

Future Energy Trends

Quarry Academy
November 10, 2008



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- Climate Change & Global Warming
- U.S. Dependence on Foreign Oil
- Price of Oil



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Climate Change

Think of
Climate Change & Global Warming
as a risk management issue.



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Price of Oil

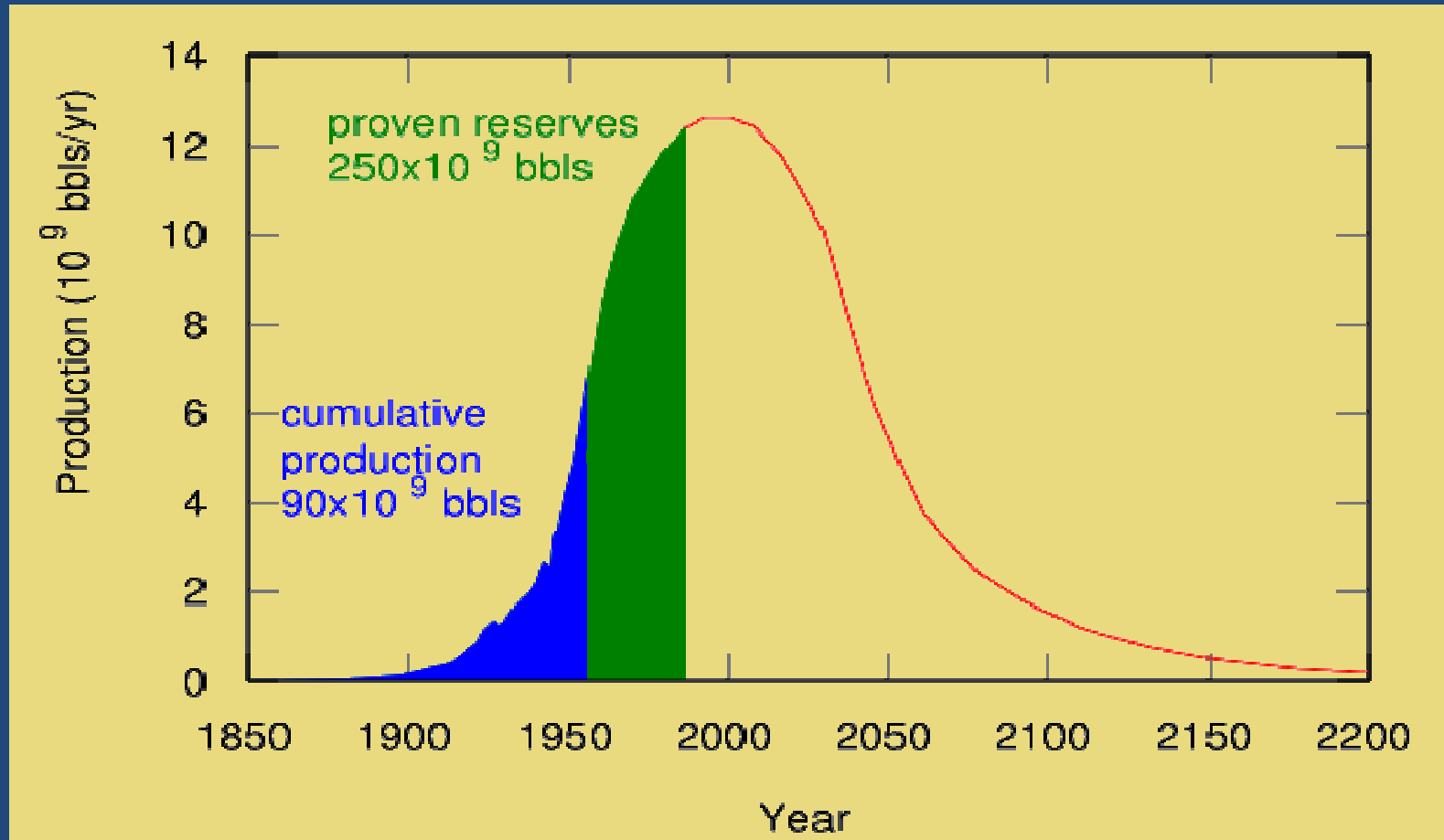
Peak Oil



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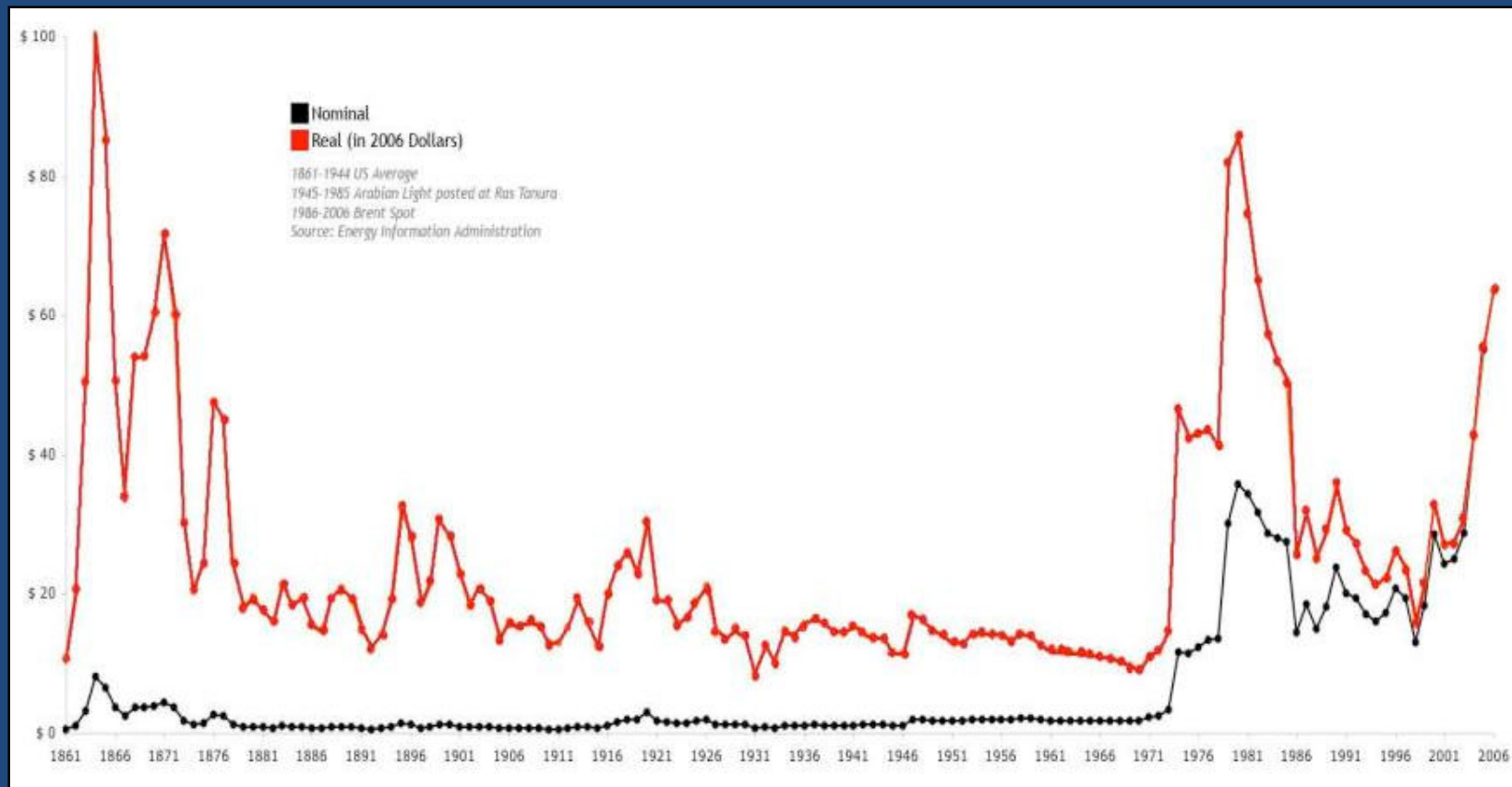
Peak Oil



