

RURAL FUTURES

Associates in Rural Community Development

The Best Place On Earth: Preparing for the Energy Transition in Rural BC



Here's My Point(s)

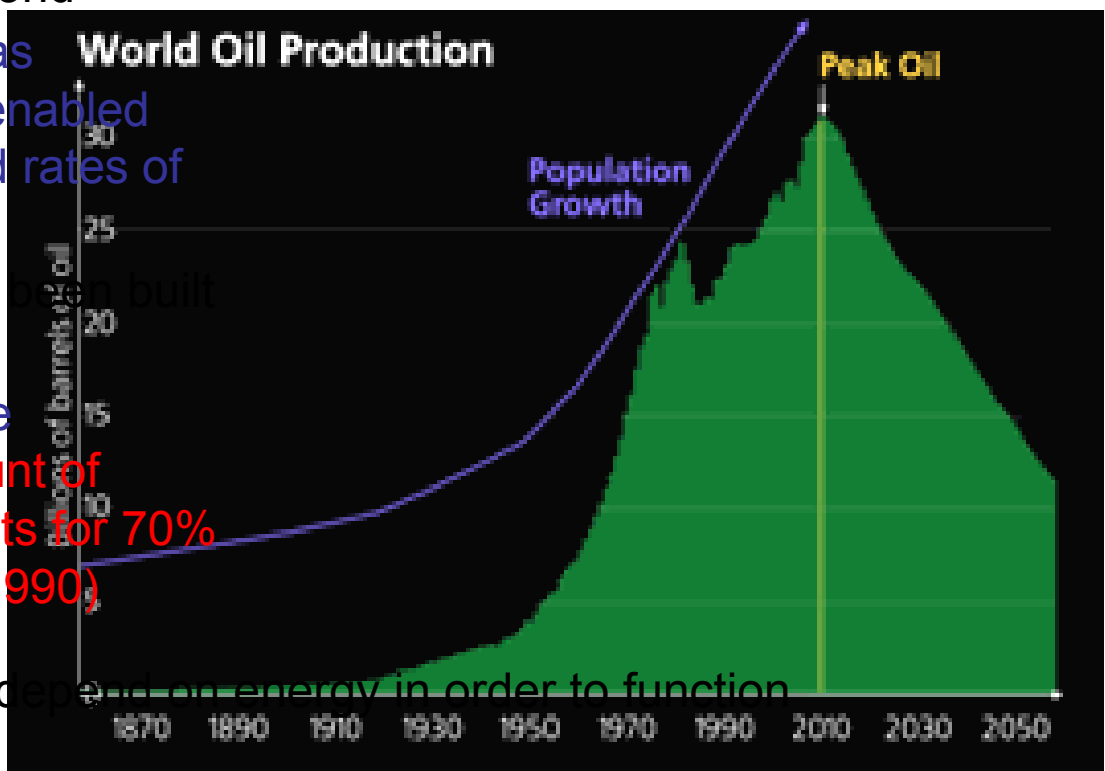
1. Oil makes the world go round
2. Soon, we will not have enough of it
3. This means we are in a race to find equivalent substitutes
4. Until we make that transition, there will be economic decline and social devolution
5. Rural BC is a good place to be during the transition



Common Curves

World Oil Production

- Energy is the currency of the world
- Oil is the marvelous fuel that has transformed human culture and enabled wealth creation at unprecedented rates of growth
- All of our energy systems have been built by oil
- Hard fact about energy and the economy: **Increases in the amount of energy productively used accounts for 70% of economic growth (USA 1900-1990)**
- Our complex institutions also depend on energy in order to function



