

Studying the numbers on biomass

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It is indeed time to get serious about biomass burning, as suggested by Cinda Jones and Elisa Campbell in an April 21 Gazette guest column. Better to get it all straight now than when three or four hungry biomass plants are scarfing up our forests.

To that end, here are the actual numbers - how building the three to five plants currently proposed in Western Massachusetts will mean that, each year, over six million trees will be cut on tens of thousands of acres; hundreds of tons of air pollutants will be released in the Pioneer Valley; and net carbon dioxide emissions (CO₂) will significantly increase. It is time to go beyond generalities.

The three biomass plants currently in the permitting process in the western part of the state (Russell Biomass, the Pioneer plant in Greenfield, and Palmer Biomass in Springfield) plus additional plants planned in Pittsfield and Fitchburg, would come at a large cost to forests. It takes about 13,000 green tons of biomass per year to generate 1 megawatt (MW) of power, so a 50-MW plant requires around 650,000 tons of wood a year.

According to the state's biomass availability study (cited by Jones and Campbell), current logging operations in the five "core" western Massachusetts counties generate only about 110,000 tons of "forest harvest residues" per year (i.e., branches and other unsalable wood), meaning the remainder of the 1,365,000 tons of wood required by the three plants would have to be provided by new logging. Using U.S. Forest Service figures for the average weight of trees too small for saw logs, this would represent about 6.24 million trees, and using the state's figure for the maximum amount of wood that can be extracted per acre without actually clear-cutting, these trees would come from about 30,000 acres (47 square miles) of heavily logged forest, each and every year. Even more land would be required if lighter harvest levels were employed.

It does not make sense to credit the wood in other states to Massachusetts' account, because we've looked at the number of biomass plants proposed in surrounding states and we suspect they may have plans for their own wood. And, according to the state's biomass study, much of the "urban wood residue" claimed as available for biomass fuel actually consists of construction and demolition (C&D) debris, which biomass developers in Russell and Greenfield have promised not to burn (the Palmer plant will primarily burn C&D and will use forest biomass for only part of its wood supply.)

Biomass proponents claim it is "carbon neutral over time," but they avoid saying over what length of time. Scientists tell us we only have a few years in which to

reduce our greenhouse gas emissions, or face dramatic consequences. The native forests that will be exploited to provide fuel for biomass plants represent "carbon on the hoof" that will take decades to regrow if logged and burned. Campbell and Jones may not be aware that the Intergovernmental Panel on Climate Change, which they cite, employs best practices for carbon accounting that explicitly recognize forest cutting as a net source of greenhouse gas emissions, stating that it takes decades to re-sequester forest carbon that is released by burning.

The three Western Massachusetts biomass plants currently in the permitting process would emit over 1,500,000 tons of carbon dioxide a year, each producing 3.25 times as much as carbon dioxide per unit of energy generated as a natural gas plant.

The Russell Biomass plant, by its own estimates, would emit 1.5 times as much carbon dioxide per unit of energy generated as the worst carbon dioxide emitting power plant in the entire Northeast region.

The plants would supplement the Massachusetts energy supply by less than 1 percent, while increasing carbon dioxide emissions from the energy sector by more than 7 percent. Can't our "green" energy solutions do better than this?

Other annual air emissions from the three plants would include 98 tons of hazardous air pollutants, 648 tons of carbon monoxide, 165 tons of fine particulates, and 492 tons of nitrogen oxides, the precursor of ground-level ozone.

Noted for its F-rating from the American Lung Association for poor air quality, the western Massachusetts region is currently out of compliance with the U.S. Environmental Protection Agency health standard on ozone on many days of the year, and is perilously close to exceeding the particulates standard.

Jones and Campbell claim that biomass development would create "thousands of jobs," although the state's own economic impact study found that building 165 MW of biomass generation would create only 440 permanent jobs. Given the costs to environmental and human health associated with development of large-scale biomass for energy, a far better plan would be to create those jobs in energy conservation and efficiency.

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