



# WHY RECs SHOULD BE TIED TO EFFICIENCY

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# STRAIGHT FROM THE HORSE'S MOUTH

- *The concept that there is plenty of 'wood waste' available to burn is not in line with reality.*
- *Standing timber is one of our nation's greatest resources and deserves to be respected as such.*

Scott Hasekamp  
General Manager  
Missouri Mulch

Quoted in Waste Handling Equipment News (12/10)

# ROADMAP

- Renewable Energy Credits (RECs)
  - What they are
  - How they work
- Wood to energy
  - Conversion efficiencies
  - Emissions
- Precedents for linkage

# RENEWABLE ENERGY CREDIT (REC)

- “a trackable certificate of proof that one megawatt-hour of electricity has been generated from one or more renewable energy resources” (HB 613 definition)
- Environmental “currency”
  - has unique serial number to avoid double counting
  - is valid in specific territory
  - has real value - can be bought, sold, traded

# HOW RECs WORK

- Certified, renewable power plants create RECs based on measured amount of electricity delivered to grid
- RECs sold to or retained by utilities, separately from power
- Utilities compelled by State to buy/hold RECs for certain percentage of annual electricity sales
- “Fine” for non-compliance typically exceeds prevailing REC market price
- Incentivize carbon-neutral, renewable energy by providing a production *subsidy* to electricity generated from renewable sources

# REC REPRESENTS

- Environmental attributes
  - renewable, sustainable energy
  - reduced greenhouse gas emissions
- Tangible financial benefit
  - So
- Federal Energy Regulatory Commission requires utility to include these proceeds when passing costs of renewable energy to customers

# **SUBSIDIES AND INCENTIVES FOR 20 MW BIOMASS POWER PLANT**

- RECs: \$2-4 million/yr
- Energy Production Tax Credit: \$2 million/yr
- Investment Tax Credit: \$20-50 million of development costs reimbursed (in lieu of former)
- Exemption from Carbon Allowances: \$5 million/yr (not currently applicable in MO)
- BCAP Fuel Subsidies: \$8 million/yr (funding uncertain)
- MO Wood Energy Production Credit: \$2 million/yr

Adapted from: <http://www.pfpi.net/biomass-basics-2>

**WHY IS IT IMPORTANT  
TO SUPPORT APPROPRIATE  
TYPE OF ENERGY PRODUCTION  
FROM SMALLWOOD?**

# WOOD TO ENERGY CONVERSION EFFICIENCY VARIES WITH TECHNOLOGY

TECHNOLOGY	EFFICIENCY* (%)
ELECTRIC	25
COMBINED HEAT & POWER	50
THERMAL	75

\* EFFICIENCY = OUTPUT / INPUT

Source: Manomet Center for Conservation Sciences (2010) Biomass sustainability and carbon policy study.

# WOOD EMITS MORE GHGs PER ELECTRICAL UNIT THAN FOSSIL FUELS

FUEL	CO <sub>2</sub> (lb/MW <sub>h</sub> )
NAT. GAS	1,200
COAL	2,200
WOOD	2,900

Source: Manomet Center for Conservation Sciences (2010) Biomass sustainability and carbon policy study.

**CARBON IS NOT ABSORBED  
INSTANTLY**

**ATMOSPHERIC LIFETIME  
OF CO<sub>2</sub> IS  
100++ YEARS**

# CARBON IS NOT ABSORBED INSTANTLY

- Excess emissions from smallwood create *carbon debt*
- Regrowth of harvested forest removes atmospheric carbon over decades
- Eventually, atmospheric CO<sub>2</sub> is reduced compared with fossil fuels
- 3+ decades to erase carbon debt cf. coal-to-electric
- *Timeline* of absorption matters!

# NOT ALL RECs ARE EQUAL

- New Hampshire has four REC classes
  - Class I held to higher emission standards
  - Required percentage of Class I increases annually
  - In-lieu-of payments for Class I higher
- Massachusetts awards RECs according to overall efficiency of biomass energy production
  - $\geq 60\%$  gets full credit
  - $< 40\%$  gets no credit
  - 40-59% gets partial credit, prorated from 0.5 REC

# NOT ALL RECs ARE EQUAL (cont'd)

- 2.1 CSBP\* Standard for *Bioenergy*  
**Greenhouse Gas Emissions**
  1. It is generally agreed that cellulosic biofuels and biopower should, considered over the whole life cycle, reduce greenhouse gas emissions relative to fossil-based energy.

\* CSBP = Council on Sustainable Biomass Production

# THANK YOU FOR LISTENING



Image: <http://www.biomassengineerjobs.com/>