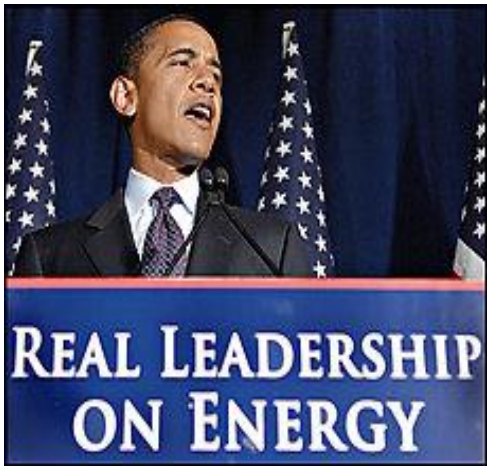

Amy Myers Jaffe, Lew Fulton, Daniel Scheitrum, Colin Carter

The Oil Price Cycle and Peak Oil Demand Scenarios

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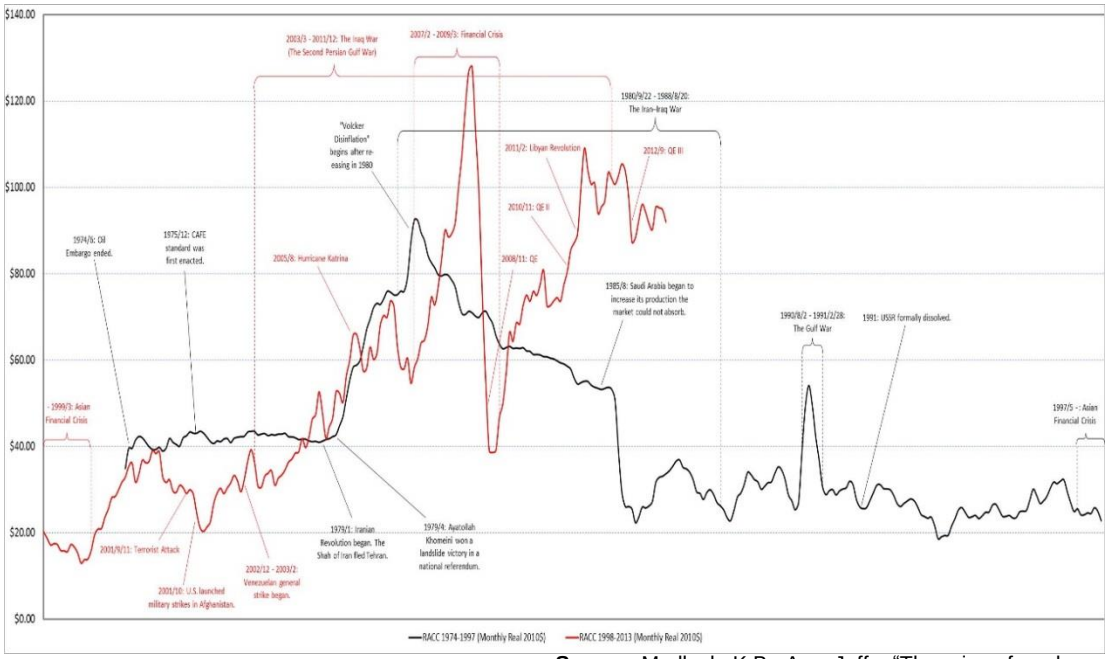
Oil is a cyclical industry, linked in large measure to the global business cycle



Source: Medlock, K.B., Amy Jaffe, "The price of crude oil: deja vu all over again?" (2013), EIA

Current oil price collapse mirrors similar cyclical downturns seen in past decades. Cycle shifts tend to have similar characteristics.

- Demand destruction: A decade of high oil prices, combined with policy intervention in the OECD and China slowed oil demand growth and enabled innovation and advanced clean energy solutions. Financial crises also associated with high oil prices and recession curtails demand.
- At the same time, high oil prices stimulated drilling innovations, leading to a supply bubble. Shale technology is game changing, just as deepwater drilling in the North Sea and U.S. Gulf of Mexico was in the 1980s.

