

Massachusetts: Taking a Hard Look at Biomass Electric Generation



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Why Did MA Revisit Biomass Regulations?

- **As new Biomass Plants were proposed and the “2008 Massachusetts Global Warming Solutions Act” was enacted, public concern was raised regarding:**
 - 1. Whether electric generation through biomass truly reduced GHG emissions**
 - 2. The impact biomass plants would have on the sustainability of forest lands**
 - 3. Need to demonstrate to the public that rate payer subsidies (in the form of RECs) were paid only to truly “Renewable Facilities”**
 - 4. How was MA was currently managing its forests?**

The Next Steps

Action Taken

1. MA Department of Energy Resources (DOER) suspended qualification of biomass units for the RPS beginning in December '09
2. Commissioned a research project led by the Manomet Center for Conservation Science to analyze the issues - aka "The Manomet Study"
 - Based on the findings of the Manomet study, DOER opened a public comment period and received close to 500 comments
 - Held two public hearings

Goals Established by DOER for the Review

- Provide eligibility criteria on biomass generation
- Assure approved Biomass facilities contribute positively to the carbon reduction commitments of the state under GWSA
- Ensure forest lands remain sustainable

Diversity of Biomass Stakeholder Interests

■ **Forest Land Owners:**

- Allowing biomass harvesting is important to enhance the economic and aesthetic value of their lands
- For owners of >10 acres, a Forest Management Plan can reduce property taxes
- Reduces Pressure to develop the land

■ **Public Concerns:**

- Environment Impacts on both Air and Water
- Safe-guards against clear cutting
- Addressing sustainability and proper forestry practices

■ **Forest Products Sector:**

- The economic importance of biomass markets to the forest product sector

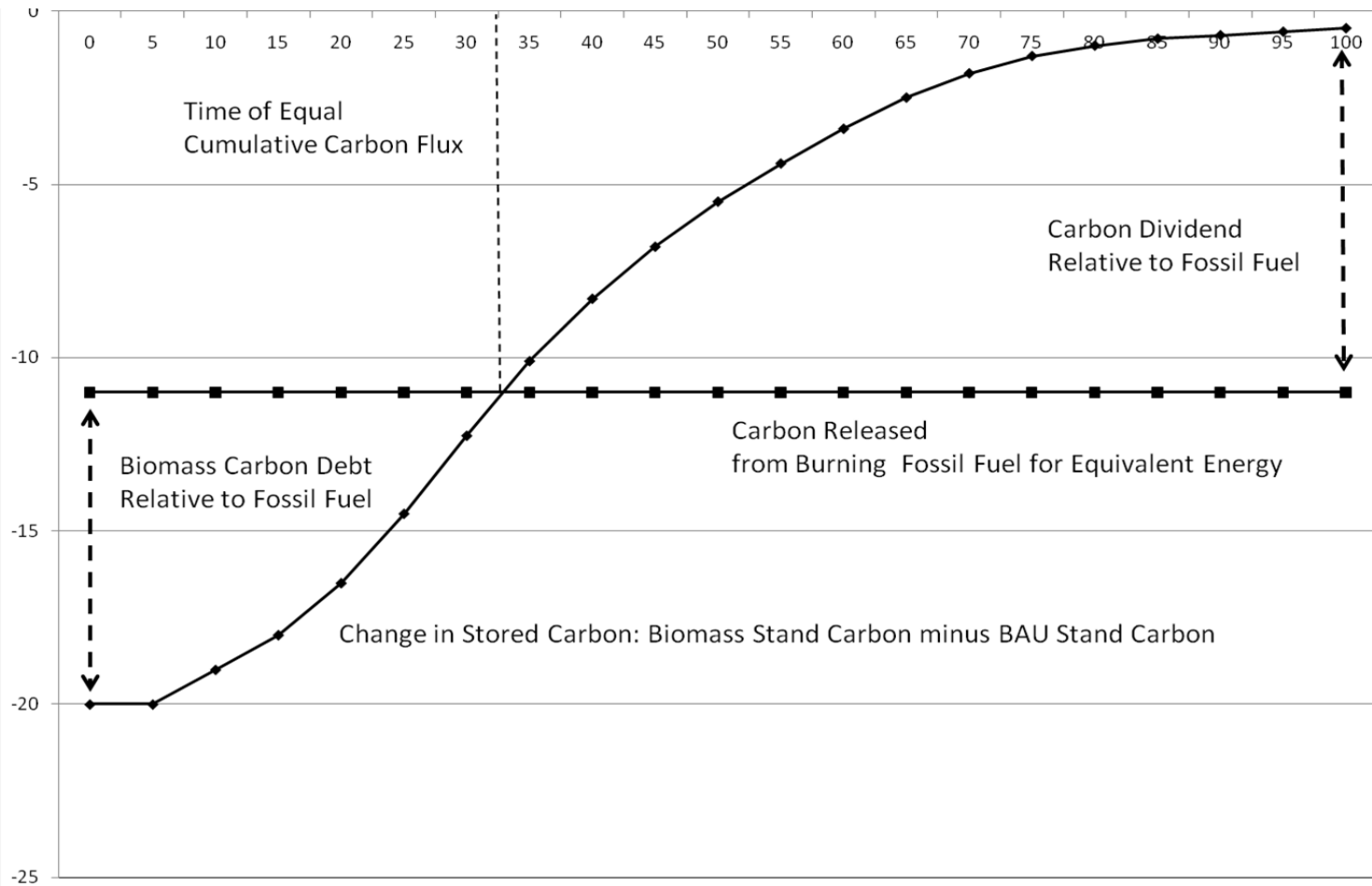
Key Points in Revised Regs by DOER (draft)

