

Why It's Oil & What do Do

Oil: The Largest Climate Threat

Cheaper Oil: The Road To Climate Security

Competition: The Key To Cheaper Oil

Monopoly And Volatility: Blocking
Competition

Ring Fenced State Markets: Scaling
Competition

Of fourteen "no return" carbon bombs identified by Greenpeace, 10 are oil and gas – only 4 coal.

Largest dirty energy expansions by 2020

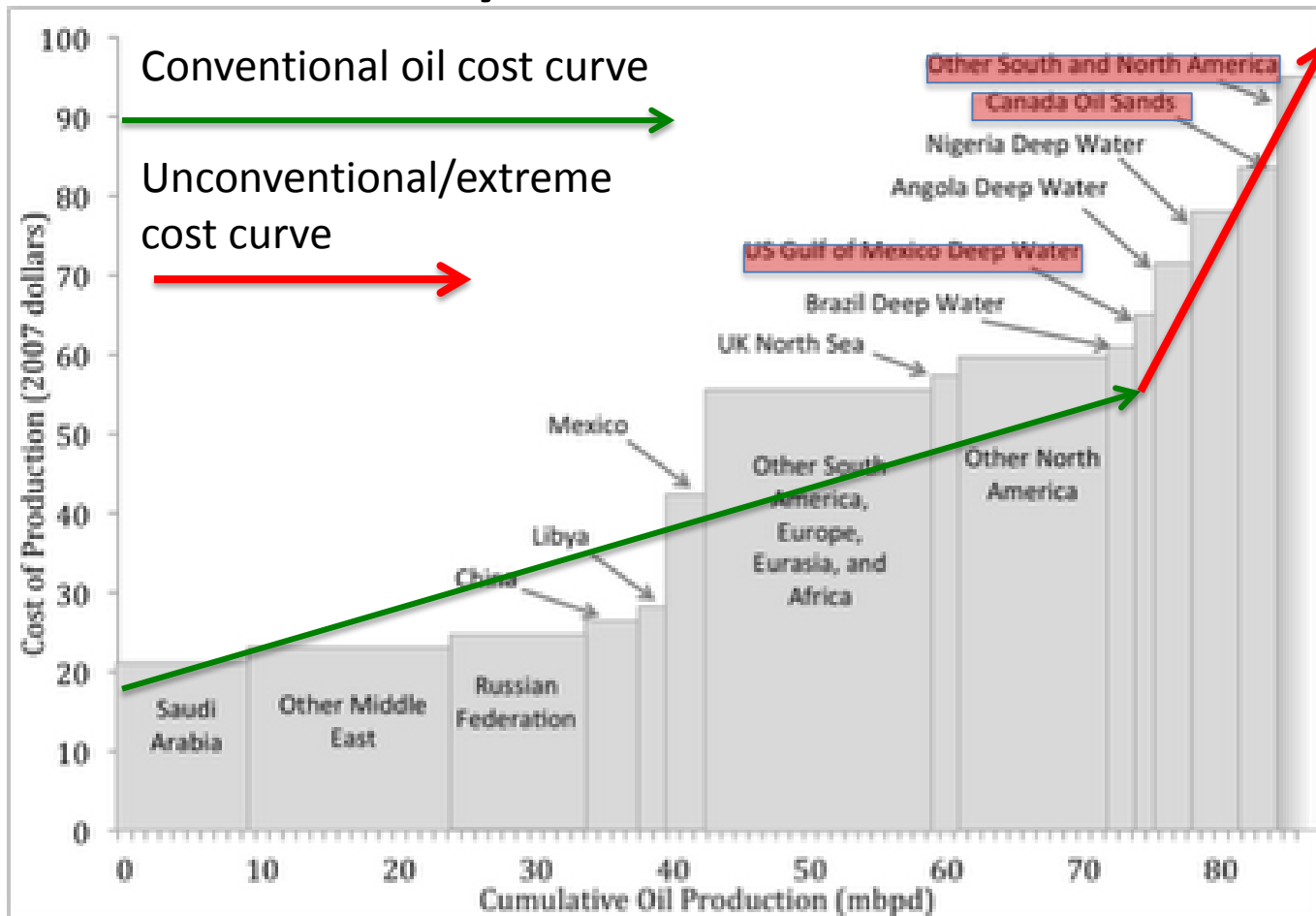
Total new CO₂ emissions = 6,340 million tonnes a year by 2020.

