

# **Other Potential Biomass Feedstocks Working Group**

Northeast Sun Grant  
Regional Feedstock  
Summit Working Group

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# Working Group Participants

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## Current best feedstocks in this category in the northeast and best source(s) of information for determining quantities

- Source-Separated Waste (i.e. industrial waste) for liquid fuels
- Knowledge Conundrum: little is known about volume/composition/variability etc. because it's not in the interests of the waste producers or the waste haulers to track/categorize/reveal their waste stream data.

# **Inventories, databases and information available for existing feedstocks**

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- SWANA (Solid Waste Association of NA)
- Local and municipal waste and environmental agencies
- Individual factories

## **Top 3 most significant challenges that must be addressed to bring the feedstock (or the technology) to the energy market?**

- Knowledge Void—we need better, more precise data
- Once individual waste stream has been identified and categorized, optimization of correct technology (A. Digestion? Fermentation? Gasification? Pyrolysis?) for specific waste stream is a fractured and diverse process
- Solution will always be local—cost of transporting waste eliminates huge centralized energy production.

**What would be the cost (dollars, equipment, full time equivalent positions, time, etc.,) to adequately address the identified roadblocks?**

- This technology can be and should be market-driven, so public funds aren't necessarily required.

# What sources of information are available to help determine what lands are capable of producing specific feedstocks?

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- EPA databases on brownfields and landfills
- Economic Development zones in rural and urban areas should be identified

# What are the constraints to feedstock delivery to the plant?

- Excessive distances incur high transportation costs.
- Lack of knowledge about specific composition of waste stream—no matter what, it's going to be more heterogonous than agricultural waste from an apple farm (as an example).



# What are the technology drivers for feedstock development?

- Most of the technologies necessary for this are already mature:
  - Fermentation
  - Anaerobic digesters
  - Gasification
  - Thermal Liquefaction
  - Direct Combustion

# Feedstock Generator Opportunity

- Unnecessary or outdated industrial solvents and pollutants are employed in processing, which end up in industrial feedstock streams, such as VOCs and PCBs.
- This example can be applied to lots of industrial waste stream by working with the waste generators and applying creative substitutes that might otherwise devalue the waste as a bio-energy feedstock.

# What are the potential benefits of feedstock production?

- Regional job growth
- Reduction of landfill space
- Elimination of otherwise hazardous wastes
- Carbon recycling
- Decrease in transportation energy used in trash hauling

# What are the process co-products (value and cost)?

- Heat, compost, distillates, low-cost fertilizers, clean water...

- Examples:

Char/Ash is a good ingredient for construction material manufacturing

Distiller grains and thin distillates could be used to generate parasitic heat and power

# What's the best form of end use of energy?

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Biofuel production from waste as an example:

- CHP or some other form of stationary power from questionable feedstock for biofuels.
- A stationary power plant can always be scrubbed for VOC's and other toxicities. Much harder to do that to a tailpipe.

# Virtuous Cycle Suggestion

- Establishing a program for manufacturer to keep account of their waste and ensure that it ends up in an energy recycling program will provide an incentive for them to start keeping that data.
- Rather than establish regulations to force them to do this, create public/private program in the form of carbon credits or even just an “Energy Star”-like certification program would drive the motivation to participate in the system.
- Once such a system is in place, it creates an infrastructure for a company to start making process decisions based on the value of their waste stream (like the restaurant owners who start using citrus cleaners instead of toxic solvents).

# Other Feedstock Sources

- Ethanol plant wastes (turn DDG and other wastes from plant into an energy source that replaces the natural gas or coal that otherwise runs the plant)
- Fruit orchard wastes
- Municipal greenwaste (leaves, grass clippings, tree prunings)

# One last idea

- Create a program that standardizes the process for creating an onsite biofuel plant at a factory site for those plants large enough to do this profitably.
- Make it easy to have a contractor run these modular plants, so that factory-owner doesn't have to get into the energy business.
- For smaller factories, create power-sharing agreement templates between waste producers and utilities so that centralized waste plant can sell into the grid and waste producer can claim a renewable energy credit for the energy produced by their waste stream.



# Factoid of the Day

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- Most local regulations require hospice nurses to dispose of unused medicine by dumping it in the toilet.

