



A NEW FACE IN THE CANADIAN CORPORATE FINANCE INDUSTRY

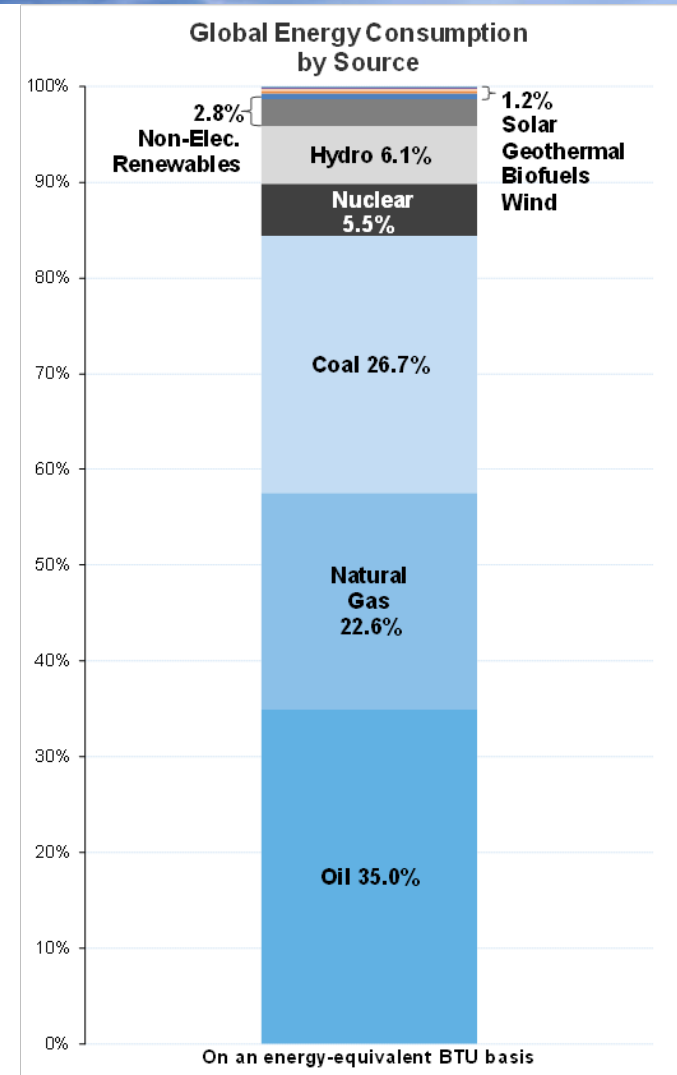
# Renewables vs. Hydrocarbons The Energy Reality

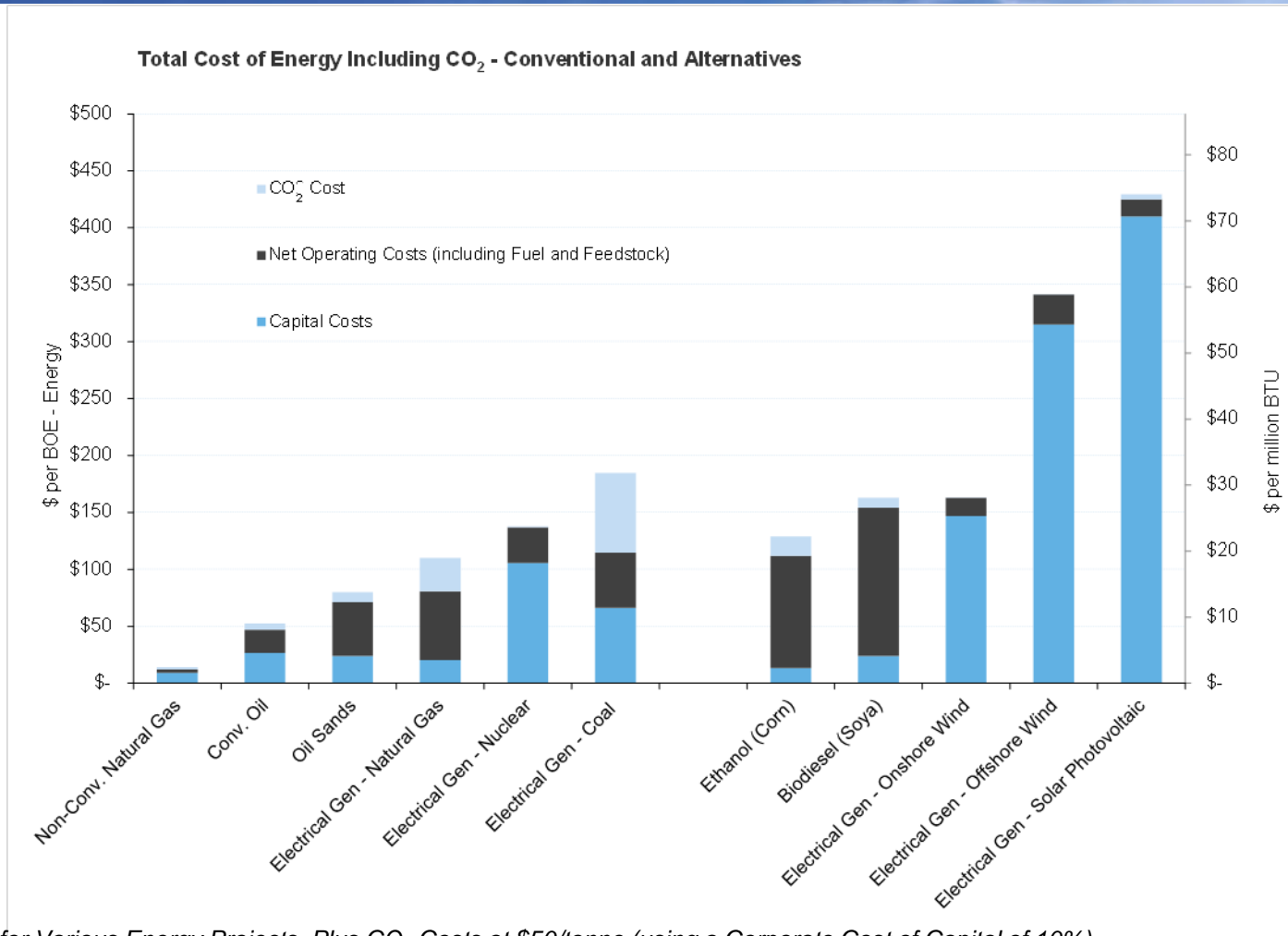
INVESTMENT BANKING | INSTITUTIONAL EQUITY RESEARCH | INSTITUTIONAL SALES & TRADING

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- Hydrocarbons provide 84% of the world's energy, but they are non-renewable.
- Hydrocarbons are the most economic form of energy.
- There are economic and practical realities about renewables that are often ignored.
- We believe natural gas will play a central role in meeting global energy needs.





Total Costs for Various Energy Projects, Plus CO<sub>2</sub> Costs at \$50/tonne (using a Corporate Cost of Capital of 10%)

Sources: Please see The Energy Reality report for sources.

Note: Oil Sands is an average of mining and SAGD.

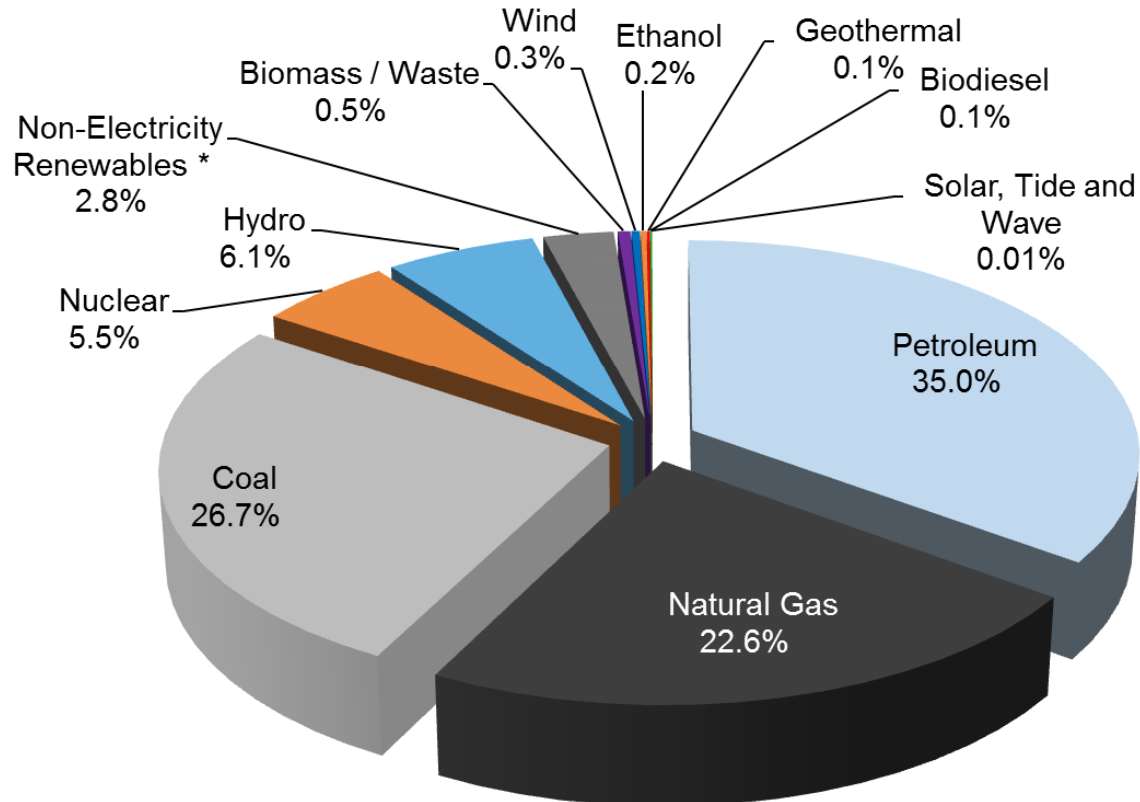
- All forms of energy can be measured on a common basis
  - Electricity: 1 MWh = 3,412,000 BTU
  - Light / Medium Oil: 1 barrel = 5,800,000 BTU
  - Natural Gas: 1 mcf = 1,027,000 BTU
  - Ethanol: 1 barrel = 3,563,000 BTU
  - Biodiesel 1 barrel = 5,359,000 BTU