- 1. Defined Eligible Biomass Woody Fuel – limits forest derived fuels primarily to residues, limited thinnings and forest salvage resulting from storm events or pest infestations**
- 2. Requirements of Biomass facility to provide lifecycle GHG analysis and demonstrate emissions reductions of at least 50% over 20 years**
- 3. The amount of biomass that should be left in the forest varies depending on soil conditions. In poor quality soils, all biomass material should be left to encourage soil nutrient retention**
- 4. Eligible woody biomass that can be removed will be limited to a % of total weight of the forest products harvested, range of 0% to 40% depending upon soil conditions**

Key Points DOER Revised Regs (con't)

- 5.** Established overall efficiency threshold of at least 40% to qualify for $\frac{1}{2}$ REC, increasing linearly with full REC achieved at 60% efficiency
- 6.** The overall efficiency determined will be based on the Biomass Input Heat Content of the biomass fuel when fed into the generation unit
- 7.** Recognizes that electrical energy generated on-site is incrementally positive relative to electric grid generation and subsequent transmission losses, therefore the overall facility efficiency is adjusted to reflect the onsite electric generation
- 8.** Existing Biomass subject to requirements beginning 2015, political pressure exists to give 5 yr. extension

Manomet's Theoretical Framework: Debt then Dividend



Manomet Study: Exhibit 6-2b

Good Things Come to Those Who Wait

**Exhibit 6-7: Carbon Debt Summary Table
(Excess Biomass Emissions as % of Total Biomass Emissions)**

| Scenarios | Coal | Oil (#6) | Oil (#2) | Natural Gas |
|------------------|-------------|-----------------|-----------------|--------------------|
| Electric | 31% | | | 66% |
| Thermal | | 8% | 15% | 37% |
| CHP | | 2% | 9% | 33% |

