NEW JERSEY BOARD OF PUBLIC UTILITIES

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NEW JERSEY ENERGY MASTER PLAN

BIOMASS WORK GROUP

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RUTGERS ECO CENTER

BORDENTOWN, NEW JERSEY

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I N D E X

SPEAKER REPRESENTING PAGE

PRESIDENT SOLOMON: I apologize for not

being on time. I had another matter that I had to attend to, and it was emergent, and I think that it will become more clear before the end of the dayaa to what that matter was.

Thank you for being here at our last Work Group, this is the Biomass Work Group, we will receive a report on that, and I am not going to go

through all of my talking points again, but we have been through a series of public hearings. We will still entertain comments by sending an E-mail to our Board Secretary's E-mail address within the next two weeks from today, so if you have other things you want to address or responses you want to make send them to us to our Board Secretary's E-mails address.

All of the comments, all of the transcripts, everything is being transcribed today, will be reviewed by all of the Commissioners and we will be looking at all that for guidance in proposing a final draft of the Energy Master Plan which we believe will be completed and hopefully rolled out by the Governor at the end of the year.

Having said that, Gail Richardson and Dave Specca are going to be our persenters today. I do apologize, I know it is even later than I usually am, I hope you will forgive me, but good luck. It's

all yours.

I see Commissioner Asselta and I know Commissioner Fiordaliso is here. Commissioner Fox is not here, she may be here later, she has another commitment, so I said, "Commissioner, if you have to be somewhere else, we will forgive you but only this once," but she may be here a little later.

MS. RICHARDSON: Good morning, everyone. I am Gail Richardson, Dave Specca and I will present this presentation as we have co-chaired the Biomass Work Group together and have enjoyed the privilege

of speaking to you as to some of the opportunities that confront New Jersey now in the area of biomass to energy which we will talk about as including both electrical power and fuel, so here we go.

Our Biomass Work Group is a wonderfully diverse group. I think that this represents virtually all of the sectors in the State that are closely connected with the biomass arena; the management of solid waste was well represented, the wastewater treatment sectors, as you know, biodigestion occurs in wastewater treatment plants.

We also have agriculture, we have had wonderful participation with the agricultural sector; it is very rare that you have the urban and

agricultural sectors sitting down and talking about areas of common interest. This happend with us.

The public utilities engineering firms and other expertise was well represented. So we feel that in tackling the important questions that the Board of Public Utilities posed to us, we have had a very good high level input.

The one area I totally forgot are the State agencies, especially the Department of Environmental Protection.

The task:The Energy Master Plan embraces the State goal of producing 22.5 percent of electric power from renewable energy by 2021. However, the Plan notes that in the area of renewables, although there has been a lot of action with solar and wind,

the biomass sector is really lagging.

The current State level incentive, these are largely the RECs that are regional in scope, for producing renewable electricity from biomass are ineffective in really stimulating investment in this arena.

The central question that the BPU posed to us is this: What can the State do to incentivize the development of biomass for energy production?

Energy in this draft Energy Master Plan includes vehicle fuel for the first time, a critical point.

And among other measures that are promoted in the Plan is the encouragement of the use of clean transportation fuels including a shift to natural gas fuel for trucks and busses.

In looking at New Jersey's biomass resources it is important when we think about renewables to recognize how different biomass is from, say, solar and wind; those are the other two that really are in the commercial sector.

The first point to be made is the tremendous diversity of feedstock. This comes from a report done by the New Jersey Agricultural Research Station, it is called "The Assessment of Biomass Energy Potential in New Jersey," dated 2007, and It is a fundamental resource for the State, one that we have studied very carefully.

It shows that there are 5.5 million tons

of available biomass in the State of New Jersey distributed across the sectors that are listed here.

We started with this and tackled the diversity of the sources that we considered we would recommend by way of incentivizing their use.

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The second major point about biomass resources is that there are so many conversion items to turn them into products. The biomass assessments that I just mentioned list all of these different commercial and near commercial technologies.

For electrical power heat and vehicle fuel you can use, anaerobic digestion, gasification for electric heat and power direct combustion, ethanol fuel, for which we have a couple of conversion thchnologies listed there, in other words, this is an area in which there are so many possibilities of matching feedstocks with conversion technologies, so many products that can be thereby developed, that the challenge is somewhat different from what we see in the solar and wind renewables sector.

So the key challenge that we found was that there is very little evidence, very little on the ground experience in New Jersey with these various feedstocks and technolgies to give rise to the kind of information and knowledge base that would be needed to establish a second incentive.

In looking at a course of incentives that would promote sustainable enrgy and clean fuel, those technologies having the lowest possible energy cost and no environmental or societal

consequences, we were confronted with the question: How do you recommend incentives if you don't have commercial experience in New Jersey to help you figure out what it would take to bring more investment into the field?

This explains why we moved in the direction we did with our recommendations. Our major recommendation is that the State should really launch what we are calling a biomass to power and fuels initiative in which State resources would facilitate public and private partnerships to build and operate biomass fuel plants in two or three years are targeted; In other words, the State should take a role to kind of jump-start this industry.

We are dealing with this at a time of very limited budgets, of deep concern at local and State levels about covering regular costs, so as you will see in a moment, we are not talking about some brand-new program with major new investments; I stress "new" here.

We will talk about where the sources will come from in a moment.

To facilitate, once again the Energy Master Plan recommends facilitating and

incentivizing pilot and small scale biomass energy demonstrations; there are a number of incubator

sites already in the State, a number of research sites that could be mobilized for this purpose.

That there be studies commissioned of key economic aspects of agricultural and rural feedstocks so that they can be used often economically for different purposes and, therefore, are not always available to be used for energy production, and that studies be commissioned to fill data gaps in urban and industrial feedstock areas.

The biomass work was actually built on top of and is commandeered in a wonderful way by work that is being done by a work group called the Renewable Natural Gas Work Group which focuses on vehicle fuels and the tremendous opportunity there is to transform waste into vehicle fuels as a form of supplanting diesels, with all of the benefits that that can bring about.

The Renewable Natural Gas Work Group was also invited as a component leading into the Biomass Work Group to comment on this.

Now, the Biomass Power Fuel Initiative, just going through the objectives here, the aim

here would be in facilitating the rapid development by private companies and public/private partnerships of commercial biomass energy facilities to contribute to the State's renewable energy and clean fuels goals, to serve as showcases of effective technologies and business models for producing power and fuels from biomass, and to create the knowledge

they need to establish effective incentives to really build this industry in New Jersey.

Biomass to power and fuel initiative components would include the following: State agencies collaboration, that there would need to be very strong inter-agency collaboration in this area to make use of resources that are already available through the State and Fred programs. I want to mention a couple: the Board of Public Utilities and the Economic Development Authority have financial support available for renewable energy projects, the State can help in securing Federal clean renewable energy grants, innovative clean energy manufacturing funds exist and so do many others.

With careful focus and political leadership, these resources could be mobilized in a way that could tremendously propel the investment of private sector partners.

In addition, the State agencies themselves could participate as partners based on large fleets of vehicles, not only in the fuel area, they also purchase electricity, they also generate waste, so the State agencies themselves could become participants in projects that could enable private sector partners to develop an economic plan.

Regulatory reform and speedy regulation completion is a key way in which the State could facilitate private investment.

That is what has to be done within

environmental requirements, there is not a way of getting around those.

The second component would be carried out by the State with State leadership, and the decisions would be based on things like selection criteria, number of facilties at host sites, technologies, geographic distribution, weighted outcome criteria to be sure that what is selected for demonstration would actually be demonstrating the outcomes we would be looking for and not just an array of technologies that are out there but technologies that can do the job economically and environmentally, and in terms of energy objectives, and that the feasibility of projects, that specific

State resources be taken into consideration and the acceptability of a proposed project at the community level.