- Too much misinformation in the media about energy use, renewables and the need to reduce our use of the non-renewable hydrocarbons.
- We saw the lack of a true “apples to apples” comparison of energy sources.
- As a new Alberta-based investment bank, we need to understand the reality of all forms of energy.
- The issues to be addressed in regards to energy use, and the necessary conversion to renewables, are vast, challenging and complex.
- This is factual report, not an opinion report.

- Limited arable land is available for growing biofuel feedstocks.
- The ethical reality: we calculate that 149 million people/year could be fed with the feedstocks now being used for ethanol production in the United States.
- There are no utility-scale technologies to store solar and wind energy.
- Many renewables create electricity, which is impractical in most transportation applications.
- Hydrocarbons are non-renewable

- Environmental impacts need to be considered for all forms of energy use including renewables.
- Biodiesel crops use over 500 times the amount of water than an oil sands mining project for the same amount of energy produced.
- Hydroelectricity also has an impact, based on the amount of carbon-absorbing forest that is lost when a valley is flooded.

Global Energy Consumption by Source

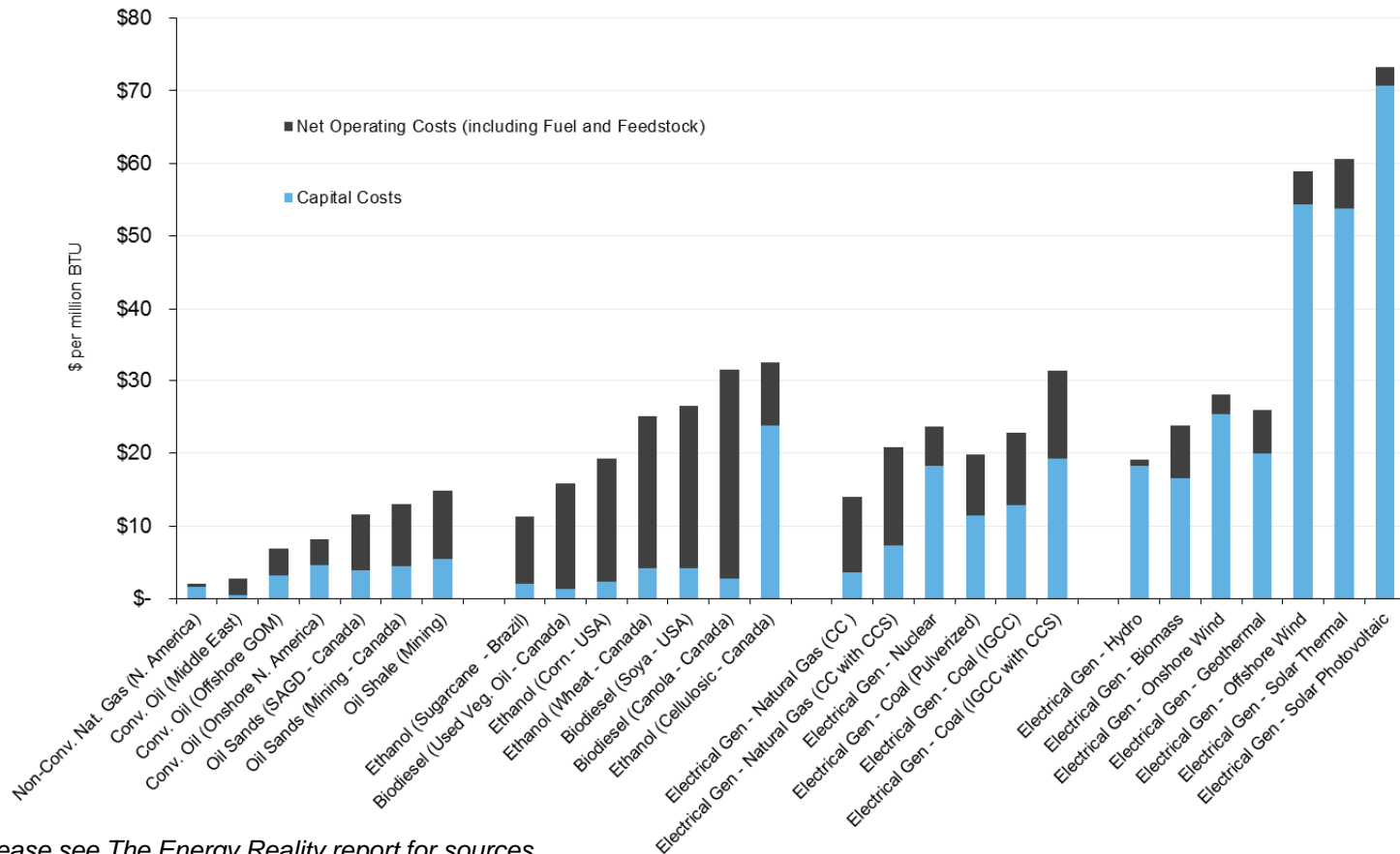


Sources: EIA, AltaCorp Capital Inc.

\* Non-Electricity Renewables are those used for heat generation

- High oil prices are here to stay:
  - Due to the practical and economic realities, oil will be central in meeting global energy demand.
  - Canada's conventional oil and oil sands companies will clearly benefit from high oil prices and demand.
- Because of economics and availability, natural gas will see much broader use in the coming years

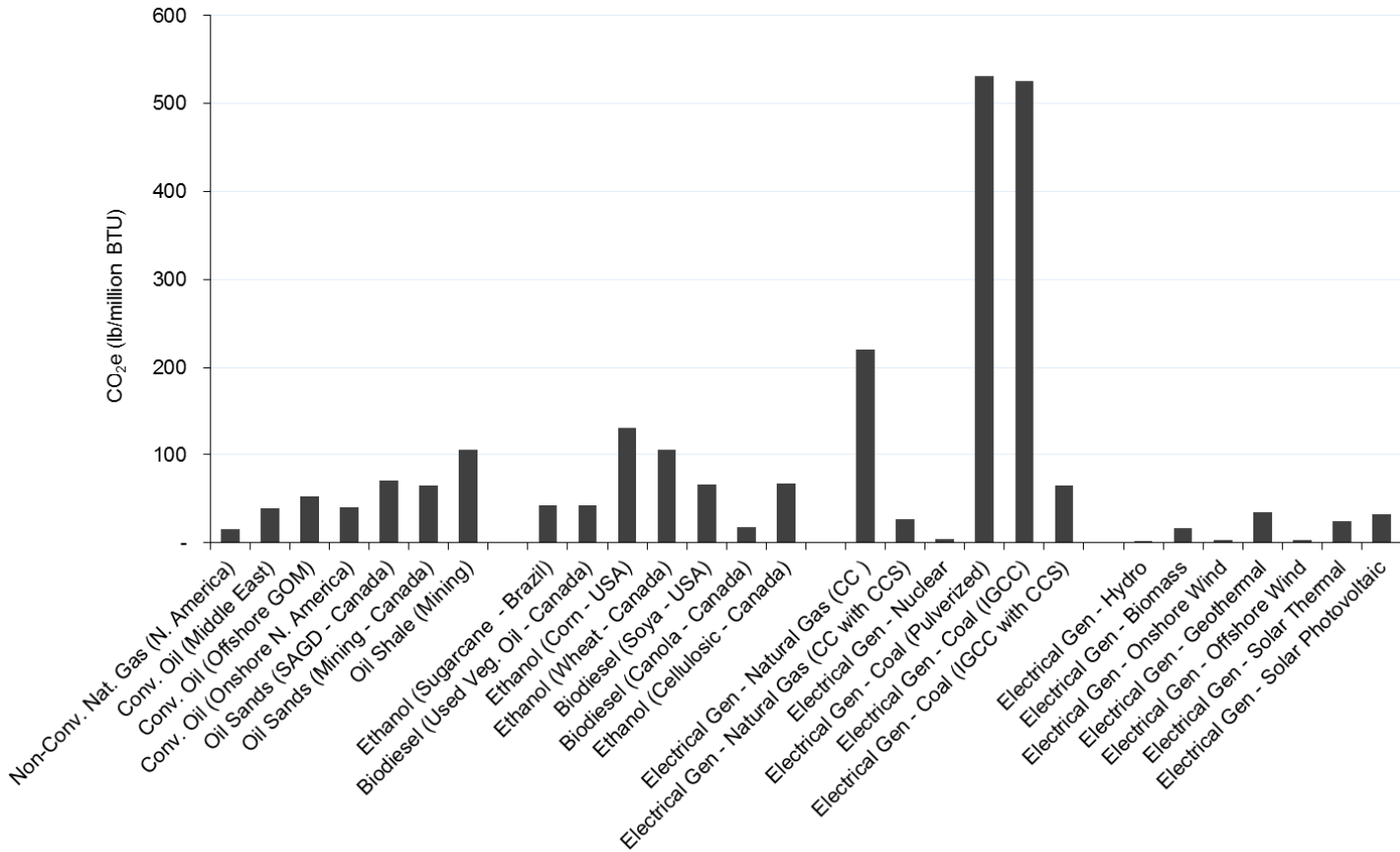
Total Cost of Energy (BTU) - Conventional and Alternative



Sources: Please see The Energy Reality report for sources.

