Coastal Bio-energy Forum

University of Washington
Olympic Natural Resources Center
Forks, Washington
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Q & A after Siemens Feasibility Study Report on Forks Bio-energy Plant

Q: How much biomass is available in the Forks area?
We are estimating the total at 75,000 green tons annually of hog fuel.

Q: Isn't the biomass being used by the mills that are producing it?
Yes, currently Portac is using a portion; about 600 green tons/month. Most, however, is being shipped out of the area.

Q: Are we talking about using chips otherwise used for pulp and paper?
No, only the material that is called hog fuel is being trucked out of the area now.

Q: How many workers or jobs are being created by this project?
Rod Fleck: About 130 men and women are employed by the cedar industry in the Forks area. Portac and Allen's Mill are dealing with waste and we want to add value to that part of the business to help insure their survival. Actually, this project will not create any new jobs, or just a few. We hope it will help preserve many jobs that may be at risk.

Q: What was the consumption of feed stock on the co-gen plant on an annual basis?
A one megawatt plant would consume about 40,000 green tons annually.

Q: Wet and dry calculations are mentioned. What is the value of the material to the producer?
We are talking about hog fuel; most is hauled to Port Angeles or Aberdeen with a small return or at a loss. Bill Hermann: some cedar mill owners are hauling to Port Angeles. Delivered hog fuel is worth $14/ton in Port Angeles right now. Cedar mill operators are paying $3/ton to dump at Port Angeles. Trucking costs is what is captured by keeping it here in Forks.

Q: What kind of efficiency do you calculate for the combined heat and power plant?

25% to 30% is what we are looking at now. We are fine tuning this to reach about 35%.

Q: What is your estimated production cost per kw/hr? How about per therm?

Hoping it will be 5 cents a kw/hour or less. Huge variation in cost per therm; $0.20/therm to over 1$.

Q: What is the estimated cost of the plant and life expectancy?

20 year life expectancy. The cost is not publicly availably at this time. However, the costs track the published standards found in the literature per unit of output.

Rod Fleck: capitalization of these plants should be considered for government participation in order to achieve national energy policy goals.

Q: Are you leaning towards 100% combustion or gasification?

Right now we are looking at combustion even though there are additional operating costs associated with the combustion process. There is less initial cost with combustion.

Q: Once you choose combustion is it costly to add gasification process later?

Yes, it would mean a complete replacement costs.

Q: Doesn't it rain a lot here in Forks? How do you intend to burn that water?

Moisture content for wood fuel in Forks is considered. Handling the cedar waste must be addressed. A stockpile of waste will only wet down a certain amount which is acceptable. Cedar mills must produce delivered waste at less then 60% moisture content. The boiler can take this amount of moisture. Cedar waste runs from 40% to 60%.

Q: Does the in-town project include a facility for chipping or hogging material delivered to it?

This is still under consideration at this time. A relatively cheap processor can be integrated to deal with cedar waste.

John Calhoun: costs must be kept low for cedar mills. Doing the processing at the energy plant for the various cedar mills is the most economic alternative. At the larger plant, in the industrial park, we should integrate a tub grinder so it increases our flexibility of material we can take.

Siemens: Mixing cedar waste with other materials is the best feed stock.

Q: Have you considered co-firing the plant with other feedstock such as tires or other waste?

No. Air pollution authority folks really forced us to stay pure in regards to feed stock. They gave us good advice. Fleck: the end of slash burning is sought by some groups. We must think about this when designing this plant.

Q: What is the operating schedule per year?

About 95%.

Q: Is your return on investment calculations based upon any subsidy?

Our Performa calculations are being done without integration of any special programs or subsidies. The town solution does require some financial assistance because the distribution system for the heat is expensive.

Group Discussion

Rod Fleck: Pre-commercial thinning slash may be a fuel source. The problem we ran into was that the economics of using slash does not work at this time. Also the BPA issue is a major problem so we are going after the lowest hanging fruit. But the future must include the slash.

Bill Quigg: Sen. Cantwell's office says that BPA has to participate in the solution. PUDs have to protect their customers from higher prices. If we can't make the biomass dog hunt here it will not hunt! We need to figure out how to do this. We live in the best place to produce biomass in the world. I will show you our plant in Aberdeen.

John Calhoun: One of the reasons we did not focus on moving biomass (slash) out of the forest and into the plant is that an economic breakthrough of existing conditions must be achieved. We are dealing with reality today so that is why we went with an existing stream of hog fuel for feedstock. Is there a national policy issue here? If that is what it takes to break through then we can develop a strategy for influencing that.

