

Infrastructure & Policy

Northeast Sun Grant
Regional Feedstock
Summit Working Group

Working Group Participants

- William Chernicoff
- Dan Conable
- Ben Heavner – Recorder
- Tom Richard
- Keving Stone
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Questions?

- Group consensus that the questions provided were the right ones, just not for our topic.

Most significant challenges that must be addressed to bring the feedstock (or the technology) to the energy market?

Feedstock Production

- Level playing field for cellulosic
- Focus on underutilized resources (not just land)
- Insure positive environmental outcomes during production/use
 - We acknowledged and avoided defining

Infrastructure (rebuilding rural America)

- Physical Infrastructure
 - Preserve & improve rail infrastructure for distributed resources
 - Bridges
 - Storage
- Understand what it might take to double or triple rural material flows
- Pay attention to medium & smaller scale

Final Policy Thoughts

- Ag development is infrastructure building not just jobs creation
- Need to quickly build the knowledge with effective R&D, and analysis before implementing policy that is not fully informed or may have unintended consequences and not achieve the true societal goals
- If there's anything our legislators can do that would be really helpful, it's to consider if the scale assumption of any national policy are applicable to the Northeast. For biofuels:
 - > feedstocks (must be mixed)
 - > moderate scales

anything else, you're not talking about the NE.

Begin with 2nd question –

Quantities? – not answer.

KS – secondary questions seem to be more policy/infrastructure, primary are other groups (GIS, etc.)

DC – agree, process question: infrastructure and policy? Many policy issues related to infrastructure, but primary policy need is incentive for feedstock production, b/c we don't have feedstocks, only potential. Won't elicit w/o \$\$\$ Maybe \$50/ton, prob \$75 or \$90, if a reliable market. Not Switchgrass.

So policy resolves around – give to producer or guy with plant to dole out? Or is there policy issues with infrastructure?

TR- there are policy issues that have been made w/o discussion – scale might not be same here. DOE has done big plants, assuming scaling benefits that may not apply to us. What transportation issues if we scale to this region size?

DC – you've been working on it – look at CHP or Heat – have you run into significant infrastructure infrastructure constraints to 4k or 5k tons/year

TR – yep, depending on siting – truck traffic a prob.

DC – infrastructure, or just everyone hates truck?

TR – both – and face with other things (landfills)

DC – only 3-4 trucks/day for relatively small CHP?

TR – even complaints then

DC – but that's social/environmental

WC – 12-15 tons/day for small school. A truck does 30...

TR – you're right, infrastructure issues are much less with smaller scale plants

DC – NIMBY issues – community – policy?

KS – true for siting any large industrial plant – you look for not intruding on local issues. See social aspect of acceptability of traffic an issue that needs to be addressed, but not a limiting factor right now. Infrastructure is if it's impractical regardless of community. But we're always going to face some communities that say they don't want it there. You'll find some places that will accept it.

WC – so then we do need to think about social issues of scale – size of plant affects 1-2 trucks/day vs. rail line through community. May need to clarify these factors for analyses beyond “this many trucks, this many rail cars” – secondary issues that policy experts/economists need to figure out.

If already have large power plant, and you’re converting over, may not have challenges

KS – important issues that I’ve been bringing up – from energy perspective, combined fuel and power – strip off highest value product from biomass, work down the value chain, combust at end – integrate fuel and CHP – can use existing infrastructure by co-firing.

back to policy point – currently have RPS (all electricity) and RFS (renewable fuel standard) all fuel standards. Other than wind, next big thing is biomass, but not a clear policy connection between the two (electricity & fuel).

Avoid policies to drive all biomass to one or the other – shouldn’t use all for co-firing power plants, leaving none for fuel – you can use for fuel first, then waste for electricity.

Do we care? Is that a policy issue?

DC – that’s a platonic solution – the wise king is going to organize US energy policy. We already know we’re stuck with corn ethanol forever. We’ll have it forever. We’ll have coal forever, and may be turning it to liquid fuels. Grand scheme, you can get lost in the macro – think more on scale of what we actually do.