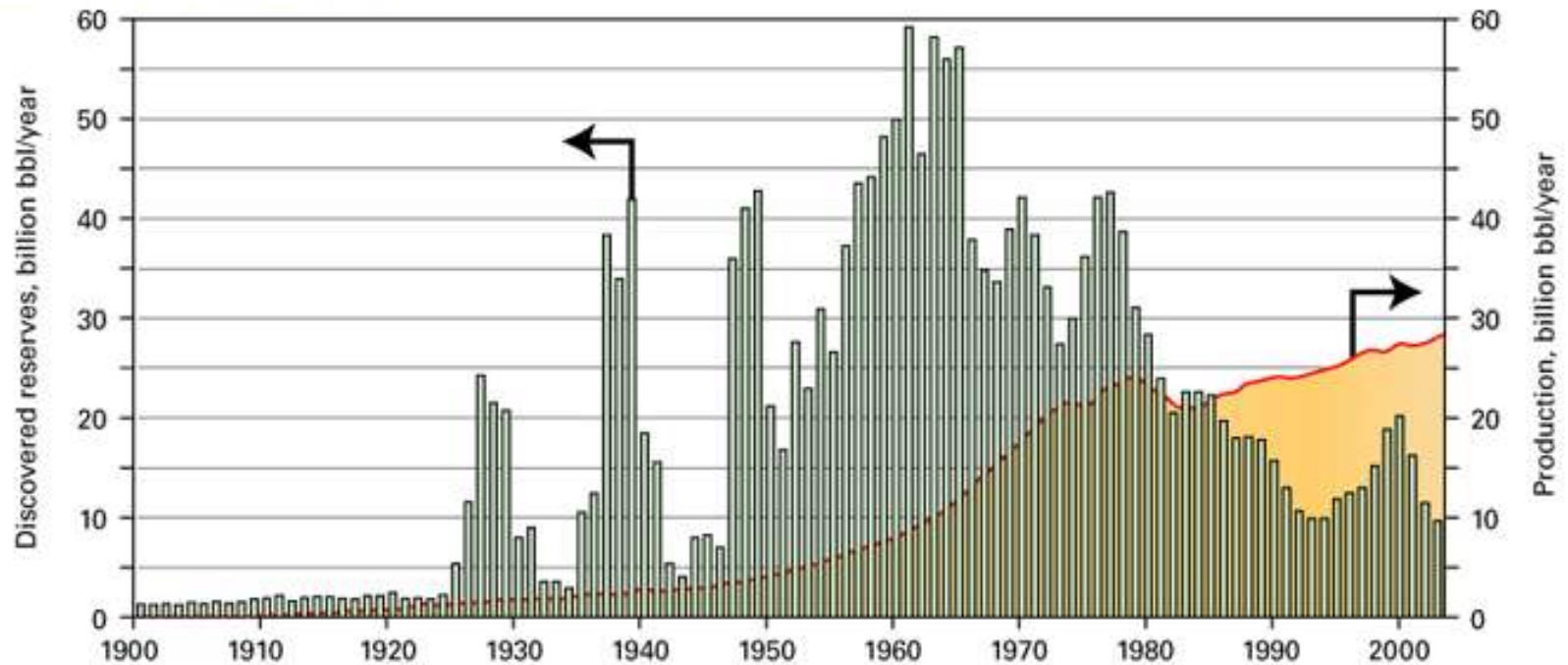
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The Bank Balance