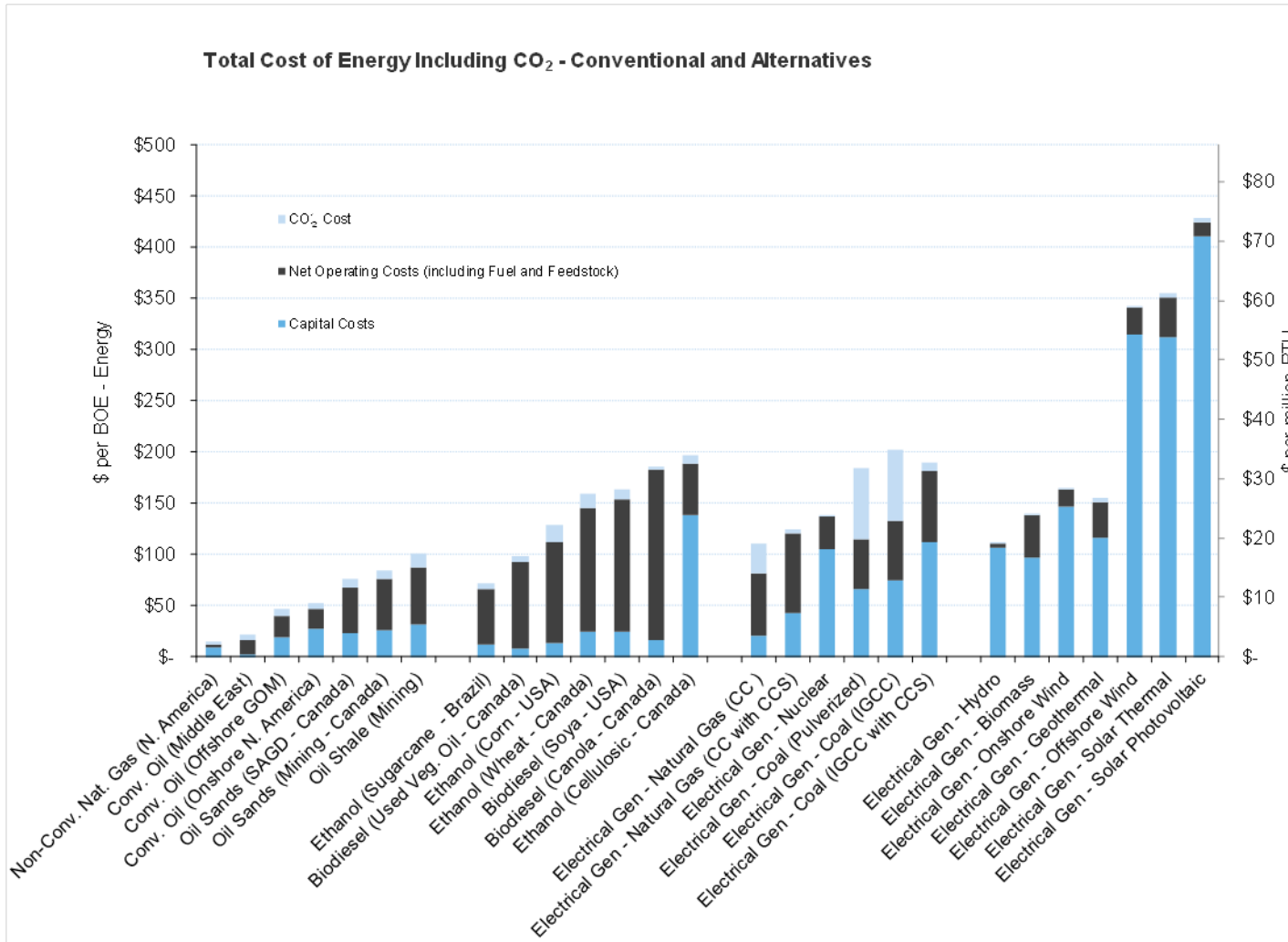
Note: CC – Combined Cycle; CCS – Carbon Capture and Sequestration; IGCC – Integrated Gasification Combined Cycle

CO<sub>2</sub> Environmental Footprint - Conventional and Alternatives

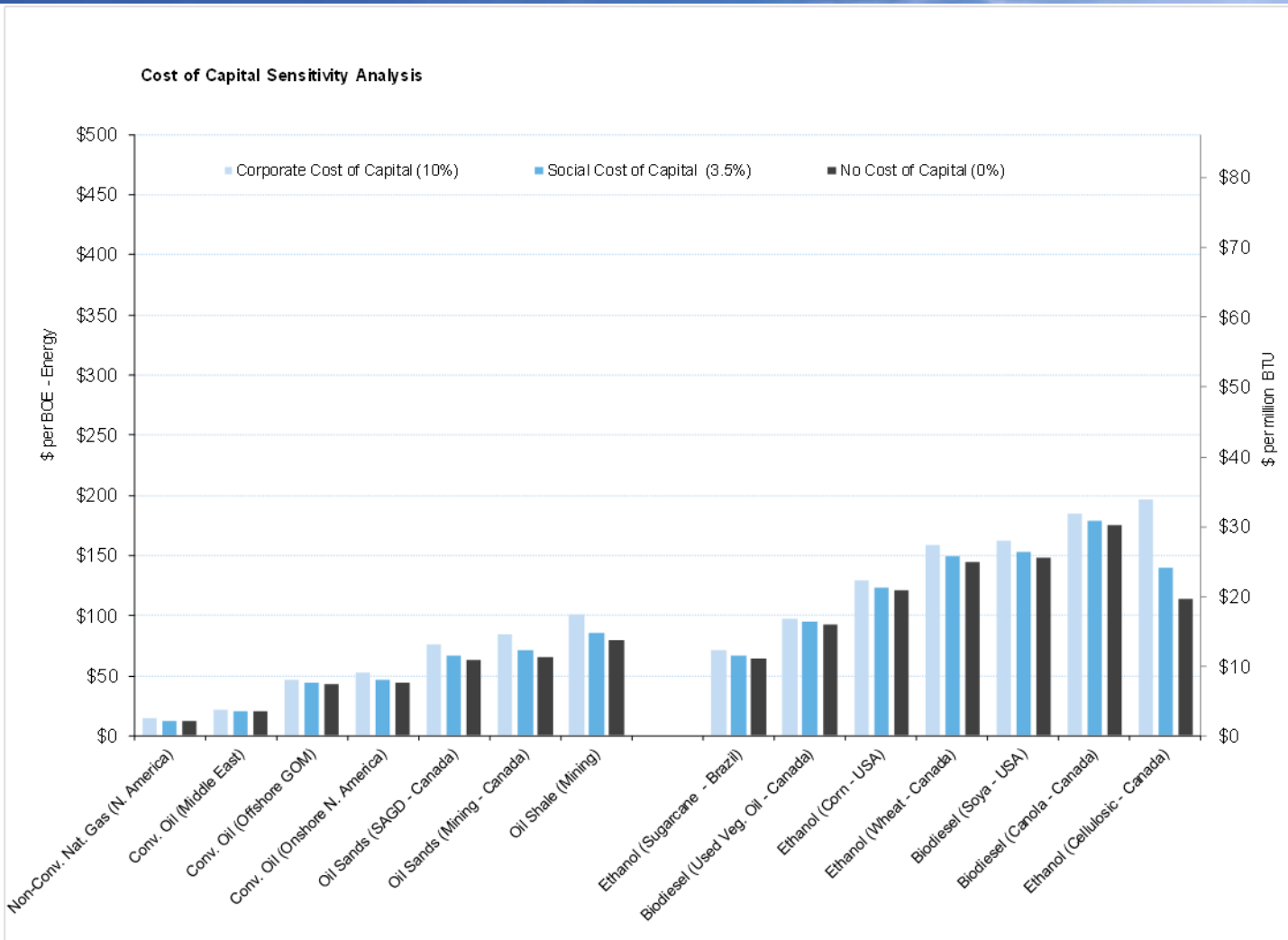


Sources: Please see *The Energy Reality* report for sources.

