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Hampshire, April 24, 2009

Energy, Economics, and Quality Forest management: Reflections

Lloyd C. Irland
Yale University and
The Irland Group



Outline

- Energy: how will affect forest management?
- Key economic issues for Quality Forest Management
- Conclusions
 - Note: speaking strictly of forest management here, not wider social concerns...

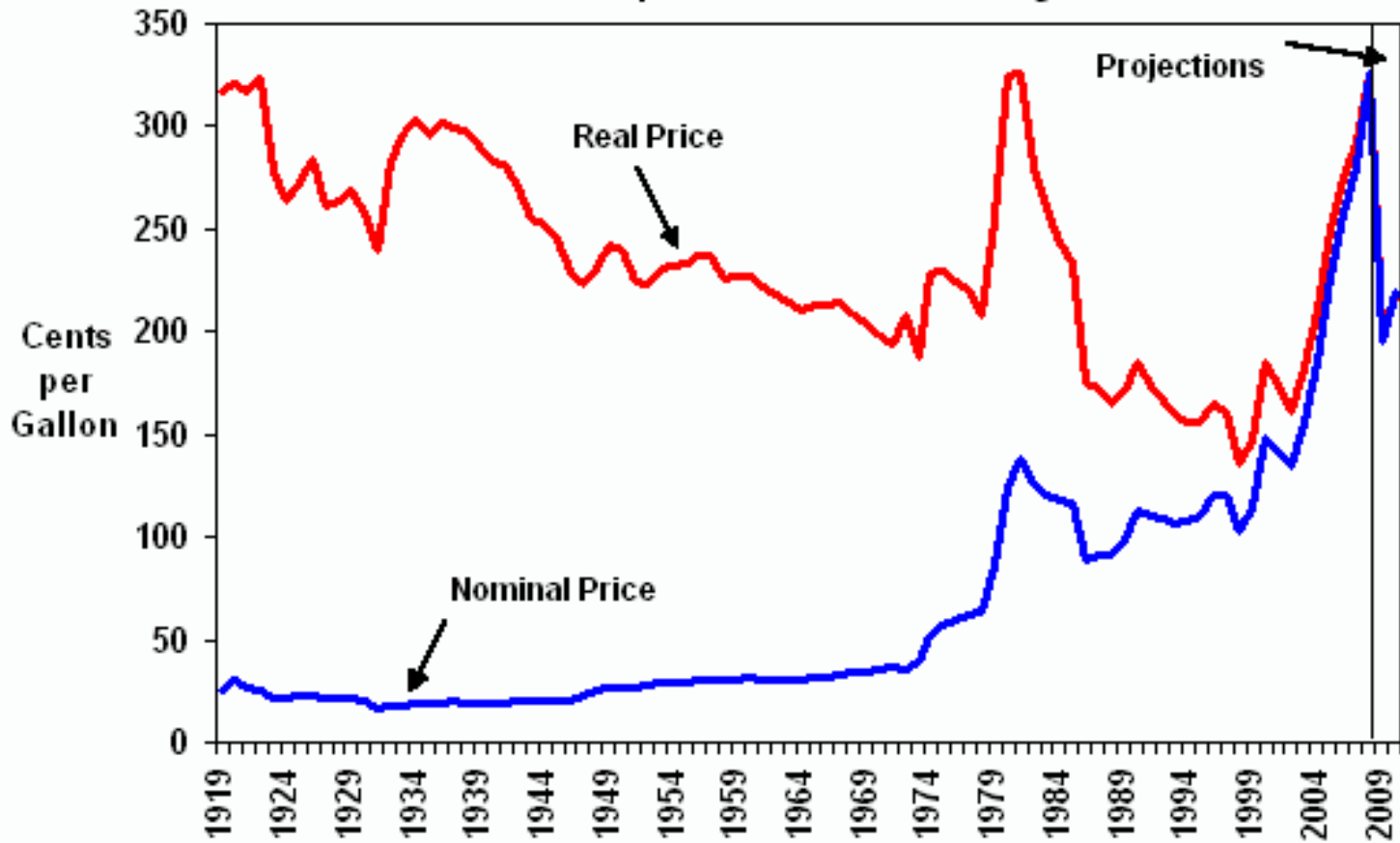
Energy: Volatility

- Critical challenge on energy prices is less the level, than the volatility
- When fuel oil falls back to \$2.00, we lose interest. Close down biomass plants
- So, you can't count on the market!