BACKDATED OIL DISCOVERIES



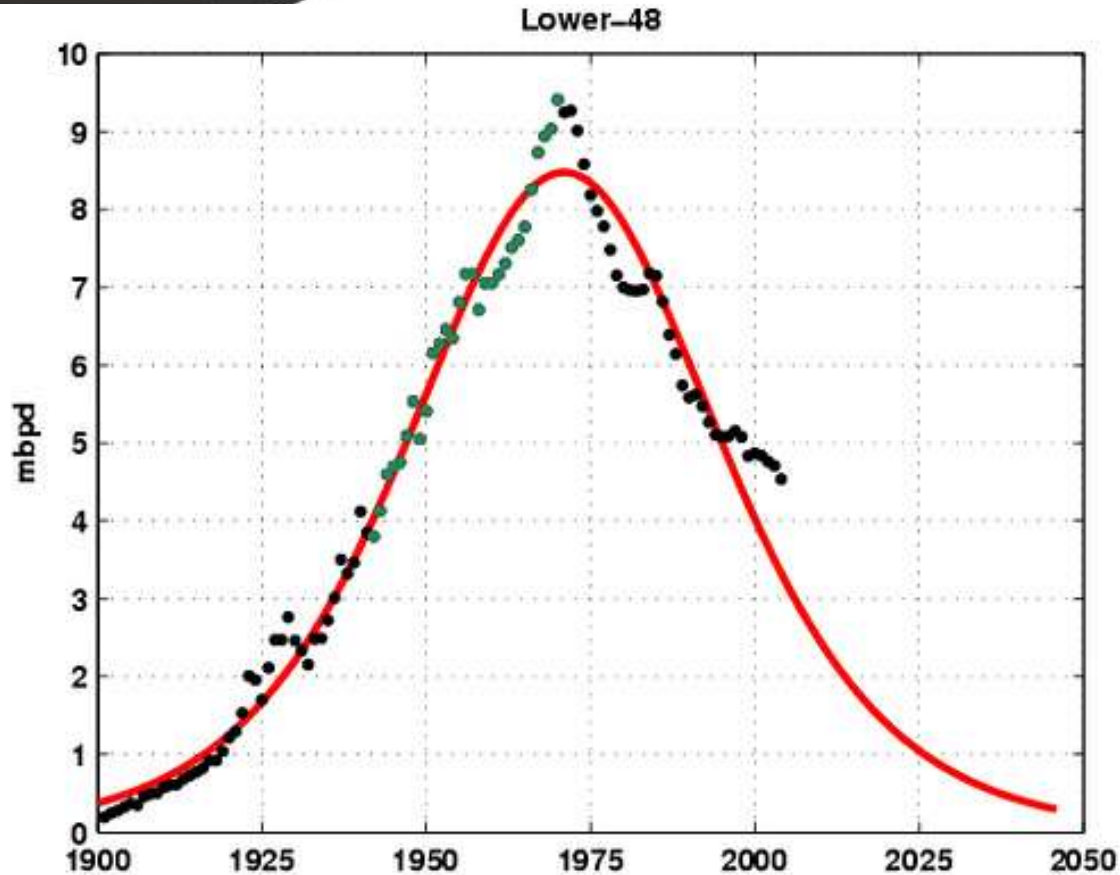
Source: Reference 6

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Lower 48 Production and Hubbert Prediction

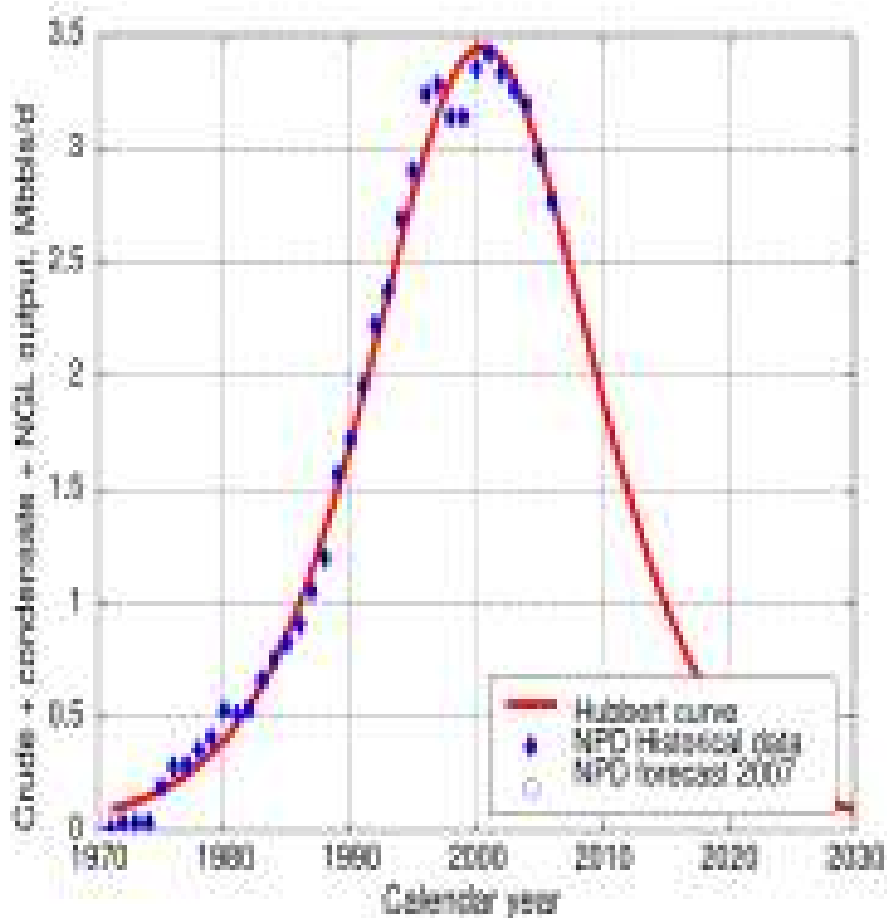


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North Sea Production





Do the Math

- British Petroleum's estimate of remaining conventional reserves is 1.2 Tb
- Used (2006) = 1.1 Bb
- What about undiscovered oil?
- What about non-conventional oil