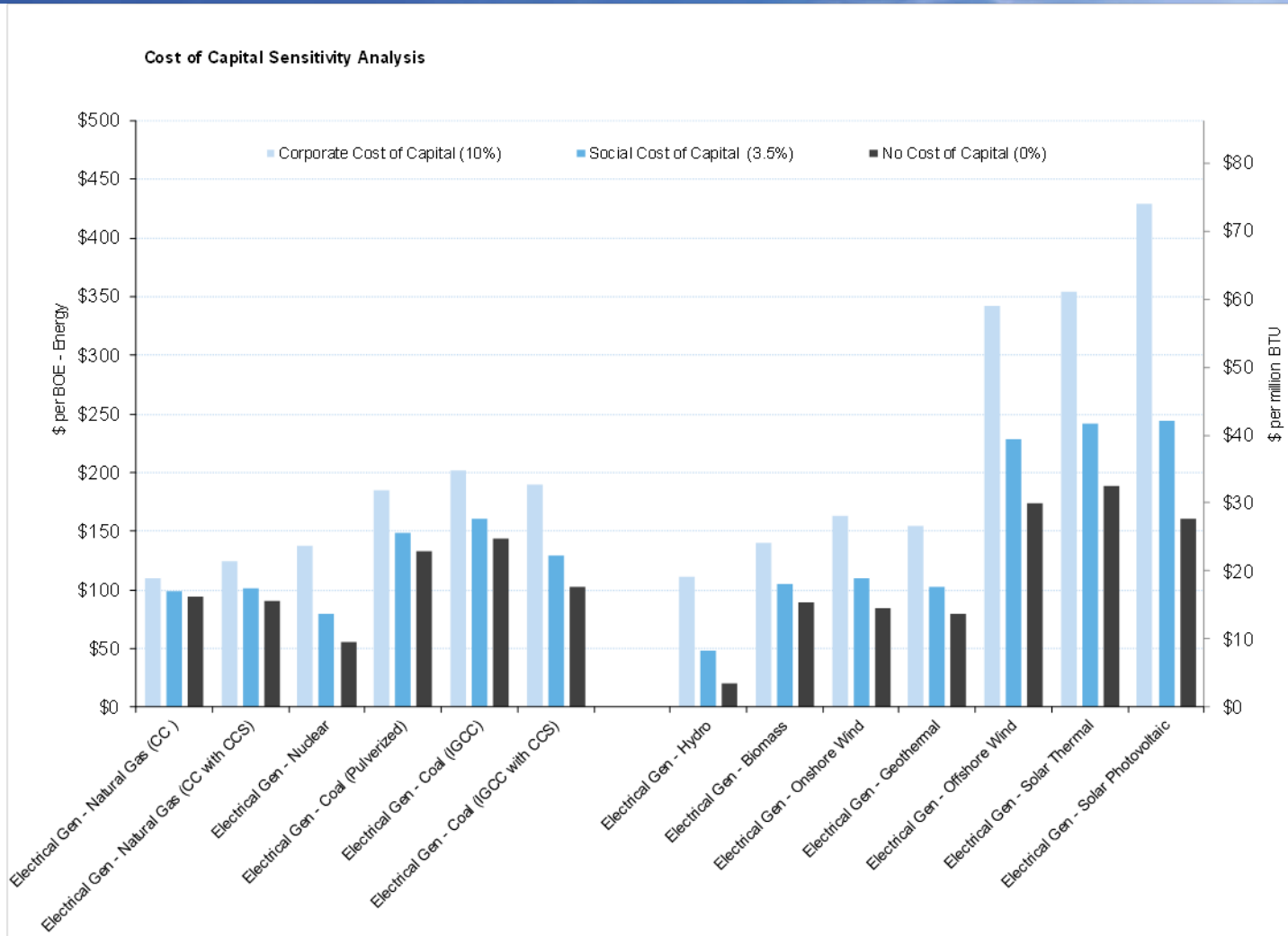
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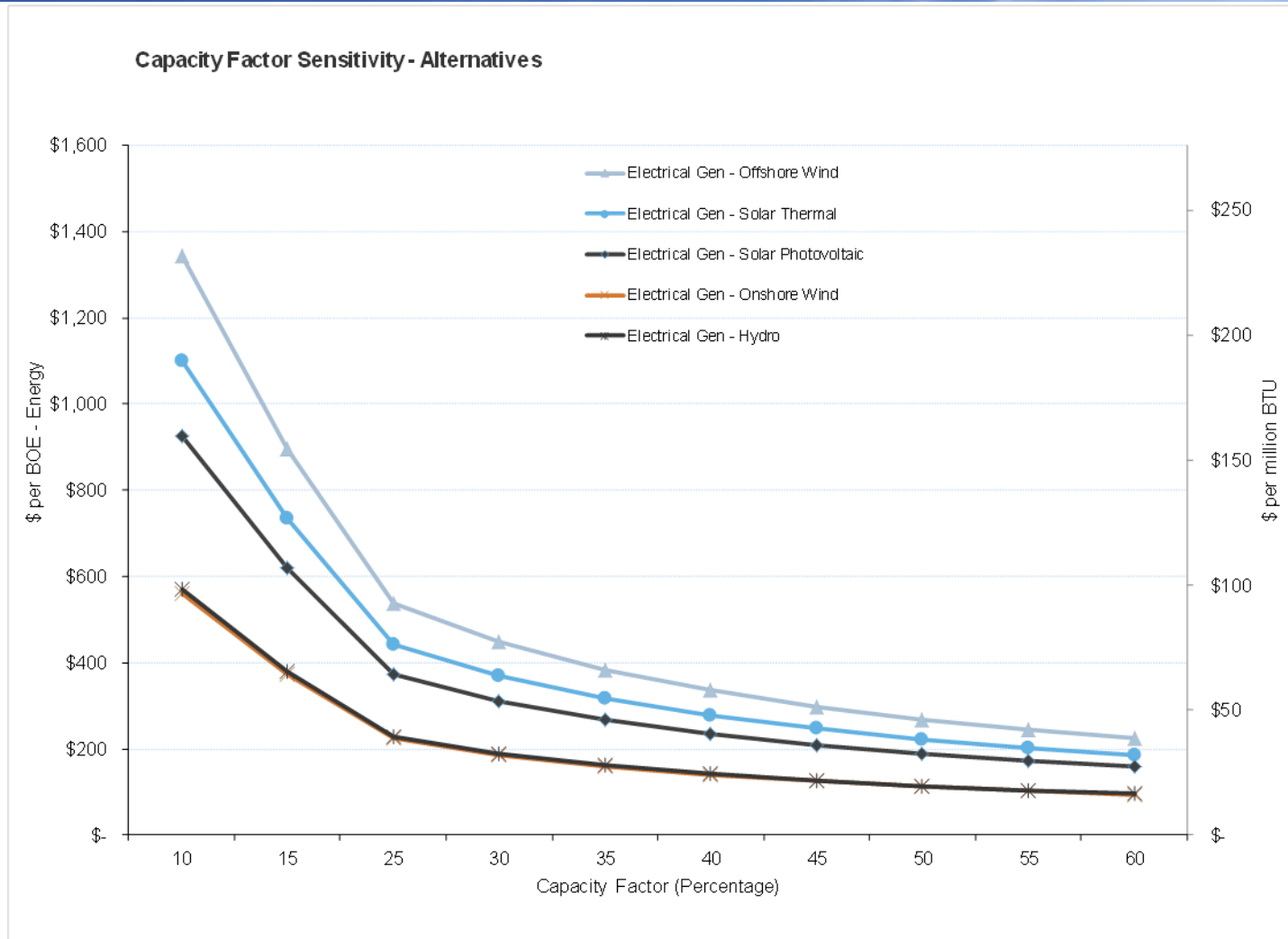
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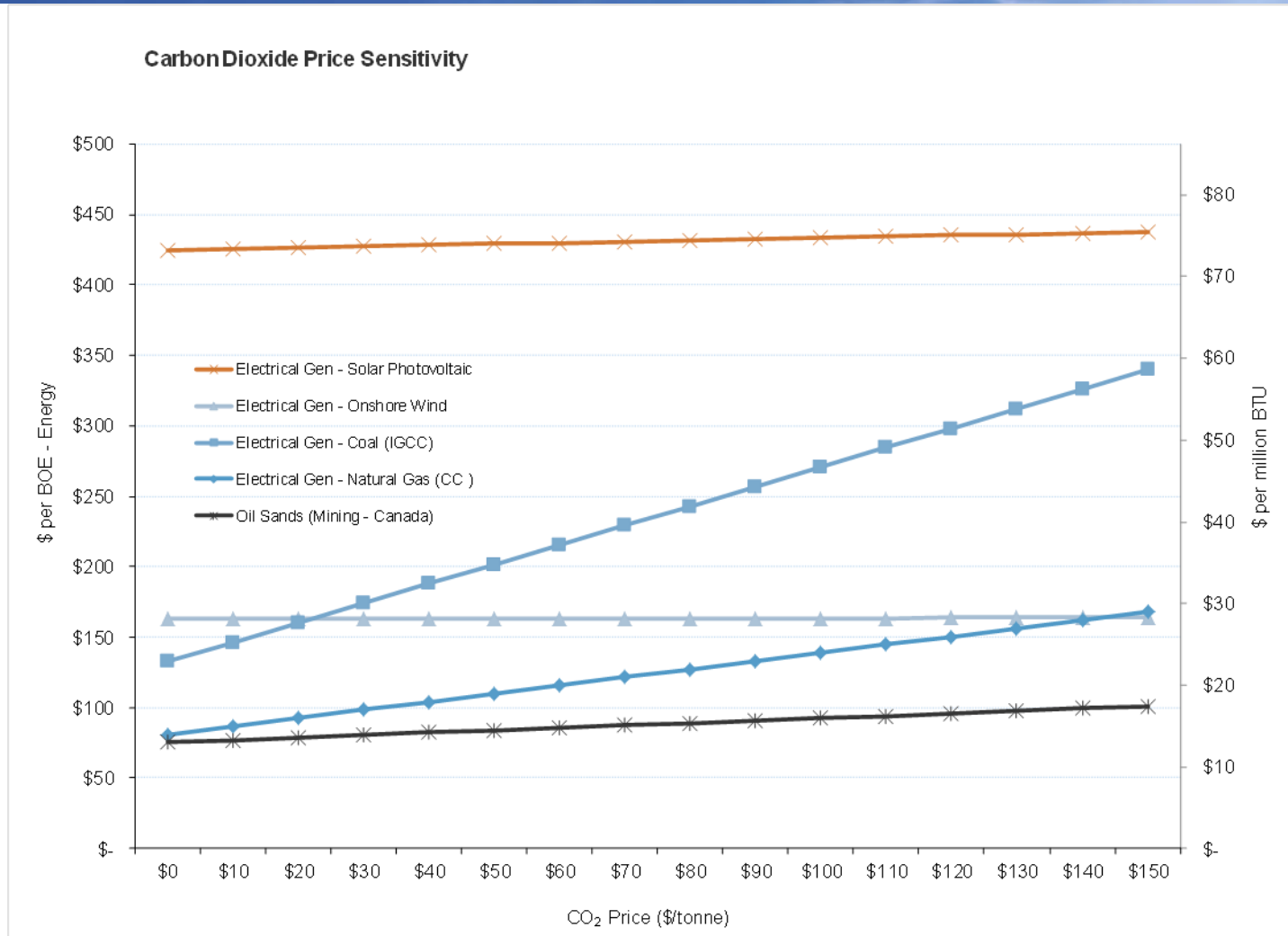
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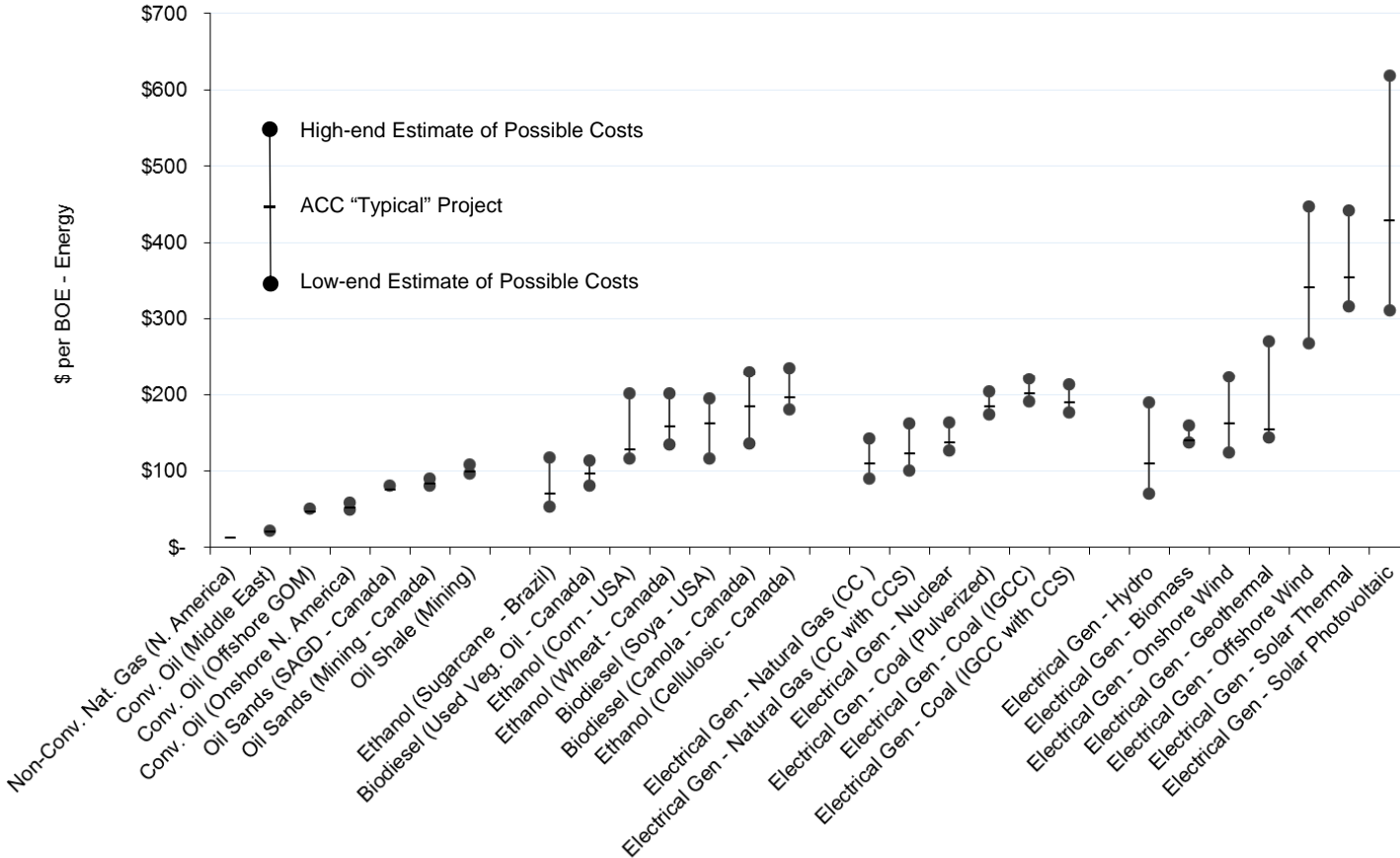