Three major linchpins to high price psychological "exuberance" have dissipated

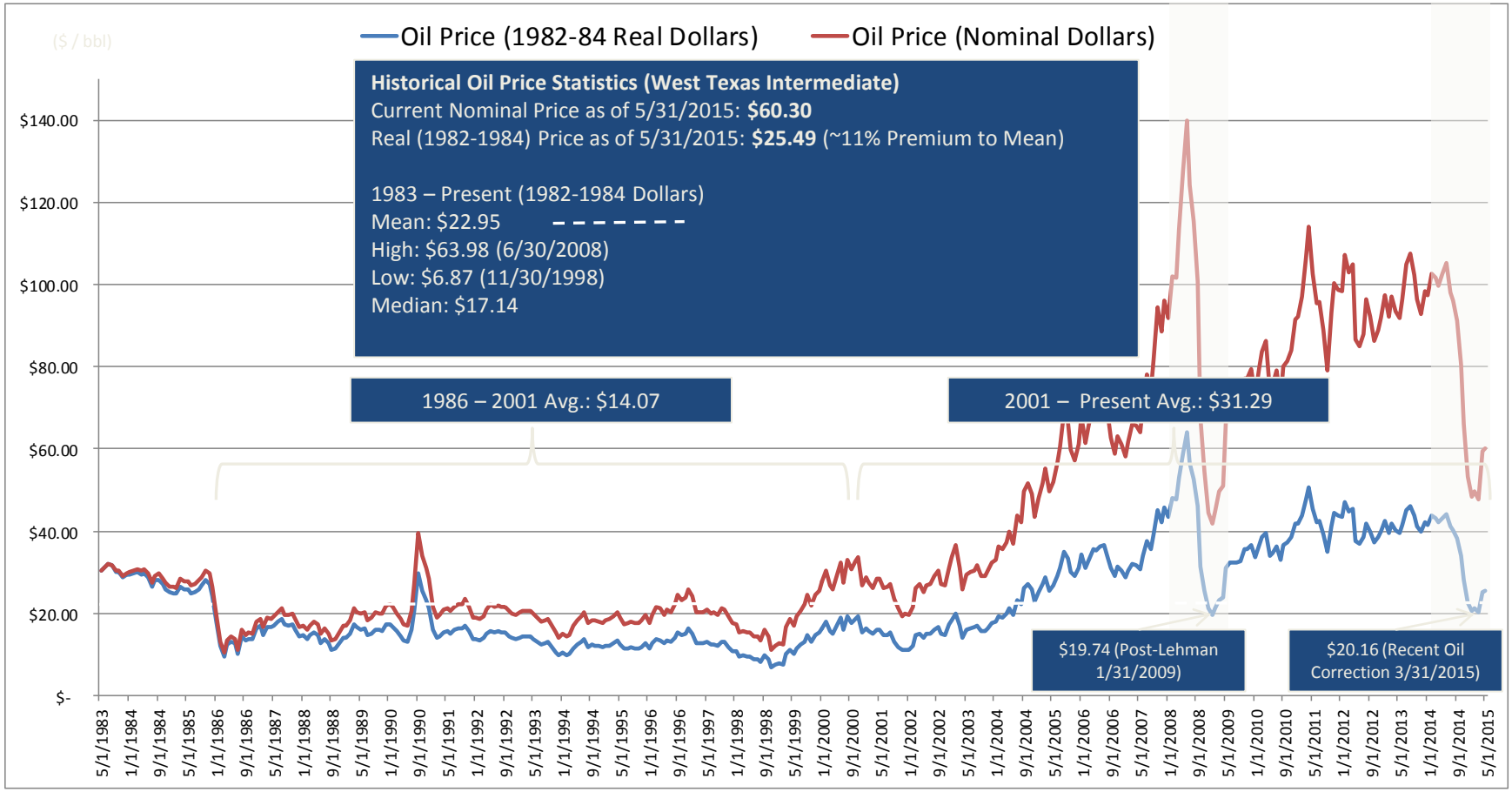
2002–2015 up-end of the price cycle was mainly driven by three characteristics that no longer prevail:

- "Peak Oil" theory
- Steady, rapid Chinese "demand" based on industrial growth
- Rising upstream services costs