My question – is the cleanliness of what comes out of a smokestack of a school a policy issue? A stopper?

JS – depends on size of boiler

DC – what’s the breakpoint?

JS – Title V is big – bigger than school. May have efficiency and other regulations.

KS – generally not. There are generally not emissions problems for biomass, but studying.

WC – brings back to primary questions – what are feedstocks for CHP vs other things? Are we splitting categories, are feedstocks competing for land use?

KS – I think they’ll be the same – wood chips, grasses, corn stover – all dedicated CHP – are also things you can use in cellulosic ethanol. Biodiesel may be different, b/c feedstocks tend to be very specific, generally not good for combustion or cellulosic ethanol.

DC – and they're all fuels we don't have right now. We could produce lots of hay, but we need a price

KS – we do have forest products

DC – yes, there is a market for any piece of wood that someone extracts.

KS – there's lots of wood in Penn that isn't marketable

TR – a very underutilized infrastructure in Penn that's there, not a big change to bring back to life – same in NY

DC – agree

KS – combining infrastructure and feedstock, hardwood is major native species of NE, so policy needs to use that as a major element of feedstocks. Grasses and woody bioenergy crops (shrub willow) the jury is still out on their role in the NE. Definitely potential, but doesn't exist yet in large enough scale to judge.

DC – suggest w/ hardwoods, if you can figure out policy mechanisms for extraction of hardwood as silviculture instead of mining, (which it has been forever), can get better product. Don't know policy mechanisms for better forest management (how to get there from here).

Start from highest value product, go from there.

TR – disagree, have to start with whole process. Biggest value is cherry and oak, lots of value in small diameter stuff.

KS – if you're going high value, get low value anyway

DC – how policy?

TR – ag policy highly biased to corn/soybean

DC – yeah, emphasis on Ethanol pushes to Corn

TR – yes, policy drives to corn

DC – current corn crop is not (grown by farm programs) – roe crop interests drive farm bills (upsets environmentalists). They're not getting dollars.

KS – ethanol subsidy boosts corn price

TR – right, which limits corn risk. Don't have same risk limitation for other crops (switchgrass)

DC – yes, so throw out let's create incentives to make alternative crop surpluses to play with. Didn't play well to last audience.

WC – so why ethanol driven? DOE, some USDA, but DOE for fuel for light-duty vehicles. Potentially works to detriment of biodiesel, other fuels. DOE has driven federal policy within scope of narrow mission. Does that compromise opportunities?

DC – ethanol is driver for current policy with idea that cell-ethanol will somehow take over and solve our problems

TR – I'd agree with that assessment, but on the feedstock side, don't have incentive for farmer to convert from Corn to anything else. Need to reduce risk for these people.

KS – exactly. As Cell ethanol producer, incentive needs to come from producer – find location, do mapping, determine can get 2k tons/day, economic size, so as project development, do siting, supply development. Could do more easily in northern ME (Knock on one door – I want wood from you 100k acres for the next ten years). can't do that down in NY

DC – so in NY what policy do you need to create moderate-size supply

TR – level playing field independent of end use (not just ethanol)

DC – so grow infrastructure around CHP

TR – right, b/c we don't have 100k acre owners, we have 100 10 acre owners. So need middle operators to build infrastructure (as they did with pulp and paper) so you have to give them incentives

DC – what incentives?

TR – now, liquid fuels

DC – so should be tied to energy use of feedstock?

TR – sure, and doesn't matter if to producer or other. Need substantial biomass infrastructure support whether it turns to biomass or anything else.

DC – anything else is important

TR – talk of feedsheds

DC – feedsheds are pilot projects - requires lots of farmers working together, not “you’ve got a plant, go get suppliers” – have to form co-op initiative has to come from supplier. Must be group of producers. Seems pretty limited.

TR – and that was shrunk down from proposal of any group of 50 producers could form co-op.

DC – that was from Natl wildlife, very conservation oriented

JS – could cuttings from existing farms serve as feedstock? Wild growth?

TR – few tons/acre, a mess

DC – intermediate thing on way to managed forests/land. Can do lots better with minimal management.