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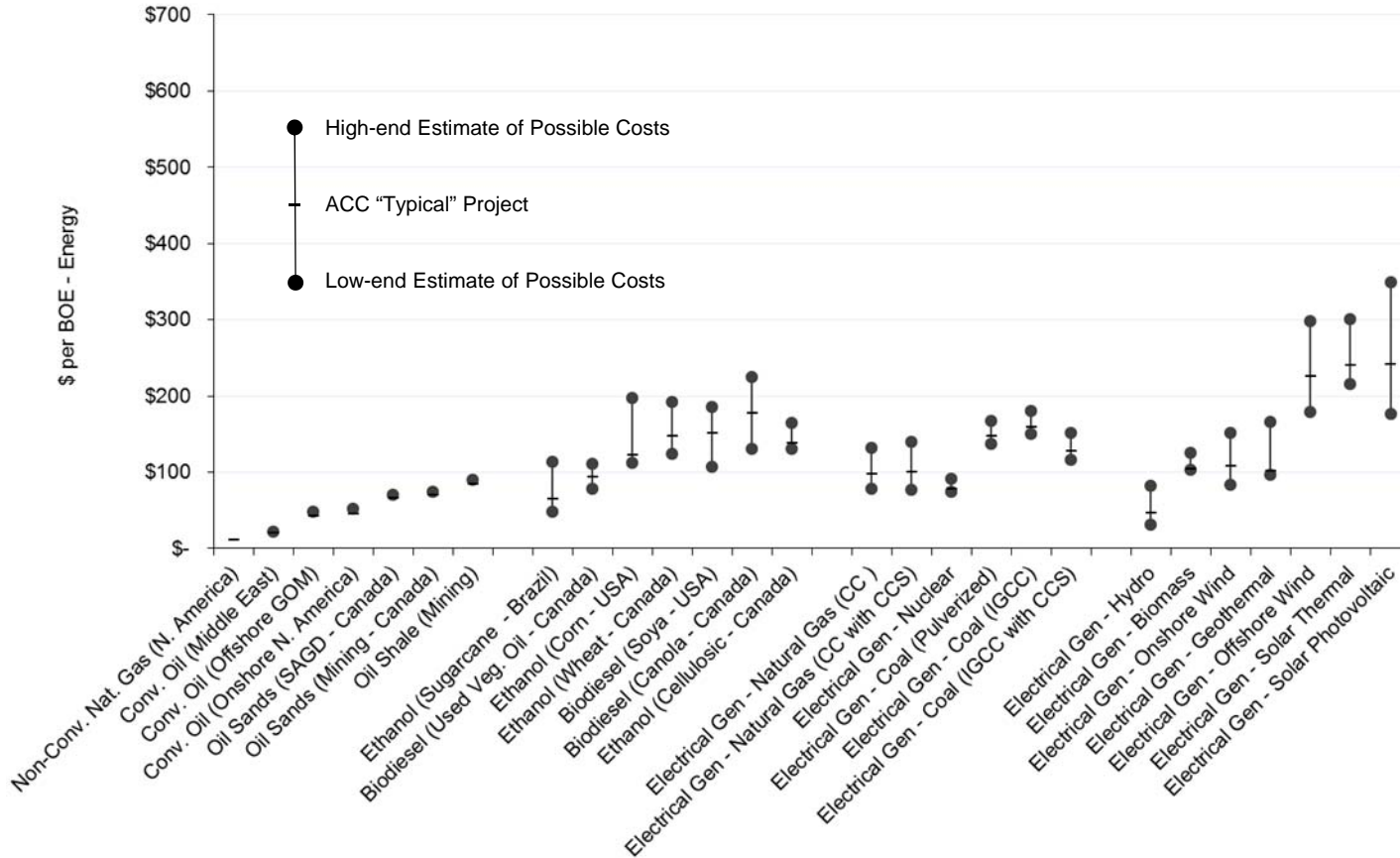
Cost Ranges for Energy Alternatives (Using the Corporate Cost of Capital of 10%)



Sources: Please see *The Energy Reality* report for sources.