Historical Oil Prices

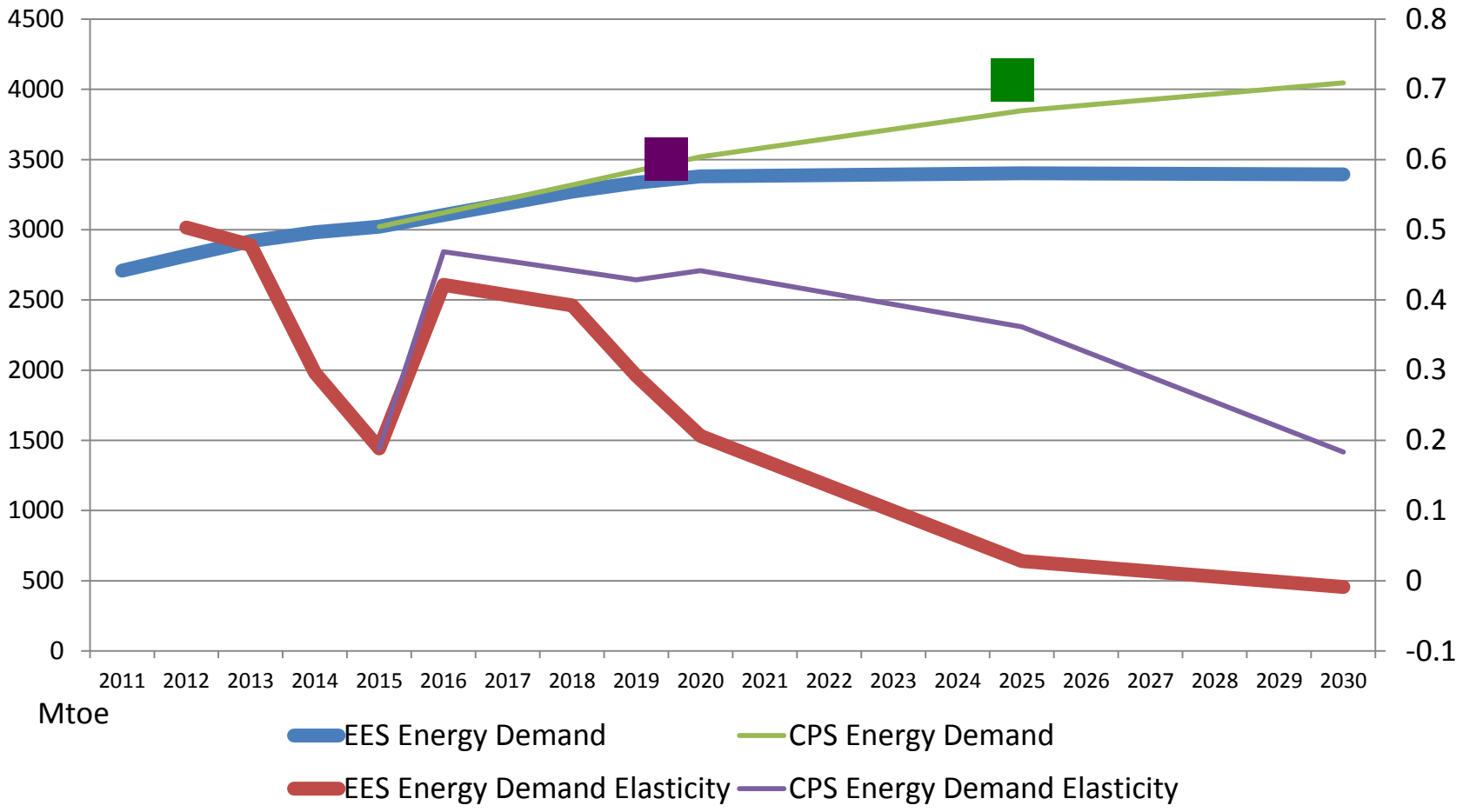
Monthly Nominal and Real Oil Prices from May 1983 to Present

- Long-term oil prices have reverted back to historical long-term mean of ~$23 per barrel
- As U.S. shale production continues to come on line, coupled with technological advances in oil and gas recovery, oil prices could potentially remain range-bound
- 1986–2001 average price is ~45% lower than the current, which implies potential low of ~$33/bbl in nominal terms

