



Forest Bioenergy

Port Alberni Bio-Energy & Forest Carbon Discussion Forum

July 9, 2009



Questions from one of today's participants...

- How many jobs are there in a 100,000 mw plant? How labour intensive is the bio-energy industry?
- Port Alberni lost 2000 jobs before the recession started, when will a bio-energy plant be able to replace them by?
- The Minister (and Deputy) is very bullish on bio-energy – is he wrong?
- Why doesn't government start up a plant or two to get things rolling? Port Alberni would be a great location!
- How much fuel is available proximate to Port Alberni for bio-energy production today, and into the future?
- Are the new bio-energy tenure opportunities going to increase the demand and therefore the price for logs?
- The pulp industry has been applying bio-energy in their mills for years – what is new about this?
- Who cut your hair?



Common questions and statements

- Why aren't we doing more?
- Europe's doing it! Why aren't we?
- If government wants this to happen, then make it so! What's the hold up?
- How much "biomass" is there?
- What does it cost?
- Can you give me a tenure?
- Can I manage Crown forest land for energy crops?



Common questions and statements (cont.)

- Using biomass for energy will not mitigate climate change!
- Don't log old growth!
- Don't build a plant near me!
- The only effective solution is to get rid of all the people!
- Government should pay me to do this!



Its all about choice!

- Do you believe climate change is a real problem and we need to take action now?
- Are you willing to see the price of almost every consumer good increase to properly reflect the price of carbon?
- Do you support product life cycle pricing?



Its all about markets...

- Or:
 - do you believe we should always seek the lowest short term cost opportunity and let traditional supply and demand economics guide our behaviour (irrespective of the mid to long term consequences)?



Cellulosic Transportation Fuels



7/8/2009

<http://www.choren.com/en>



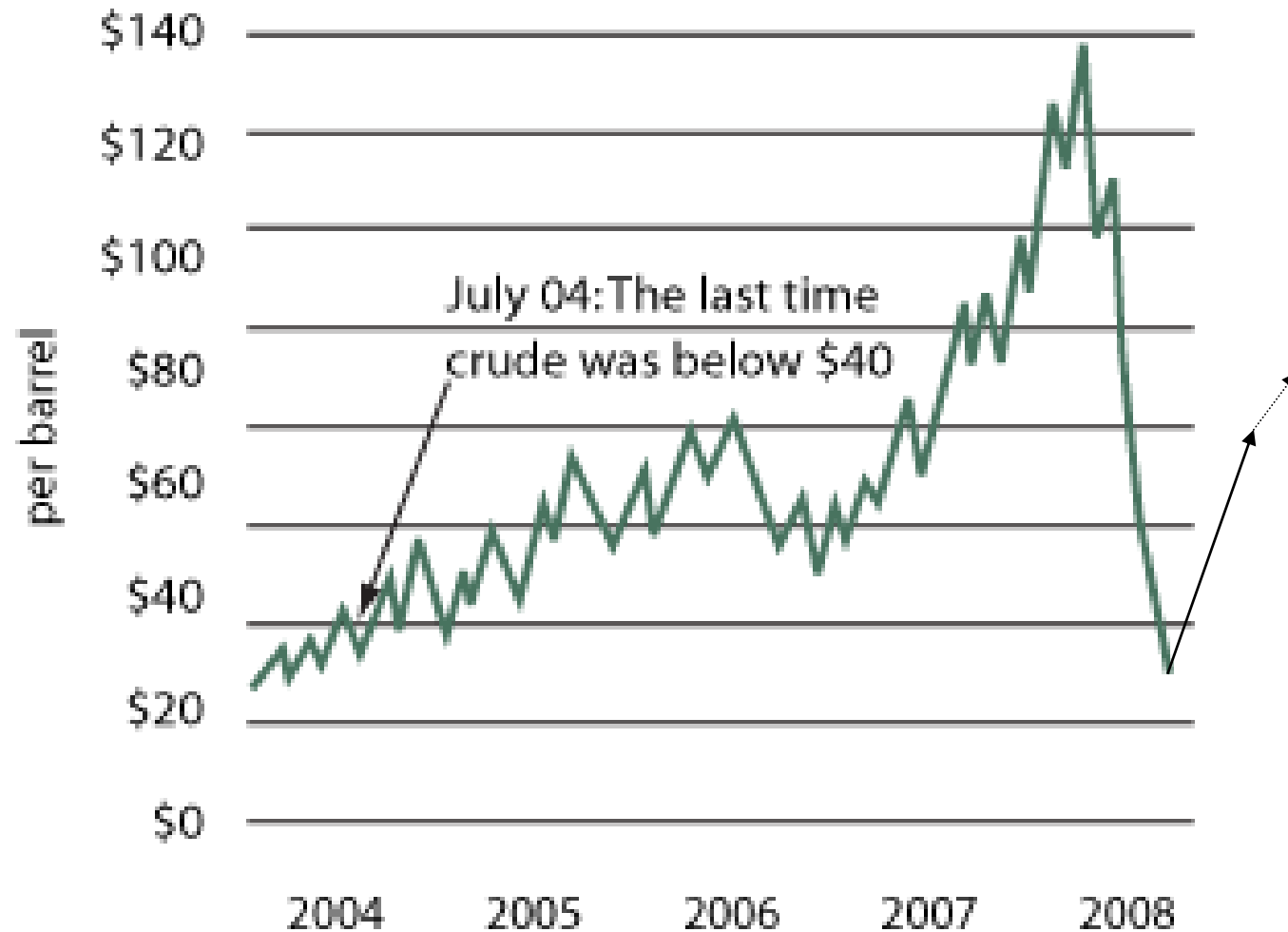
So why aren't we following Europe's example?