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Cost Ranges for Energy Alternatives (Using the Social Cost of Capital of 3.5%)

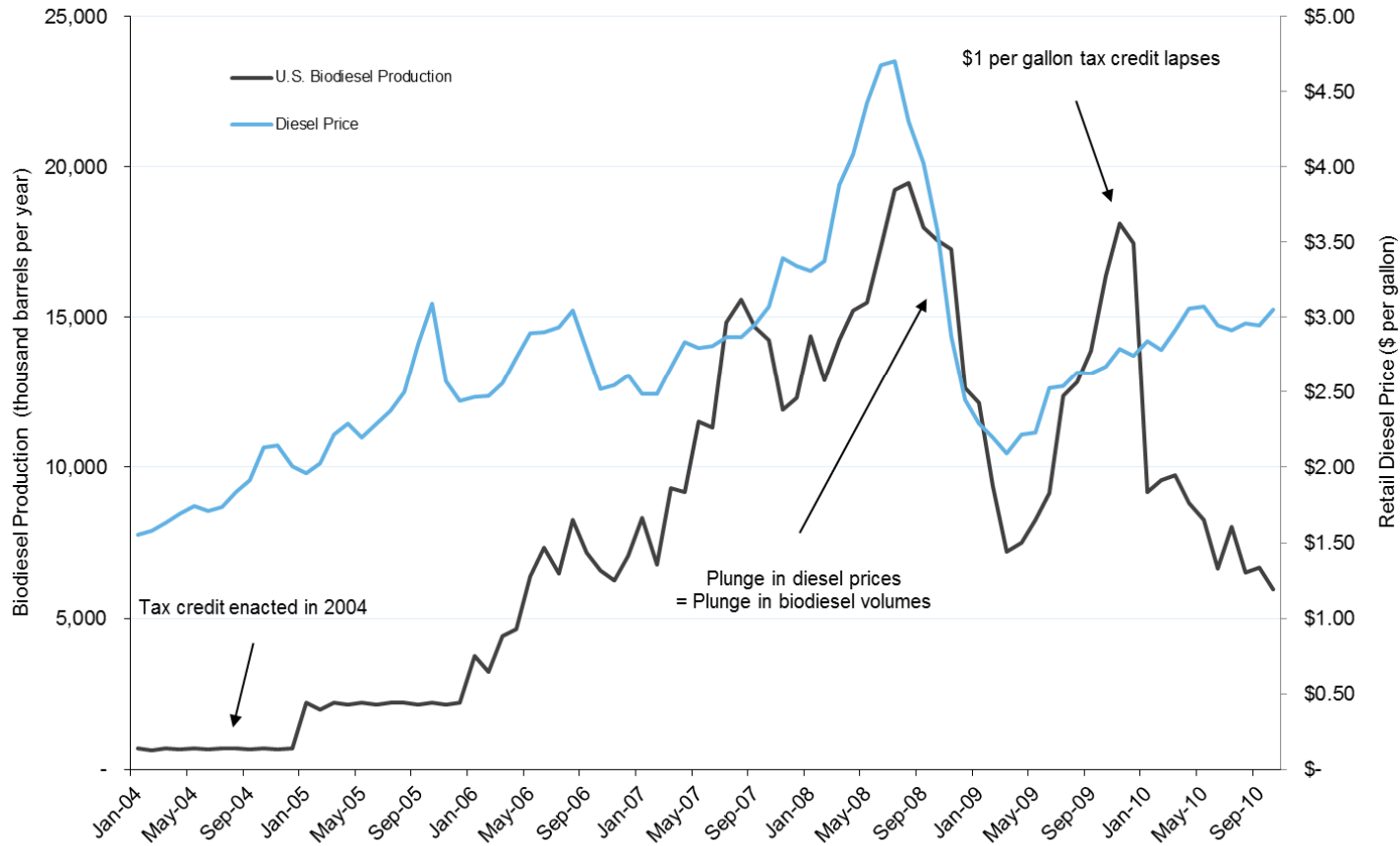


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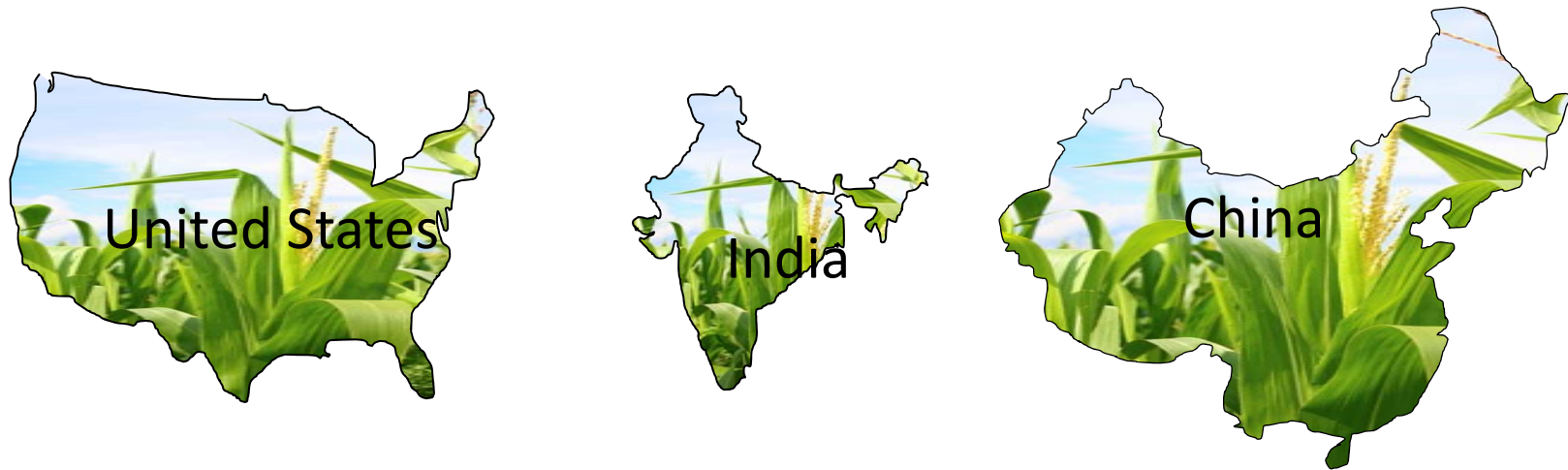
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- Types of Subsidies:
  - Direct Transfers
  - Preferential Tax Treatment
  - Feed-In Tariffs
  - Government Policies, Regulations and Royalties
- Tougher Decisions in Leaner Economic Times?
- “Sustainable Energy” – Under What Economic Conditions?

U.S. Biodiesel Production History - Links to Prices and Subsidies



- The Tragedy of Hydrocarbons is a dilemma where individuals will choose to consume hydrocarbons because they are the least expensive and most practical form of energy.
- The tragedy lies in the fact that it is not in the best interest of the individual, society, mankind or the planet for this to continue.
- Practical limitation of Hydrocarbons: they are non-renewable and as we continue to consume them we are “emptying the tank”.
- A transition to renewables will be forced upon us and this will not be simple or problem-free.