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Oil Prices 1861-2006



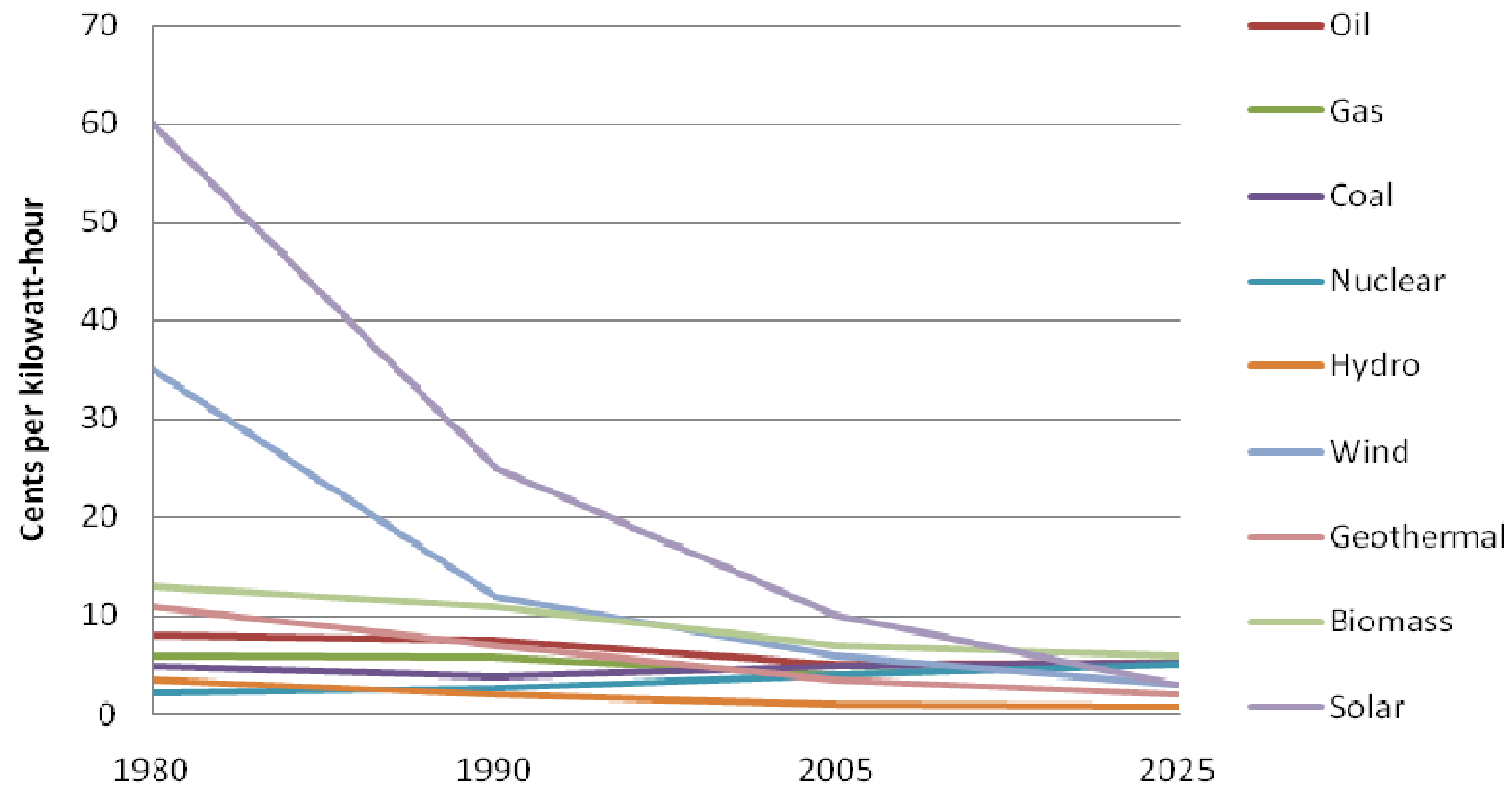
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Courtesy of Dr. Feng Hsu