We Demand A Lot

- 2007 world consumption 33 Bb
- = All of North Sea oil that will ever be recovered
- Oil is found in specific geological formations
- found average 12 Bb yearly since 2000
- Non-conventional: Canadian tars sands 1.2% of world production; all AB oil *might* replace *decline* in just the world's largest field (Ghawar)
- **The bottom line**
- Undiscovered and non-conventional too little, too late



Energy Economics

- 1973: 5% reduction >> -6.8% U.S. GDP
- Classical economic theory: economic growth is a product of increases of labour and capital
- Solow 1950's: L and C accounted for only 20% of economic growth: Solow "residual"
- Energetic German physicists: 54%
- A breath of fresh Ayres: 70%
- Recall the common curves
- Energy **is** the basic currency

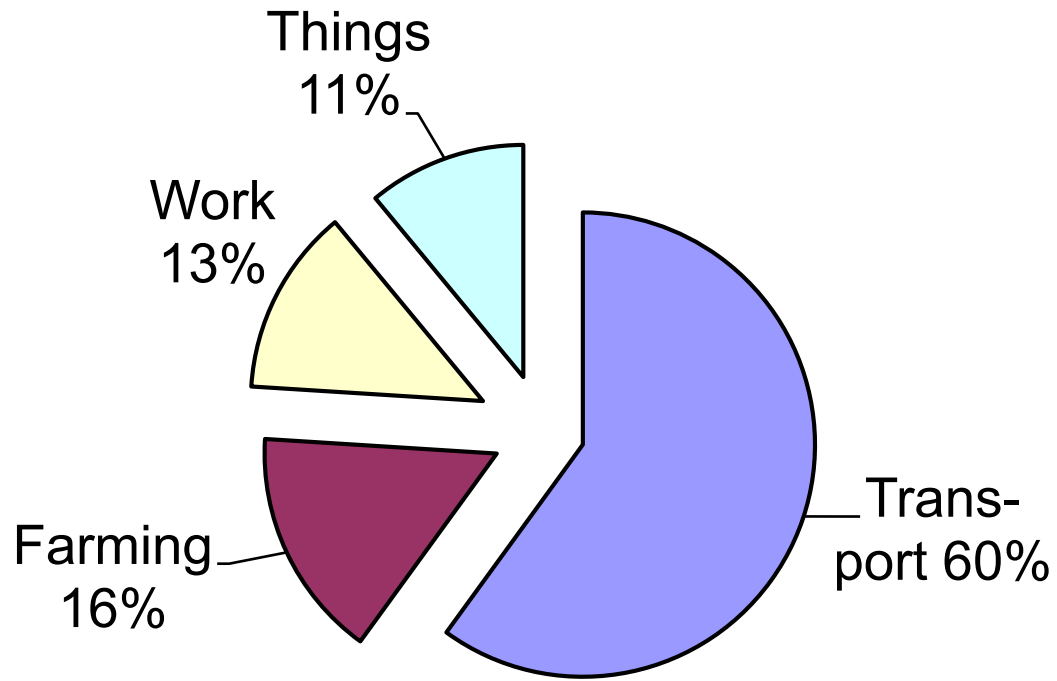


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Oil Uses





Reaching the Peak

- The peak will not be steep. Production will level off.
- High prices will cause a decline in demand that will delay the point of decline
- Post-peak world production will fall at about 2-3% annually
- Ten years after the peak we will produce the same amount of oil we did 10 years before