One thing I forgot to mention when I was looking at the biomass list there, agricultural products are not really going to be a major biomass resource in New Jersey in the near-term or the longer-term, I should say, although the possibility of doing them on State land is something that can be explored, but the main rosources in the biomass arena in New Jersey now are residues and waste, key components of it.

And, finally, I wanted to mention and emphasize that the perspectives of the Renewal Natural Gas Work Group which has its eye on the potential of biomass based vehicle fuels and the

perspectives here are as follows, we have a group of about thirty people and most of them are very active and made tremendous contributions to the Biomass Work Group report as well, but renewable natural gas along with conventional natural gas is really the only alternative dual pathway that can simultaneously break oil dependence, slash health endangering urban air pollution, lower greenhouse gas emissions and reduce fuel costs and price

volatility.

When this precious fuel is made from biogass emissions or organic waste it is the least carbon intensive fuel in the world and is recognized increasingly as the fuel solution for heavy trucks and busses.

There are a number of urban fleets in Europe. There are projects going on in this country, the Altamount (phonetic) land fill in California, a very large one, Madison, Wisconsin with both a landfill and wastewater treatment plant are now building small-scale productions to fuel their own local vehicles and it is emerging elsewhere as well.

And New Jersey, this is an important point, New Jersey is the home, and the Rugers Eco Complex where we are standing today has played a major role in the evolution of very important technology to clean up biogass and make renewable natural gas.

One of the things you will note in our report is the opportunity that New Jersey has to build on this.

That was my part of the presentation so I will ask Dave to take it from here and talk more in

detail about the findings in the specific areas of biomass research.

Thank you.

MR. SPECCA: Thank you, Gail.

So my section will actually address some of the specific questions that were provided to us as part of the goal for the Work Group to get back with some answers on.

Before I start I want to thank Lee and the BPU for using the Eco Complex for these hearings. Originally the vision of the Eco Complex was sort of as a hub for environmental and renewable energy technology development, and interaction with the State agencies was a key part of the vision here, and it is really nice to see it becoming a reality, and we really appreciate everybody who has made the effort to get down here today.

Let's get started on specific questions.

Addressing first agricultural and other biomass resources, two questions were directed toward that. One was, what role can agriculturally derived fuel play in the development of new fuel sources in New Jersey?

And the second was, are there any regulatory legislative barriers to the development

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of this fuel source?

So referring again back to the 2007 biomass assessment that was done by the experiment station, we sort of have refined some of those numbers. Since 2007 there have been a lot of changes in the agricultural world that may have an influence on how we report those numbers today and we will talk a little bit more about that as we move along.

One of the types of products that we do feel would be available for biomass, for bio-energy projects, whether it's electricity or fuel, would be crop residues because crop residues can potentially be an additional income source for the farmers. However, some of those residues have alternative uses.

We don't list specific crops, things like corn and soybeans and so forth. Part of the reason for that is that they already have very good economic uses that place their value higher than what would be affordable for use as an energy crop. We will talk about that a little bit more as we go along.

In addition to the crop residues, livestock manures is also potentially a good source

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for bio-energy in this State.

Forest residues, this quantity that is

listed for forest residues is somewhat lower than was listed in the original 2007 study. Among some of the discussion within our Work Group was how much of that forest residue is really available, given some of the restrictions in places like the Pinelands and Highlands and some of the other residues that would be available as part of either forestry activity or food processing.

Here are some of the findings: Crops produced on New Jersey farms have a much higher value for food and feed than as a bio-energy feedstock. Don't necessarily feel bad for the farmer that he can't sell the crop for bio-energy, if he is actually getting six dollars a bushel for corn or thirteen dollars a bushel for soybeans he has got a much higher value outlet for his crops and the fact that he can't specifically use it for bio-energy production perhaps is a good thing as it is being used for further higher value purposes.

However, the crop residue that is left, whether that is corn stover, wheat and rye straw, were some of the main things we looked at, some of those things could be available.

Pricing may be close to a point where they could either go as animal bedding, used for incorporation back into the soil, to return nutrients back into the soil and improve organic matter and tilt of the soil.

So the farmer would have to trade off some of these different alternative uses for crop

residues, but one of those could be for use as a bio-energy production.

Farmers don't usually pay for disposal of organic waste. One of the exceptions to that might be some of the horse farms where they don't have adequate acreage on their farm to land apply manure in those farms where they are paying to dispose of their waste.

But in most cases in the dairy farms, of which there are a few left, or with the steers and chicken farms, they usually have enough acreage around the farm to land apply it, so if you are building a bio-energy plant and you are going to assume that farmers are going to pay you to bring their dairy manure to your facility, you probably need to look at that a little bit closer.

Other incentives such as returning fertilizer and organic matter to the farm for

bio-energy plants may overcome those barrriers. There may be some type of arrangements made where the digestate, which is rich in nutrients and organic matter, could be returned to the farm, and that in a way kind of eliminates some of the decisions the farmer has early on, whether he keeps a crop on the farm to get the organic matter and nutrients back in, or whether to give it to the bio-energy facility and then get the nutrients returned to him just the same as he would have in the first place.

Other things that we looked at in our discussions were some of the State lands that are available. There are nearly two million acres of State owned or managed land, and there is a large opportunity, even if look at only a small portion of that land, to produce sustainable bio-energy crops.

In addtion to producing bio-energy crops it would also be a benefit to the State in the reduction in that maintenance cost for that State land.

Recommendations for farm and rural production or bio-energy production: One is that we need to conduct a study to determine the economic availability of these crop residuals and animal

manures. This would probably be a study that does a specific analysis on pricing at zero dollars, how much would be available at twenty dollars a ton and so forth, so that some of our bio-energy projects can get a more realisitic sense of what is really out there.

Investigate business models that will help to bring together ag and rural biomass into energy projects, and this is looking at perhaps developing cooperatives or some other limited liability corporations;a lot of the amount of biomass that would be needed for a project probably wouldn't be sourced at an individual farm or rural business, but as a collective cooperative of farmers perhaps that's doable.

Conduct a study to assess the energy

potential of sustainable forest residues. even though we discussed some of this in our Work Group we feel that there is a much more thorough, perhaps more scientific analysis that needs to be done to really find out what could realistically be available given some of the restrictions on access to some of the forestry.

Potentially it could be a very big number if there was a fairly high level of access to the

forsted lands, and we are talking about the forest residues in this case, we are not talking about going in and clear-cutting areas, but really it would be material that comes from thinning some of the weedy materials from the forest or what is left over after it has been logged perhaps, so that needs to be done.

We also need to determine the availability of State owned and influenced lands for biomass production, to quantify how much of those are wetlands, what is uplands, what is too hilly perhaps for biomass production and what is a realistic number that we can work with.

And also to develop a framework for farmers to be able to grow and harvest bio-energy crops from State owned and influenced lands we also feel is important, that some structure, some lease agreement that a farmer could build a business around perhaps or feel comfortable with investing in equipment to do so is important as well as from a

State perspective of not opening themselves up to a situation that they wouldn't be happy with.

Moving on to other big sources of biomass in New Jersey, of course, urban biomass, as you saw in the graph that Gail had put up earlier, urban

biomass is potentially a huge source of biomass for New Jersey.

Here is a list of some of those sources. You can see even on the top one with yard waste, the net usable dry tons in 2010, that number of nine hundred thousand dry tons is higher than the total amount of ag and rural biomass that we estimated before, that was only seven hundred, so even just one category within this group is a big number.