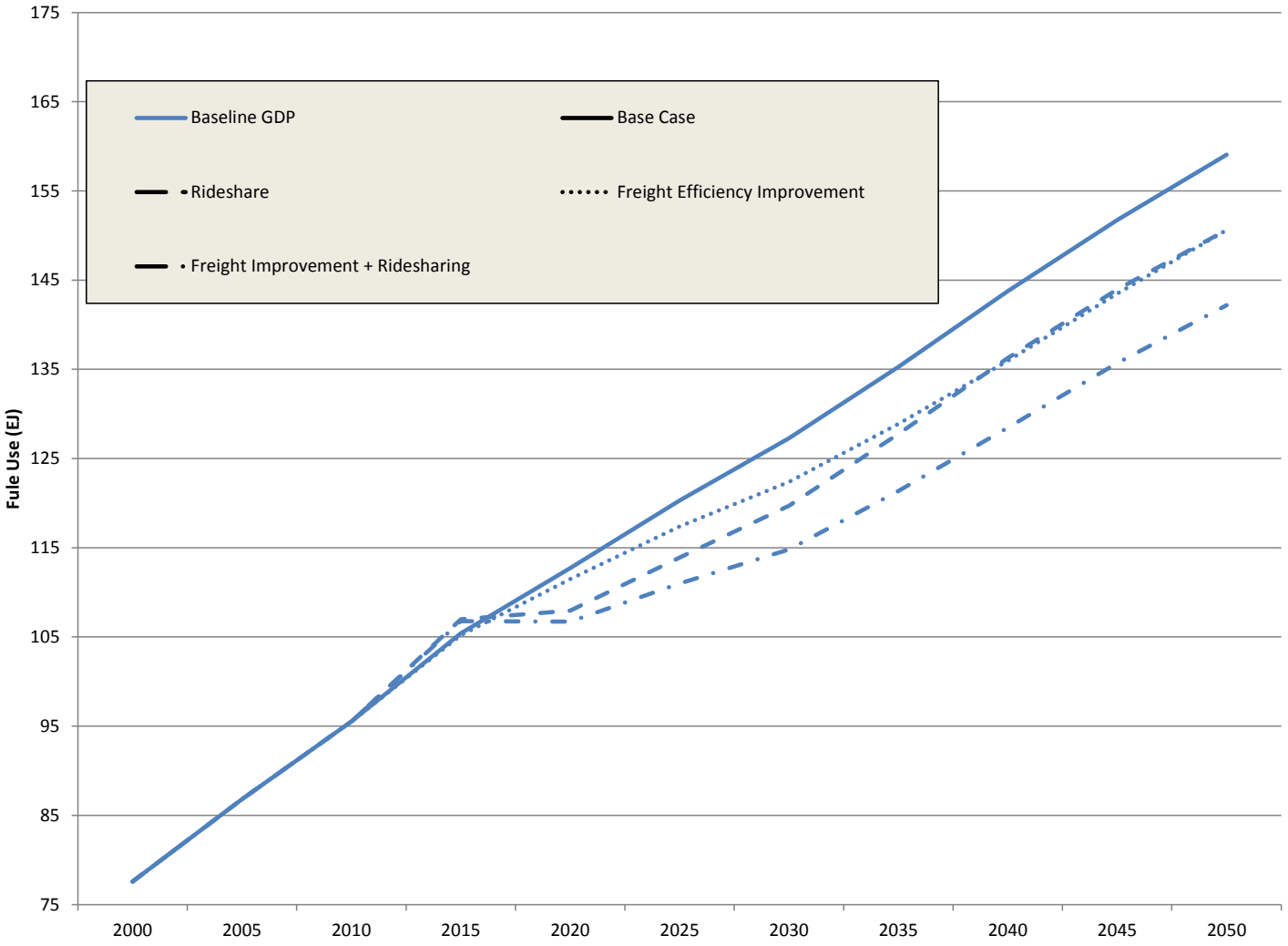


Source: Bloomberg, West Texas Intermediate (WTI) Cushing Crude Oil Spot Price: USCRWTIC Index, CPURNSA Index as of May 31, 2015