Key Points

- Biomass energy highly politicized
- Individual projects bring out the NIMBYs
- Political conflict over issues like REC's
- Definition: What is really "Green" energy...
 - Not a consensus
- Influence pathways not always obvious
 - E.g. wholesale electricity prices set by price of natural gas -- not oil.

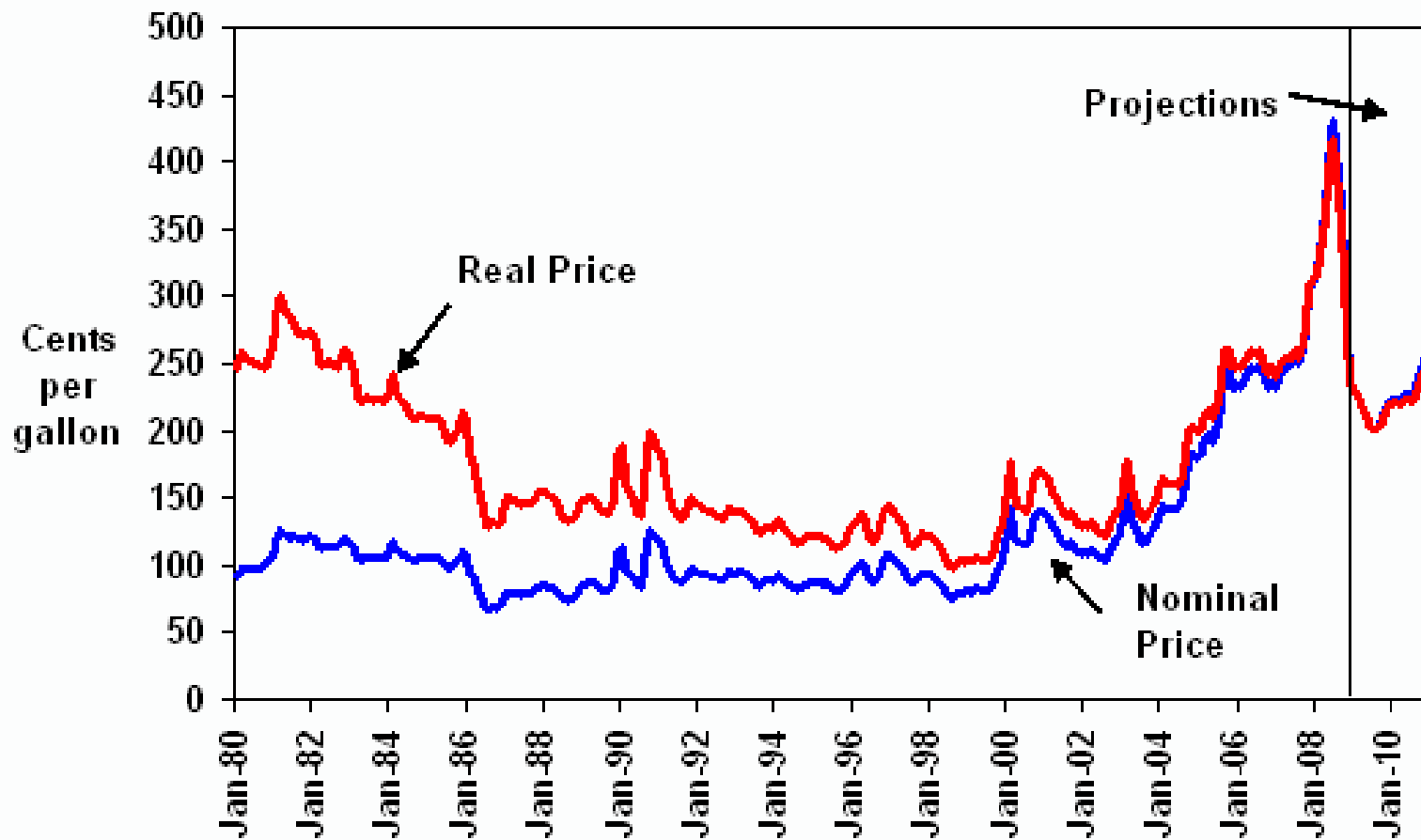
Real Gasoline Pump Price: Annual Average 1919- 2010



Short Term Energy Outlook-February 2009



Heating Oil Prices: Nominal and Real



Short Term Energy Outlook-February 2009



Will expensive fossil fuels boost value of biomass?