Yard waste represents only twenty-three percent of the urban biomass. The biggest one by far is our solid waste which is currently being landfilled. There is a huge portion of the waste that goes into a landfill that's organic in nature, with the appropriate technology we could possibly convert it to bio-energy in some form, and these numbers are trying to capture and divide that up between the different types, human waste itself, recognizing that they would probably be different technologies.

In the recycled materials, there is food waste, wood scraps, which also are recycled at this point, and then there is this category of magazines and junk mail, and at a lot of recycling centers that is often the lowest grade paper that they

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recycle. It potentially could be used to produce bio-energy as well.

Waste oil is a pretty small portion of this category but it is certainly worth mentioning because waste oil has a very high energy content per pound, it is well over thirteen thousand or higher BTUs per pound versus things like organic matter from wood and crop residues, around eight thousand; especially in the anaerobic digester, adding a little bit of this waste oil seems to really do a lot to improve the methane production.

Then we have the waste biogass emissions currently being collected at our landfills and wastewater treatment plants.

Here are some of the findings: Existing landfills and wastewater treatment plants can play a key role as locations for new clean bio-energy technologies.

Even though it wasn't really spelled out specifically in our report, we also add to this list the transfer stations where waste is being brought in, in some cases it is being sorted and transported out-of-state, and also our waste energy facilities, the incinerators in the State could also be key areas where some of this consolidation,

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perhaps separation in transformation into bio-energy would be important.

There is a lot of the infrastructure in place, we already have the highways and the railways needed to move materials in and out, they are already hopefully separated from highly urbanized areas so if there are some odors produced or noise it is not a big an issue.

So that's one of the recommendations or findings we have relating to urban biomass. The amount of bio-energy produced by landfill gas could be much greater, and recognizing that landfill gas right now is the largest source of bio-energy in the State, there is even more available if we manage it properly.

One of the ways to do that is to recover waste heat from the generators at the landfills. There is only only one landfill right now in Middlesex County where they utilize the waste heat. All the other projects as far as we are aware of do not recover waste energy.

A typical generating station at a landfill converts somewhere in the neighborhood of thirty percent of the energy into the facility as electricity. If you were to recover waste heat, the

percent of energy recovered could be as high as sixty-five or seventy percent, depending on the match of the waste heat recovered.

Also with landfill gas, there is a lot of municipal solid waste currently beaing hauled out of the State. There is a potential, perhaps, if we are looking at transportation fuel, that some of that is

produced into, if it produces landfill gas at out-of-state landfills it could be convertred to transportation fuel that will actually be used for the trucks that haul this waste in and out of the State, so that is a good way to potentially get some bio-energy from that.

Landfills as they exist now can do more to improve the gas recovery within the landfill and then have more fuel available for electricity or transportation fuels.

Yard waste is another opportunity, feedstock, given that it is already being collected and consolidated, and there are very few other uses for it, most of the time it is things as simple as mulch, and the town will give it back out to the residents of the town as the best way to get it off the work-site once they mulch it, and a lot of times they have difficulty even getting the mulches that

they have converted it, the organic waste to mulch, getting rid of it from the site.

Recommendations for urban biomass: We would like to see that the DEP food waste study be expedited because of the large amounts of food waste that are available in the State. Food waste in New Jersey could b an opportunity for feedstock, by that we mean feedstock that right now is available, the economics look really good, the technologies to do the conversion have been proven elsewhere and it is really important that these demonstration

projects that we talked about get started, but that food waste is really what we see as an opportunity to feedstock.

We also need to do an inventory of industrial organic waste as a potential source of biomass feedstock. This was really brought home to me just a couple of weeks ago on a tour out in Wisconsin at an anaerobic digester that was in a wastewater treatment plant as well as another that was three dairy farmers bringing their manure into one anaerobic digester, they were bringing in this high BOD(phonetic) organic liquid such as waste from off-spec (phonetic) soda from a bottling plant and also some off-spec beer, and when they put that

in the digester they almost saw an immediate spike in the amount of methane produced, they said it was like giving them a Mars bar, all of a sudden they are getting all this energy and they are producing methane like crazy, so that's also a real opportunity as to feedstock we think as well.

We also were given a question about waste to energy in the REC designation. As you are probably aware, there are Class I and Class II RECs for bio-energy, and so the question was, does the Biomass Work Group support pursuing changing the classification from waste to energy from Class II to Class I resource, this waste to energy would refer to the incinerators, and if so do you have specific recommendations regarding how this should be done?

So what the Committee pretty much has

decided, and this was actually discussed at length and considered at length, was that based on consideration of the economics of the conventional REC value right now and a recent history on the legislative level, the Biomass Work Group found that an effort to modify the waste energy REC at this point in time would be ill-advised and it does not recommend it, and for a couple of reasons here.

Class I definition for this sector

wouldn't make any difference in view of the current value of the RECs, still below ten dollars per megawatt hour, and it's still not much different than what Class II RECs we.

There appears to be little chance of changing the State level policy position to retain waste to energy as a Class II resource and there is value in exploring a market-based approach in the future and perhaps creating a bio-REC is one of the recommendations we thought might help.

And that's pretty much the focus of my report.

MS. RICHARDSON: Could I make a comment?

I neglected to say something that is crucially important if the biomass to power and fuels initiative becomes part of the Energy Master Plan, and that is that there will be project opportunities all across the State, and that it will be very important that there are active outreach and community education programs so that people can

recognize in their local landfills and wastewater treatment plants, possibly in transfer stations, free-standing digester opportunities that are located near organic waste sources, that these opportunities be identified and understood as ones

that could be acted on under such an initiative, so that is a key element in this as we go forward with this.

PRESIDENT SOLOMON: Are there any questions?

Commissioner Fiordaliso?

COMMISSIONER FIORDALISO: Thank you very much for such an in-depth analysis and report, It is really helpful to me.

In your investigation have you found regions of the United States where biomass is much more in use than possibly here in the Northeast?

MS. RICHARDSON: Biomass is an emerging industry across the U.S. I think the direct response, the most enlightening response, is that people are waking up right now, our base is relatively low, but there are projects.

For example, the U.S dairy industry is anticipating building something like thirteen hundred dairy digesters in a project down in Wisconsin that makes vehicle fuels, they have seventy-nine contracts that they are working on now.

An anaerobic digester as to electricity and power and fuels area from Ohio has forty projects underway, so I think the answer is really

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this is really the opportunity for New Jersey to stand up and play a leadership role in this arena.

There are enough examples out there that show that it can be done and be done quickly, and New Jersey has a special opportunity to move into this area.

MR. SPECCA: I would add that even as we look outside of the U.S, there are a number of countries in Europe, Sweden, Germany, Austria, that have a very large bio-energy program.

Part of their reason is that they want to reduce their reliance on natural gas coming out of Russia, and there are other issues with the cost of energy in those countries, so over time, over a number of years they have developed some very practical bio-energy technologies.

It is hard to transfer to the U.S. sometimes because the economic situations areis different, the technologies and feedstock might be built and used here a little bit differently, but there are certainly places we can for examples.

MS. RICHARDSON: Let's make one more point, that there are pioneers right here in New Jersey although the plants are not up and running that I could mentiion, but I think I won't mention because

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I think these things are best publicized by the people who are doing them.

But there are a couple of anaerobic digesters that are already in the works in New Jersey. There is a potential for both fuels and electrical power markets from those, so New Jersey is already on this path and can strengthen it.

MR. MILLER: Lance Miller.