Exhibit 6-13: Carbon Debt and Dividends

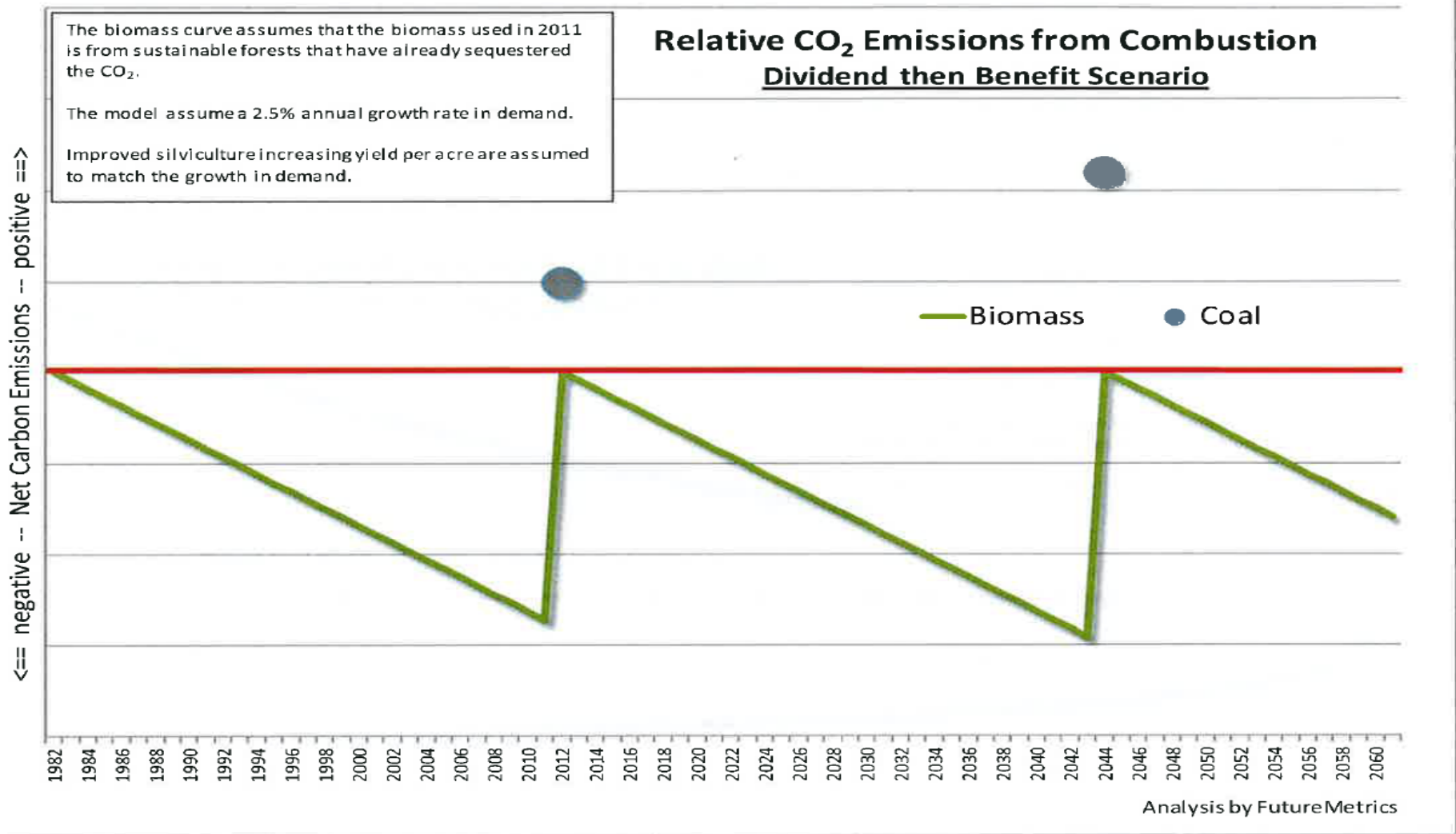
| Fossil Fuel | Debt Payoff in Years | Carbon Dividend In | |
|--------------------------|-----------------------------|---------------------------|-------------|
| | | 2050 | 2100 |
| Oil (#6), Thermal | 7 | 47% | 58% |
| Coal, Electric | 21 | 32% | 46% |
| Gas, Thermal | 24 | 26% | 41% |
| Gas, Electric | >90 | -38% | -9% |

Manomet Study Exhibits

The Manomet Study: Opposing Viewpoints

- **Manomet logic suggests that a random stand of trees is clear cut. What is reality?**
- **Should carbon accounting begin on the day the tree was harvested (assuming clear cut)?**
- **Do the remaining stands of the forest that were not harvested accumulate more carbon?**
- **There is no debt in a forest system that has been in growth-to-harvest equilibrium or has a growth-to-harvest ratio >1**

FutureMetrics View of “Dividend then Benefit”



Did MA get it Wrong? Other Points to Consider

- **Forest Health Perspective: Will MA lose out in the long run by not making general Timber Stand Improvements of:**
 1. Low value wood will not be removed from the forest, low value trees compete for nutrients with the younger trees impacting forest growth
 2. Desire to have young trees that are still growing. Trees near maturity see dramatic decrease in the pace of growth and the amount of carbon sequestered
 3. The short and close to the ground shrubs, bushes and trees contribute to forest fires and allow a fire to “step up” to the taller healthy trees
 4. Less desirable species of wood will not be replaced decreasing economic value for land owner
 5. For GHG benefits forest protection is less effective than sustainable forest management
- **Achieving 60% efficiency at a biomass facility will not happen due to moisture content, therefore facilities will not earn full REC**
- **How do you physically weigh the harvested trees in the forest? What forester is going to sign off that what is being pulled from the forest is 15% and not 18%?**
- **What is the likelihood that harvest wood from clear cuts is going to be used as biomass fuel?**