Time to Get Serious About Oil



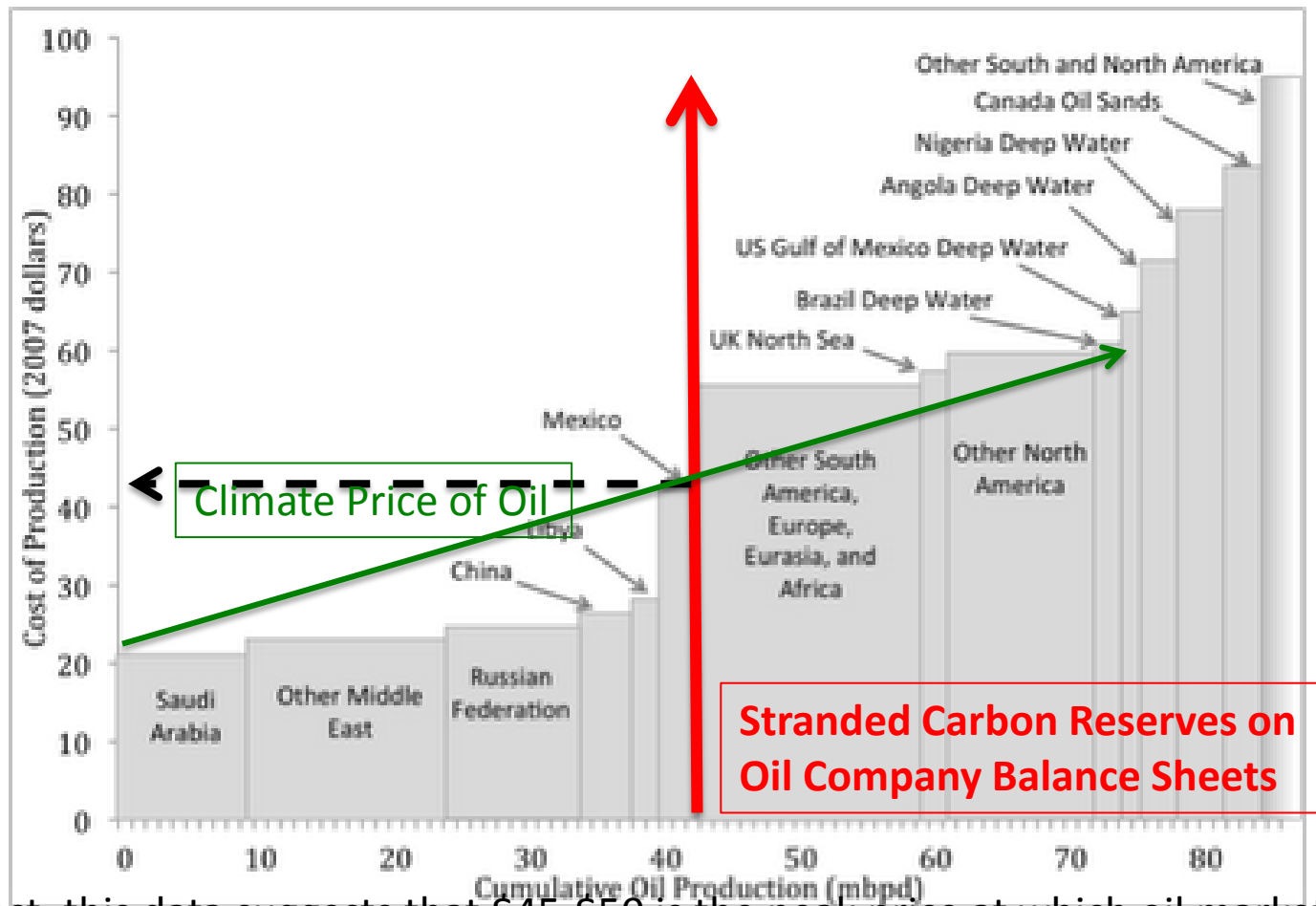
Source: Ecofys

The Sources– and Costs – of Today’s 90 mbd of Oil



About 75 mbd of today’s oil is conventional sources – the last 15 mbd is unconventional or extreme crude reserves costing more than \$60 bb including all new US/Canadian oil. Unconventional oil costs more – and reserves are limited, meaning a much steeper cost curve.

