

Connecting Spatial Metrics to County-Level Data¹

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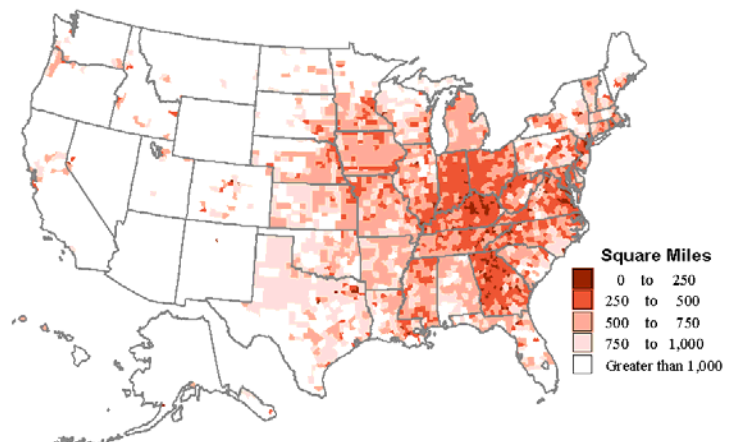
Land use policies are increasingly becoming key components of biomass/carbon policies. It is a bit of a free-for-all as various agencies in different governmental levels begin to claim authority and expertise. Some of the controversy is due to the fact that we have never traveled this new bioeconomic path before. Understanding in these new areas will require more research and study than I can offer at this point. I *can* try to keep us on the solid ground of what we do know.

This past summer Forbes Magazine published 5, NREL county-level biomass maps on-line. I found out about it through an article in the July issue of Biomass Magazine. I read the article and did not agree with the conclusions. Then I followed the links to the Forbes “Top 5 Potential States (for biomass investment).” I went nuts. http://www.forbes.com/2008/07/09/energy-solar-green-biz-energy-cx_bp_0709atlas_slide_20.html?thisSpeed=30000.

I have not been impressed with Forbes’ understanding of biomass resource investment. This Top Five list reinforced that view. They grabbed some nice maps from an excellent 2005, NREL Publication, A Geographic Perspective on the Current Biomass Resource Availability in the United States (A. Milbrandt) <http://www.nrel.gov/docs/fy06osti/39181.pdf>. In the context of the actual biomass industry growth, they did not understand what they were presenting.

Within the US political hierarchy, ‘counties’ are a basic unit of measure. Counties generally work similarly within state political systems across the country. They are not equivalent when it comes to resource utilization. The Forbes ‘analysis’ did not understand this. In the distribution on the right, the darkest counties are also the smallest (less than 250 square miles). The next level, brick red, indicates counties that are 250 to 500 square miles in size. Most of the counties east of the Mississippi River are less than 500 square miles. Most of the counties west of that same river are much larger than 1,000 square miles in each county. *These differences are not insignificant.*

County Distribution by Area in Square Miles

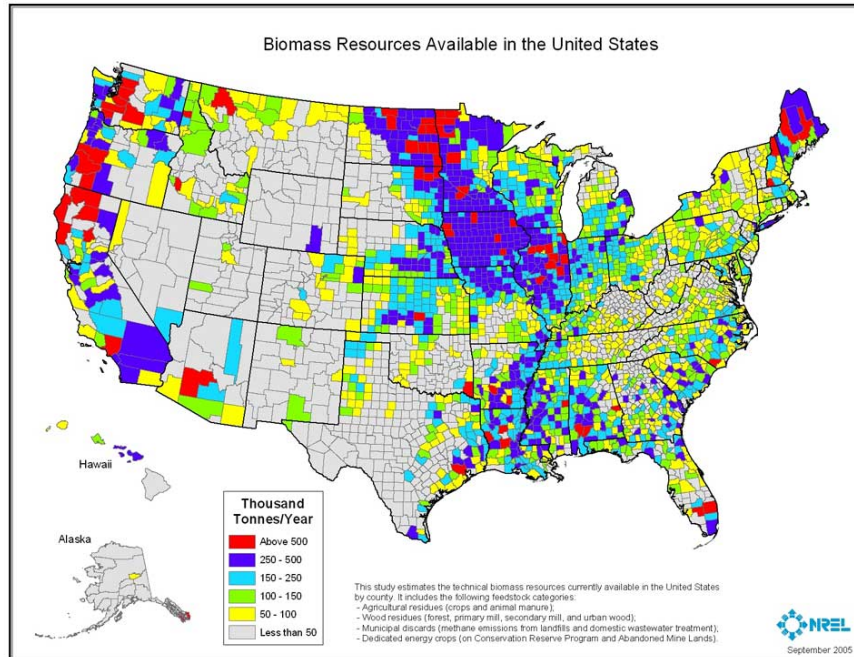


NREL presented most of their biomass feedstock maps in tons per county. Feedstock availability is not automatically reason to invest in biomass energy projects. To balance their work, NREL also presented the same national biomass data in three different ways: tons per county, tons per