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The Energy Race is On



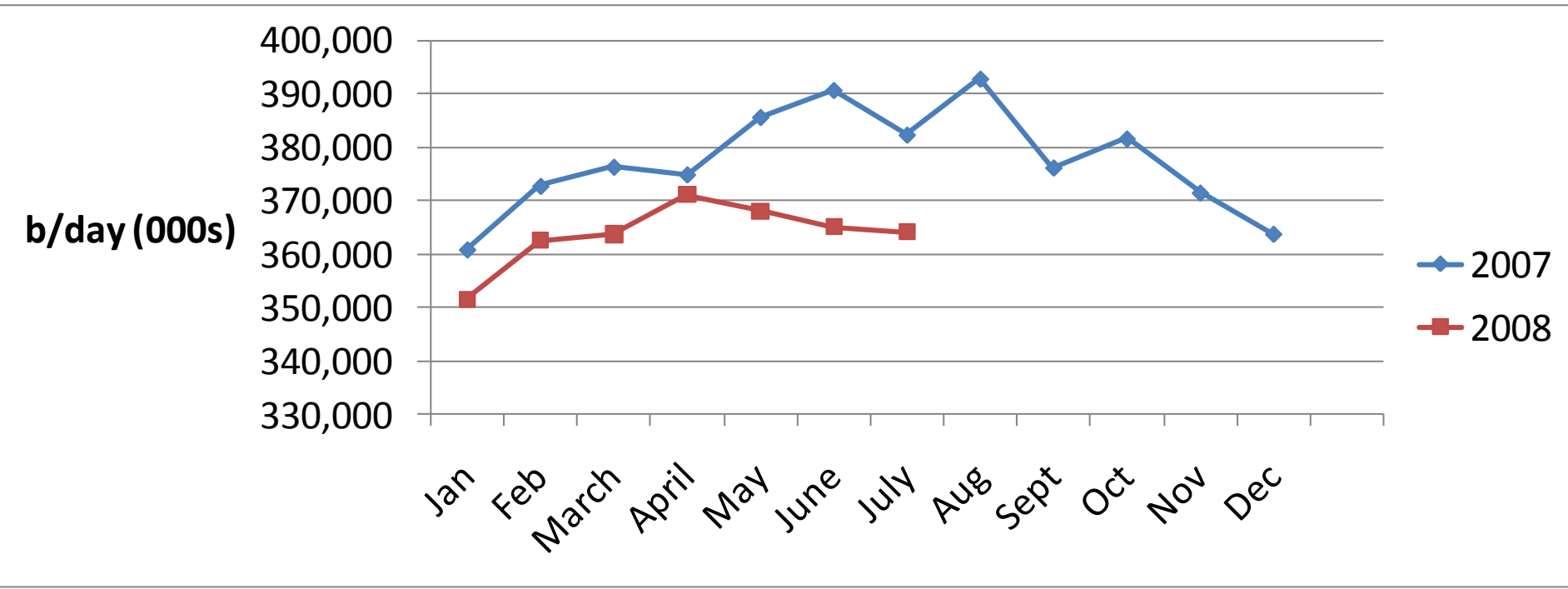


\$140/\$1.40 economics

- Commuting, travel, cost of all goods ↑ ↑ ↑
- How will consumer behaviour change?
 - Shifting shopping patterns
 - Fix rather than replace
 - Re-use industries
 - Travel



U.S. Gasoline Consumption





Tourism Transition

- Historic: 50% BC; 20% AB; 12% RoC; 11% U.S.; 7% over seas
- So far in 2008 for all of Canada, foreign spending down 2%: lowest level since 1999
- Domestic tourism spending up 11.0%
- “Accommodation spending increased 12% compared to 2007, as Canadians undertook more overnight travel within Canada”
- U.S same day visits down by 21%; over-night down by 3.4%: over-night trips from all other countries up 2.7%



\$300/\$3.00
economics

- Industry “returns” on shore
- Industry locates closer to markets or resources?
- A mill in every town
- Regional production for regional use
- Plant YOUR corn early
- Snow birds sell their homes in Arizona
- Stay home, it’s a nice place



Energy Transition: preparing

➤ Five vital assets

❖ energy

❖ food

❖ materials

❖ transportation logistics

❖ social institutions





Energy Security

- Rationale: energy costs will rise/energy security will decrease
- Rationale: Regional energy production for regional use will make economic sense
- Rural regions:
 - ❖ assess energy use, priority of needs, conservation
 - ❖ develop regional energy sources
 - Hydro, wind, direct sun and photovoltaic, geothermal, biofuels, fossil fuels (coal bed methane)
 - BC best place on earth



Food Security

- Rationale: food costs will rise/selection will decrease
- Agricultural inventory
- Agricultural Plan
 - ❖ full, nutritious diet/ best use of land
 - ❖ use of regionally produced inputs
 - ❖ feed the region first; trade the surplus
 - ❖ significant political and social obstacles
 - ❖ economics will, in part, promote regional food independence (where it is possible)
- Can BC feed itself?