- Only in specially favored locations
 - Forests with very short hauls to large, Reliable biomass users.
- Consumption, Prices likely to be volatile
- Boost to revenue from biomass
 - Also helps the liquidators!

Look at NEFF figures...

All Projects Combined	NEFF FY 2008		
	\$ / MBF	\$ / ton	% income
Sugar Maple	\$ 376.58	\$ 60.25	6.8%
Red Oak	\$ 309.73	\$ 44.25	7.0%
White Pine	\$ 187.07	\$ 41.57	55.6%
Red Maple	\$ 125.85	\$ 20.14	3.6%
White Ash	\$ 109.93	\$ 17.59	0.9%
Hemlock	\$ 38.78	\$ 6.88	1.0%
Spruce & Fir Pulp		\$ 3.48	0.2%
Mixed Hardwood Pulp		\$ 2.96	3.6%
Pine Pulp		\$ 2.93	1.5%
Whole Tree Chip		\$ 1.00	0.6%
	average/ton =	\$ 17.41	

NEFF, Timber investment seminar, Jan 12, 2009.

Tops and branches, deadwood

- Most New England forests are light on DWD, standing snags.
- Full utilization of all top/branchwood not immoral but generally leaving it on the land preferred –
- so, as to these components, biomass market not relevant

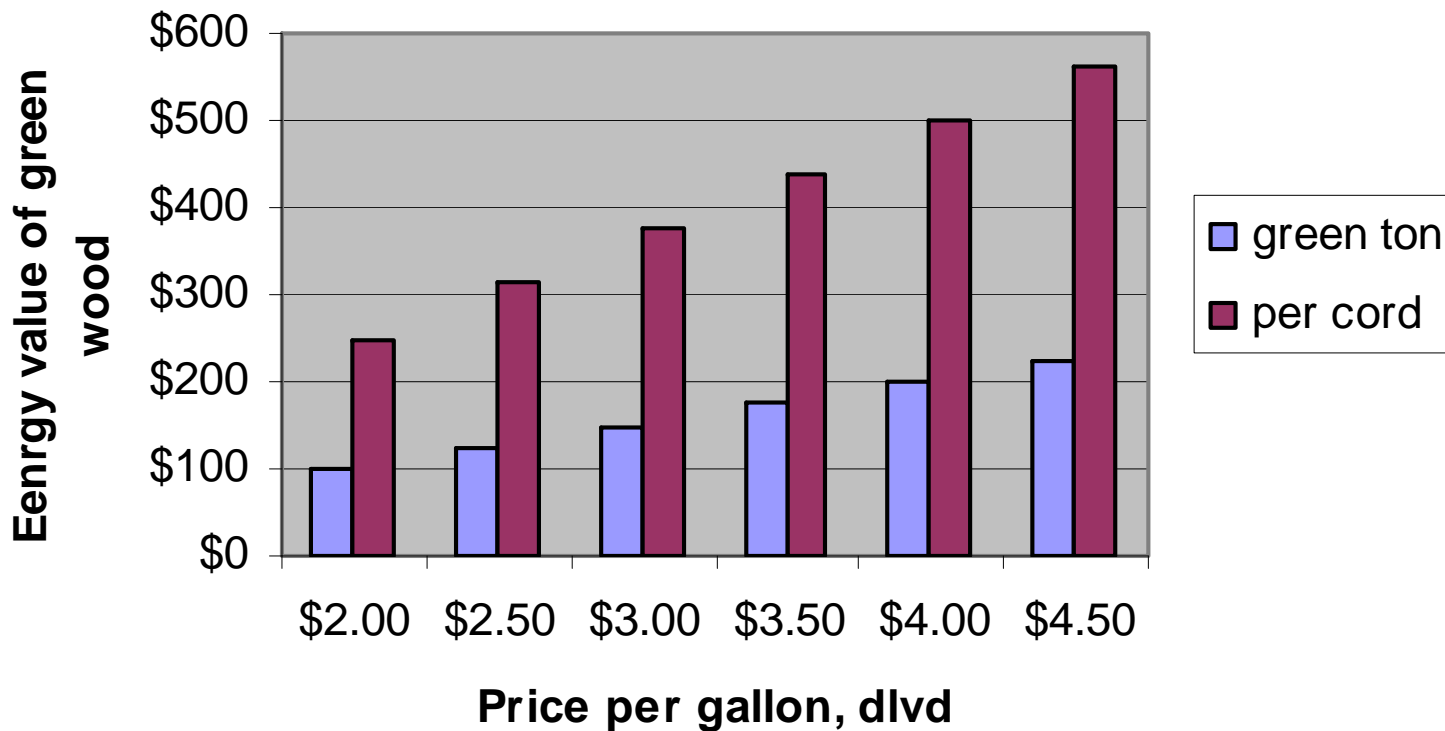
Traditional pulp/firewood material

- In Maine, firewood stumpage > pulpwood in many areas.
 - True elsewhere?
 - Pulp markets virtually absent most areas of SNE
- Pellets: producers are turning to roundwood
 - Not enough chips, shavings, dust

Logging/ Trucking Costs

- Obviously higher cost fuel will increase these costs, in principle shorten haul distances.
- Logging infrastructure at risk already. Fuel costs a major issue.

Energy Value Equivalent at Range of Heating Oil Prices



Source: based on USFS FV calculator

Trucking

- Each \$1/gal increase in diesel adds \$0.0134/ton mile (1.3 cents) round trip
- Doesn't sound like much, but that is
 - \$0.68/ton more to haul wood 50 miles and return
 - \$1.34/ton more to haul wood 100 miles
 - \$2.02/ton more to haul wood 150 miles
- And If your pulpwood stumpage price is \$5-\$6/ton?
 - Hardwood, pine and hemlock as reported by MFS for 2007
 - This ignores petroleum-based oils, lubricants and other fluids needed
 - And the raises the loggers and truckers will need to afford the gas to drive to work
- “Plan on diesel at \$10/gal, then when it hits \$7/gal you will be able to survive”
