

Burning BC's Forests

What's Wrong With Bioenergy?

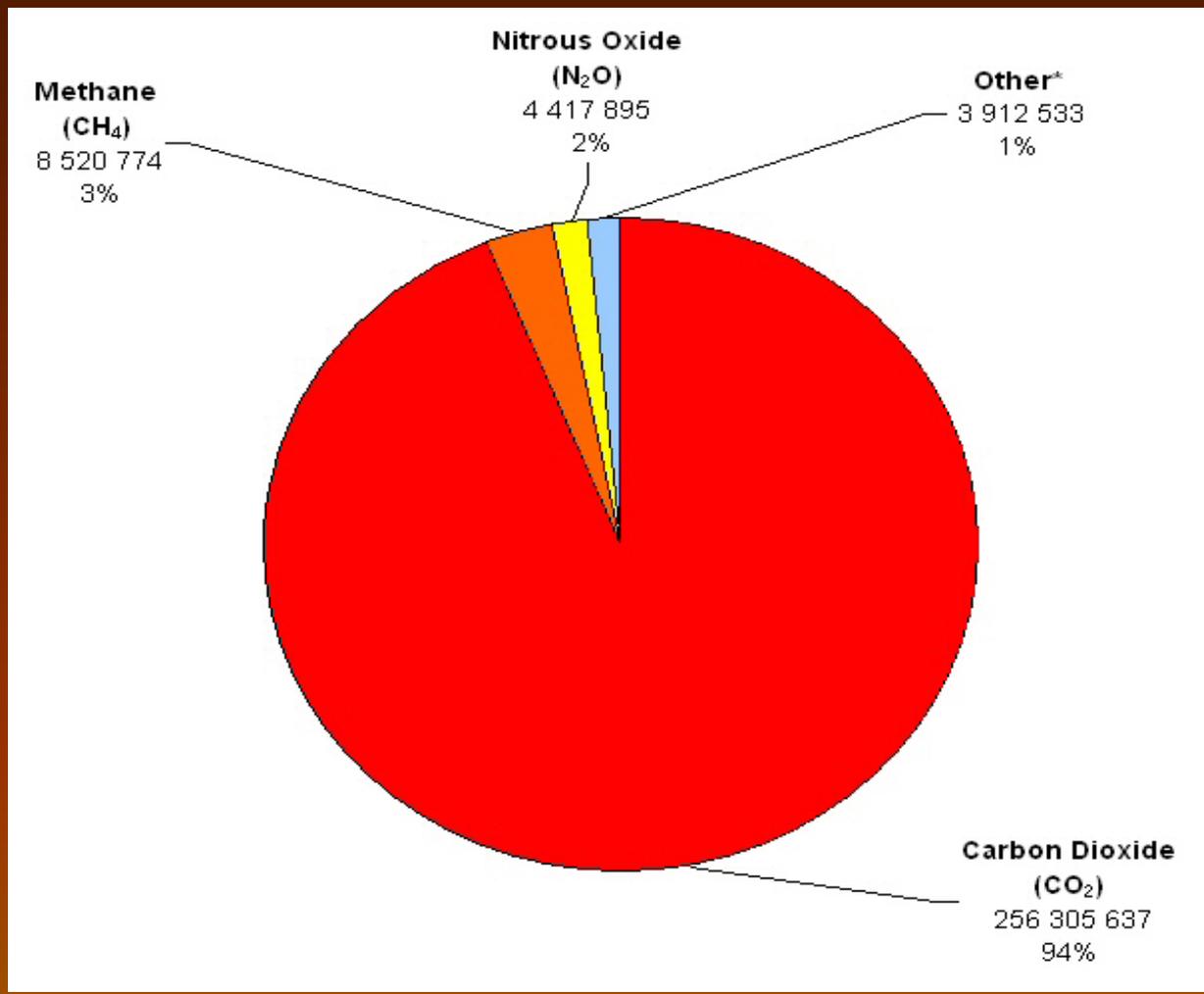
A presentation to B.C. SEA July 15, 2008

