

# Grasstopia: The USDA Regional Biofuels Roadmap

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A few days have now passed since the USDA released its “Regional Roadmap,” outlining a plan to meet the biofuels goals in the Renewable Fuels Standard by 2022. Industry reaction has been, to date, tepid to what has been dubbed the “grasstopia” envisioned in the USDA plan.

First of all — the good news, which is to say there is a generally positive reaction to the idea that the USDA has undertaken a more detailed study of the target at all.

A general criticism of the plan’s weakness is that it could have been written in 2007, given that it focuses almost exclusively on cellulosic ethanol from energy grasses. Algae as a feedstock, biobutanol and drop-in fuels as products were left out of the targets — though nearly 75 percent of planned advanced biofuels production is in these forms.

A second reaction is that the assumed feedstock tonnage in the Southeast region, which translates into around 10 tons per acre, may not tie back to known yield data for switchgrass, but rather reflects the yield ranges for miscanthus. Giant miscanthus, goes the critic’s line of thinking, is a new crop that no cellulosic ethanol producer has a scaled solution for processing.

A third reaction is that the proposed biorefineries are an awkward size at 40 million gallons per year. First of all, plant size is a function of feedstock radius, and in the Southeast (where the USDA expects double the yields compared to the Midwest), larger biorefineries will be feasible compared to the Midwest, where the lower yields will make feedstocks more expensive to transport and curtail plant size.

A fourth reaction is that biorefinery costs may be low for a 40-Mgy spec plant at \$8 per gallon of installed capacity. Approximately \$10 per gallon is more in line with

the costs being bandied around privately between cellulosic ethanol producers and their engineering consultants.



A fifth reaction is that much of the debate over the report may be moot, because the new shape of the energy bill — which may propose only to regulate the power industry — will push up biomass feedstock prices well north of their current \$100 per ton range. Most bioenergy plants are planned in terms of \$60 to \$65 feedstock — or less — and it will be difficult to compete with feedstock if utilities are paying out \$120 per ton and passing along the costs to their customers with impunity. Replacing the ruinous competition between food and fuel for corn with a competition between power and fuel for switchgrass only changes the protagonists rather than resolving the conflict.

A sixth reaction is that the study does not take a view on the viability of consolidated bioprocessing — the all-in-one magic bugs that extract sugars from pretreated biomass and ferment them into fuels — all in one step. The use of such systems is expected to vary construction and operating costs.

What the critics are using is a bioenergy variation of the sniff test — what may be called the TRY analysis. In short, does the proposed system have sufficient tons per acre (T), a feasible rate of conversion (R) and an affordable yield (Y).

Tonnage not only relates to land profitability, but also to the radius within which a given supply of biomass can be profitably grown and delivered to a plant. The bigger the tonnage, the smaller the footprint to supply a given plant, which translates into less cost in transit and lower break-even costs.

Rate of conversion is the key metric for predicting capital costs of a bioenergy plant. The slower the rate of conversion, the more steel needed per gallon of production — bigger fermenters, bigger pretreatment tanks, longer pipes and so on.

Yield is the key metric for predicting operating expenses. The bigger the yield, the lower the enzyme costs, the higher the productivity per staff member and so on.

Using these metrics, informed analysts can begin to parse out areas of improvement in the USDA plan — and begin to amend its initial vision into something more robust and sustainable. Of course, this is the USDA's goal with this report, to channel the discussion about feedstocks, processing technologies and fuels into a comprehensive plan that forms the basis for immediate action.

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On that level, the plan is an unqualified success, because it has stimulated the critical analysis the USDA appears to have been seeking. And it forms a very useful first step on a journey toward meeting the Renewable Fuel Standard targets, rather than annually forcing them into insignificance by the EPA in the face of insufficient supply.

For more information, please visit [www.biofuelsdigest.com](http://www.biofuelsdigest.com) [1].

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