China High Policy Intervention Scenario:
Energy demand peaks and decouples from GDP under 6.6% growth scenario via efficiency gains, renewables targets and nuclear development

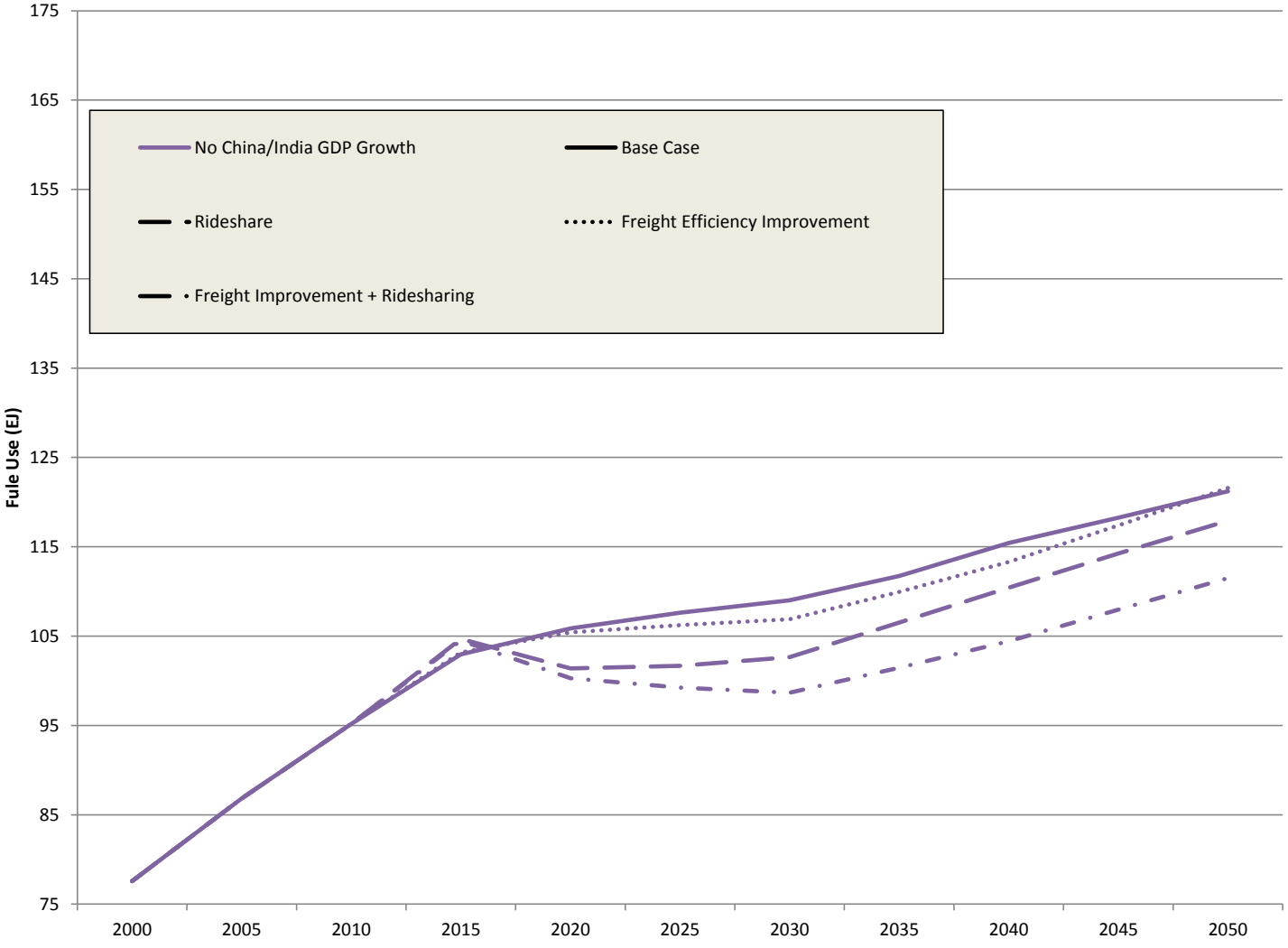