DAVE NEADS, *B.C. Spaces for Nature*

Context

- Avoid 2 degree Celsius threshold ⁽¹⁾
- Reduce emissions 80% by 2050 ⁽²⁾
- Meet provincial targets ⁽³⁾
- Actions/Policies to cut CO₂

Why CO₂ ? (4)



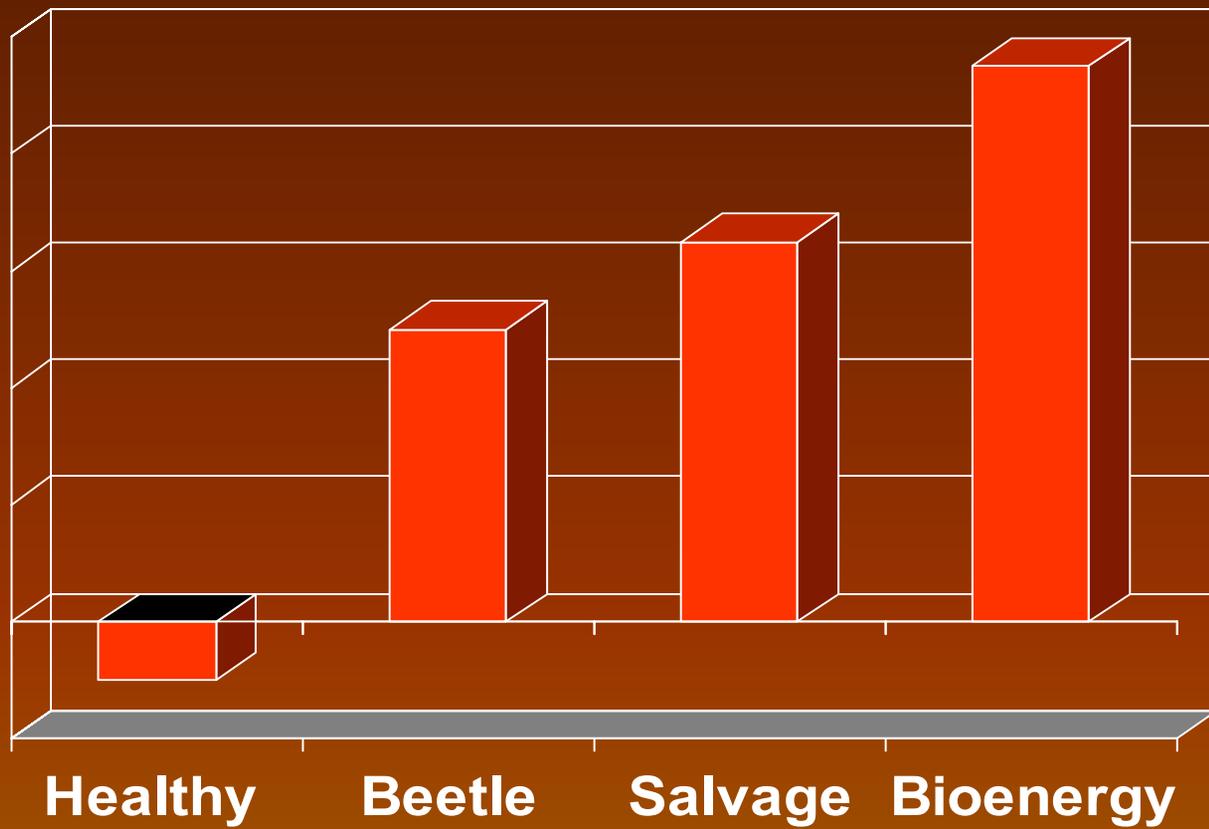
What is Acceptable?

- Burning residue
- Removing beehive burners
- Generating electricity for existing operations

What is Unacceptable?