 - Rick Williams, Fiber Supply Manager, Boise White Paper LLC, , Western Forest Economists 43rd Meeting , May 5 - May 7, 2008

Logging Cost

- Roadbuilding – not considered
- Stump to loaded : 2.5 gal per ton
 - = \$2.00 diesel \$5/ton
 - \$4.00 “ \$10/ton
- Consumption will vary...we've heard less
- \$1.00/ton increase costs you all the stumpage (\$2.42 acc. to MFS report)

Cheap Fuel? Not any more...



Economics of Quality land Mgt

- Forest Management Cannot pay its land costs in most of New England
- Current condition of most stands means returns delayed... possibly 2 cut cycles
- Many treatments do look good on ROI grounds
 - w/o land cost
- If owner willing to invest actual cash
- Try to sell them on reinvesting harvest revenues?

Principal Costs

- Noncash Costs
 - Opportunity cost of land
 - Timber opportunity Cost (TOC)
 - Harvest value lost to:
 - Buffers
 - Created snags, etc
 - DWD
 - What is the baseline? Bound to be uncertain...

Role of TOC

- Classic forestry carrying large volumes of quality growing stock breaks the bank on opportunity costs
- True for any silvicultural system
- With \$600.00/A of growing stock value,
 - at 10%, TOC = \$60/A/yr
 - At 5%, TOC = \$30.

Land Opportunity Costs

- Extremely high in most of region now
- Value at suitable interest rate
 - You can have the land, or the interest
 - Not both
- In N Maine, transaction prices 2X realistic timber NPVs
- In SNE, how much higher???

Operating Costs

- Higher planning, marking, supervision costs?
- Lower harvest volume, at least initially, to cover them
- Effects on Stumpage revenues?

Land Improvements

- Larger culverts may pay for themselves
- Better quality roads/water crossings may pay for themselves over time, in many ways

Top Quality Everywhere?

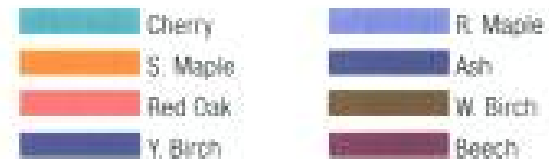
- Every acre not suited to planting
- Same applies to quality forestry
- Mindless application of uniform prescriptions to be avoided – same here.
- Common sense “land allocations”
- Natural regen. a gift – release it.
- Practical recognition of cash flow needs
 - More frequent, if smaller cash flows...