Dave, on your last point on the inventory of organic industrial organic waste, could you also identify any potential barriers from classification of those wastes at the State or Federal level that might need to be addressed to allow those industrial wastes to go into anaeroboc digesters or energy fuels--energy technologies?

MR. SPECCA: I think not only the industrial waste but even some of the ag waste or urban waste going to an agricultural environment, in some cases there seems to be this classification issue where it would end up requiring so much additional regulatory hurdles that it makes it uneconomical, so it is important to identify those.

MR. MILLER: And possibly get them directed?

MR. SPECCA: Exactly, righr.

PRESIDENT SOLOMON: Ma'am, make sure you introduce yourself for the record.

MS. UNDERWOOD: I am Joanna Underwood, I am President of Energy Visions.

I just wanted to note the reason that we as a national environmental group wanted to create a work group in this State to tackle this issue is

because it is the densest population of any state and has a huge overwhelming waste burden, so the opportunity here is enormous.

Just looking at the eleven landfills, there is the model project, which is the Altamont landfill project in California in the Bay Area, where they are collecting and refining gases that are powering almost four hundred refuse trucks serving twenty-two communities.

So the example that this is a very viable thing to do makes for Jersey in picking this up a tremendous opportunity, and I just want to also thank the BPU for inviting us to be involved in this decision-making.

I don't think we should underestimate with all those points here the importance of the leadership role that you play in talking about this and its importance to the State in making it happen.

PRESIDENT SOLOMON: Thank you.

Anybody else?

COMMISSIONER ASSELTA: There is no mention in your report whether the Department of Environmental Protection will be a partner an inhibitor in that and I think Mr. Miller was alluding to that fact, his question didn't touch it, but I'm going to touch it, the DEP, the EPA--

MS. RICHARDSON: Essential players in the biomass to power and fuels initiative along with the Department of Agriculture, the universities, the

Department of Transportation, there is a whole list of agencies in this full report, absolutely have to be involved.

PRESIDENT SOLOMON: Yes, sir?

A GENTLEMAN: Greg (inaudible) with the Atlantic County Sewage Authority.

We have been working significantly to get a waste energy project up and going at a landfill, we are working with NRG Energy so we really have that synergy of a public/private partnership going.

And we got pretty significant public buy-in's from the community and we began to see some permitting hurdles, a thousand miles for an RND for a small project, we had all the recommendations, we

even got solid waste permits, but we really kind of got jammed up there with permitting in the end.

And as mentioned, to what extent is the BPU going to help facilitate or solve these problems. With the RND permit we expected we would get some good faith permitting process, so really it seems like there was a disconnect there.

For stationary sources in generating power there are definitely some hurdles but when it comes to transportation fuel it is sort of not looked at. We are still combusting, whether it's in a vehicle moving or stationary source, so there are some discrepancies there and I think those ought to be addressed.

We are trying to replace a landfilll. Everyone knows we can't keep on landfilling, but we

continue to stick our head in the sand, we are trying to get beyond that but I don't see us as a State taking a role in stopping landfilling. Obviously incineration is not a good thing, but there has to be something else besides landfilling.

The State should take a lead to get people to stop landfilling, but we are not doing that right now,.

MS. RICHARDSON: That's a lot of questions

you posed, but one of the key points about the bio to power and fuels initiative is that one of the key elements that the State could bring to the table would be help in the regulatory process, to speed it up. We have heard companies say that we can operate fine on day one and fifteen months later they are gone, so if the regulatory process takes that long they can lose that entire project, so we are very much aware of that as a key element in this initiative.

I'd like to say one word about landfills: Yes, people would like to use organics and all of the other materials as the best possible way and the most efficient and benign way we can come up with.

One way of looking at landfills is that if it is demonstrated that organic products, even if they end up in landfills, are actually energy assets, the competition for those assets is stimulated. The effort to make a more efficient plant that don't have organic waste mixed up with

metals and paper cups and so on is also promoted.
Another issue is that the landfill gases can themselves be much more effectively trapped, so that some of the major environmental concerns could be separately addressed, but over time it seems to

me, Europe now has a ban on landfills and the Unites States is definitely moving, municipalities across California have organic waste recycling, there are lots of public/private initiatives.
We have the food innovation center here at Rugers which has been active in that area. Priscilla Hayes is a leader here, for ten years she has worked with people across the State, so I think New Jersey is well educated about that, but unless we get a regulation with teeth in it, like a landfill ban, we are not going to have a major shift certainly in the near-term as to landfills, but it is certainly a long-term goal.
MS. UNDERWOOD: A landfill ban is one way to generate action. Another way is tax and economic incentives of one sort or another, that really encourages having this happen, and isn't that a more likely path than a ban here, or what do you foresee?
MS. RICHARDSON: There are different waste streams, some of them are pure and easy to capture like beverages that are thrown out, so you go and pick them up in a tank and take them somewhere.
Similarly in a tomato processing factory, somewhere where you get a nice clean stream of

waste.

And incentives are probably more likely to work in areas where you can easily capture those waste streams to get them out of landfills and into projects like composing or digestion.

Where you have the mixed solid waste streams if it goes to a landfill you would have to institute very rigorous, provide incentives for very rigorous separation of household garbage and the other things that get thrown into the garbage can.

This is not yet demonstrated in the United States, that we have very good models there, and even in Europe they have an enormous amount of contamination among the organics, so that to me is an issue, JoAnna, that is, the slow pace, the cost of it will become unlikely to be sufficiently an incentive and the difficulty of doing it is likely to be a hurdle for some significant time.

So a lot of these things will end up in landfills.

MR. SPECCA: I would add as well that with the State's sensitivity to adding to the cost of electricity or bio-energy or any type of energy, for that matter, any incentives that would require additional revenue being generated from somewhere

that goes toward that incentive is probably not going to be very well accepted at the State level

for a while, whereas the directives, in Europe they made a directive, over a period of time organic waste will no longer be allowed in landfills, that in itrself sort of spurred on an industry with composting and anaerobic digestion, so it will probably take a combination of the two.

MS. RICHARDSON: New Jersey could usefully look at some of the local incentives that are in place, in Connecticut where if you live within a certain distance of the composter and a generator of organic waste you must take it to the composter.

I am not sure if that is an outright mandate, but it is a type of action that would capture some of these concentrated wastes to make sure that they don't go to landfills if there is a facility for composting it or anaerobic digester, that they go there.

A GENTLEMAN: Regarding the direction of waste to go to certain facilities, that's all very good but I think that there are still ways around that.

MS. RICHARDSON: One of the exciting things about a biomass to power fuels initiative is that

you get a lot of smart people in the State working on putting up things with State supportand precisely that kind of observation in a refined way would come out.

MS. HAYES: Priscilla Hayes, the former Director of the Solid Waste Resources at Rutgers and now it is consultant and Sustainability

Director.

One of the recommendations that was mentioned here a little bit is a better report on how much food waste we do have in the State, because I was part of the team that did the 2007 study and what we found was that, you know, we would end up with, like Essex County was a good example, they were recycling almost more food waste than we calculated that they had, and that was because of something like Anheiser-Busch which was recycling all sorts of tons of food waste, and that was just one example, you know.

There is a very strong possibility that there is way more food waste than that report represented because we are such a food dense state and we have all sorts of things, and that's something we need to look at much more closely just so we can really get a sense of how much of that can

be captured.

The other thing is that there are municipalities that have begun to move toward incentivizing getting the food waste out of the waste streams, and Princeton is probably the most active on that, but we are hoping that as things move along that the municipalities will feel more comfortable about starting to do things that we have seen in other parts of the country like San Francisco or other places.

It is just much better to keep the food

waste not mixed up with the Draino or the paper cups or the steel or all of the other things we send to landfills and use it as the resource that it is.