- Burning sawlogs
- Logging forests for bioenergy
- Making forest-based electricity part of the provincial energy strategy

Relative CO₂ Emissions ^(5, 6)



B.C. proposes burning forests for bioenergy ⁽⁷⁾

- Wood is a low grade fuel--CO₂ emissions from bioenergy are 3-4 times greater than diesel, and
- More than 4 times the Pacific Northwest average for electricity production ⁽⁸⁾



B.C. proposes burning forests for bioenergy

- CO₂ molecules don't care where they come from, pathways don't matter ⁽⁹⁾
- This proposal contravenes BC's targets to reduce CO₂ emissions 33% by 2020, 80% by 2050 ⁽¹⁰⁾
- It takes 70 seconds to burn a tree and 125 years to pull that carbon back, 20 years before a clearcut is CO₂ neutral

B.C. proposes burning forests for bioenergy

Burning forests is *not* CO₂ neutral

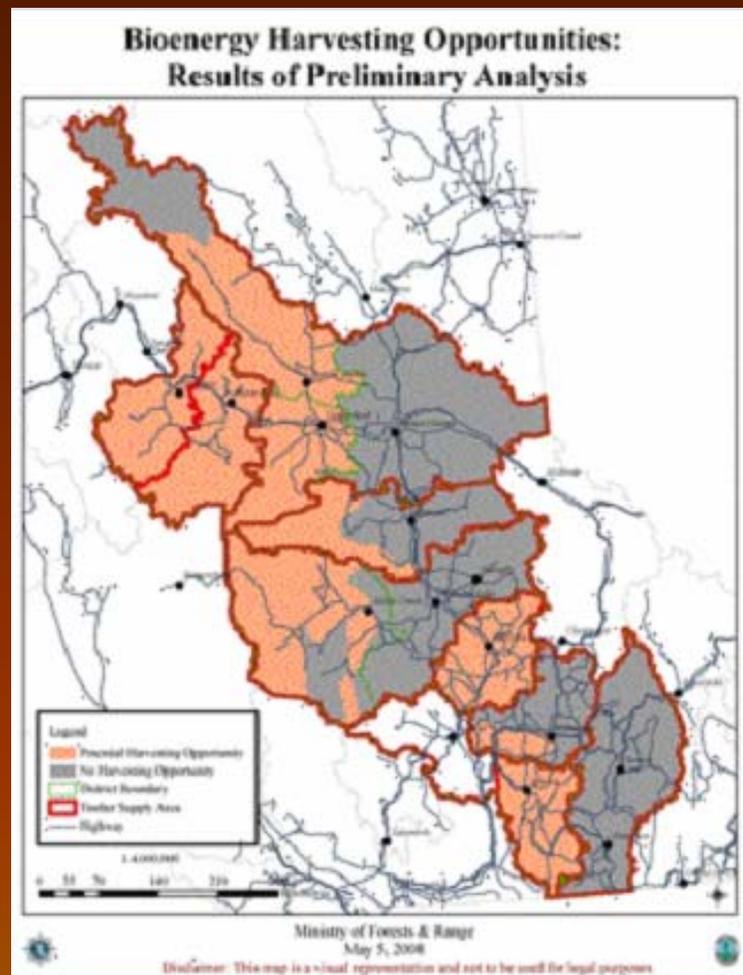
It will be a huge CO₂ source
between now and 2050

Up to one million acres of forest burned over the next 20 years

- 20-year licences to be issued for up to 4.4 million cubic metres *(11)*
- Beetle wood runs out long before licences expire, which means that healthy forests will have to be cut and burned *(12)*