- Europe gets their oil and natural gas from Russia and the Middle East.
- European's live relatively low carbon lives because in part, they have to.
- Canada has relatively cheap, abundant and secure energy and we treat it that way.
 - But that's about to change....



Slippery Slope

Futures are pointing to a continued decline in crude oil prices, but most analysts agree traders are overshooting the downside.



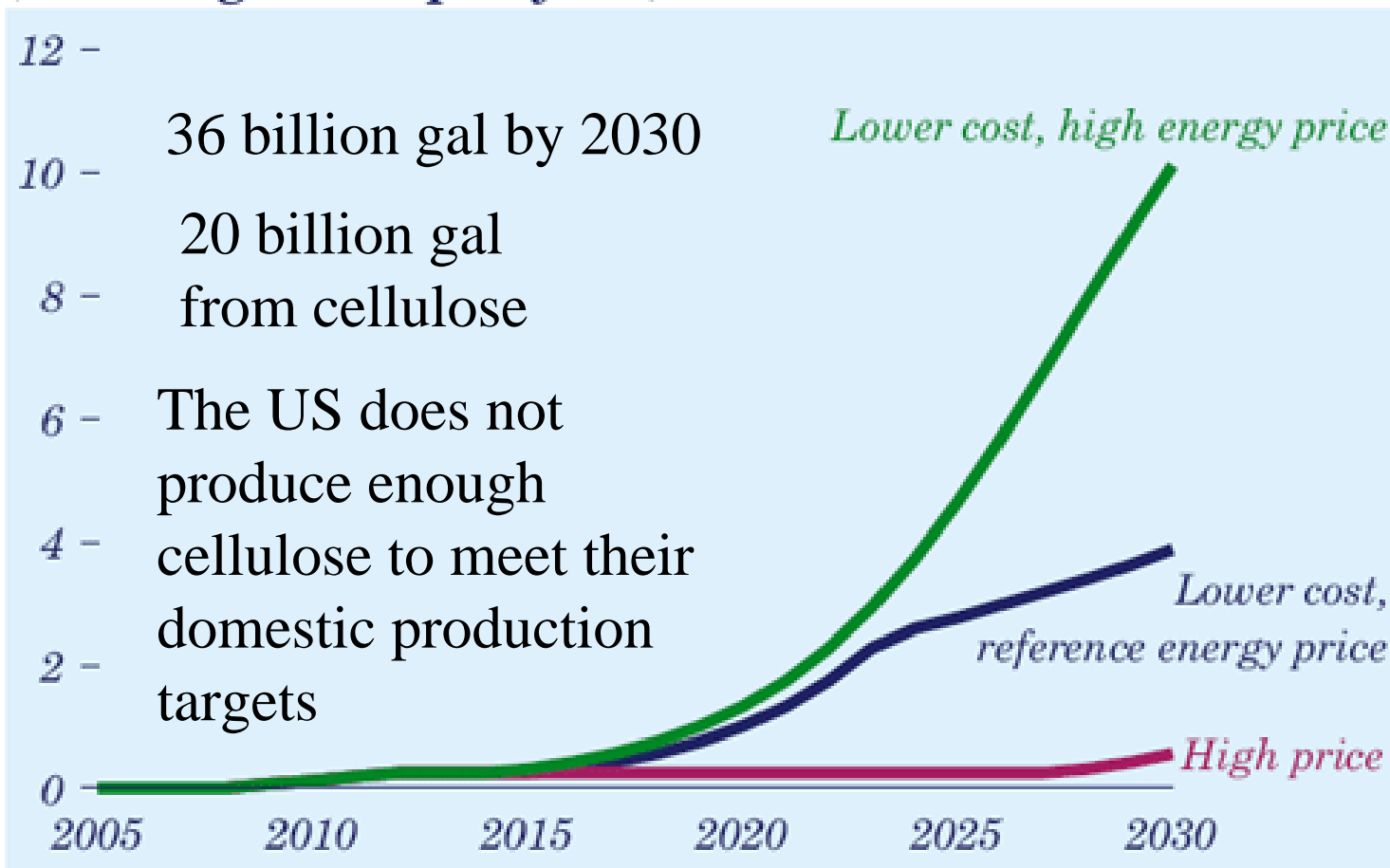
7/8/2009