PRESIDENT SOLOMON: Anyone else?

MR. ALBRECHT: Ray Albrecht.

PRESIDENT SOLOMON: You are on the list to speak up front. Do you want to do that now?

MR. ALBRECHT: I am an engineer but I am also an organic gardener. We do our organic waste right up at the kitchen counter. It is real easy, It doesn't require any technology other than a plastic or stainless steel container to hold that stuff before you bring it to the compost pile.

It would seem that this is really not a

technology revolution but, rather, a culture change.

MS. RICHARDSON: I just talked to California Recycle, and you are absolutely right, it seems like the simplest thing in the world, but when you actually pick up those green recycle barrels in the street, according to California you get everything from lawnmower parts to used tires, so that's the issue, consistency of implementation.

MR. CALCANIO (phonetic): Frank Calcanio.

In Europe you are beginning to see the use of autoplating as a means of taking MSW and other waste streams to make biomass, and in those situations you don't have to worry about separating the foods from the other recyclables and you get a biomass product at the end that you can use as fuel.

Have you addressed any of that in your

studies or reports?

MS. RICHARDSON: That particular technology, you mean? We didn't address it specifically but we would invite --

MR. SPECCA: Not only autoplating, but there are a number technologies that are developed or are under development that are, they call it an enabling technology where they actually are separating waste or cleaning landfill gas and are

enabled to use that biomass for energy production, and I think it is an area where there are a lot of opportunities especially in New Jersey where there is a lot of need for waste separation and autoplating is perhaps one of those.

PRESIDENT SOLOMON: Anyone else?

We are done.

PRESIDENT SOLOMON: David and Gail, thank you very much, the document is well done. I am sure that out of the questions we have had today there may be some others to come.

Michael Smith, CEG Power and Gas?

MR. SMITH: Good morning, Ladies that Gentlemen, members of the Board.

My name is Michael Smith and I am the CEO of CEG Power and Gas of Mays Landing, New Jersey, a sustainable biomass company.

I am also the owner of Mother Earth Energy, a 3.5 million gallon a year biodiesel plant that began operation in early 2009.

Our work with lipid oil crops such as canola, switch grass, soy bean and algae has given us a unique perspective into the state of the biomass industry

The main challenge faced by biodiesel

manufacturers is essentially the same challenge faced by sustainable biomass companies: where does your feedstock come from?

This question led us to look into alternate feedstocks very early in the game. We took a look at all kinds of options from algal strains to genetically modified grasses.

What we learned was that most of these options, while promising, have yet to realize their full potential. That was until we considered a small native aquatic plant dcalled duckweed.

Duckweed is a free-floating aquatic plant fround with world-wide distribution. Renowned for being the world's smallest flowering plant, duckweed reproduces both sexually via flowering and asexually via budding, leading to tremendous growth rates.

During the growing season it is common to see communal duckweeds growing in undisturbed pools of water throughout the continental United States.

It's very likely that the average American passes by vast communities of these plants every day without giving them a second thought.

However, this tiny aquatic plant has the immediate potential to answer our nation's call for an American made cost-effective renewable energy

source

Duckweed is a fantastic candidate for a sustainable biomass, it grows so rapidly it can double its body-weight under ideal conditions every twenty-four hours. It has five to six times as much starch as corn and does not contribute to global warming.

Duckweed is considered a carbon neutral energy source because unlike most fuels it actually removes carbon dioxide from the atmosphere.

Duckweed also functions as a bio-remediator by effectively filtering contaminants such as bacteria, nitrogen, phosphates and other nutrients from naturally occurring bodies of water as well as waste and grey water streams.

Several years ago the Waksman Institute of Microbiology of Rutgers was one of the first U.S. academic institutions to recognize the potential of duckweed as a bio-energy source. The Waksman Institute applied to the Department of Energy to fund the DNA sequencing of the duckweed genome to determine the order in which the DNA bases were arranged in certain duckweed species.

It is believed that the genome of duckweed will provide invaluable fundamental information for

further energy technology development

The Waksman Institute has been a valuable

resource for us and our continued collaboration with the Institute has led to major breakthroughs in our sustainable biomass technology.

Over the past three years we have developed methods to grow the plant vertically utilizing the cutting-edge of aqua-ponic science.

We grow our duckweed in modern greenhouses and using advanced harvesting strategies we are able to literally farm duckweed on a daily basis on-site. This allows us to utilize our patented technology to transform the biomass into useable forms of energy.

Our patented gasifier technology creates a methane rich biogas that can be used to run conventional generators or use heat from our gasifier to turn steam turbines.

This allows us to have two wholly complete and separate products, a "No Drill" low impact natural gas equivalent as well as a virtually no emission clean electricity production system.

Our process of returning the CO2 rich exhaust streams back to the greenhouse feed the next generation of duckweed; thus, creating true clean carbon neutral energy.

And unlike solar or wind, our power generation is dispatchable, meaning we are not waiting for the wind to blow or the sun to shine. We produce power on demand. This allows for more steady power distribution into the existing grid without taxing the system.

Our technology is not pie-in-the-sky. It

is really right now, right here in New Jersey. We have already constructed a 45 kilowatt pilot scale plant at our research facility in Mays Landing, New Jersey, where we farm our biomass directly on-site and convert it to useable energy.

We have accomplished this without one nickel of public funding and we invite today's attendees to see a sustainable biomass plant in action.

We have made great strides in our Mays Landing facility. Our successes at the pilot plant level have garnered the attention of major banks, financiers and industry experts.

And as such, we are slated to begin construction of a 30 megawatt power plant facility in Millville, New Jersey, early next year that will also produce a "No Drill" natural gas equivalent for the gas pipeline. The first of its kind in the

country, this facility will create dozens of well-paying fulltime jobs at all skill levels and deliver clean green energy to the local community.

New Jersey has shown its strong commitment to renewable energy. In April 2006 the New Jersey Board of Public Utilities approxed an expanded Renewable Portfolio Standard (RPS) which calls for 20 percent Class I renewables by 2020. This program has been extremely effective in improving New Jersey's air quality and has made us a leader in green technology.

The total reductions in carbon dioxide emissions resulting from New Jersey's Clean Energy Program in 2009 alone is the equivalewnt of taking ninety-five thousand cars off the road for an entire year.

These emission reductions reduce our State' contribution to greenhouse gases, smog and acid rain. Thus, the public receives substantial engvironmental and public health benefits from programs that also lower energy bills and benefit the economy.

Through its rebate and SREC credit programs New Jersey leads the nation in solar energy. We would like to see New Jersey lead the

way for emerging technologies in sustainable biomass as well.

The State currently supports the SREC program or Solar Renewable Energy Certificates program for producers of solar energy. Ostensibly this program was put into place to assuage the substantial cost of building and operating renewable energy facilities and incentivize the companies that build them.

We feel very strongly that sustainable biomass should be afforded the same SREC distinction because when you get right down to it , we are a solar installation. The plants absorb the sun's radiation and convert it into sustainable biomass which is processed into energy much in the same way that the photovoltaic cells transform the sun's

radiation into electricity.

It is my opinion that our energy processes deserve the same benefits that solar-based installations enjoy.

Our clean, carbon-neutral processes neatly fit into the State of New Jersey's new Energy Master Plan.

In summary: Sustainable biomass technology is available now and right here in New

Jeresey, spearheaded by a New Jersey company.

The emerging technology will create dozens of fulltime jobs at all skill levels for each installation.

Our carbon neutral approach will foster a better environment and increase the air quality and have positive health benefits for New Jerseyans by displacing dirty antiquated technologies such as coal.