# Questions

## NE Feedstock Workshop

### Primary

- What are the currently available feedstocks and quantities of each?  
M- source separating feedstock?

1) waste generation is 4.5 lbs per person. Industrial number is not known, since there is so little flow control of wastes we can not account for what is being moved around. This is a challenge

M- in NE there is so much waste that moved to landfill that must be tracked?

1) rail road sighting are not regulated by the DEP in NJ so that would be a no, we do not know what is being moved. Michigan takes in a lot (\$15 a ton), Texas takes in a lot of waste. PA is taking a lot and then going to Ohio. One of the problem in trying to come up with answers for these questions is that there are not enuf incentives that are certifiable by corporate America. EPA does some certification...Europe is further along, they do have certification for carbon and if the company reduces its carbon then it can trade in cash.....

NY and NE states are in the renewable energy

Regional Greenhouse Gas Initiative, (regi)

These state can for example car emissions standard

Este Lauder is in NJ and they have an award process that involves companies, public and private sector for doing better....

This is not partisan.....

- What existing feedstocks can be enhanced and at what increase in productivity?
  - 2) what you just said of keeping tabs should be down ....
  - 1) enhancement of the feedstock is going to locally placed capacity its reducing trucking.
- What are the best candidate feedstock species and varieties?
  - source separated industrial organics.. Pumpkins, apples.
  - Secondary wastes from processes. Glycerine can be converted to butyl alcohol.

- What “new” feedstocks can be produced and in what quantities?  
Ag questions....

- What inventories, databases and information are available for existing feedstocks?

Department of environmental protection...landfills, incinerator

There is a national group that handles landfill- national group such as SWANA- they can not give exact numbers....

- Where are the most significant voids (top 3) that must be addressed before making a reasonable assessment of feedstock inventories?

In assessing the numbers from these generators...

Difficulty of getting information...

Cost of creating a public awareness campaign.

- What would be the cost (dollars, equipment, full time equivalent positions, etc.,) to adequately address the roadblocks/voids identified above in each NE Sun Grant state and the region as a whole?

Another void or cost is going to be matching the technology to feedstock that has not been gasified before. This is market driven and so if someone owned a technology then they are not going to cite the technology until they have enough contributors of feedstock or longterm contracts to handle the debt.

## **Secondary**

- What sources of information are available to help determine what lands are capable of producing specific feedstocks?

Depressed zone and work zone....neglected space that can be regenerated to conversion facility and a group like this can help economic development. Regions have a lot of brown fields.....and EPA has this data. This is beneficial to the urban rural fringe since it helps both rural and urban activity.

- What are the constraints to feedstock delivery to the plant?

Excessive distances between feedstock and generation

Lack of knowing the feedstock?

- What are the technology drivers for feedstock development?

Incentives to get the waste.

- What are the process co-products (plus associated value) and/or cost?

Company should not be in business if it does not add value and not to produce anything without added value.

If you even have 10% ash then u have minimized the footprint of landfill....

- What are the potential benefits of feedstock production?

Increased industry

Reduced solid waste

Reduced carbon footprint

Savings to the generator.

- What are the consequences of feedstock production?

- What are the consequences of biofuels production?

Choose where they are produced so you have grades.....

Greases you can get particulates out without esterify.

2007-2008 ASTM certified bio-diesel.

- What are the social issues associated with biofuels?

Pros:

Reduced C footprint

Reduced air particulates

Incentives for separating the feedstock so can produce cleaner feedstock.

Changing the kind of solvents that are used

Educational value.

cons

used recklessly and produce toxins in air.

Should make sure we are not putting something worst out there.

If there is chlorine then you are having other toxins.

- Are these the questions we need to be asking? Are there other questions we need to include in the discussion?

Most corporations do not want to go into hazardous waste....some states do not have tipping facility (NC has no hazardous waste site) analogous to wine industry.

In EtOH there are distillates in production...EtOH is extremely expensive product to make.....thin distillates, brewers grain(ddg) Nitrogen source for fermentation, a lot of water.

You can use these to produce energy to run the plant. So these could co generate the plants by using all of their waste streams and not using DDG , you remove the clean water out of the water table. So this way you are not creating new waste streams and therefore there can be a sustainable cycle. (get the squeal out of the pig!!)

This is an immediate source separated feedstock stream that can be separated at source. The ash can go back to the corn fields.