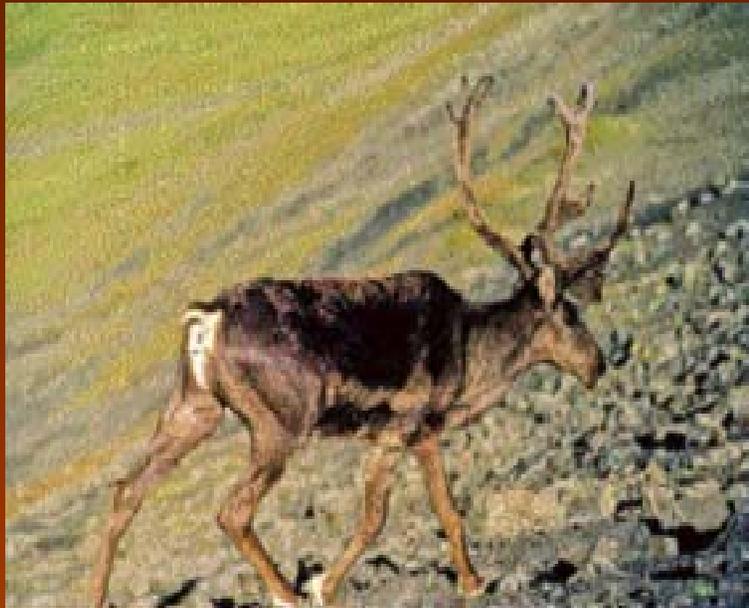


Huge destruction for little power



- Total energy production from extensive burning of forests is only 300 megawatts! (13)
- This is equal to just one medium-sized run-of-the-river project, or half a wind farm (14)

Devastating to biodiversity



- Will destroy habitat and biodiversity, removing adaptation options ⁽¹⁵⁾
- May endanger healthiest caribou herd in southern Canada (Itchas herd: 3,000 animals) ⁽¹⁶⁾
- Increased logging impacts hydrology and increases flood risk ⁽¹⁷⁾

Very few jobs created



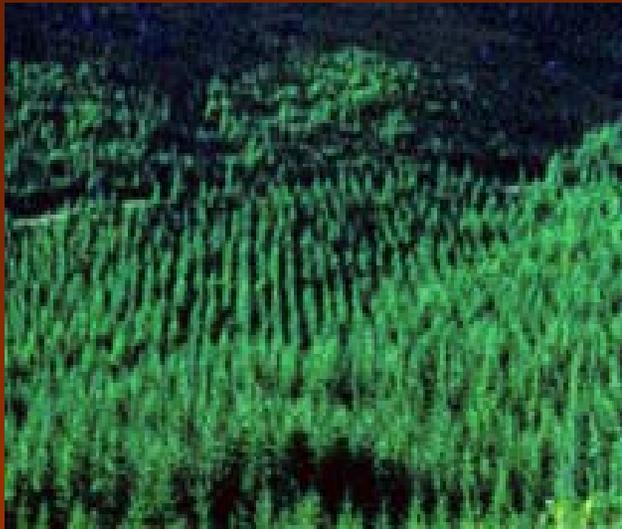
- 6,000 cubic metres creates one bioenergy job (all phases) ⁽¹⁸⁾
- Bioenergy creates $1/6^{th}$ of the jobs created by lumber and pulp/paper ⁽¹⁹⁾

Threatens forest industry

- When beetle-killed wood runs out, bioenergy will consume vast areas of green trees ⁽²⁰⁾
- The resulting “overcut” threatens lumber/pulp industry wood supply
- Clearcutting destroys the established regeneration, delaying future harvest by 20 to 40 years ⁽²¹⁾



Requires hefty subsidies



- To be viable, bioenergy requires 16 to 20 cents per kwh ⁽²²⁾
- By contrast:
 - Conventional hydro is 5 to 6 cents/kwh
 - Run-of-the-river hydro—7 to 9 cents/kwh
 - Wind power—8 to 9 cents/kwh ⁽²³⁾
- Replanting the forest after bioenergy logging likely requires government subsidies ⁽²⁴⁾

Summary

BIOENERGY.....

- Emits 3 - 4 times more CO₂ than fossil fuels
- Ignores targets; pathways don't matter
- Is **NOT** CO₂ neutral
- Produces very little power
- Destroys important habitats

Summary

BIOENERGY.....