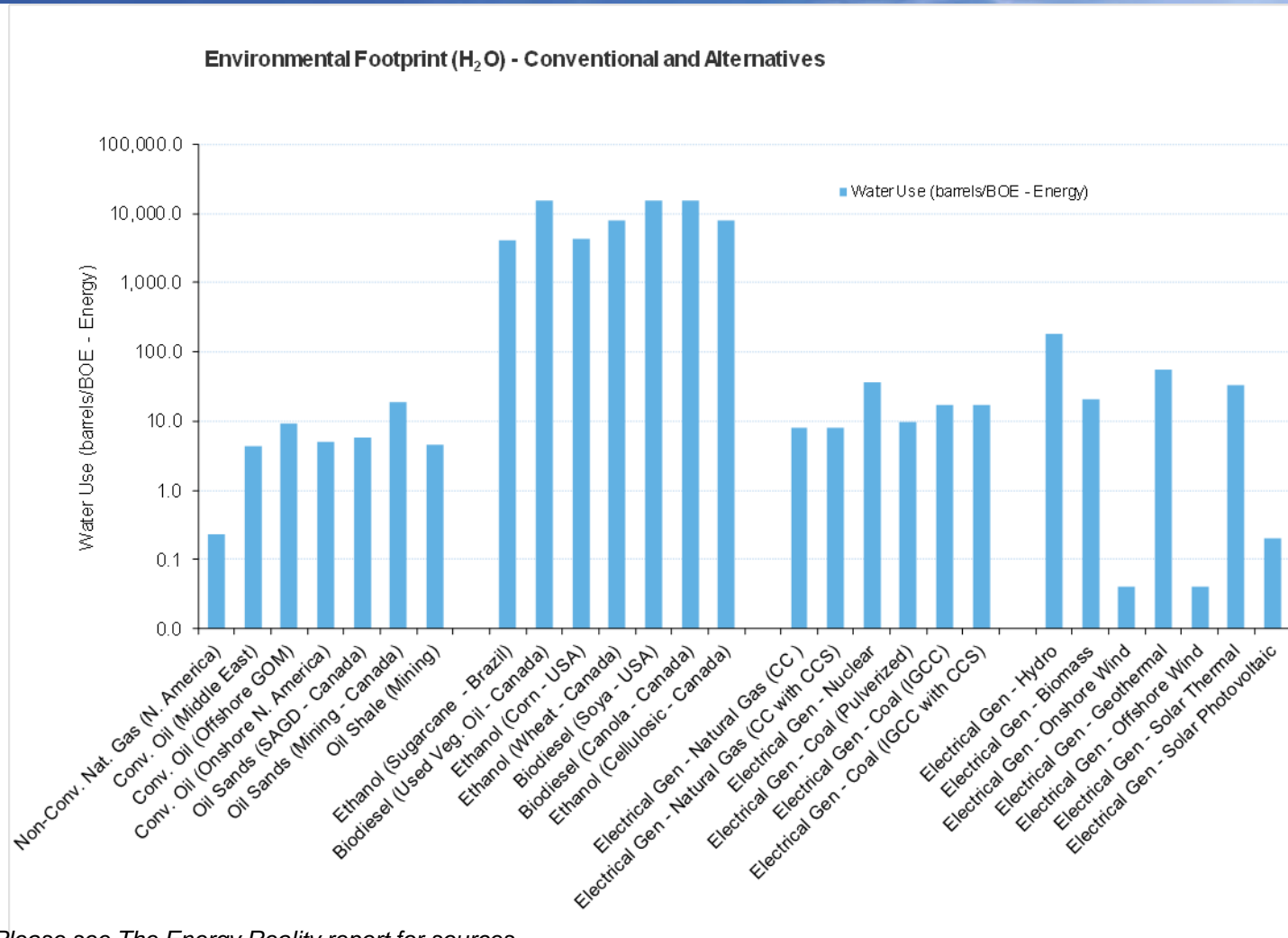
- To replace the current global oil production of 84.4 million barrels per day with corn ethanol, it would take a corn field the combined size of the United States, China and India.

## U.S. Corn Production and Caloric Equivalent

Step	Calculation	Total
1	U.S. Corn Production Used for Fuel Ethanol	4,568 Million Bushels / Year
2	Caloric Equivalent of U.S. Corn = 4,568 million bushels x 56 lbs/bushel x 0.45 kg/lb x 3020 Calories/kg	350 Trillion Calories / Year
3	Caloric Equivalent of U.S. Corn (Food Corn Replacement) = 350 Trillion Calories (per year) x 1/3	117 Trillion Calories
4	Caloric Requirements per Person = 2000 Calories per capita/day x 108% (spoilage/waste) x 365 days/year	788,400 Calories per Capita / Year
5	Number of People that Could be Fed = 117 Trillion Calories ÷ 788,400 Calories per capita	149 Million People

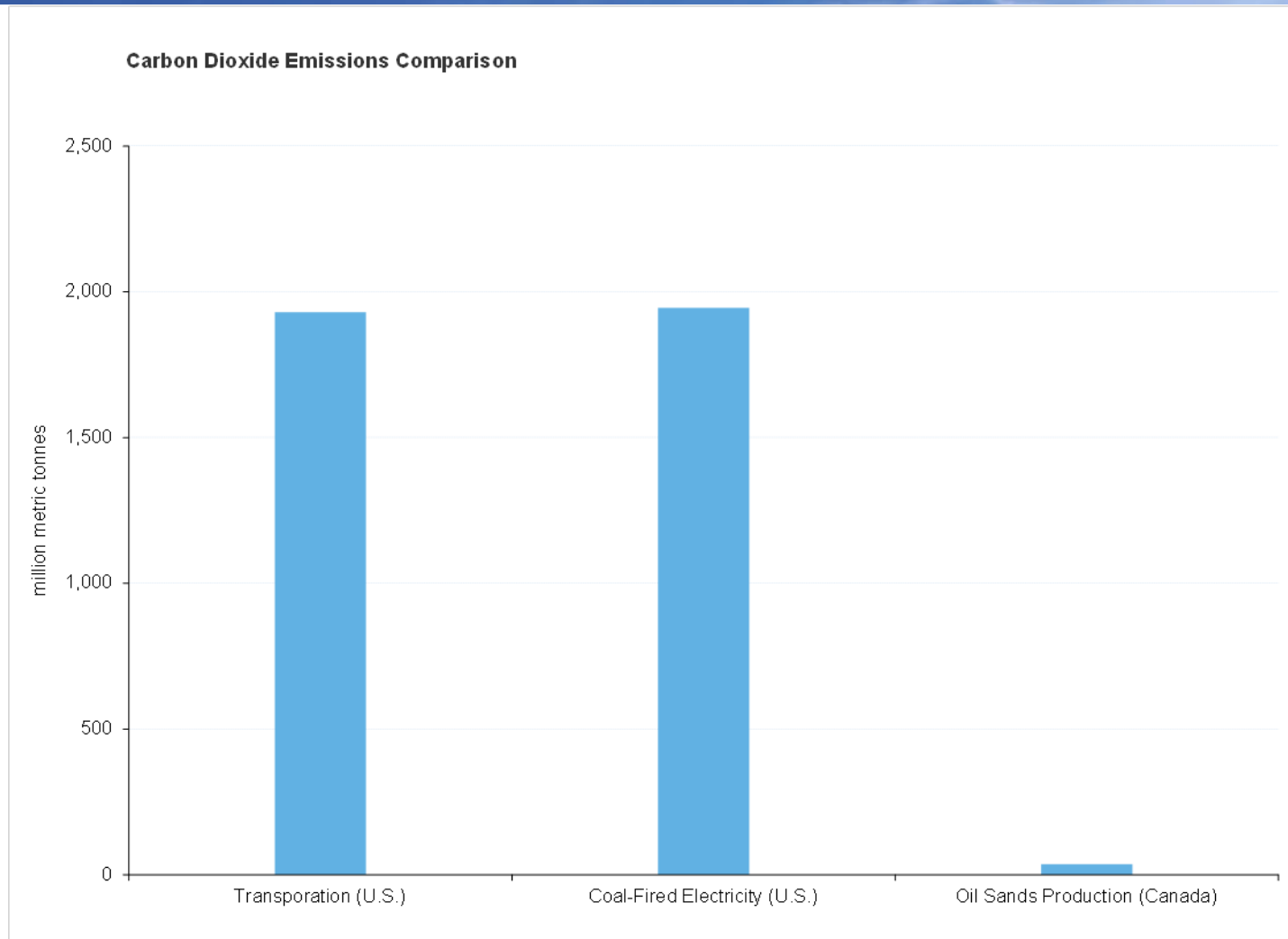
- “So it is a crime against humanity – it’s a crime against humanity to convert agricultural productive soil into soil...which will be burned into biofuels”*

– Jean Zeigler, Chair of the United Nations Human Rights Council’s Advisory Committee, October 26, 2007