WC – SO POLICY SUGGESTION IS SHIFT TO MORE MANAGED FORESTS

DC – yes, and tax incentives for shifting land to dedicated bioenergy crop – for any 1 acre, no real estate programs. Might cost state (NY) \$70 mil, maybe. Idle real estate doesn’t pay much tax.

JS – DEC used to have grants

DC – 480 grants?

JS – Not sure, that’s a tax thing. DEC used to write forest management plans

KS – these are supply-side aspects

DC – owners aren’t farmers. Key point. Farmers are deciding how to use best land, they’re not playing in this other game

KS – Yeah, and rest of policy goes back to demand side. You’re creating demand, have structure in policy to provide feedstock at acceptable price, you’ll create industry.

DC – demand side policy that isn’t happening: should be environmentally impact neutral in terms of how stuff gets harvested, because if you link incentive for wood chips or hay with someone’s idea of sustainable extraction, you need validation bureaucracy – NRCS. So need to protect what happens in woods – these are the only things you can do in the woods (via DEC), so you’re trying to create commodity, not how it’s produced.

JS – like FSC certification process – not a government process.

TR – not sure I understood DC – do want rules, or no?

DC – shouldn't tie environmental concerns about production into incentive for purchase.

TR – so you need them in place separately

DC – argue that it already exists in forestry management.

JS – which in NY is none

DC – but if you want combine freighting wood chips with a much higher level of forest management, you're hobbling your energy objective

TR – but you're making potential for screwing up environment, lose public support

JS – in ME, need permit to cut trees

DC – Seems like a good idea. Suppose producer has to go to certified supplier, who is going to do that? Higher costs?

DC – As soon as you talk about bioenergy (environmental community), they're also interested in how resources are extracted. So incentives are mixture of better source management and by the way let's do fuels.

WC – so need better definition of sustainability – audit of input/output? How detailed is monitoring? What metrics, who monitors, to what level?

JS – some states regulate stream crossings, buffers, etc. NY doesn't but has voluntary best management practices. There's a market for FSC-certified wood.

WC – not just forests – USDA comment – we know how to do sustainable farming for decades (same amount of food every year) ignoring environmental consequences. How far does definition of sustainability go?

DC – goes back to what parts of system have a price, which don't? Sustainable is an aesthetic definition. Use of any resource has implicit cost, policy job is coming up with appropriate cost.

KS – right, so policy is to make appropriate cost. Example: fertilizer, which has high petroleum part, so if petroleum cost goes up, may reduce use; or provide policy incentive to reduce use b/c they don't have a direct cost.

DC – started with policy with \$1/bushel subsidy to companies buying corn/soybeans for energy. Embarrassing to be giving so much money to

companies working on MTBE replacements. Thinks it started with view that it should be neutral. But that kinda got a bad reputation b/c throwing money at the wealthy.

TR – to the extent we're subsidizing..

WC – do we have to?

TR – Good ?, but I think we need to for both economic and environmental regions. Producers will go wherever they can get easy supply. We should have a level playing field, supporting biomass production, but be thinking of WTO framework. We're on dangerous ground with our commodity program. Do in green box category that rest of world does

DC – then per acre, not per ton

WC – but do we subsidize feedstock, or understanding role of feed in low/no carbon fuels, if policy is focused to carbon reduction, doesn't that cascade down to producers subsidizing? Does it trail down?

DC – end product subsidies so easy to pervert – building factories for carbon credits to sell in Europe, etc. Veggie diesel racket – any veggie in diesel, get \$1 credit, so get boat load of soybean oil from wherever, add a drop of diesel (don't unload), get \$1 from US, take to Europe, get European subsidy which is proportional to amount of veggie in it. Lately, tankers of rapeseed from Europe, then back to Rotterdam.

Point is if you subsidize end products, get lots of unintended consequences b/c people are smart about getting your money.

KS – yeah, that's a stupid situation. Not a problem with concept, though. With execution.

TR – stepping aside, so what are we going to try to accomplish in this session. It's fun to brainstorm, but where do we go?