Our continued partnership with Rutgers and the Waksman Institute will further emerging technologies for sustainable biomass.

And lastly, we believe very firmly that sustainable biomass companies should be afforded the same SREC distinction that solar companies enjoy and for the very same reasons.

New Jersey is America's solar leader, and with your help it will be the leader in the next generation of green energy, sustainable biomass tehnologies.

Thank you for your time.

I would be happy to field any questions that you may have and also a reminder that you are all welcome to tour our facility in Mays Landing for a closer look. I have our contact info handy for

anyone interested after the Work Group.

Any questions?.

PRESIDENT SOLOMON: Any questions for Mr. Smith?

MS. RICHARDSON: What do you think about the biomass power into initiative ideas, is that something that you would find helpful?

MR. SMITH: I think it is a fabulous idea. When you get right down to it, especially when you are talking about displacing liquid fuel for natural gas, there is a lot to it, it's a very complicated question, but making that shift when you get down to energy independence, that's at the core of the issue.

MS. RICHARDSON So you think that would be a helpful contribution?

Mr. SMITH: I do.

MR. MARSHALL: Bob Marshall, New Jersey Energy Coalition.

Do you have an arrangement for the off-take of this electricity at this time?

MR. SMITH: We do. Clean Energy Fuels, which is a company owned by T. Bone Pickens, they are set to take our natural gas. Right now it looks like it will be headed to North Jersey.

Our power is going to be bought by Next Air Energy, which I believe is a Duke Energy Company.

Anyone else?

(No response.)

PRESIDENT SOLOMON: Thank you very much sir.

Mike Van Brunt, Covanta Energy?

MR. VAN BRUNT: Thank you very much.

My name is Michael Van Brunt, I work with Covanta Energy as a Director in our Sustainability Department.

Thank you for the opportunity to comment on the Biomass Work Group's recommendations for the Energy Master Plan.

Covanta Energy is a leading international owner, operator and developer of waste energy facilities. We also operate other renewable energy facilities, including landfill gas to energy as well as biomass to energy facilities.

Waste Energy has proven technology that converts MSW remaining after recycling into base load steam and/or electricity. There are currently eighty-six such facilities operating in the United States, including five in New Jersey, and there are

over four hundred facilities operating in the European Union.

Covanta Energy is headquartered in Morristown New Jersey and has three such facitlites in New Jersey including ones in Essex County, Union County and Warren County which generate together over 120 megawatts of power.

We respectfully disagree with the Work Group's recommendations against change in the classification of waste energy from a Class II to a Class I resource. We believe recognizing waste energy as a Class I resource will provide a strong policy signal to encourage the better use of a vastly underused resource that we saw on the slides this morning, New Jersey's municipal solid waste.

As noted by the draft Energy Plan, only 17 percent of the State's MSW is converted into energy, and even providing for a Statewide MSW recycling rate at 50 percent new energy recovery facilites could generate 1.3 million megawatt hours of net electrical energy to the grid.

Including waste energy as a Tier I resource will also resolve the current disparity between landfill gas energy, a Tier I resource, and technologies that generate electricity prior to

landfilling currently in Tier II.

Waste energy technology offers significant greenhouse gas and energy benefits over landfill gas energy that can be recognized by their inclusion as a Tier I resource.

In terms of greenhouse gases, each ton of waste processed at a waste energy facility leads to

the reduction of a ton of carbon dioxide equivalent greenhouse gas emission relative to landfilling based on national averages including landfill gas captured at landfills.

This is predominantly due to the prevention of landfill methane, a greenhouse gas 25 times as strong as CO2.

Concurrently, waste energy facilities recover ferrous and non-ferrous metals through cycling and supply and supply a baseload of renewable energy to the grid, offsetting the cost of fuel generation.

Furthermore, waste energy generates an order of magnitude more electricity than landfill gas energy per ton of post recycled waste.

New Jersey can be in good company in recognizing the energy potential and greenhouse gas benefits of post recycled MSW, the State of

Maryland recently passed legislation that recognizes waste energy as a Tier I renewable energy source.

Waste energy is defined as renewable in twenty-six states including the State of New Jersey and also by the Federal government.

The European Union has standard recycling recovery driven predominantly by landfill directives that were discussed this morning which limits the use of landfills and they have achieved reductions in waste sector greenhouse gas emissions by 34 percent, and that's the highest reduction of any

any sector in the EU economy.

Waste energy facilities in developing countries have been approved to generate carbon off-site credits for two years and the World Economic Forum in its 2009 Davos report identifies waste energy as one of eight technologies likely to make a significant contribution to a future low carbon energy system.

As an economic driver, the construction of one 50 megawatt waste energy facility could create nearly one billion dollars of economic activity, create approximately eight hundred direct and secondary jobs a year during a three year construction period.

There are approximately fifty permanent high paying jobs necessary to operate one facility. Waste energy can help New Jersey produce baseload renewable energy near the source of consumption, create high paying jobs, all while reducing greenhouse gas emissions.

We look forward to working both with the BPU and the Biomass Work Group so we can better use the biomass resources in the State New Jersey to reduce greenhouse gas emissions and develop sustainable energy.

Thank you very much.

PRESIDENT SOLOMON: Any question?

(No response.)

Tony Lyons, NTE Energy?

MR. LYONS: My name is Tony Lyons and I am

Executive Vice-President for Fuel Strategy and Supply for NTE Energy.

NTE Energy is a developer of hybrid and stand-alone biomass generating facilities and supplier of biomass fuels for electric power generation. NTE Energy's proprietary technology integrates proven biomass combustion with proven steam electric generating technologies into a single efficient hybrid renewable power generation

facility.

The addition of this hybrid technology to an existing generation facility provides substantial capital cost savings through the use of common existing major equipment and systems. In addition, the technology allows the host generating facility to realize significant operating cost savings, further benefitting electric customers.

Along with a copy of my comments is a document that further explains our technology and company.

NTE Energy is headquartered in St. Augustine, Florida, with a staff of over twenty professionals with esxtensive energy industry experience, including leadership roles with several major energy, legal, construction, engineering and wood supply firms.

We are currently pursuing development opportunities throughout the United States, including some projects here in New Jersey. We are

evaluating commercial scale projects that will provide immediate value to the host generating facility, electricity consumers and biomass fuel generators/suppliers. Our involvement with the New Jersey projects has made the progress of the Biomass

Work Group of great interest and I am pleased to be here to comment on the Biomass Work Group Subcommittee's recommendations.

We agree that, "The most important step the State of New Jersey could take at this point would be to assist private companies to construct and operate a range of commercial biomass-to-energy facilities."

We fully support the new Biomass Power & Fuels Initiative. Cooperation between the public and private sectors is absolutely critical for the speedy deployment especially of proven technologies. This cooperation provides us with an environment with regulatory consistency and stability.

We have completed significant review of the State of New Jersey's permitting requirements and are designing our projects to be in full compliance with DEP and EPA regulations and have spent significant time understanding and assessing the biomass fuels available for a project in New Jersey.

Our projects are commercial scale points based on proven technology that meet the financial and economic goals of our company, our financial partner and our host generating facility. We agree

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that there must also be "demonstrations" where barriers that arise can be evaluated to ensure success and full utilization of available biomass supplies.

Urban biomass provides a unique opportunity in New Jersey because it is a heavily developed and densely populated state. Urban areas produce great quantities of wood waste that needs to be managed to keep as much as possible out of landfills and repurposed for futher benefit to the local community.