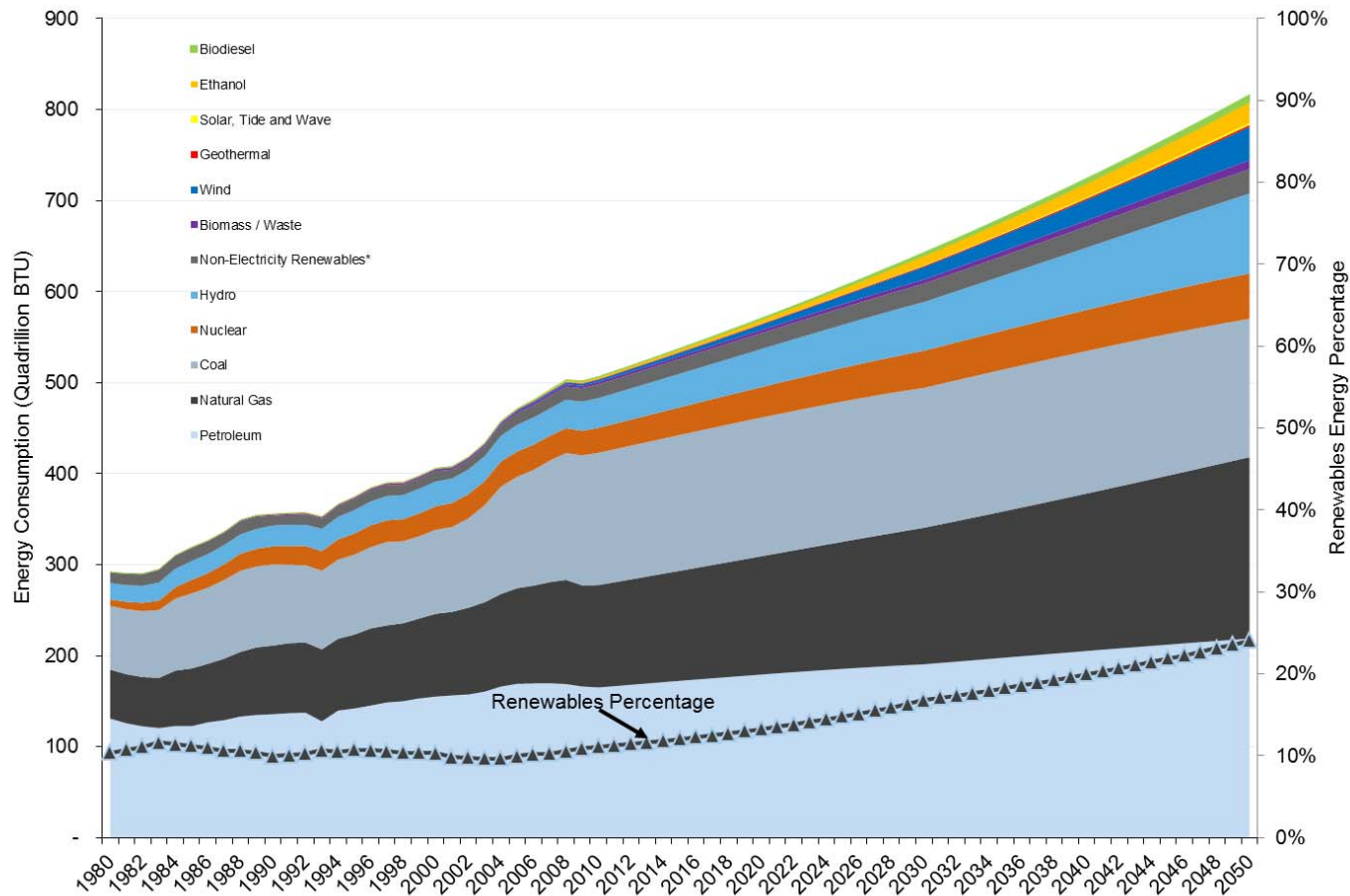
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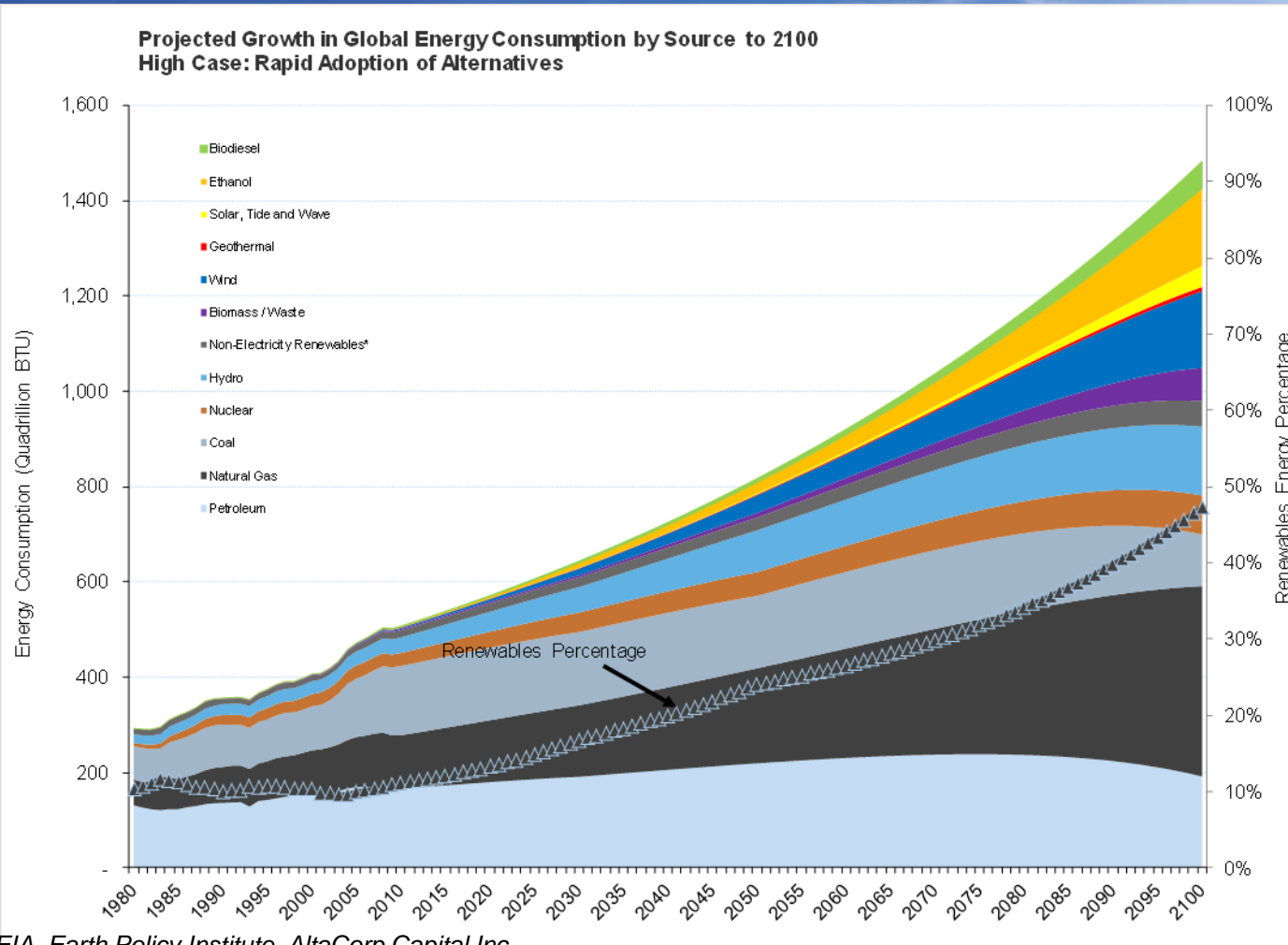
Projected Growth in Global Energy Consumption by Source to 2050  
High Case: Rapid Adoption of Alternatives



Sources: EIA, Earth Policy Institute, AltaCorp Capital Inc.

Note: Renewables Percentage includes Hydro and all other renewables

\* Non-Electricity Renewables are those used for heat generation



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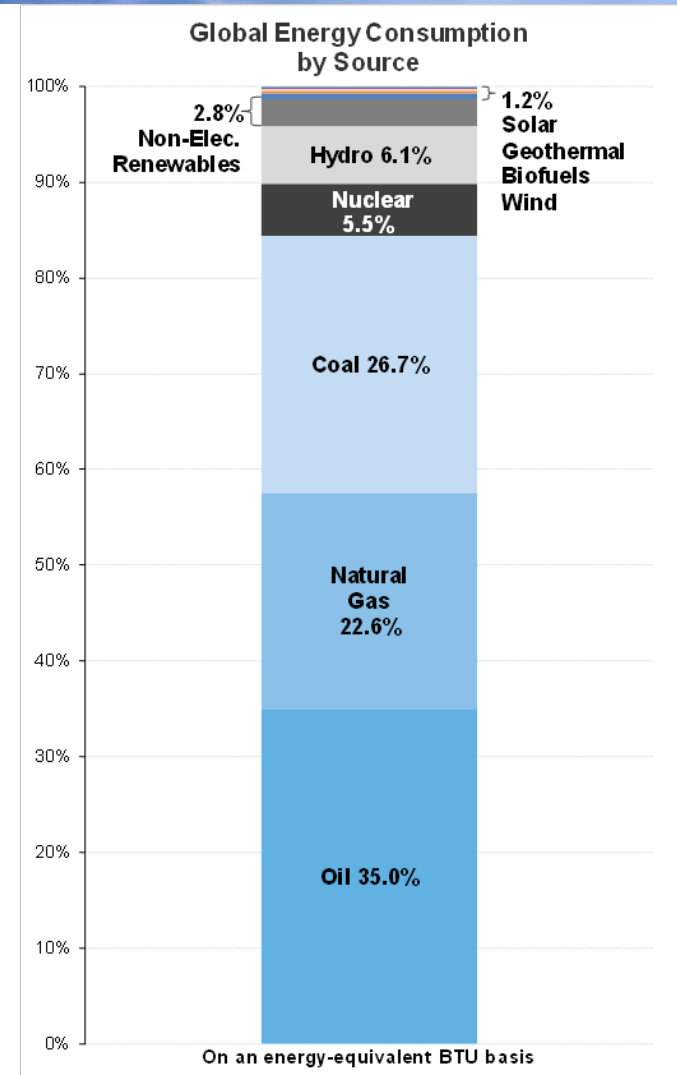
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- Reduction in energy consumption can be a “source” of energy; this is an essential part of our energy future. Not only is it the most economic, it is also the most environmentally attractive “source” of energy.
- It is our view that mankind needs to reduce its energy needs by choice, or the choice will be forced upon us.
- Natural gas is the lowest cost source of energy and it is also the most environmentally-friendly when compared with other hydrocarbons.
- Other uses of natural gas will include Gas to Liquids, LNG, Power Generation and Transportation

- Inexpensive energy is critical to all economies.
- Increasing the use of renewables is necessary (because hydrocarbons are a depleting and non-renewable resource), but how that will be economically achieved within realistic time frames is a question that needs to be asked.
- Mankind needs to transition to renewable technologies as oil continues to get more expensive and as conventional oil gets harder to find.
- Our society is still driven by economics and individuals make a majority of decisions based on price. This will drive consumers to use hydrocarbons.

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- Hydrocarbons are the most economic form of energy.
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- We believe natural gas will play a central role in meeting global energy needs.





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