DC – try to lead us through id of policies that might elicit feedstock in NE.

WC – first, are these (given) the right questions for this group?

consensus – no, not the right questions for us.

KS – Ours would start with “assuming we agree that we want to encourage cell biomass, and we can make enough, and we can physically put in infrastructure, what are the policies we need to do it?”

DC – agreement that if the market is there infrastructure will happen?

TR – not sure - heard recently that Iowa infrastructure is very inadequate b/c of bridges. That's a bottleneck, and you're stuck. That would screw us in this region.

WC – We've got a policy to build infrastructure, but is that the right infrastructure? We can create market for biodiesel, ethanol, whatever, but in 5-10 years, is that the right investment? What's the timeframe, what's the scope? Some may get rich quickly, but may compromise.

TR – I've been challenged, so (at white board).. What policy outcomes? Not so many policies.

Feedstock Production:

level playing field for cellulosic production independent of end use?

KS – not sure complete agreement. Qualify with “encourage best use that best meets our national policies”

DC - ?

KS – assume GHG reduction, energy independence (security),

DC – are those national policy issues?

WC – national policy issues are 20 in 10, etc. Should we be targeting these political goals, or who should define national policy?

DC – defending TR “level playing field” b/c GHG/national security, etc, varies every 4 or 8 years. So that's a better route than “national policies”. Will help with fuel side too.

KS – understands position, ok.

so

Feedstock Production:

level playing field for cell feedstock production among products (try to get out of national policy b/c that's mutable)

DC – incentives focused on underutilized resources (if we're thinking corn to switch-grass, it's a dead end). Good forest a dead end. May get idle land, unmanaged forest.

JS – but even in well managed – have tops

TR – right ,so not just underutilized land – tops are another resource (writes waste materials, MSW, food, C&D, marginal land)

JS – MSW is ineligible in NY

KS – MSW should be eligible

JS – not advocating for MSW, maybe separated (yard waste, etc)

WC – framework for implementing? This is a regional workshop. We're talking about national things.

DC – the feds don't block grant these kinds of things (USDA hates block grants). So the way this plays out is that states take these initiatives, then states look at them, and state legislators have to go to fed to try to lobby – allocated by farm

bill. Fed money aimed at particular commodities that are well representatives.
Farm bill written by representatives. We don't have CRP land up here.

BH – so is that a regional issue?

DC – not energy crop specific, same old fight.

What Infrastructure? Rail?

WC – trains in NY? Trucks?

TR – and aren't rail lines in NE full?

WC – not tearing up rail, but trying to increase use of existing ones. Not building new rail.

TR – preserve & improve rail infrastructure; bridges

DC – these are universally true, not just biomass

TR – 0.8 billion tons food biomass now, so we're talking a lot more.

DC – infrastructure – where and how we store it? All harvested at same time?
Even seasonal? Where to keep it question is huge. Even if invent silos, never get permitted b/c visual impact and number of facilities.

KS – storage not as big a challenge as transport – we've done it with paper mills.
We're doing a lot more, but can do on site, a couple log stacking areas in region, chip as needed.

TR – if switchgrass or reed canary, probably store wet as bunker silos. But at much bigger scale than dairy industry (think baker stadium)

KS – agree on dedicated energy crops – grasses and willow – this is an issue that needs to be addressed. Willow is sold as easy to do – chip, put in truck. Do in fall/winter, so what do you do with year's supply? Not a problem with round wood.

WC – general comment on policy development – too often with just subset of input. How many components, how far down do we need to drill for policy that doesn't fail b/c we overlooked something?

DC – giving a policy legs – point about amount of biomass processing off the farm could feed discussion b/c where it goes is people's interest in rural development. Everyone imagines clean little factory that employs 45 people. Problem is agriculture is low-labor, and will go more that way. This is rural

development of a different sort – more construction, more trucks, big machines, things that people who moved to the country don't want to see. How get people excited about productive landscape that is very different? Get them excited about the investments as the development (immigration issues with contractors).