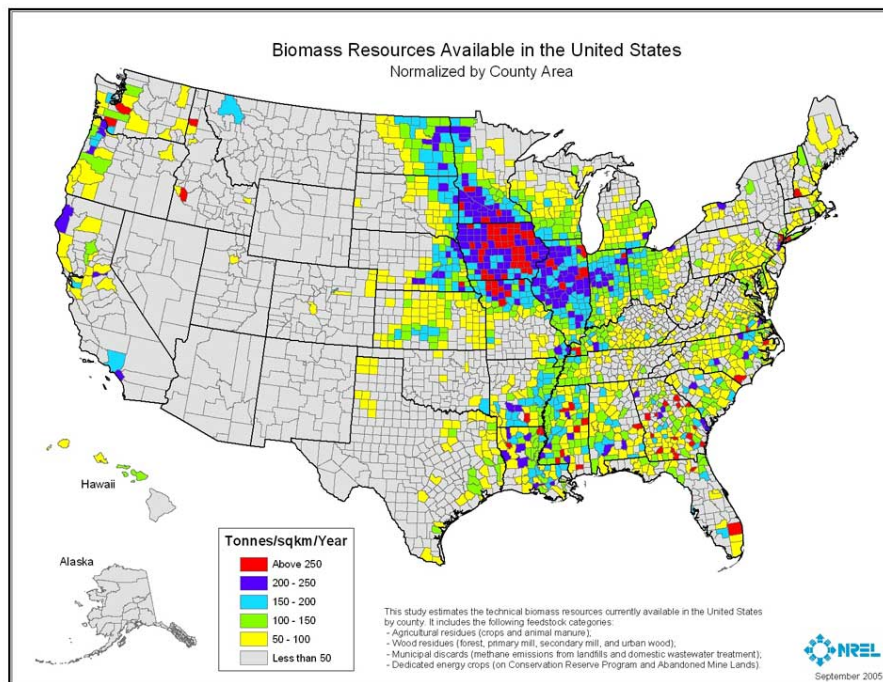
¹ Originally presented in Burning Bio News, Volume 2, Number 7, <http://biomassrules.com/eNews/BBNv2n7.pdf>

square kilometer (sqkm), and tons per capita. These three maps are currently the only biomass maps posted on the NREL website and are described below.

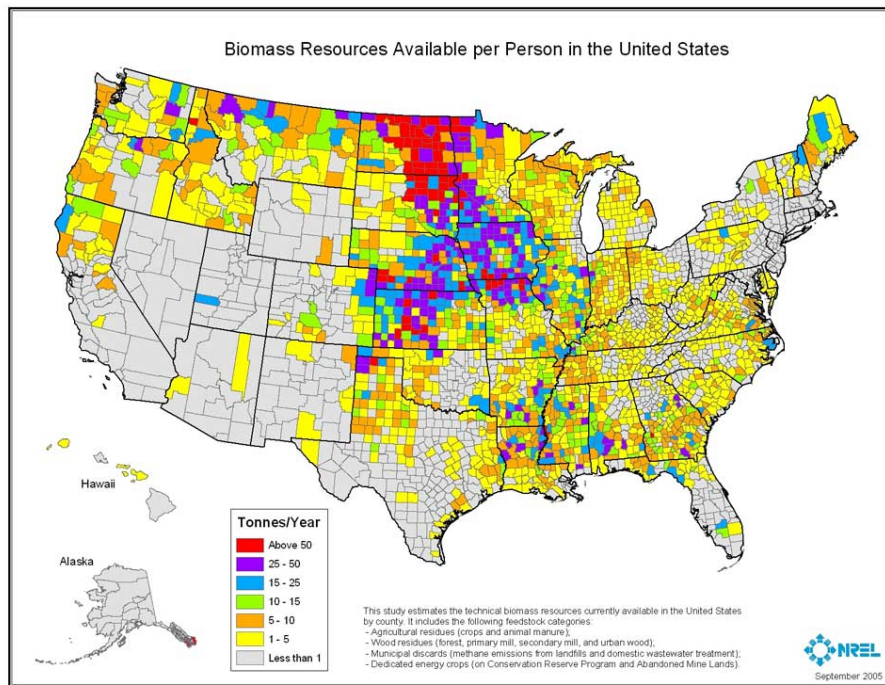
The first map is biomass in **thousand tons/county**. The West Coast, Upper Midwest, and Maine all look pretty 'hot in terms of biomass fuels. <http://www.nrel.gov/gis/images/biomass.jpg>.