Bill Quigg: If there is an economic solution we can identify then we can go the political solution route.

John Calhoun: Federal energy policy does include a $25/ton subsidy for transporting slash out of the woods. The provision is not funded, however.

Unidentified: Twenty megs are minimum for an economically viable bio-mass model. Permits may be hard to achieve but we are seeing a change in attitudes among some environmental groups.

How much demand is there for green power? Will people pay? What is the market for green power? If you ask customers if they want it the answer is yes. When they see the costs they back off. An initiative for renewable portfolios is on the table. That will force a higher demand for green power. And a higher costs for everyone.

Fred Mitchell: What is the bottom line for green energy? Clallam PUD has a green power rate which is $0.07 more then standard rate of $0.062; $0.069 for green. Clallam PUD has about 200 green power customers. The more interest in green power, the more we will consider adding it.

You can legislate a 15% green share but the infrastructure that is required to support the intermittent green energy is very costly.

Q: What is the utility perspective on relative value of renewable energy; wood biomass vs. wind vs. gas?

You need a mix of reliable and intermittent sources.

Rick Lovely, Grays Harbor PUD. We have 12 megs of wind from Eastern Washington. We are going to buy 8 more. It has a utilization factor of only 20%. You have to build in the extra capacity to achieve reliable 20 megs. We must invest in 80 megs of wind turbines to get 20. We need to integrate wind with hydro; balancing the load

between the two. You need equal amounts of hydro to match wind production for reliability. Wind can be produced for about 6 cents if it can be backed with hydro; otherwise the costs are much higher. BPA fees are applied to make alternatives problematic. We would rather have a firm source of green power then the wind that is variable and unreliable. The best of the wind generation sights are already developed; the next generation (growth) is less reliable.

People vote their pocket book; five people signed up for green power out of 40,000 Grays Harbor PUD customers.

Unidentified: How can a 1 meg plant work?

Siemens: cost of fuel is low and we are asking for low interest loan support for the town plant. A 5% ROI is not private grade investment but reasonable for a publicly financed investment.

Paul Means: Did you consider producing pellets with the wood waste in Forks?

Siemens: We did not consider pellets.

Unidentified: Where would you site a plant in the town of Forks and how would you distribute the steam and hot water?

Siemens: A 1 meg combined heat and power plant for municipal buildings is being studied. The plant would be owned by (whoever) and generate power and steam at a negotiable rate with the users. The owner would benefit from the revenue. The users would benefit from lower energy bills.

Unidentified: Is there existing technology and is it affordable?

Siemens: Yes and yes.

Unidentified: What kind of revenue can you expect to get for the sale of energy from the plant?

Siemens: The design standard will return 5% on investment.

Ideas and Next Steps

Bill Quigg: Carbon credit trading is something we should look into as well. Biomass fits into the carbon credit market. This is a private arrangement that does not need government involvement.

John Calhoun: Is the low cost feedstock fuel assumption realistic?

Bill Hermann: That is a critical issue. Private mills will pay whatever they have to for hog fuel. When mills consider the alternative of paying for oil at $60 barrel then they can pay a lot higher price for hog fuel. Also, there is a lot of pressure on demand for hog fuel as more co-gen production comes on line. Don't base this decision on cheap fuel.

John Calhoun: I think the biggest risk to this project is the assumptions on fuel costs, and the fact that we have only two primary sources for hog fuel. The cost right now reflects the opportunity costs for hauling. If hog fuel cost goes from less then $5/ton to $20/ton, we need to know what that means in terms of financial viability.

John Rivers: There is an excess of power in the region. We cannot sell additional power generated. If someone would buy 20 Megs of power we would build a plant right now. But we can't sell it. We developed a wood fired plant in Darlington, WA but in the end we could not sell the power (at an adequate price) and lost $1 million. The only projects that work are the really small ones where you are selling your power retail. The idea that you can build a cheap power plant here and sell the energy is not going to work. A small project used locally is the only thing that will work now.

Rod Fleck: Investment in a pellet plant was too high when Clallam EDC looked at it.

Sen. Tim Sheldon: During the supplemental budget process this year, the legislature decided to re-write the entire budget and give Bill Quigg $7.5 million. Energy is the hot topic; bio-fuels are going to be a big deal in the state legislature next year. Everyone is very interested. Members are looking at innovative proposals. The timing is right for proposals.

John Calhoun: Folks are here from the coastal region of our state. We think bio-energy can be a big part of our regional economic development. The organizers of this forum want to facilitate movement in this area. We are hoping to leave here with some ideas on how we can do this for the region. Would a regional conference, perhaps in Grays Harbor, be

worthwhile? What can we do to advance the cause? What are the impediments to progress? Is BPA the 900 lbs gorilla? Is this something we can look at?