Sources: Nymex, MarketWatch.com, Money Morning Staff Research



US Energy Policy

**Figure 85. Cellulose ethanol production, 2005-2030
(billion gallons per year)**





Jobs



Health



Security and supply



Local investment, retention of wealth, infrastructure



Social cohesion



Environment and biodiversity



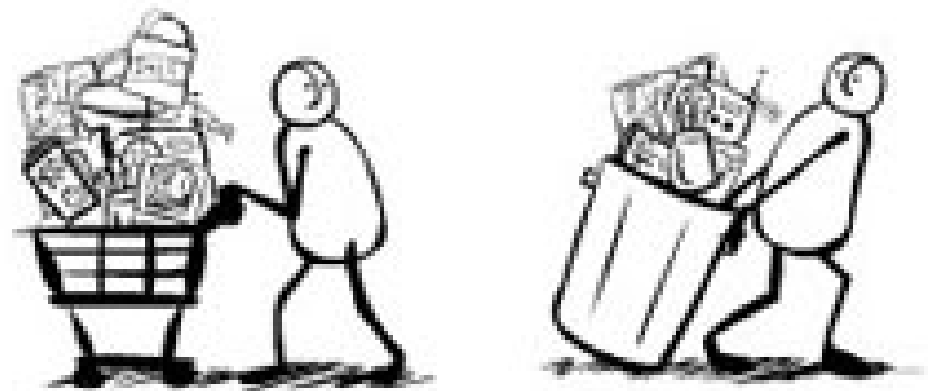
Equity



Education



THE STORY OF STUFF



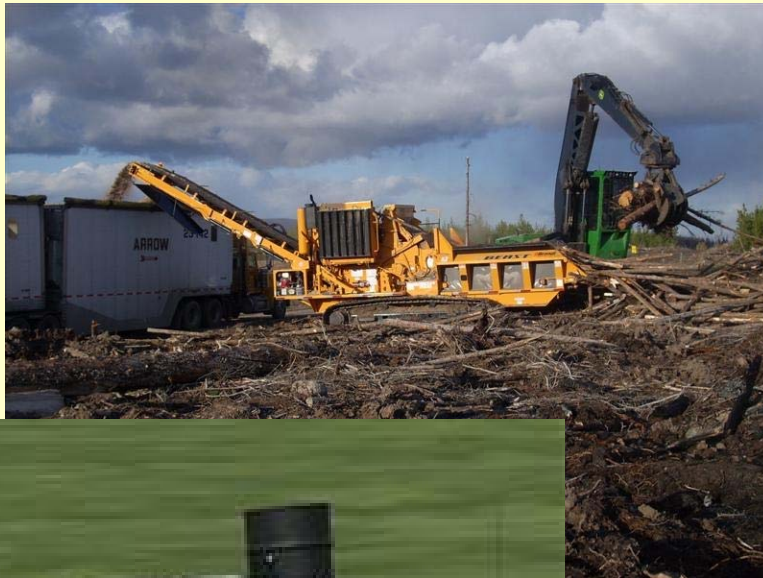
How would you gauge the local appetite for transitioning to a low carbon economy?