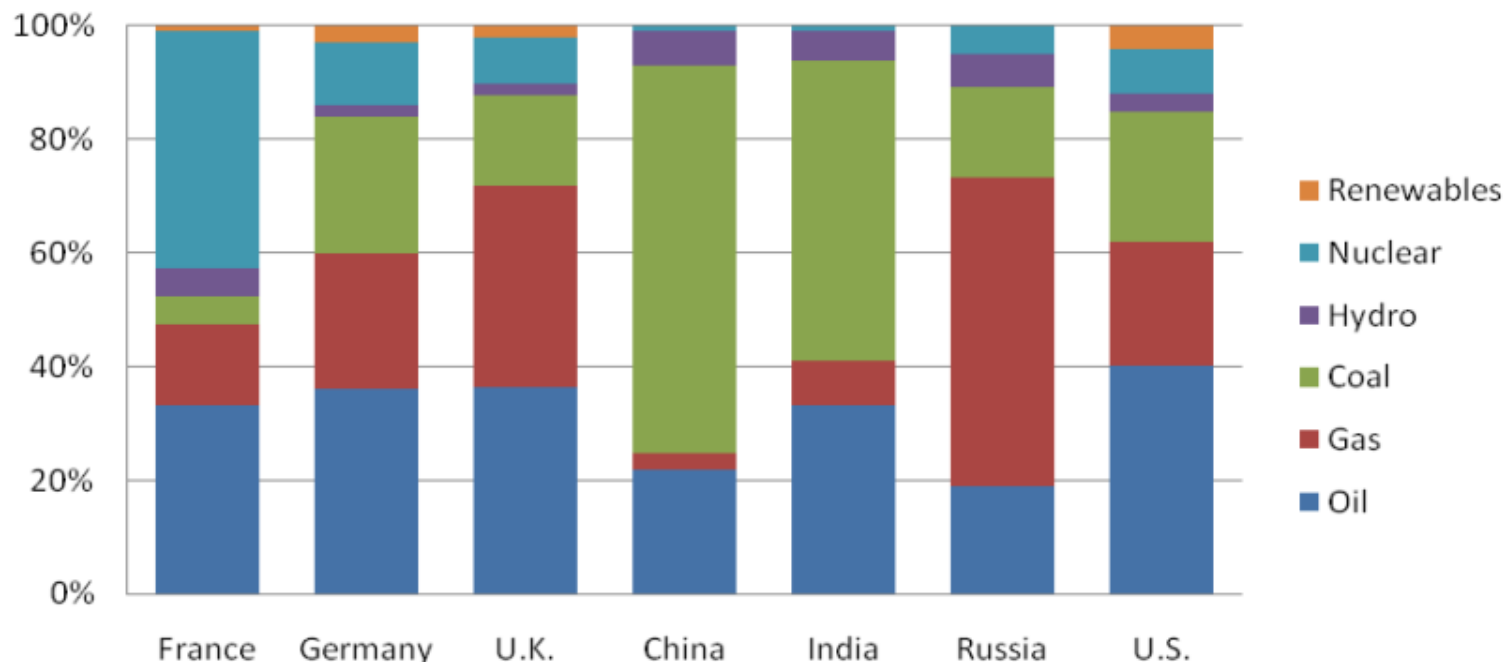
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Energy Costs by Source, 1980-2025



National Comparisons on Energy Sources

Sources of Energy Supply, 2005



Source: Energy Information Administration (EIA)
(<http://www.eia.doe.gov/emeu/cabs/index.html>)

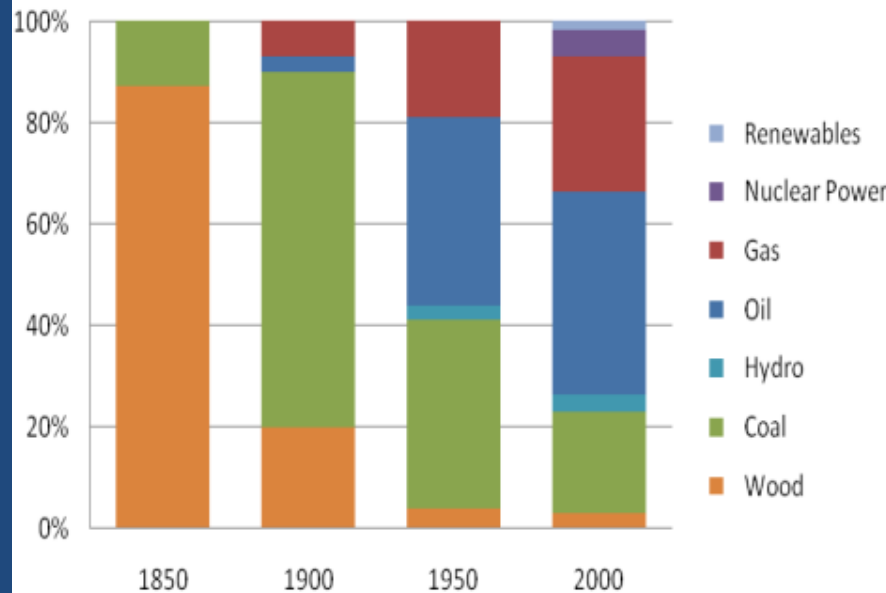


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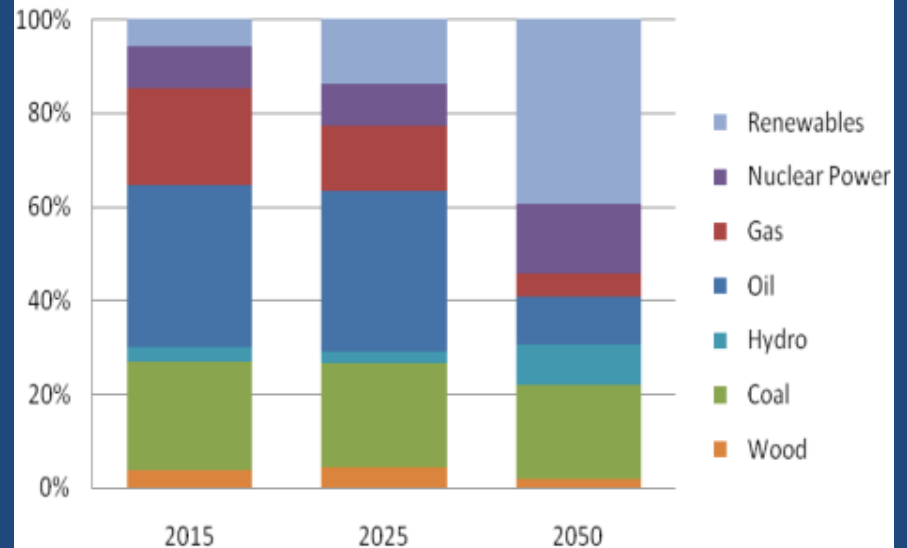
Sources of U.S. Energy Supply