Materials Security

- Rationale: cost, availability, economics
- Inventory of materials assets
- BC: best place on earth: wood, water, industrial minerals
- Transform landfills into re-use industries
- Mine redundant and non-sustainable buildings
- Get your transportation logistics in order



Transportation Logistics

- Hubs and nodes >>>> re-configured
- Air and truck transport decline
- Rail and water transport increase
- Nelson: has rail; water connections to several communities: a hub
- Prince George: rail with deep water connection: major hub for north and Peace



Institutional Evolution

- Think about the energy costs of the world-wide institutional apparatus.
- Smaller big governments/ bigger small governments
- Continuing devolution of responsibilities, this time due to a decline in wealth and logistical limitations
- Bye-bye non-profits, hello neighbour
- Rural BC the best place on earth: red necks and libertarians make good neighbours



NOW

- Become convinced
- Lobby higher levels of government
- Begin an energy transition plan
- Battle climate change with peak oil in mind





More Information

- www.ruralfutures.ca
- Peak oil tutorial
- Energy economics
- Local Economics
- Relocalization
- Extreme Scenarios

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The Bright Side

- EIA estimates \$3 Trillion spending on renewables 07-15
- BC low dependence on carbon fuels for electricity
- BC well-equipped with renewables potential (and don't forget nuclear) but not used



Energy Economics II

- If every % of productive energy used means a 0.7% economic increase, what does declining oil energy reserves mean?
- Oil = 42% of world energy consumption
- 95% of transportation fuels
- Oil production will decrease at 3-7%. Let's pick 5%. If oil energy accounts for only $\frac{1}{2}$ of economic growth, then we are facing an annual 2.5% decrease in the global economy



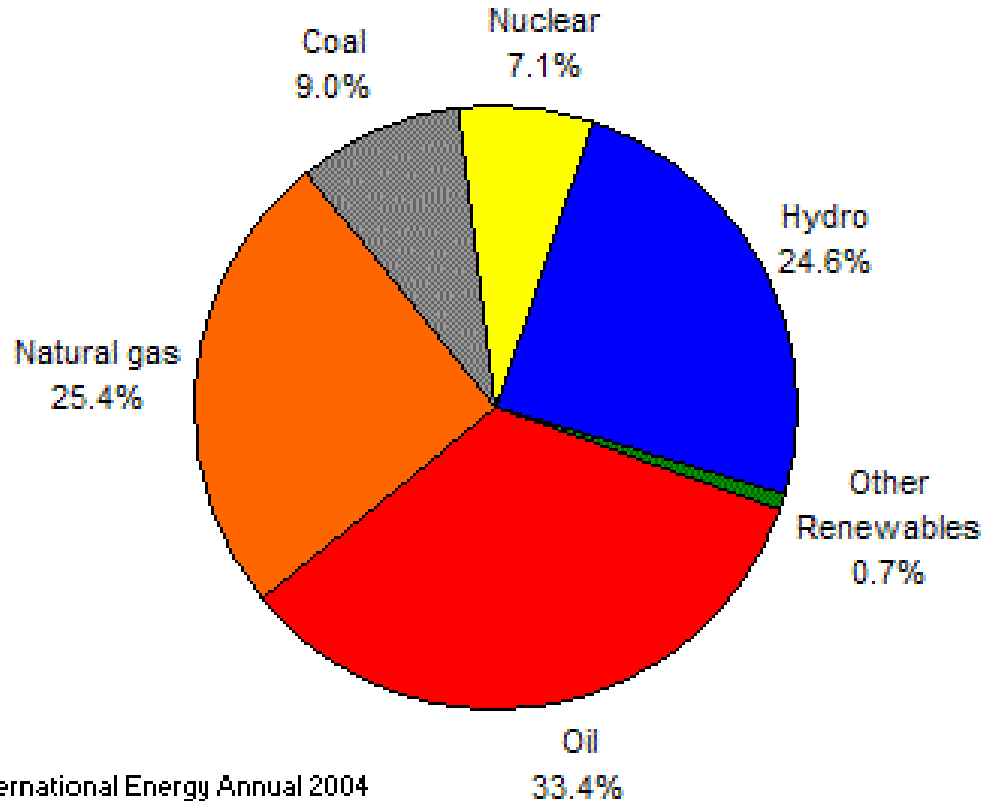
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Canadian Balance