7/8/2009

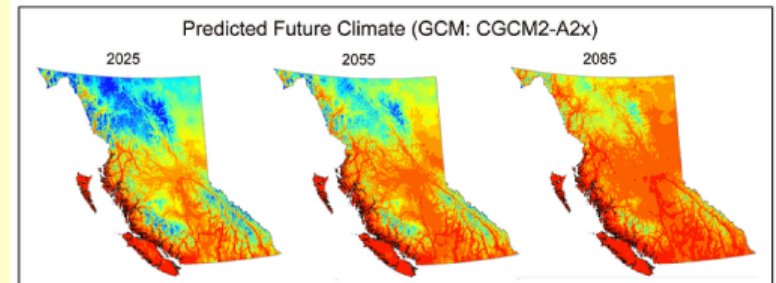
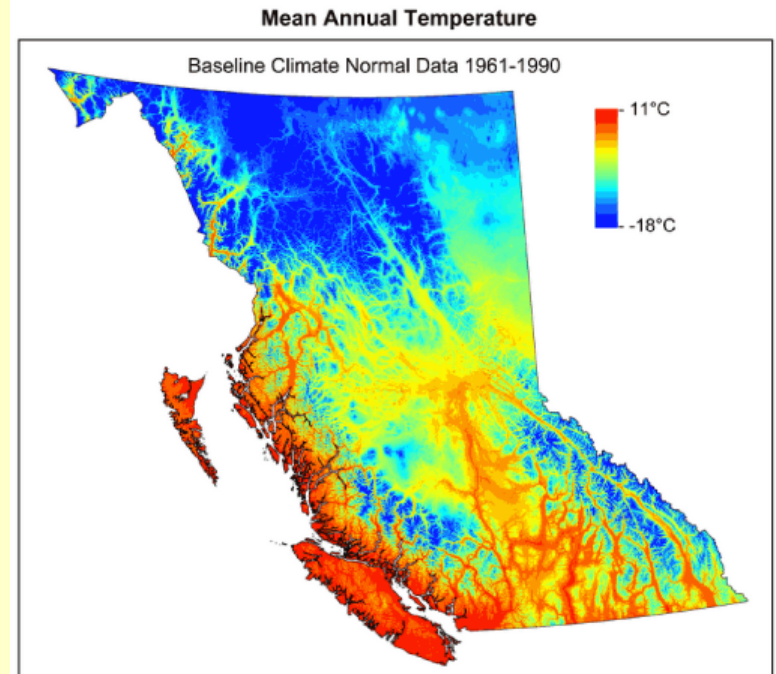
WWW.STORYOFSTUFF.COM



So what is going on?