When the same volume of biomass is converted to an area measure – like acres, square miles, or square kilometers – the map changes. The second NREL map is based on **tons per square kilometer** rather than per county. Now the 'hot are becomes the Corn Belt and on south along the Mississippi River. http://www.nrel.gov/gis/images/biomass_sqkm.jpg



Finally, NREL also presented **biomass feedstocks based on a per capita** assessment. Biomass includes agricultural residues, forest product residues and urban solid waste and waste water. In general growing plants in industrial scale requires land. We are not so good at growing plants in cities yet. For the ag and forest residues, there is an indirect relationship of people to available biomass. More biomass can be grown with fewer people. However for urban biomass residues, the urban areas (people) will generate more solid waste and wastewater than the same materials in less densely populated areas in rural America. http://www.nrel.gov/gis/images/biomass_cap.jpg

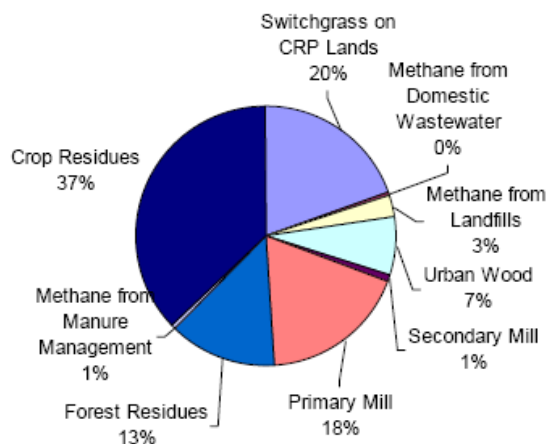


These three NREL maps show the same biomass data in three very different ways.

It appeared that Forbes quit reading before they got to the end of the 2005 NREL report. Forbes listed methane emissions in North Carolina as their #5 great biomass investment http://www.forbes.com/2008/07/09/energy-solar-green-biz-energy-cx_bp_0709atlas_slide_25.html?thisSpeed=30000. NREL did list NC as the top manure-methane emitting state, but in this pie-chart from the same report, it is not ranked high for availability.

The total US methane emissions from Manure Management are 1% or less of total biomass. Forbes ability to see this as a great biomass investment in North Carolina eludes me. But that is the only way the Forbes charts can be interpreted.

This is not to say that money can not be made with manure methane. It can. People are doing it, but it takes the right conditions and the right people (and a lot of hard work).



The larger point is that as we all scramble for solid data facts in this frontier of biomass energy, we must always practice constant vigilance to minimize the missteps and wrong turns.

Biomass Magazine does a great job providing excellent biomass information. I am not sure how this presentation got through the filters? Unfortunately Biomass Magazine decision to run this article both in July and September, kind of gave Forbes' poor analysis an endorsement of credibility. Forbes and Biomass Magazine are both very successful. But it is hard enough to affect significant change with good information. Misrepresenting good biomass data only makes it more difficult.

The entire land use policy issue has been inflamed beyond reason with the excitement about indirect land use in California and at EPA. The California Air Resources Board (CARB) is considering the regulation of indirect land use in the development of their Low Carbon Fuel Standards. EPA has also raised the issue in their July 2008 Advanced Notice of Proposed Rulemaking (ANPR) on regulating GHG emissions through the Clean Air Act authorities.

Word of internal debates about which federal agency will control the land use data are beginning to bubble up. While NREL and EIA do fine work with energy-related data, USDA should always provide leadership on land used data. EPA may influence land use policy, but no one is better poised to protect land owner property rights than USDA. I will continue this emerging land use discourse in the next newsletter. Look for a land use policy section on my website soon.