrity, the infamous Willie Sutton and his purported famous quote.

"As Willie Sutton the bank robber said when asked why he robbed banks, 'because that's where the money is!'"

Though biomass plants need not resort to crime, plant developers can take a page out of “Slick” Willie’s book. The ability to develop biomass plants that use

locally indigenous fuels gives them the ability to go to where the need for green power is highest! Why? Again, to quote Willie, 'because that's where the money is'."

The success of a green power project can be greatly improved by a business plan that builds in layers of extra value. The ability to design a plant using proven electric generation designs and equipment, greatly improves your odds for success. Biomass development is sometimes cutting edge technology. But, it does not all have to be!

Standardized and proven equipment can reduce performance risk, reduce spare parts investment, improve operator and maintenance familiarization, etc, In short, a good green power plant can apply some of the same strategies that made Southwest Airlines such a high flyer (pun intended).

In conclusion, profits are not made by just choosing to generate green. Like any other electric power plant, green power projects needs to identify what the product is going to be, what size, where, when, and how. Then, you work backwards to see what your fuel options are.

Today, there are amazing opportunities in the green power market. The demand is growing quickly. Learn to make your project one of the best! Make your green project even greener!