> **Chuck Forman**, BPA: A one to three meg facility can easily be worked on and integrated into our system; we can get it done. No big problem. A second point is what we assume about the value of electricity. Clallam PUD may save about 2.5 cents per meg from BPA and that is what they can pay for other power. If it is sold to the system through PUD this is what you will get—not much.

John Calhoun: For small size plants in our communities; if they are used to take power offline and directly substituting for PUD provided power, is that a better economic model?

> **Chuck Forman:** BPA does not recommend disconnecting from the grid! Use the power locally and sell excess back. Don't become your own utility!

Tim Stearns, CTED: From the State perspective the Region has a substantial surplus of gas generated electrical power capacity. Growth can be met with conservation only in part. Growth in the State will add 1 million people in ten years. Demand will outstrip supply; we cannot double the consumption and the distribution system. Urban vs. rural needs will require we take a look at bio-fuel which will benefit rural. The governor gets it. We need to recognize the value of small, distributed energy projects.

State government is trying to provide financing for small plants that come in at the distributed level. You got to make it work locally! Who is going to provide power in 2011 and beyond? We need more than BPA. There is an opportunity to make this project work.

We have heard about relative current price relationships today? Is there an opportunity to negotiate long term bio fuel contracts today? As oil prices grow this could be a useful hedge. We need to maintain the hydro situation but we need to embrace bio-energy and other green power options.

> **Rick Lovely,** Grays Harbor PUD. We pay whatever our retail rate is; that is, if you put a wind generator at your house and feed it into the meter we will credit you at the retail prices until your meter turns to zero. You cannot make more by selling power than the power you use through the meter.

People are putting their money in wind now. If we could build bio-mass and we could get green credits and buy it for 5 cents, we will be very interested! If a mill can lock in 5 cents, they should do it.

More Ideas and Discussion

- Create a Working Paper on Coastal Bio-Energy issues?
- Plan a "full blown" bio-energy conference in Grays Harbor or Seattle?
- "Put out an RFP for a 5 meg power plant, see who responds?"

John Calhoun: The City of Forks may build the town plant and distribute the hot water from a plant located between the school and the pool, it would be impractical to distribute steam to the hospital; it is too far. The technology is common and cheap.

Rod Fleck: The heating agent at the pool in Forks is propane, subject to increasing price. Using the bio-energy alternative is very attractive.

Bob Edmonds: Should we explore gasification of wood waste for energy and other products?

John Calhoun: Probably, but this project does not do that.

John Calhoun: Would there be interest in a series of community forums about bio-energy. Would that be useful in your communities in the Coastal region?

Bill Peach: How much would it cost to get the big piles of logging slash picked up and delivered to a plant? Can a study determine this in real terms for local conditions?

John Calhoun: The Forest Service has done these studies in Montana. They showed about $25/ton delivered within 50 miles.

Paul Means: We do logging clean up, etc. in SW Washington. We get $18 to $26 per ton delivered. We need to support the credits in the energy bill to support this cost.

Larry Mason: We need to address the information gaps on this subject. Lots of political energy expended but not a lot of progress is being made. Nobody is speculating that the percentage contribution is going to increase. What is the cost to bring material out of the woods? Universities can do these things. We can determine the

marginal trade offs and make informed decisions. A sensitivity analysis is required: for example if you could get more on a truck what would the consequences be?

Unidentified: If a private industrial owner is to build such a plant, you need much more then 5% ROI. If a city or government does it, then 5% is fine. Private will require subsidies.

Ted Simpson, Clallam PUD: What are you willing to pay for the power? Is it more then what we must charge if we buy it from BPA? Can we pay more for it if we don't have to transmit it? The initiative that mandates an integrated resource plan prohibits the use of old growth to produce green power and that shoots a hole in the cedar mill waste issue that started this whole deal. Sorry. What are you willing to pay?

Bob Lawrence: I suggest you develop a "core group" to take things forward and expand the subject to everything that would reduce our dependence on foreign oil. A core group would spawn small working groups.

Larry Crockett, Port of Port Townsend. After core groups define the issues to be worked on, this larger group should get together again.

Bill Hermann: I say, "Give it to private industry; ask them to supply 3 megs and ask them what it would cost". If it is just grants, it won't work.

Patti Morris: If the consumer is not interested in making it happen, it will not go forward.

Nancy Allison: "A core group will be formed and we will keep you informed of our progress."