- Will have to burn green trees
- Consumes 6 times more wood per job
- Delays future harvest 20 to 40 years
- Requires huge subsidies
- Takes money from alternatives

Actions required

- Do not issue forest-based bioenergy licences prior to assessment of:
 - Impacts of CO₂ emissions on provincial targets
 - Impacts on biodiversity
 - Impacts on forest regeneration
 - Impacts of bioenergy green wood "overcutting" on lumber/pulp industries' wood supply
 - Impacts on jobs and subsidies
 - Impacts on hydrology and flood risks

Actions required *cont'd*

- Develop carbon-free energy sources:
 - Run-of-the-river
 - Geothermal
 - Wind
 - Tidal
 - Solar
- Introduce aggressive conservation measures to reduce energy consumption

Kick the Carbon Habit

WHAT'S WRONG WITH BIOENERGY?

Footnotes, page 1 of 4...

1. Stern, N. (2007) *"The Economics of Climate Change – The Stern Review"* Cambridge University Press; Ch.3 and Table 2.1, Stephen Schneider WWF conference San Francisco, Feb 2008. General scientific consensus.
2. Texas Tech University (2007, September 30). *"Scientists Call For 80 Percent Drop In U.S. Emissions By 2050 To Avoid Dangerous Warming."*, Stephen Schneider, San Francisco Conference, Bill 44 Green House Targets Reduction Act, 2007.
3. Bill 44 Green House Targets Reduction Act, 2007.
4. See http://www.ec.gc.ca/pdb/ghg/onlinedata/downloadDB_e.cfm
5. *Healthy, Beetle and Salvage: "Mountain pine beetle and forest carbon feedback to climate change"* W. A. Kurz¹, C. C. Dymond, G. Stinson, G. J. Rampley, E. T. Neilson, A. L. Carroll, T. Ebata & L. Safranyik, Vol 452|24 April 2008| doi:10.1038/nature06777, graph page 989.
6. Bioenergy: Burning wood releases more CO₂ than logging because 30 to 40 percent of trees logged are converted into forest products in normal operations, whereas all the fibre is burned in a bioenergy plant.
7. B.C. Bioenergy Strategy page 6, www.bchydro.com/cleanpowercall., B.C Energy Plan, policy statement 31.

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8. Wood is a low grade fuel, with a heat potential 2 1/2 times lower than diesel.

Propane 50.0 MJ/kg

Kerosene 46.5 MJ/kg

Diesel oil 45.6 MJ/kg

Fuel oil 43.0 MJ/kg

Natural Gas 37.3 MJ/kg

Coal 29.2 MJ/kg

Wood Pellets 19.8 MJ/kg

source: Payne, 1980 *Table 2. Heating Value of Fossil Fuels and Wood*

The EPCOR bioenergy plant in Williams Lake reported 537,000 tonnes of CO₂ emissions in 2007, burning 626 tonnes of wood fiber and generating 66 MWH of electricity. That calculates to 8,136 tonnes per MWH per year.

The coefficient for generating electricity from diesel is .24kg CO₂/kWh. This translates into 2,104 tonnes per MWH per year.

From the report cited below *, California, Oregon and Washington combined had a coefficient of .203 tonnes/MWH in 1998-2000. That translates into 1,778 tonnes/MWH/year.

Ratios: EPCOR to Diesel $8,136/2104 = 3.86$

EPCOR to PNW $8136/1,778 = 4.57$

The proposal in the Chilcotin is the same technology and size (60 MWH) as the EPCOR generating station.

The basic recipe for large scale, stand alone bioenergy stations is 60 MWH or more, a 20 year licence to log and approximately 600,000 plus tonnes of wood fiber per year. If these conditions are not met, the projects are uneconomic.

**Updated State-level Greenhouse Gas Emission Coefficients*

for Electricity Generation 1998-2000, Energy Information Administration

Office of Integrated Analysis and Forecasting

Energy Information Administration, U.S. Department of Energy, April 2002

WHAT'S WRONG WITH BIOENERGY?