Global Oil Demand Upward Trending



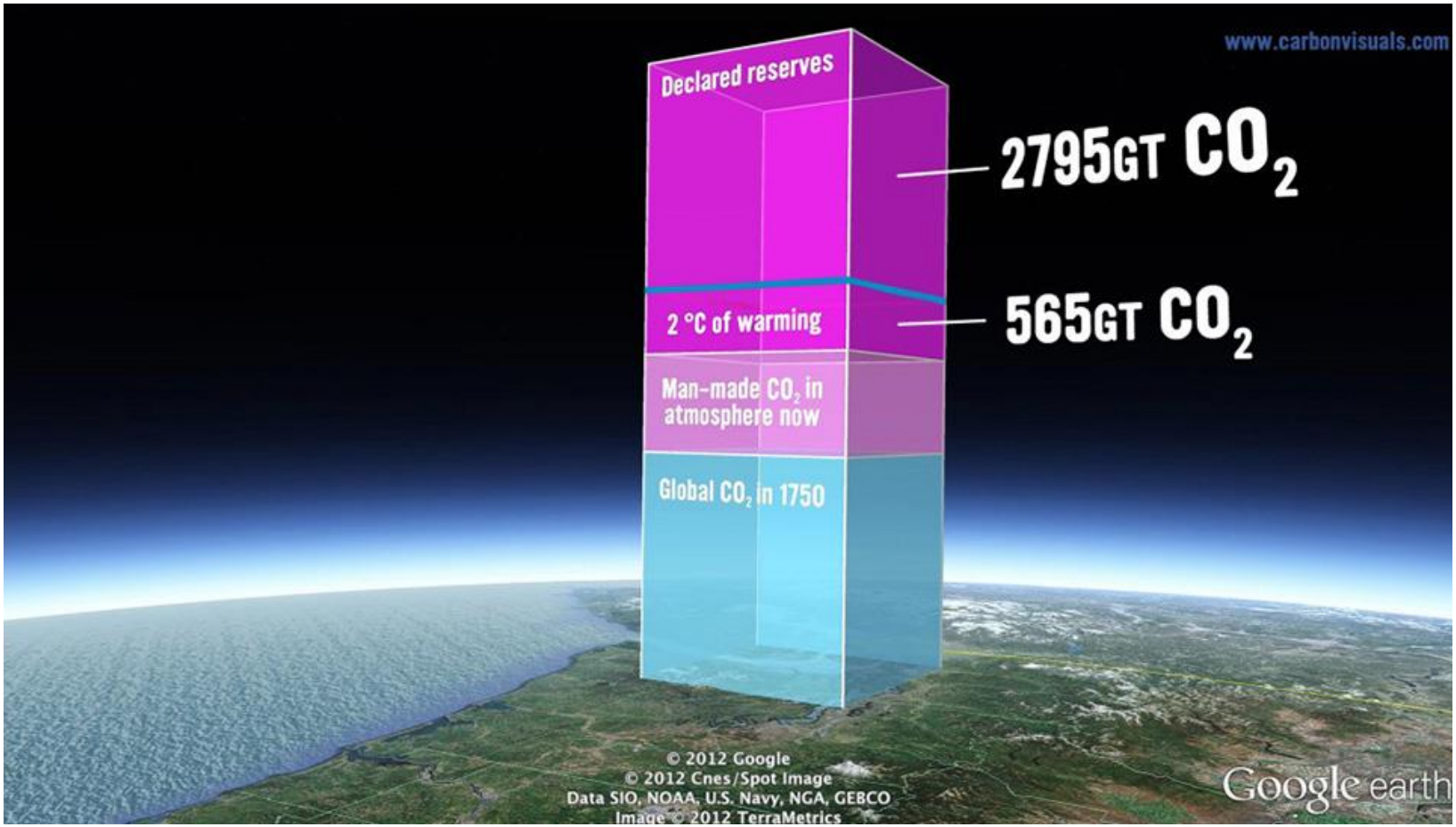
Source: IEA Mobility Model 2014

New Trends Moderate Growth Outlook

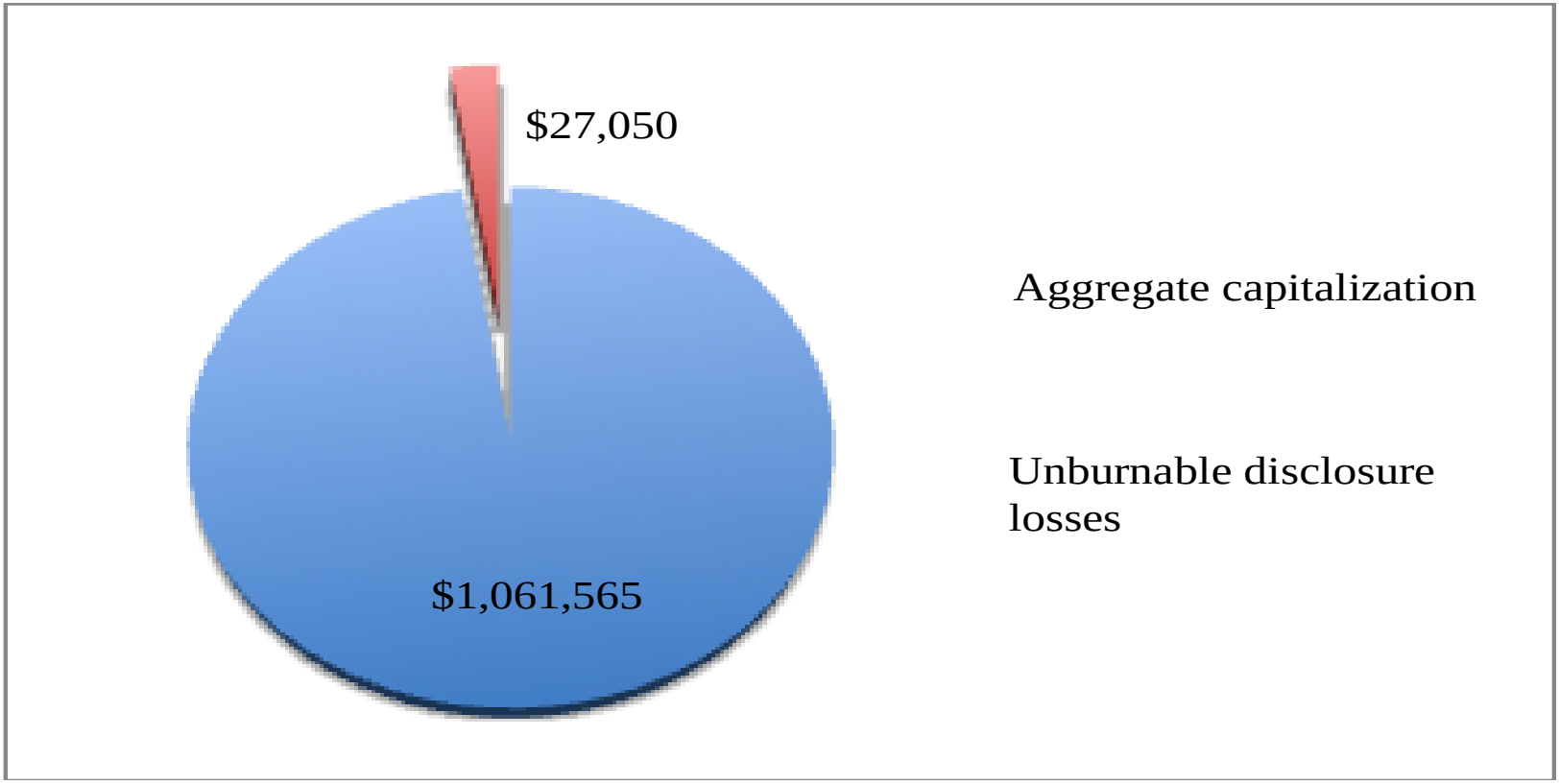


Source: IEA Mobility Model 2014

Unburnable carbon



Aggregate loss (2.48% of market capitalization) (after controls)



Griffin, Lont, Jaffe, Dominguez-Faus, *Energy Economics*, Fall 2015