Sources of Energy Supply, 1850-2000



Source: The Economist

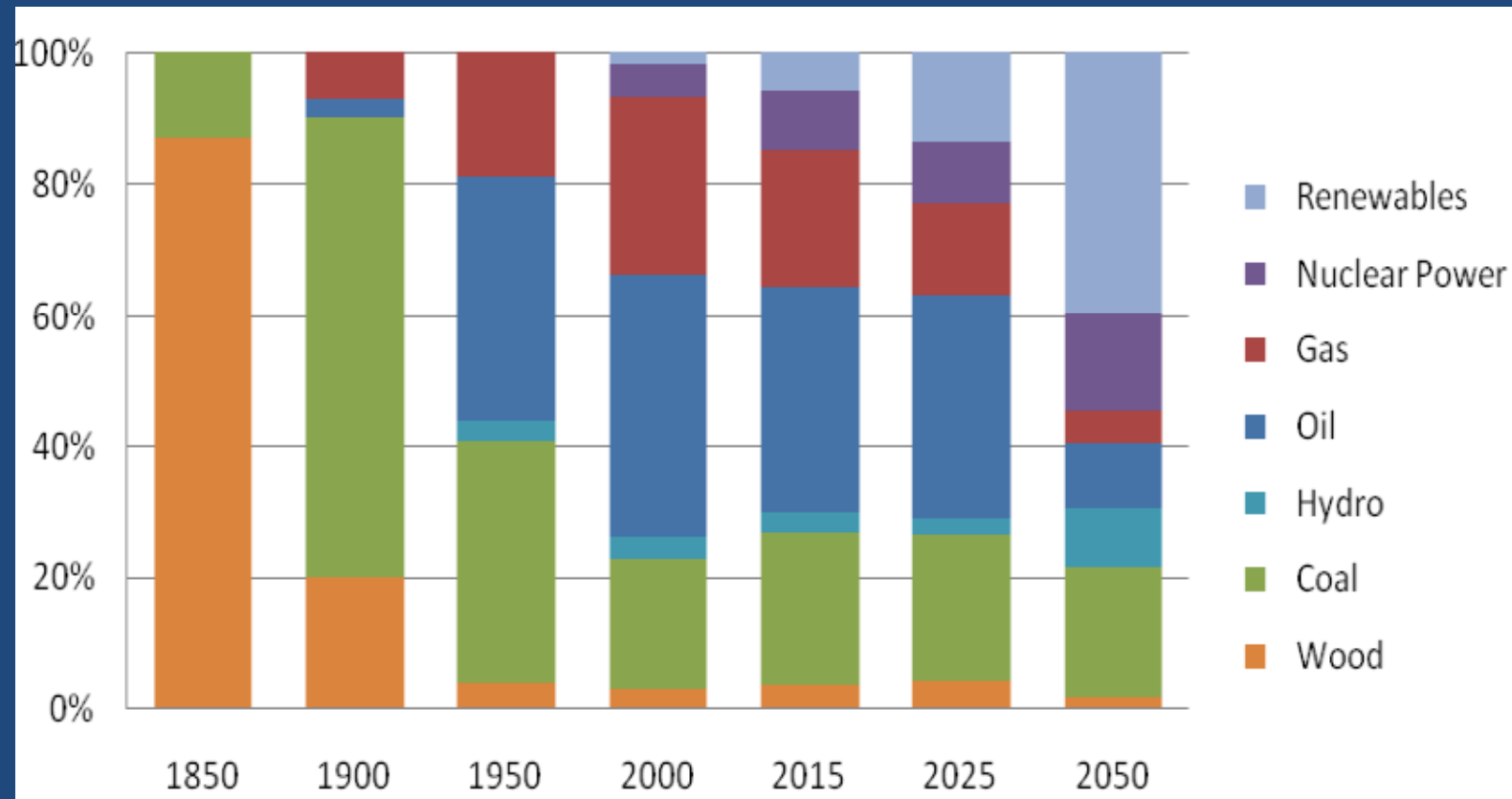
Sources of Energy Supply, 2015-2050



Source: David Houle Projections

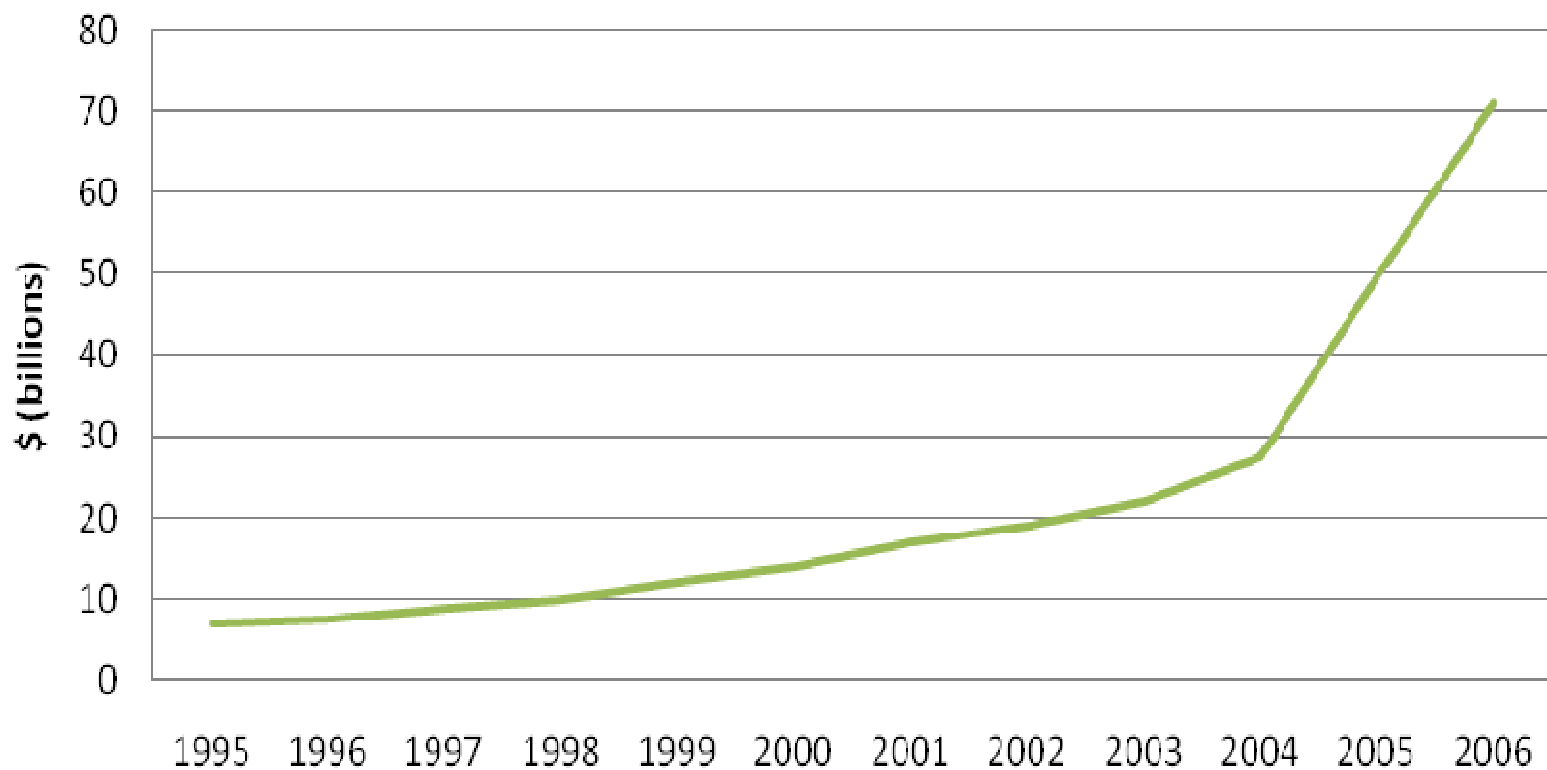


Sources of U.S. Energy Supply, 1850-2050

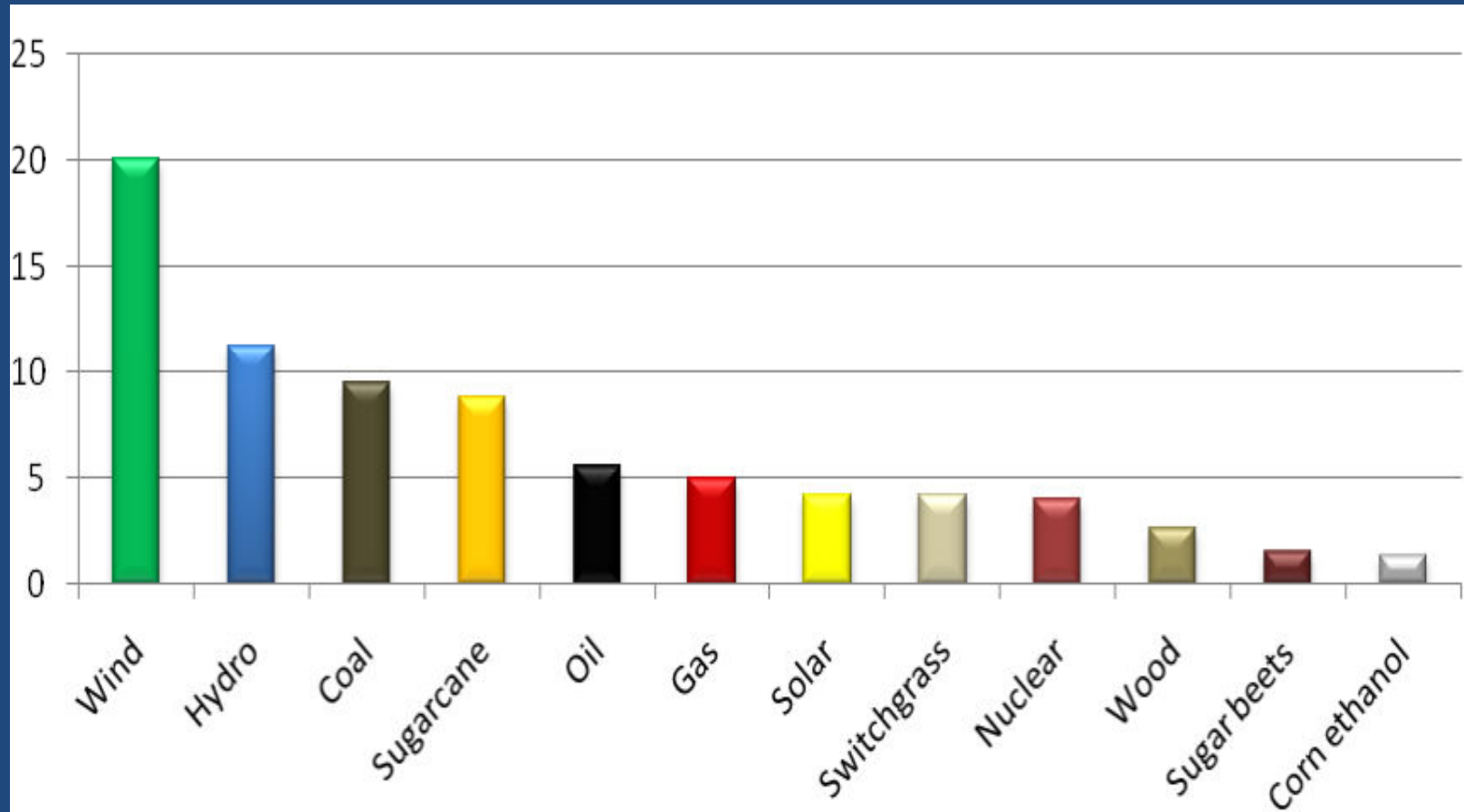


Investment in Renewable Energy

Global Annual Investment in Renewable Energy



Energy Returned on Energy Invested (EROEI) 2007



Sources: <http://www.eroei.com/eroei/evaluations/net-energy-list/>
proceedings of the National Academy of Sciences (pnas.org)



Coming Energy Trends and Events

- Peak oil now
- Petroleum in slow to rapid decline 2015-2050
- Alternative energy enters explosive growth phase 2010-2020
- Storage breakthroughs 2010-2015
- Electric age of automobiles 2010-2015
- Bio mass and conversion of waste matter
- Wind, Solar, SSP