Our projects are most likely to occur in the State's urban areas, providing economic development to these areas with permanent jobs and stability to the supply chain (the businesses and employment in those businesses) that currently sources, processes and manages the woody biomass material we will consume. Any actions to increase access to, and utilization of, these urban wood resources will significantly enhance the growth of the biomass industry in the State.

While New Jersey may not be immediately identified as a state with forest-land, it does indeed have forest-land that could contribute fuel to biomass-to-energy generating facilities. It is

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very appropriate to commission additional studies to better understand just what contribution New

Jersey's public lands and its private forests can provide to achieve the State's RPS and clean fuel goals.

The Biomass Work Group has produced excellent recommendations and we look forward to continuing to work with the Board as it deliberates these recommendations and finalizes the Energy Master Plan.

Thank you for the opportunity to speak here today..

PRESIDENT SOLOMON: Thank thank.

Any questions?

(No response.)

PRESIDENT SOLOMON: Thank you very much, sir.

Raymond Albrecht, National Biodiesel Board?

MR. ALBRECHT: I want to say thank you for the opportunity to speak this morning.

My name is Ray Albrecht, I am a consulting engineer from upstate New York, I live about twenty-five miles southwest of Albany.

Yes, I'm an engineer, but also an organic

gardener.

This has been a fascinating discussion this morning.

I also spent thirty years at the New York State Energy Research and Development Authority in Albany, I was involved for many years with technology development and public policy and the

interaction and sometimes conflict between those two.

The hat that I am wearing today is working for the National Biodiesel Board, which is the national organization of biodiesel producers, we have one here in the audience today, and also members of the agriculture community, end-users, equipment providers, it's really a broad array of everything from large corporations down to small individual entrepreneurs, the business folks who somehow seem to find some of these new ways of producing energy.

I would like to express our recognition of the value of biodiesel that New Jersey sees as part of the future energy picture here. I would like to offer the perspective that perhaps there is more that we can do with biodiesel to contribute to energy security and environmental sustainability as

well as job creations here in New Jersey in the future.

Just a quick primer on biodiesel. It offers substantial greenhouse gas savings compared to traditional petroleum. The numbers are ever better compared to producing regular diesel, biodiesel offers about 85 percent greenhouse gas emission savings.

It is also important to note that in comparison with conventional natural gas, not RNG, but compared to conventional fossil natural gas,

biodiesel achieves about 70 percent greenhouse gas savings, so it is really one of the fuel options that gets us to where we need to be in order to achieve a sustainable planet, which is up in the range of 80 to 90 percent reduction of CO2 emissions from where we are now.

As we talked about already, biodiesel offers the opportunity to use a very wide array of feedstock, it's not made just from waste oil or soybeans, but there is a growing menu of sources for this.

This morning we heard a good example of the type of creative thinking that has been brought to bear in the development of energy resources.

Biodiesel is also a drop-in fuel replacement for transportation as well as for heating applications. We haven't talked a whole lot about space heating in residential and commercial buildings this morning, but heating oil consumption is a huge factor here in the Northeast United States, a tremendous dollar cost to the homeowners, to the business owners who use heating oil as their fuel, so that's an extra impetus for really focusing perhaps more on biodiesel.

Capital cost requirements are enormous for going with many of these other energy resource types we have been discussing. With biodiesel, once you get past the production stage of this, it really is a nearly capital cost free process to the end-users.

Yes, there are operating costs, purchase cost increases associated with biodiesel. Sometimes we look at other fuel sources as being cheaper; for example, in the case of renewable natural gas, if you start to amortize the capital costs of doing anaerobic digestion you will run into the same problem that the Europeans face, and that is that it is not as cheap as we thought it would be.

That whole argument, should we expect

future fuels to be as cheap as what we have today I think is best left for a different, a separate day.

With regard to growing energy costs here in New Jersey as well as anywhere in the United States, we really have to start to think out of the box perhaps. I think in many instances we get hung up on the issue of food versus fuel, that's a very controversial topic, it is one that we need to address squarely; however. I think we need to go beyond that and think about what kind of innovations in agriculture can get us past the limitations that we tend to see.

And by that I mean the farmers, some of the small farmers out there are starting to even here in the Northeastern United States get into concepts such as double cropping, multiple cropping winter cover cropping. What this means is growing more than what we normally had thought about growing.

For example, canelino (phonetic) for

canola oil can be grown as a winter cover crop, you can plant it late summer, early fall, after the harvest of whatever you were growing during the summer, it starts out during the fall and then picks up again during the spring and can be harvested

during the late spring or early summer and produces a very nice oil bearing crop which also has certain benefits for the soil in terms of leaving organic matter behind as well as adding nitrogen to the soil, so just like we are talking about taking waste materials, handling and recycling it to the next level or generation of technology, we can do the same thing with agriculture, and the National Biodiesel Board is more than happy to help work with agriculture, the farming industry here in New Jersey, to help make that happen.

The other perspective with all of the states, the thinking is how much of our fuel can we grow here in our own neighborhood, in our own home town. The numbers are invariably not very promising, whether it is New York or New Jersey we always come up with answers, well, if we did our best we can grow five percent or maybe ten percent of what we need to either fuel our vehicles or generate our electricity, but the numbers come up short, and rather badly short.

And because of this the National Biodiesel Board and the environmental community at large is starting to say, well, perhaps we need to think internationally, and this leads us to where the

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United Nations has started to devote much of its resources and programs, and that is feedstock production in the Third World by subsistance to farmers who often are struggling to produce ten or twenty bushels of corn per acre when times are tough, and that's why they only have a dollar a day to live on, but to transform these folks into energy feedstock producers and thereby raise their annual family income from a few hundred dollars per year up to perhaps a few thousand dollars per year, which is huge.

The United Nations, for example, has been very active in South Sudan, which is that new country now in Eastern Africa, to look at and try to implement the potential for the production of some very promising feedstock types.

So to this audience here which is very knowledge about biomass and the role that it can be play, I think I would nudge you toward thinking internationally rather just what you can produce as feedstock here in your home town.

You can get feedstocks from Oversees, usually in liquid form, which means that they are fairly inexpensive to ship; that's why we see these big shipping tankers bringing crude oil and other

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petroleum products so easily around the world.

You can bring liquid fuel feedstocks into

the States and then do the rest of the job here, which could involve whatever type of processing, refining and whatever is necessary to make a finished fuel.

Those tasks create high paying jobs which can contribute though the economy.

And so again, as we have always said, always did say at NYSERDA and JoAnn has said, that you can create a win-win-win situation for energy, the environment and the economy.

Thank you.

I do have handouts here of slides, I would love to give them out to any folks who may be interested.

PRESIDENT SOLOMON: Thank you, sir.

Any questions?

Ted Michaels, Energy Recovery Council?

MR. MICHAELS: Thank you very much.

My name is Ted Michaels. I am with the Energy Recovery Council, which is a national trade association representing companies and local governments engaged in waste energy. In New Jersey our members include Covanta Energy, the Union County

Utilities Authority and Camden County, all who own or operate waste energy facilities in the State.

There are five waste energy facilities in the State of New Jersey processing more than six thousand tons of waste per day and generating, with an electric capacity of more than 175 megawatts. This is baseload renewable power. Like the previous

speaker said, this is waste that is generated in your home, not at home, and as everybody knows, New Jersey is a very densely populated State and has perhaps one of the most perfect environments for waste energy.

But the State is only producing, only using waste energy of about 17 percent of its waste, and we think that there is more opportunity.

I heard of a few things that I want to respond to. The gentleman from Atlantic County, I was very interested to here his pursuit of waste energy. I was disappointed to hear, when he said that everybody agrees that incineration is a bad idea, that's certainly not the way a majority of people see it. The facilities that operate in New Jersey and around the world today are modern technologies. These are facilities that all come into compliance with maximum achievable controlled

technology standards that the EPA put into place after the 1990 Clean Air Act amendments were enacted. These are the same types of facilities that Europe is adopting.