7/8/2009

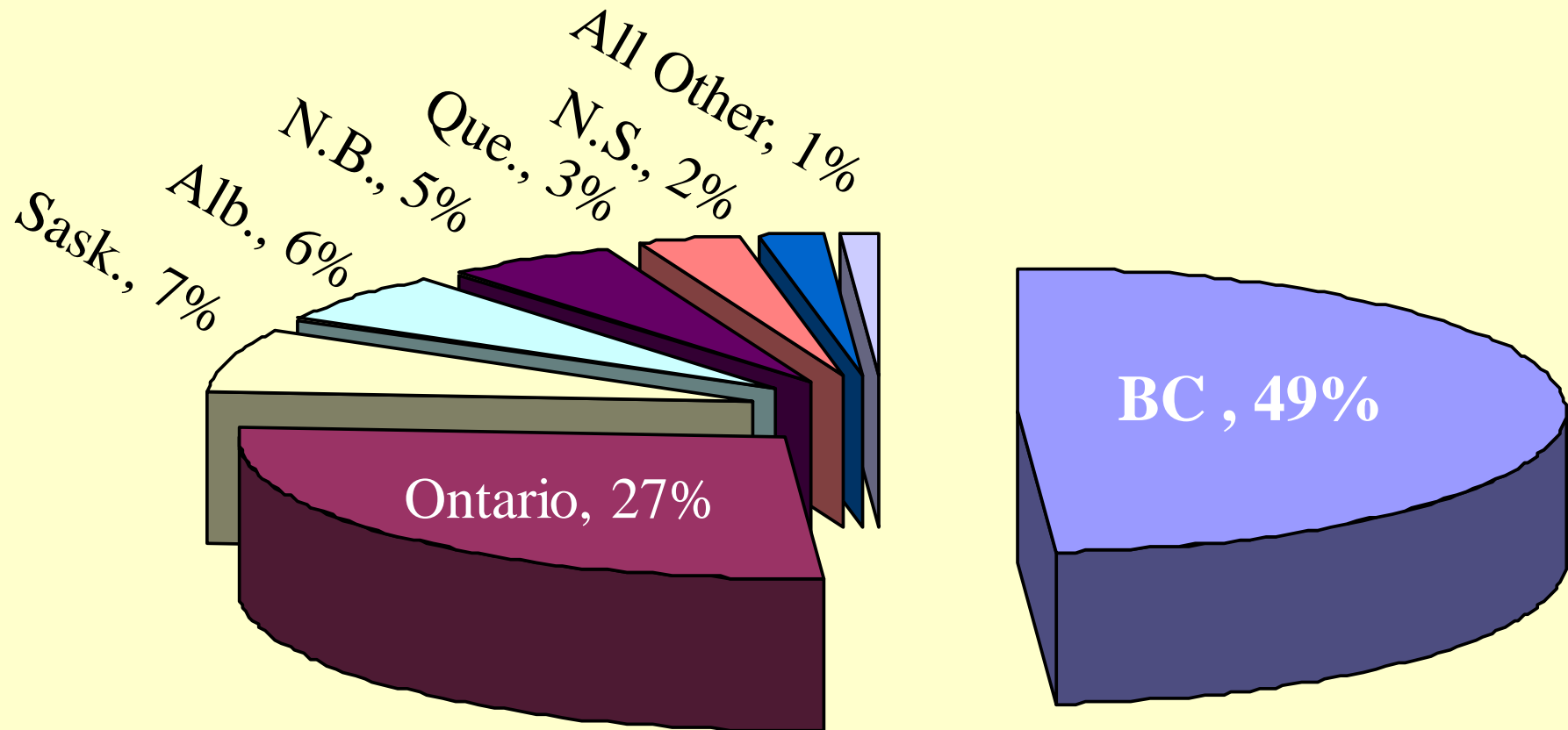


12



Bioenergy Already Big in BC

Canadian Bioenergy Production





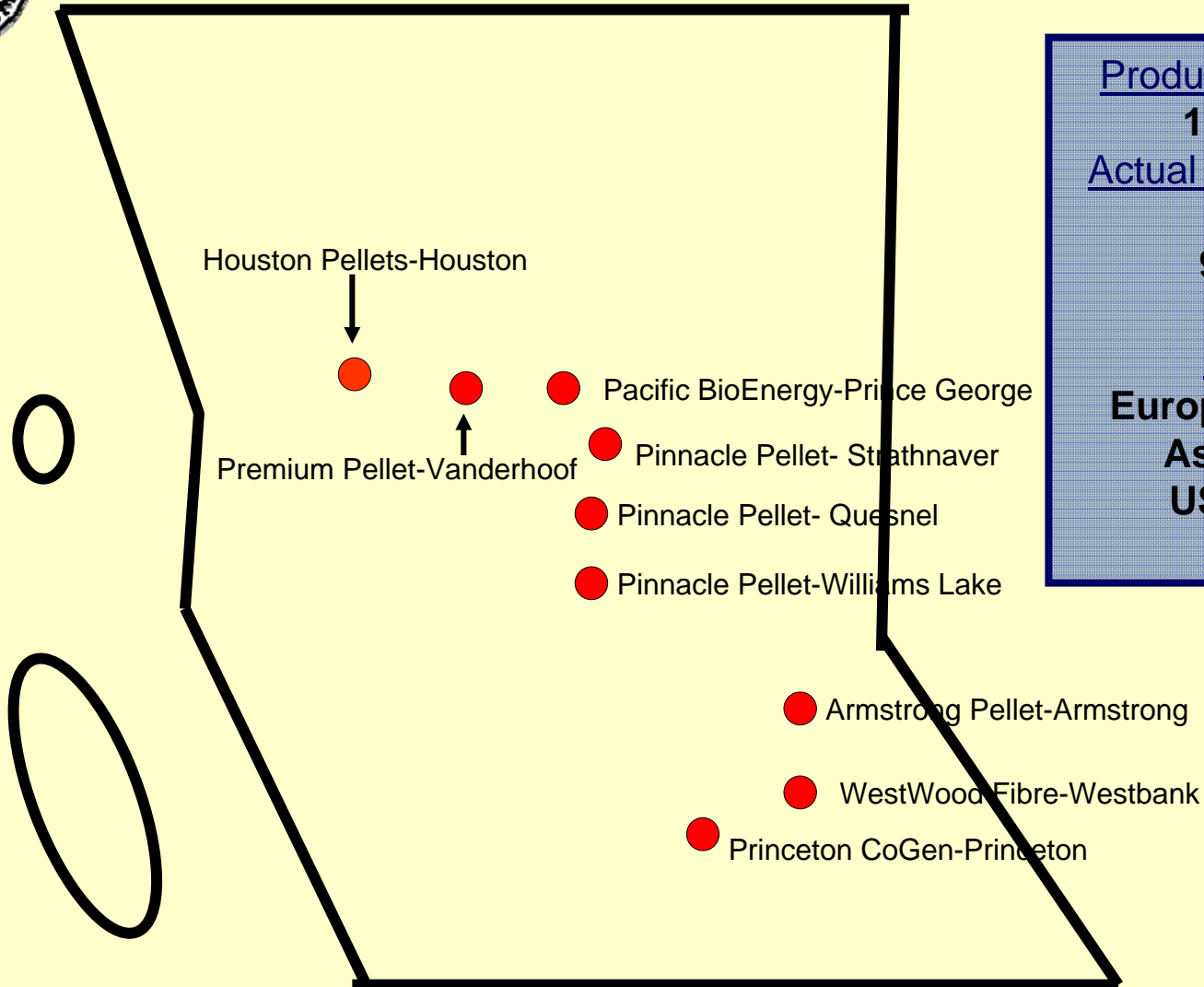
Biomass Markets

Existing Bioenergy Projects



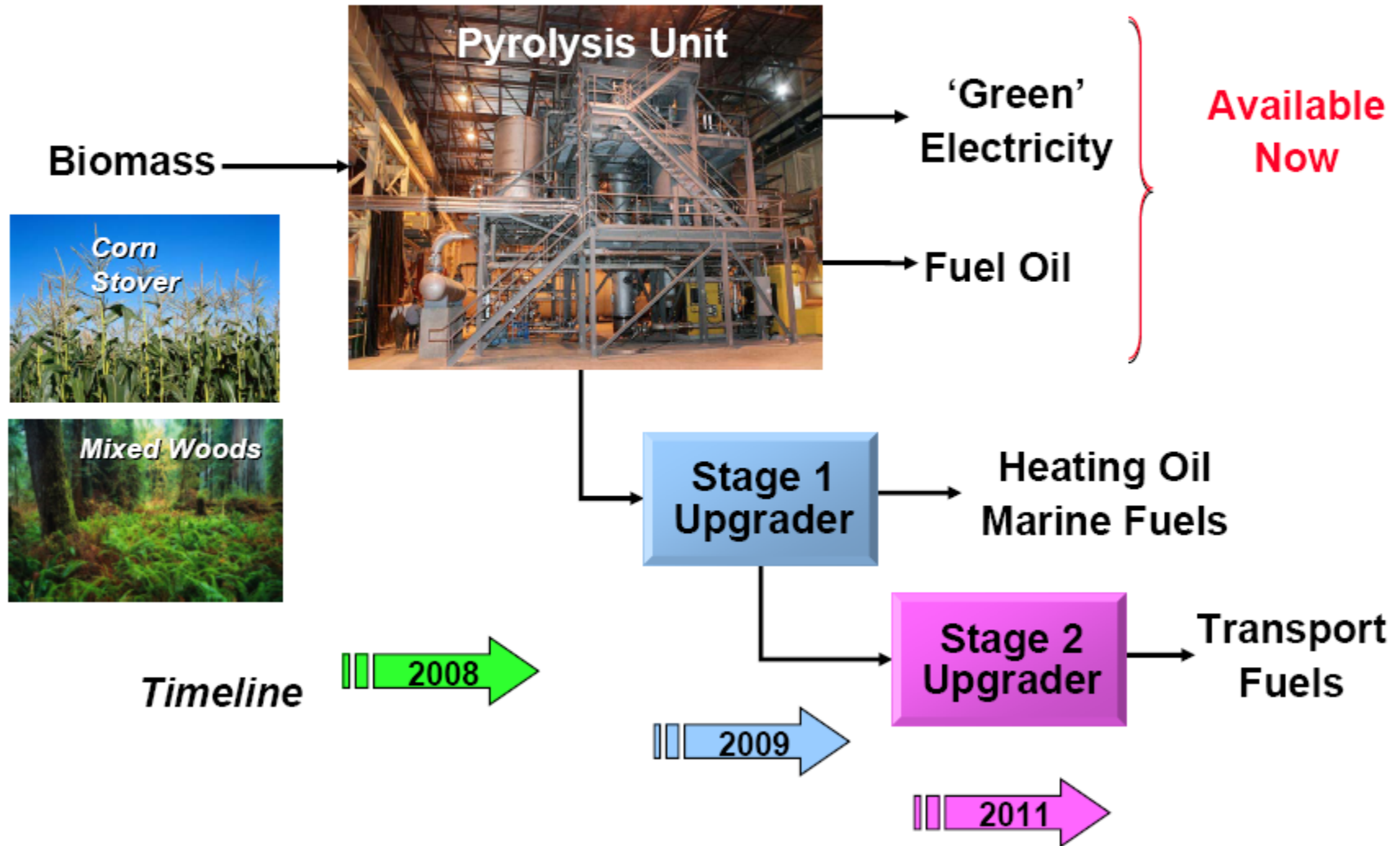


BC Wood Pellet Plants - 2008



<u>Production Capacity</u>
1,200,000
<u>Actual Production for 2008</u>
950,000
<u>Exports</u>
Europe – 650,000
Asia – 75,000
USA – 210,000

Commercialization Plan



Rolling Deployment



Bioproducts