The policy implication is.. When working for the state, battle to get support ag development, the only metric was permanent jobs created. need to get people excited about the rebuilding of rural America to produce this energy supply. That means rural development policy has to value infrastructure development as much as job creation (the current primary metric).

TR – sustainability and environmental considerations? Consensus that it's important?

general agree yes

WC – don't know that we have the right people here for that discussion necessarily.

KS – well, I don't want to define sustainability, and we shouldn't do metrics, but believe it's very important.

DC – can discuss without the word “sustainability”?

TR – try “environmental outcomes”.

JS – biofuels are in many cases a solution of sustainability

TR – so generally agree that we need to insure positive environmental outcomes during feedstock production/use.

DC – debate of global climate change vs bird habitat to be worked out through political discussion.

TR – anything else?

WC – Type of infrastructure will be important. DOT doesn't pay for rails, but pays for part of highways. Will have outcome on Fed and State investment. Have to understand where govt can make investments.

DC – gets back to tom's point – get people on board that we need a different rural infrastructure to deal with this level of biomass. Don't know outcome, need to do studies – pipelines? conveyor belts? trains?

WC – informs tax policy – rail tearing up spurred by trucking industry, has had negative consequences b/c we need so many truckers. – Rail can't keep up with growing GDP demand. If truck drivers charging for just in time delivery, raises

costs. If don't need just in time, need storage, maybe rail costs lower... Need to be aware of tax implications.

JS – read that we have more than enough train cars, but still shortages b/c of storage/allocation/management ?

WC – capacity adequate nationally, but may not be in our region. Different ownership of rails, rolling stock, locomotives. Same as manufacturing – if your capital utilization is above 85%, you're in danger. We're there for rail. Uneven distribution of demand. There must be overcapacity. Not sure how much.

DC – those are very global issues. We need to put the needs of rural America as a subset of what happens as the spending habit catches up with the need to produce things. Prices will go up as Europe, India, and China become attractive markets. We will need to rebuild infrastructure as we need to start producing things again (not just energy).

TR – one other thing to discuss is question of scale of facilities. There has been little discussion of moderate-scale production facilities.

KS – going back – is rail primarily long haul? How much short haul?

WC – depends on application – ex, coal.

DC – if there's anything our legislators can do that would be really helpful, it's to consider if the scale assumption of any national policy are applicable to the Northeast. For biofuels:

- > feedstocks (must be mixed)

- > moderate scales

anything else, you're not talking about the NE.

DC leaves

KS – following up, the infrastructure we're talking we need – with 50 mile radius concept – rail not built on that paradigm.

WC – right, rail is point to point. Maybe there is an efficiency to collection points, that's an analysis that others do.

KS – so point is rail is already taxed. We're not talking just adding, we're talking about a new kind – not point to point.

WC – policy point is we don't know answers, need to dedicate resources to identify before we make investments. First step getting info – trying to make decisions about what we could do, rather than what we should do.

- Ability to install roads or rails different in PA than KS.

TR – nice regional benefit is grades/tunnels still there from earlier rail infrastructure.

KS – all an issue of economics. Even CHP has better economics at large scale (for facility). point is what is optimization if you factor in transportation.

WC – that's where we can screw up policy – creating artificial economics by subsidizing transport to create large facilities.

KS – if can put plant in NE, and from feedstock availability perspective can do 40 million gallon plant, but in Midwest can do 100 mill gallons, but market is DC, NY, and can't move stuff as well from Iowa to NY as from NE to NY, prefer to do in NE.

WC – comes to federal subsidies, how we're affecting.

JS – in addition to medium/small scale technologies, I've heard most profitable/attractive corn ethanol facilities are at grain silos b/c infrastructure there. Maybe we should think of piggybacking on paper mills, etc. with existing infrastructure.

TR – some companies are doing that. (at least in region, if not in same site).

KS – there is incentive to do that, question is if it's enough.

BH – if end goal is petroleum use, any transport is bad.

KS - Don't want to lose sight of larger policy goal (reduction of petroleum dependency) – so don't just do policy for increased biomass use, because subsidizing transport, etc. can be exactly wrong answer