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9. Dr. Andrew Weaver, UVIC seminar, Thursday May 1st 2008.
10. Bill 44 Green House Targets Reduction Act, 2007.
11. Chilcotin Proposal: http://a100.gov.bc.ca/appsdata/epic/html/deploy/epic_project_home_330.html
12. Source: http://www.for.gov.bc.ca/hts/bioenergy/primer_IPP.htm (Underlining added for clarity.)

"The Chief Forester reviews the timber supply in each management unit on a regular basis, normally every five years. Following that review, the Chief Forester may increase, reduce or leave the AAC unchanged. As a result of the mountain pine beetle, many AACs have been increased to allow for the sale of damaged pine before it degrades to the point of being uneconomic.

"Because of governments land use objectives and the need to maintain a sustainable timber supply in the future, not all dead pine will be available for harvest in the next 20 years. Some will protect water quality, some will be retained to meet visual quality objectives, biodiversity objectives and some have an advanced understory of trees that will form the next crop of trees 30 to 50 years from now.

"As a result, of the roughly 1.1 billion m of mature pine in BC, less than 500 million m is available for near term harvest. At the current rates of harvest, the available pine will all be harvested in roughly 10 to 12 years. However, as the rate of degradation is highly variable, it is impossible to predict with any certainty how much of that 500 million m³ will be of interest to existing tenure holders and how quickly they will shift their harvest focus away from those stands."
13. The Pristine Power Proposal for Anahim Lake requires 150,000 cubic metres to generate 10 MWH, or 15,000 cubic metres/MWH/year. EPCOR burns approximately 1.1 million cubic metres/year for a requirement of 16,000 cubic metres/MWH/year. Averaged out, it takes approximately 15,500 cubic metres/MWH/year for bioenergy. The province is offering up to 4.4 million cubic metres a year for bioenergy. 4.4 million divided by 15,500 is 283 MWH.
14. Kleena Kleene Run of the River, 500 MW <http://www.pristinepower.ca/projects/klinaklini.php>
or
Naikun Wind Farm 700 MW <http://www.naikun.ca/>

WHAT'S WRONG WITH BIOENERGY?

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15. For example: <http://www.pewclimate.org/hottopics/adaptation>
16. Caribou are an old growth, wilderness dependant species; see:
http://ilmbwww.gov.bc.ca/slrp/lrmp/williamslake/cariboo_chilcotin/news/files/reports/caribou_2002_rpt/index.html
- 17 http://www.for.gov.bc.ca/hfp/mountain_pine_beetle/stewardship/hydrology
18. Personal research with West Chilcotin Forest Products and Pioneer Logging, both of which operate in the centre of the MPB area..
The WCFP example: To log 300,000 cubic metres/year: 1 RPF, 2 techs, 4 feller buncher operators, 4 skidder operators, 2 loader operators, 12 truck drivers, 2 equipment operators for road work, 2 first aid crew, 1 mechanic, 2 crew bosses, 1 manager, 1 administration. Total: 34. To log 900,000 cubic metres /year would take three crews or 102 workers. These are FTE positions. Add 33 jobs for the operation of the generating station (Chilcotin Proposal, McKenzie proposal only employs 26) for a total of 135 jobs. $900,000/135= 6,666.6$. 1 job for over 6,000 cubic metres. The Pioneer example worked out to 1 job for every 6,200 metres.
19. The accepted provincial average in the forest industry is approximately 1 job per 1,000 cubic metres.
20. A force majeure clause, included in all B.C Hydro contracts for independent power. Personal communication from Fred Scott, vice president, Pristine Power. This means logging will have to proceed, beetle killed or not.
21. See #12 above.
22. Personal communication with Brian Hansen, Woodland Manager, Pioneer Logging and Fred Scott Vice president, Pristine Power.
23. Personal communication from Guy Dauncey, BC SEA.
24. In low volume stands, which the provincial bioenergy strategy targets, cost will exceed \$15 per metre. That is the profitable threshold for the dimension lumber industry. Unless more is paid per MWH by B.C Hydro, silviculture subsidies will have to be paid to bioenergy operators.