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Space Solar Power

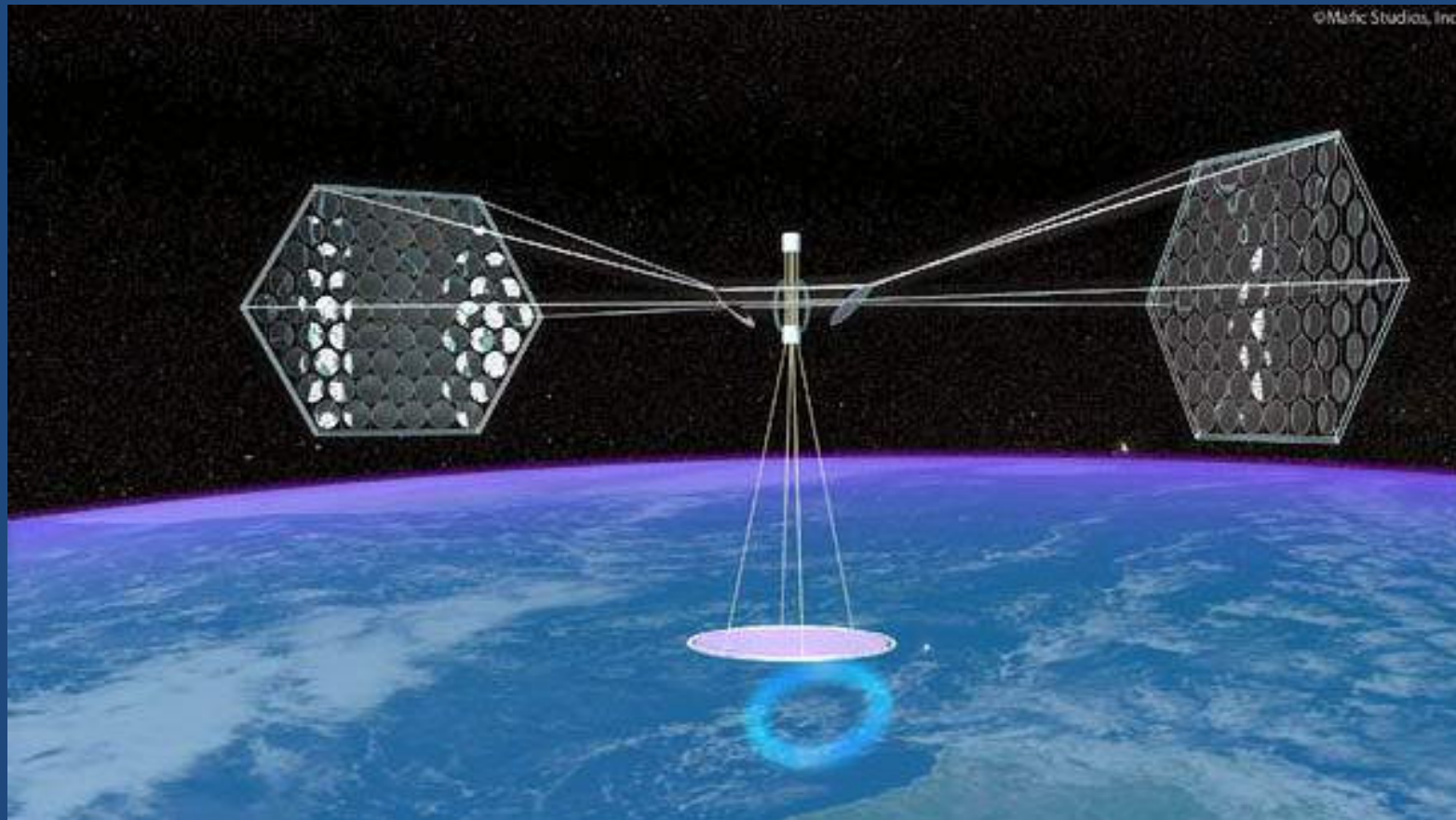


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Space Solar Power

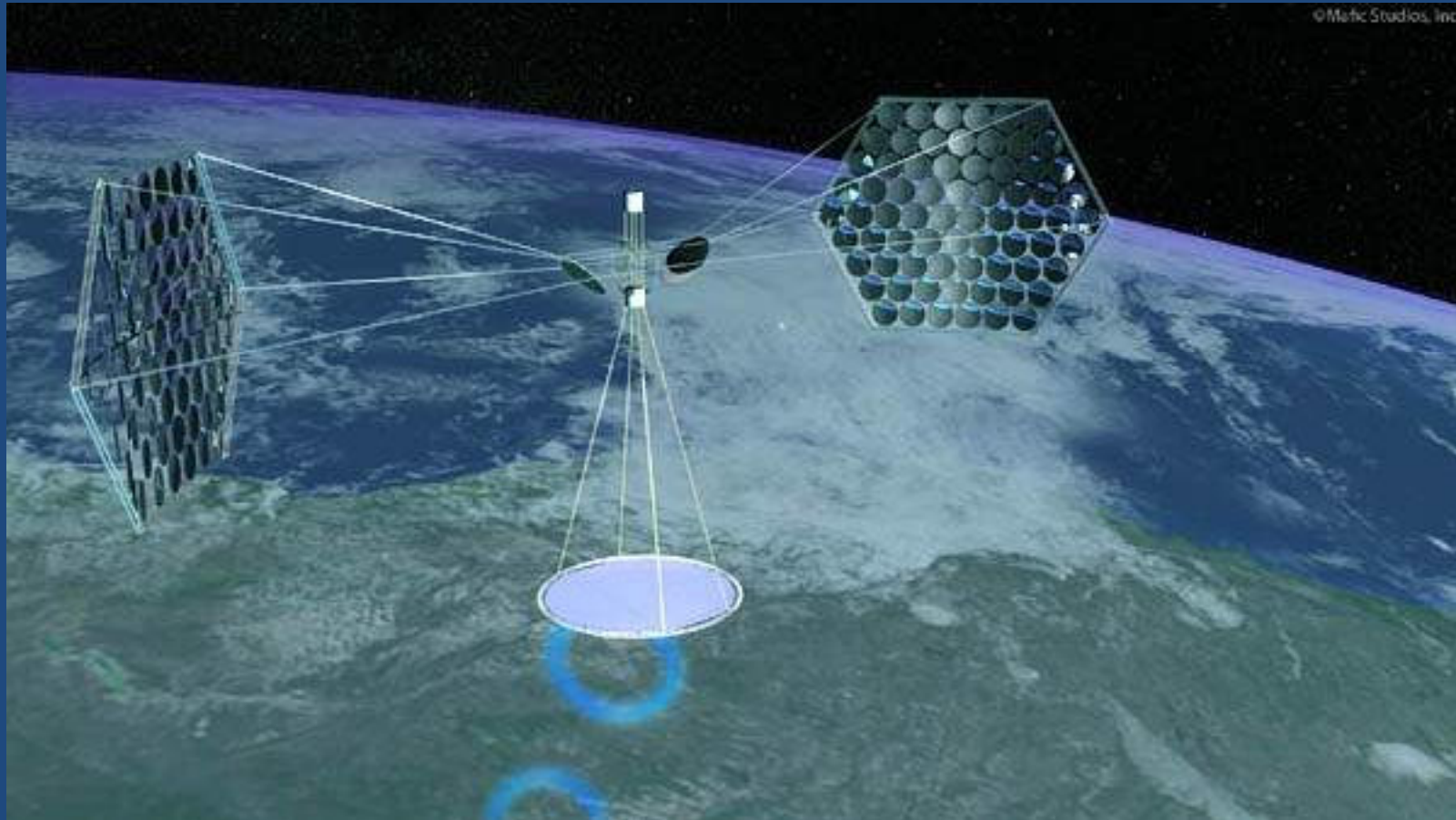


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Space Solar Power



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Space Solar Power