Total Energy Consumption in Canada , by Type (2004)



Source: EIA International Energy Annual 2004

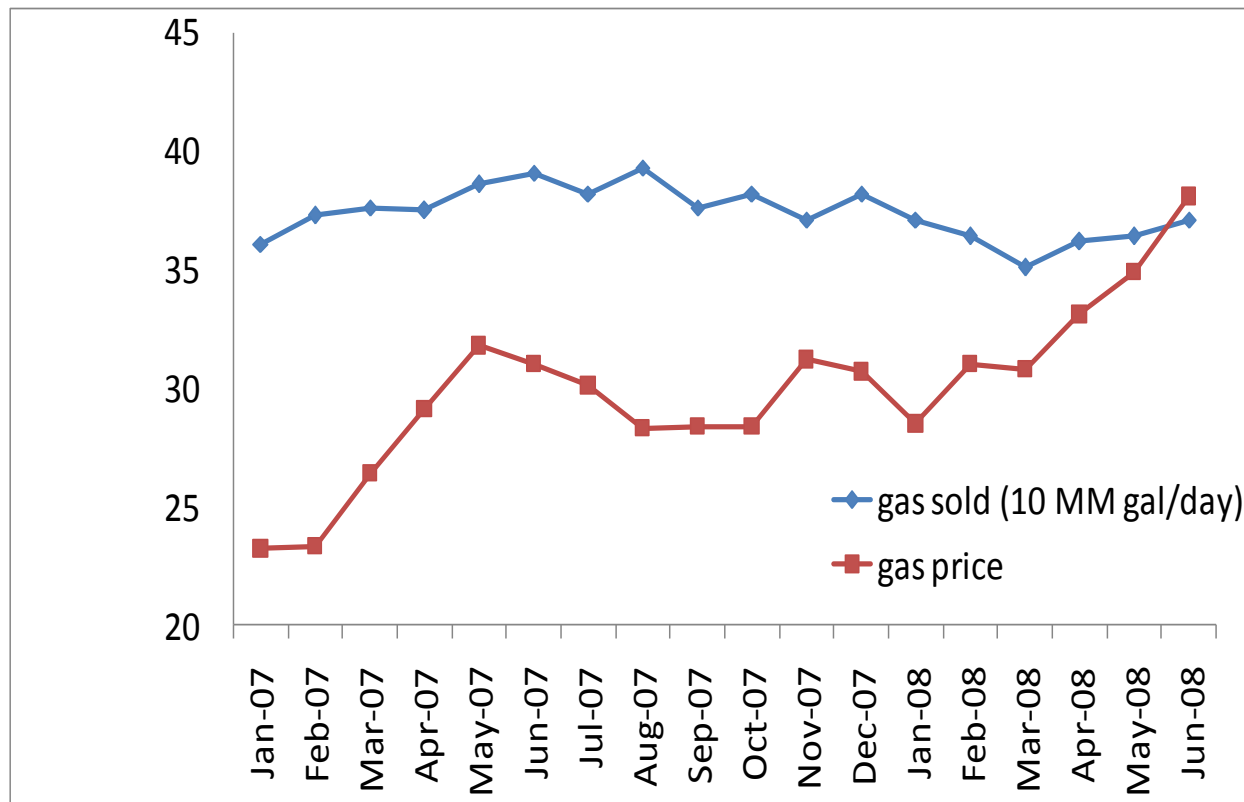


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price-demand trend





put 2 and 2 2-gether

- Cushion property losses
- Think globally, act locally



Energy and Climate Change Certainty

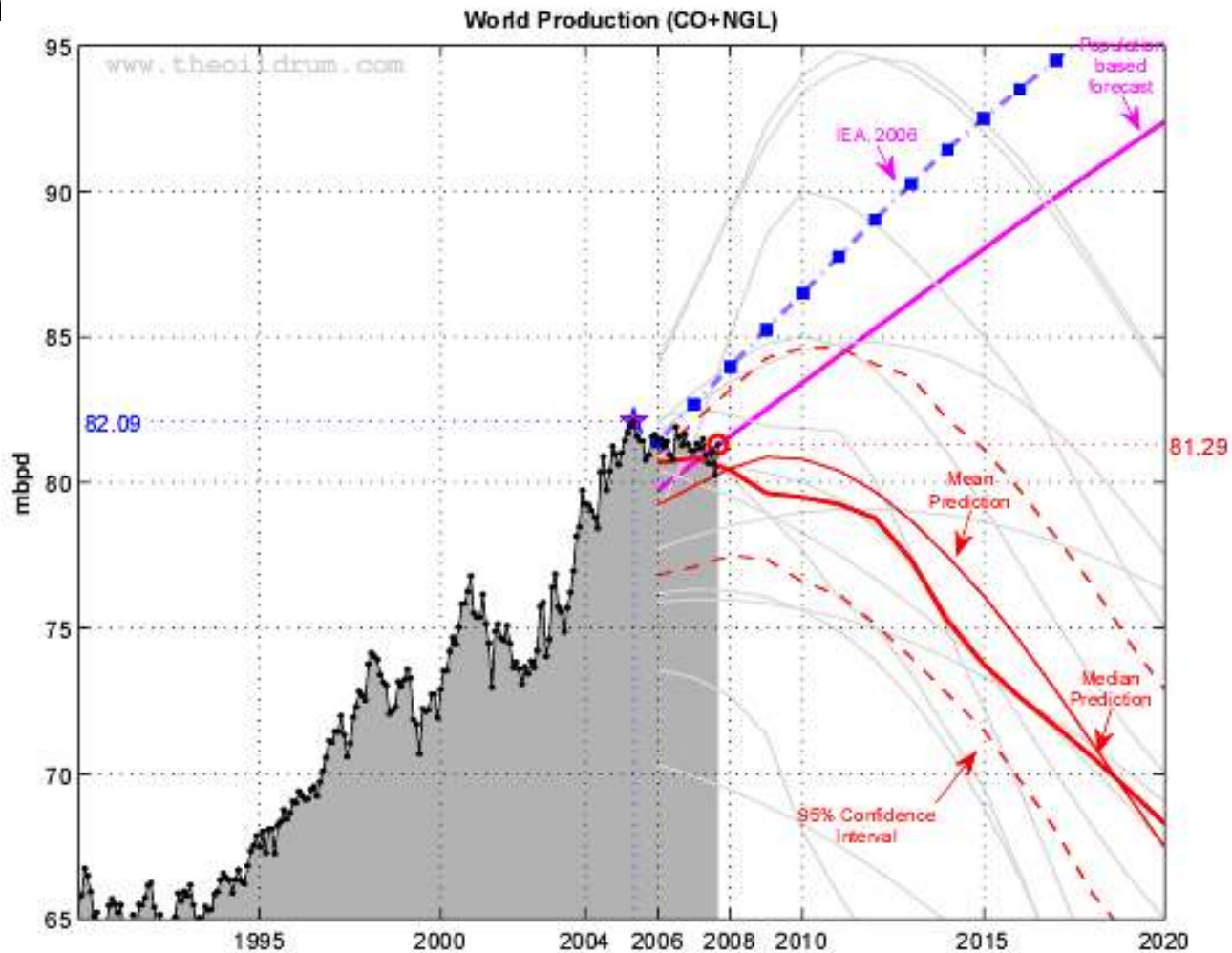
Whether it be due to voluntary reductions, or social pressure or carbon output regulations, or high price, or scarcity, we will be using less oil (and natural gas) in the future.

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Peak Oil





Energy Transition: prognosis

- Hirsch Report: 20-10-0
- 20 years: enough time to make a smooth transition
- 10 years: minimum 10 years of economic recession before energy transition is made
- Wait until the peak? At least 20 years of recession or depression and possibility that recovery could take much longer



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World and Saudi Oil Production