CHER_Manfred.pdf (SECURED) - Adobe Acrobat Standard

Edit View Document Comments Forms Tools Advanced Window Help



Renewable Feedstocks are Competitive



Petrochemicals

		Production	Price	C	H	O	Carbon
Ethylene	C_2H_4	110 mio t/a	1597 \$/t	86%	14%		1857 \$/t C
Propylene	C_3H_6	75 mio t/a	1436 \$/t	86%	14%		1670 \$/t C
Benzene	C_6H_6	45 mio t/a	1330 \$/t	92%	8%		1446 \$/t C
Naphtha	C_nH_{2n}		1040 \$/t	86%	14%		1209 \$/t C

BioRenewables

		Production	Price	C	H	O	Carbon
Sucrose	$C_{12}H_{22}O_{11}$	170 mio t/a	232 \$/t	42%	6 %	52 %	552 \$/t C
Corn-Glucose	$C_6H_{12}O_6$	330 mio t/a	268 \$/t	40%	7%	53%	670 \$/t C
Glycerin	$C_3H_8O_3$	0.8 mio t/a	465 \$/t	39%	9%	52%	1192 \$/t C

prices as of June, 2008, 1 € = 1.55 US\$.

Sources: Naphtha Europe - ICIS; Propylene Europe Contract - ICIS; Ethene Europe Contract - ICIS; Benzene Europe - ICIS; Sugar # 11 - ICE; Glycerol Crude (80%) Europe - Oleoline; Glucose in Corn (85%) - CBOT.





Competition for wood fibre

>2.7 million M3/yr
consumed & growing



28 Million M3/yr
consumed



CHP (?)