Folks earlier had mentioned the activities that had taken place in Europe, I think that's a very important discussion. European nations that have very low landfilling rates such as the ones you are espousing and projecting for New Jersey, they utilize waste energy very much. If you look at the way they manage their waste, they recycle very high

amounts, in a country like Denmark it is roughly about a 65 percent recycling rate, which is much higher than what it is, more than double what it is in the United States today, they use waste energy for about 30 percent and then they landfill what is remaining, generally inorganic materials, and they use it as little as they can, and that's a great model that we would like to see replicated here in the United States, specifically in New Jersey.

The policies that are in place don't promote that type of activity. Unfortunately, the New Jersey Renewable Portfolio Standard actually promotes landfilling over waste energy, given that landfill is a Class I renewable and waste energy is

a Class II renewable.

So we are disappointed to see the Working Group's recommendations that we have no need to elevate waste energy to a Class I REC. We think that a good illustration of this has been recently in Maryland, earlier this year in May Governor O'Malley signed into law legislation that would elevate waste energy from Tier II to Tier in that state's RPS.

One of the rationales of the Work Group is that there didn't seem to be an appetitite in the Legislature or that a policy position had been taken by the Legislature, and frankly, before they amended the law in Maryland there hadn't been any legislation that included waste energy as Tier I, it took that legislation to do it.

So we think certainly that there could be a signal that is sent by elevating waste energy from Class II to Class I, it would send a signal that landfilling is not more important in the eyes of the State than waste energy, it would send a signal to investors that future policies will promote all types of technologies, create a diversity of generation technologies across the State and we think that's very important.

Right now there are companies in America that are looking to deploy capital; the capital is going to follow the policies that support different technolgies. Often times right now that is Oversees, we are seeing American capital right now being deployed Ovesees in the U.K. or in Western Europe where the policies support waste energy.

We would like to see that capital deployed in the United States. The policies that Maryland put in place earlier this year, we think that will drive more investment in Maryland.

We think that if New Jersey took that approach, we would see more investment in New Jersey.

I understand that the price, that the delta between Class I and Class II RECs in New Jersey is not substantial anymore; that could be addressed later.

It seems a bit of a circular argument that you don't want to make the recommendation to make

waste energy Class I because the Legislature may not have an appetite for it, perhaps they don't have an appetite for it because not enough people have been asking for it. If it is the right policy and we agree it is renewable then it should be Class I and

the benefits will follow later.

So I wanted to echo all of the excellent testimony of Mike Van Brunt with respect to the greenhouse gas benefits and the environmental benefits and I won't take the time to repeat them.

PRESIDENT SOLOMON: Thank you.

Any questions?

(No response.)

David Pringle.

MR. PRINGLE: My name is David Pringle. I'm the Campaign Director for the New Jersey Environmental Federation.

In our opinion there are a lot of good things in this report. We do have some concerns and as always the devil is in the details.

From our perspective, not all biomass and not all renewable are created equal. I think it is important the keep that in mind as we move forward.

Today we are actually disappointed with one of the questions that this Committee was charged with, which was how do we get biomass to compete with other renewables? I think that's the wrong question, it shouldn't be competing against other renewables, it should be how do get all of the different renewables competing more effectively

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against the non-renewables, in particular fossil fuels.

I am glad that the Committee really didn't talk about this in terms of competition with other renewables.

Feedstock to produce ethanol. I hope as you look at the criteria that you look at several things, the full life-cycle of this particular biomass, the time-frame.

Some would argue that coal is biomass, it is just over a lot longer time-frame.

What are all of the other benefits, if you are producing ethanol from corn the major factor is on food prices when we do that, it creates costs, it uses more energy to produce ethanol from corn than you do generating from burning that ethanol, so we need to be looking at the full life-cycle of the tiem-frame.

We are also very concerned that we don't--The best option is no waste or less waste in the first place, so while we are talking about what do we do with this waste we want to make sure that we don't create incentives to be more wastefull.

The best energy use is not needing it in the first place, so a lot of the stuff we are

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talking about, municipal solid waste, that quickly falls under DEP's purview and the Solid Waste

Master Plan, unfortunately, it never got implemented, but it is still being talked about, and there is a stakeholder meeting on Monday at DEP on solid waste.

But we have gotten over sixty percent recycling at one point in this State. Getting to seventy percent was in that ballpark at that time. It is not going to happen overnight, but we could get there again. That doesn't include composting, which is relatively negligible at this point in this State, we could ge ten percent there, it doesn't include source reduction, we can get ten percent there.

If we did those three things the amount of trash left over is less than we currently landfill in the State, so we wouldn't need to send any trash out-of-state and wouldn't need to burn any trash.

Notwithstanding the previous commenter's comment on it, I thinks folks overwhelmingly would rather not incinerate if the question was posed as, we have this trash, what do we do with it, that's a different story, but I don't think anyone not directly working for or investing in the

incinerator industry would say that incineration is the highest and best use for our trash and we are very concerned that we don't go down that road.

To that end we are very pleased that the Committee didn't recommend moving garbage incineration into Class I. The whole purpose of Class I and Class II was to make a distinguishment

that some renewables are at least better than others, and clearly solar and wind, not that we want to have more landfills, but clearly the landfills exist and it is preferable to use that gas and that is a legitimate use as a Class I; garbage incineration is not.

While there are different technologies for garbage incineration, plasmic gasification is just another fancy name, plasmic gasification to garbage incineration, it might be less bad but it is not good and we shouldn't be promoting it in the States, especially when there are other alternatives out there.

If we did go 70 percent, 10 percent, 10 percent, what is left over isn't burnable anyway.

The solution there is to start putting it back on the producers' responsibily so that they then start choosing their products to make them more

reusable.

To that end, I was very involved with the legislative battles the Committee talked about in terms of Class I and Class II and what was and what should be redefined, and the Legislature made a very affirmative decision that garbage incineration shouldn't be Class I, and we support that.

Though we supported the Committee's conclusion that it shouldn't be moved to Class I, it makes us a little nervous that one of the reasons was that the inclusion of this as waste energy

would not stimulate growth of this sector.

We don't want this sector stimulated so we don't want that to be a rationale for it not being Class I.

I think that covers everything I wanted to cover.

Let me just conclude by saying again I think the key here--I think the Committee has set the stage to do this right--is the criteria for moving forward, including the full life-cycle, including the time-frame, recognizing that all foodstocks and all processes aren't created equal and if we are really going to meet the challenges from energy and global warming we need biomass, but

it needs to be the right kind of biomass.

PRESIDENT SOLOMON: Thank you, David.

I would encourage anybody who has additional comments to make to forward them to our Board Secretary's E-mail address.

Gail and Dave, thank you very much for your help. It's a well done report, very interesting and very informative and a lot of backup, it's good for people like me who need that.

With that I guess we will conclude our last meeting and look for our final Master Plan in the coming weeks. And again, if you have any written comments please forward them to the Board's Secretary at her E-mail.

And, Mary Beth, thank you as well for putting everything together and making sure it runs

because if you had left it up to me it never would have happened

C E R T I F I C A T E

I, William Sokol, Certified Shorthand Reporter of the State of New Jersey, License No. 30X100030700, and Notary Public of the State of New Jersey, do hereby certify that the foregoing is a verbatim record of the testimony provided under oath before any Court, Referee, Commission or other body created by statute of the State of New Jersey.

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WILLIAM SOKOL

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