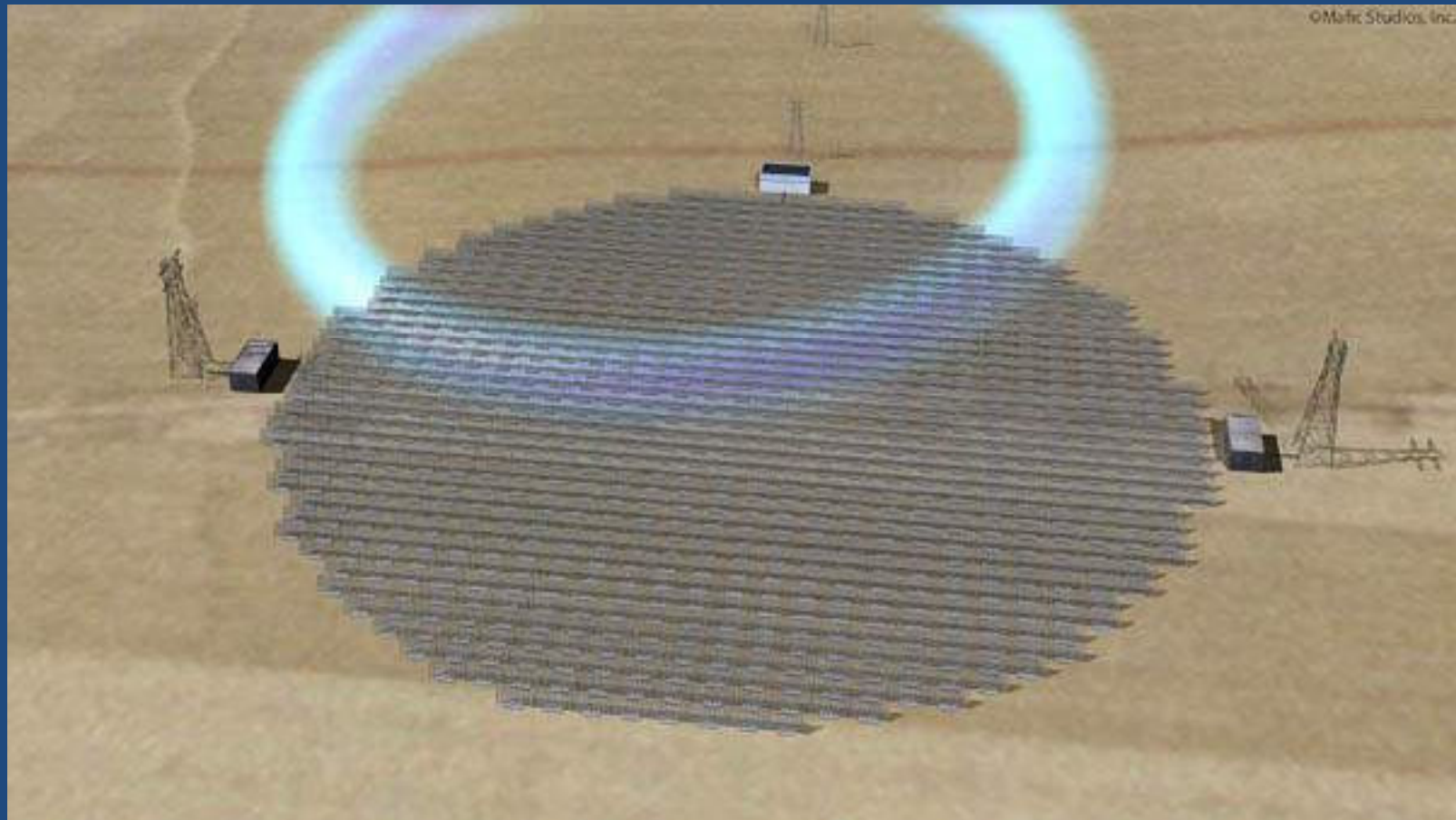


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Space Solar Power

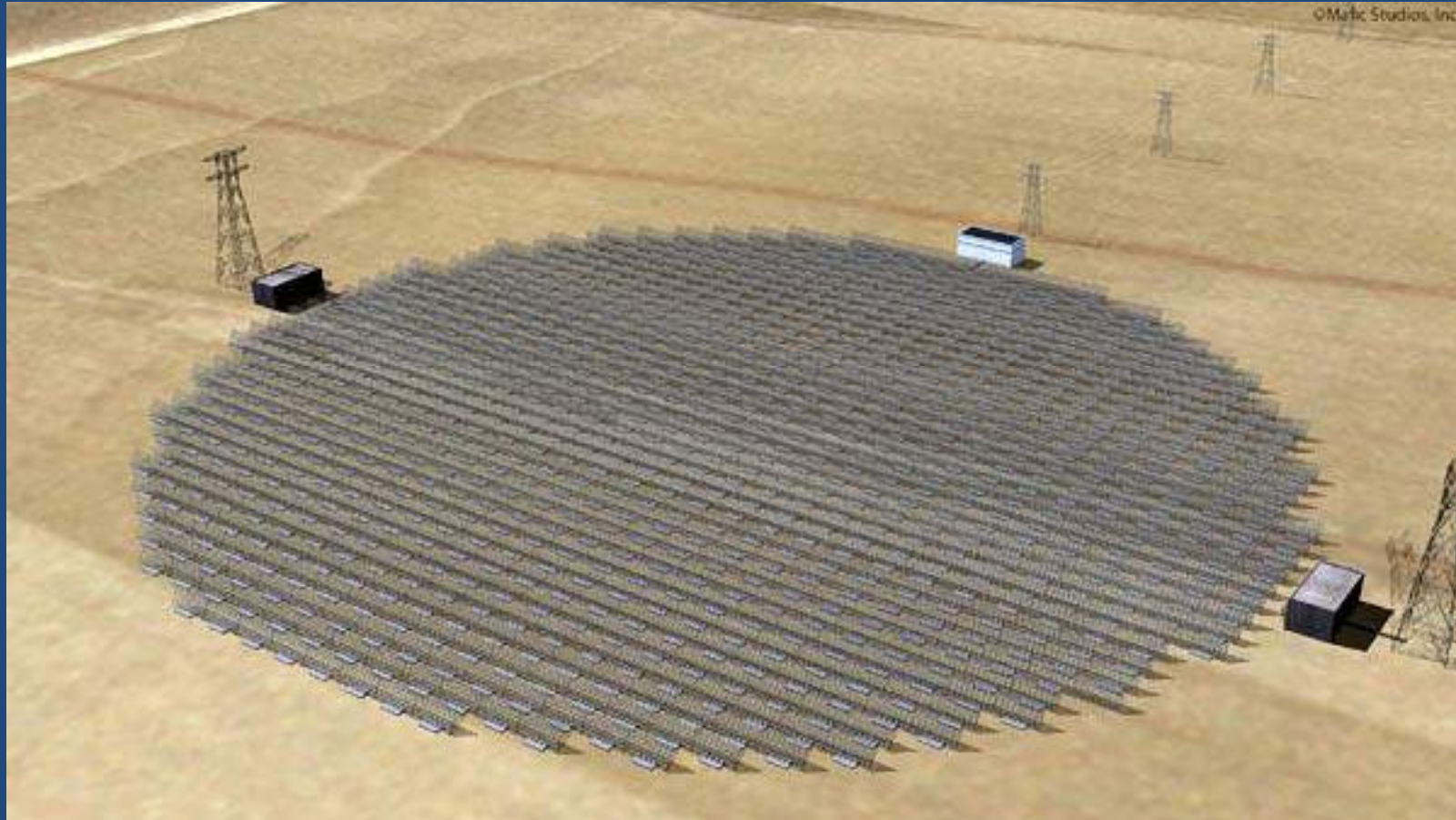


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Space Solar Power

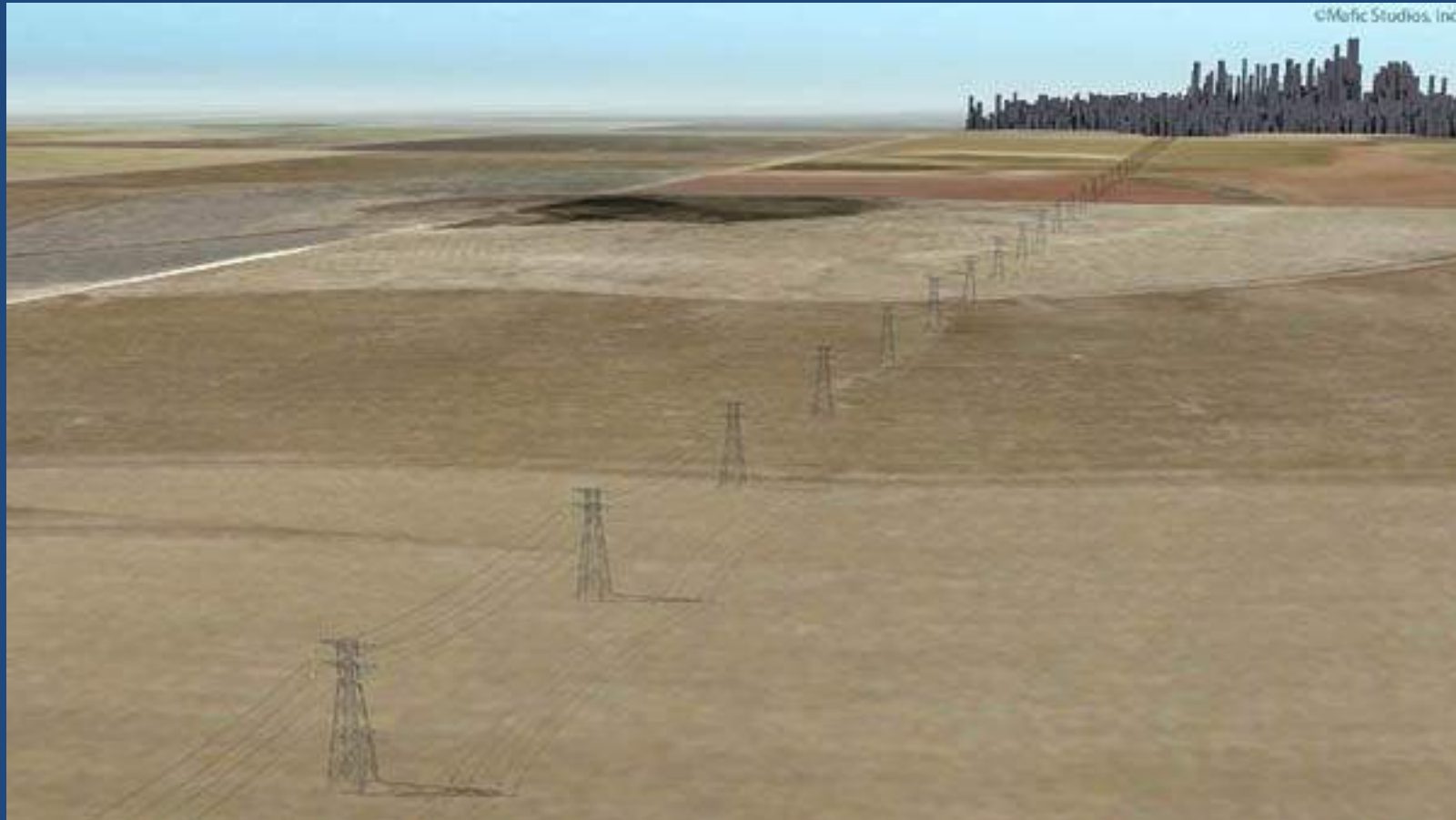


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Space Solar Power



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Three Current Crises for Humanity

- Energy
- Water
- Food



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Future Energy Trends in “The Shift Age” - a time of Transformation

Thank you!

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