Issues of Risk

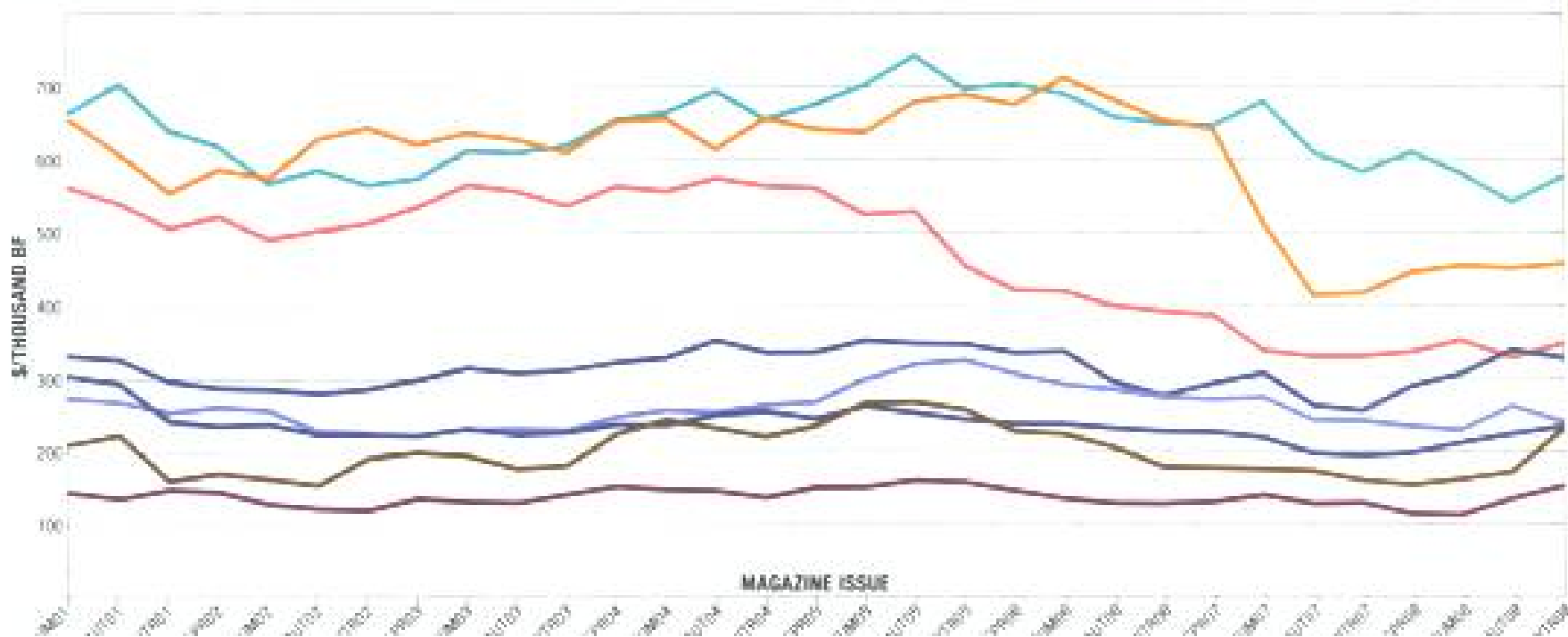
- Volatility in volume used at mills
- Price risks
 - Large quality growing stock can increase exposure
- Bugs, wind and weather
- Clients need to be aware, not scared, not complacent
- See Ernie Gould Harvard Forest Bulletin 29.

While cemetery laws vary slightly from state to state, one point holds true across

precipitously. In 2008, all except black cherry recovered somewhat. Is 2008 a



Mill prices from *Northern Woodlands* magazine, constant 2001 dollars



Northern Woodlands, Spring 09, p. 20

Results

- If there is a “Saudi Arabia of biomass”, it’s not New England!
- Many owners will not demand land opp cost from the forest enterprise
- Some can afford to ignore TOC
- Few can afford to ignore other costs
- Do we want forestry to become a carriage trade hobby? If not....
- Implications?

Further...

- Present the added costs as “tithe to nature”?
- Tax planning estate accumulation motives
 - Realize income later
 - (get expert advice)
- Dare we suggest: Land Ethic?