45 – 63 Million
M3/yr



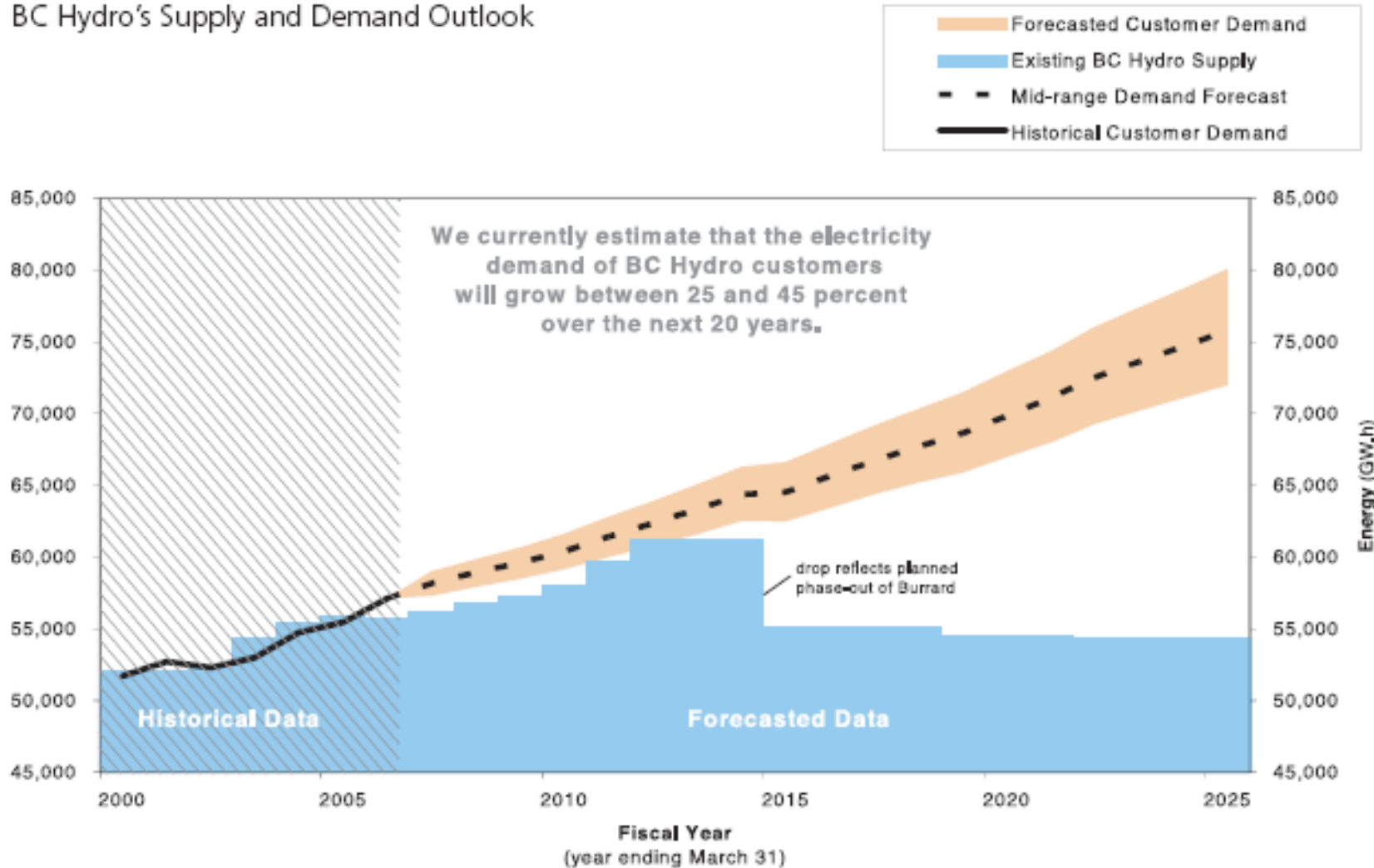
?
Biofuels and
Bio-chemicals



Electricity

BC HYDRO'S ELECTRICITY GAP

BC Hydro's Supply and Demand Outlook



Source: BC Hydro 2008-2010 Service Plan



Acronyms and equivalents

Electrical Energy

- 1 Gigawatt Hour =
- 1,000 Megawatt Hours =
- 1 Million Kilowatt Hours
- Ave home uses 1 MWh per year
(1.7 if heated with electricity)

- 1 MW plant generates 8 GWhs/yr
- 1 MWh requires approx 1 bone dry tonne of wood
- 1 BDT = approx 2.4 m³



BC Government Strategies

Climate Action Plan

BC Energy Plan

BC Bioenergy Strategy:

Increase use of wasted wood

BC Hydro Calls

Biomass Inventory



Progress to Date Policy Development

- Forest Legislation & Policy:
 - Partitions
 - Fibre tenure
 - Cut-control
 - Access to roadside waste
 - Waste Penalties
 - Innovative TSLs
 - Fixed rate for “non-merch”
- GHG Reduction Acts (5)
- First Nations Role
- BC Hydro Calls
- BC Bioenergy Network
- Waxman Bill (US)



BC Hydro Calls

- Clean Energy call
- Standing Offer
- Non-integrated Community Program
- Bioenergy Call Phase 1 and 2



Economics 101

- What will motivate customers to buy from you?
 - Better price
 - Better product
 - Better for the environment, the community, the family (Mom or dad work there)
 - Great marketing
 - Social Pressure
 - No alternatives



One last poke....

- Its about social choice
- Economic fundamentals must not be ignored
- Beware of the snake oil salesman
- Drive change locally
- Integration is the key



Thank you

Don Gosnell
R.P.F.

Manager,
Bioenergy
Initiatives,

Ministry of Forest
and Range

[don.gosnell@gov.
bc.ca](mailto:don.gosnell@gov.bc.ca)

7/8/2009

26