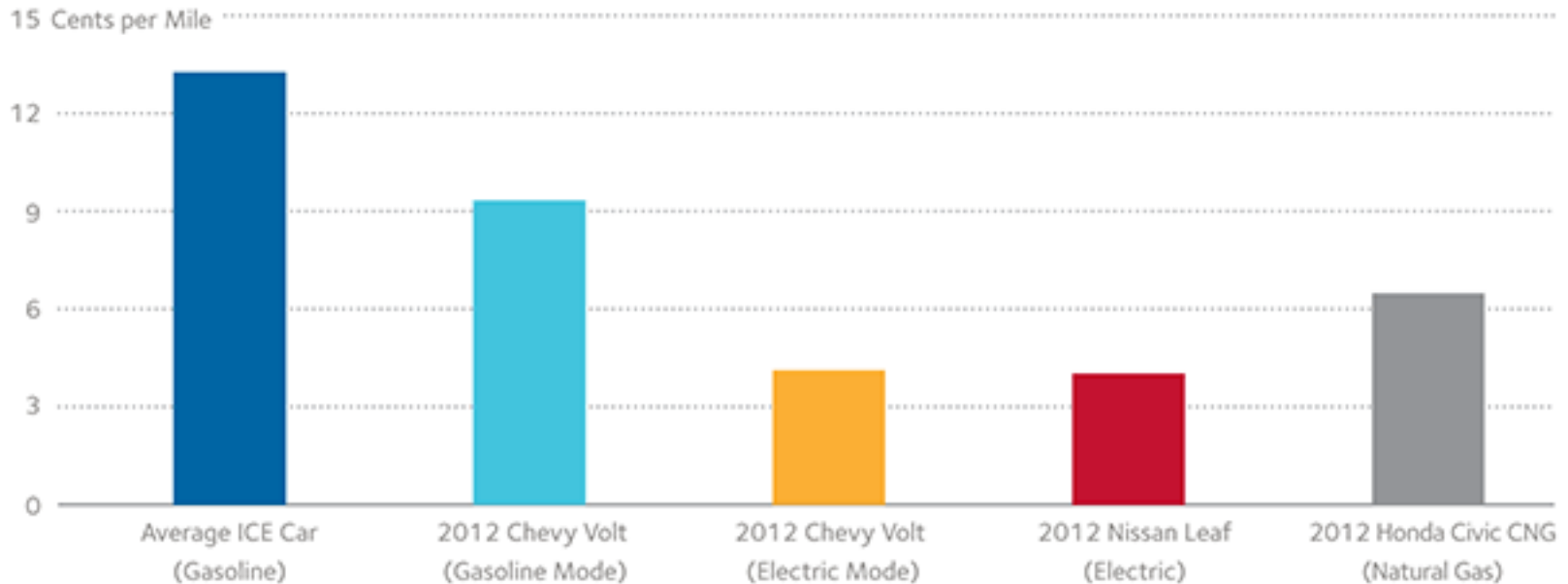
And How Much Carbon Space is there for Us to Burn this Oil?



While inexact, this data suggests that \$45-\$50 is the peak price at which oil markets pump only climate permissible reserves – and that any oil costing more than this should become stranded carbon, incorrectly carried on oil company balance sheets.

We Shouldn't Have to: Alternatives Cost Less than \$100 Oil

Fuel Cost for Selected Alternative Fuel Vehicles, 2012

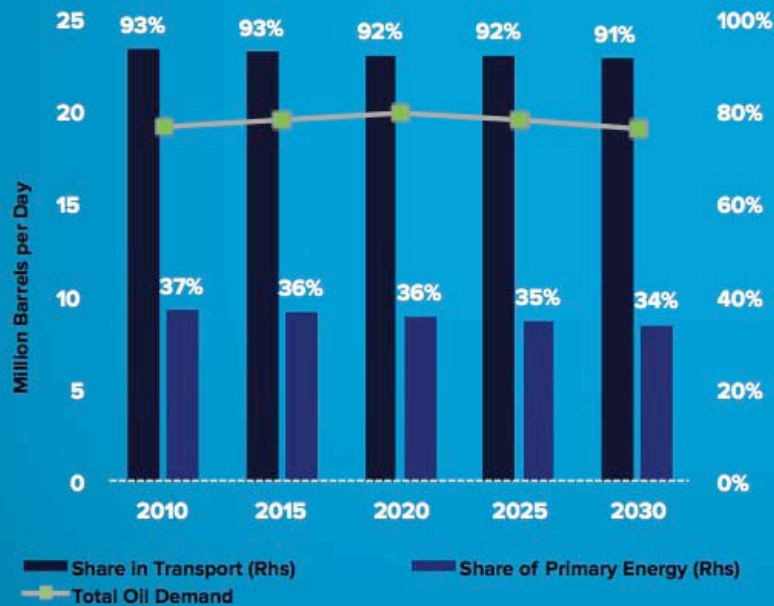


Source: SAFE analysis based on data from: EPA; and DOE, EERE

But US is not on Track to Reduce Oil Dependence

- According to DOE, oil will remain the nation's largest source of energy in 2030, accounting for 90 percent of transport fuel.

PETROLEUM FUELS IN THE U.S. ECONOMY (FORECAST)



Source: DOE, EIA

Securing America's
Future Energy

One Reason: Alternate Fuels are Locked out of Distribution Channels

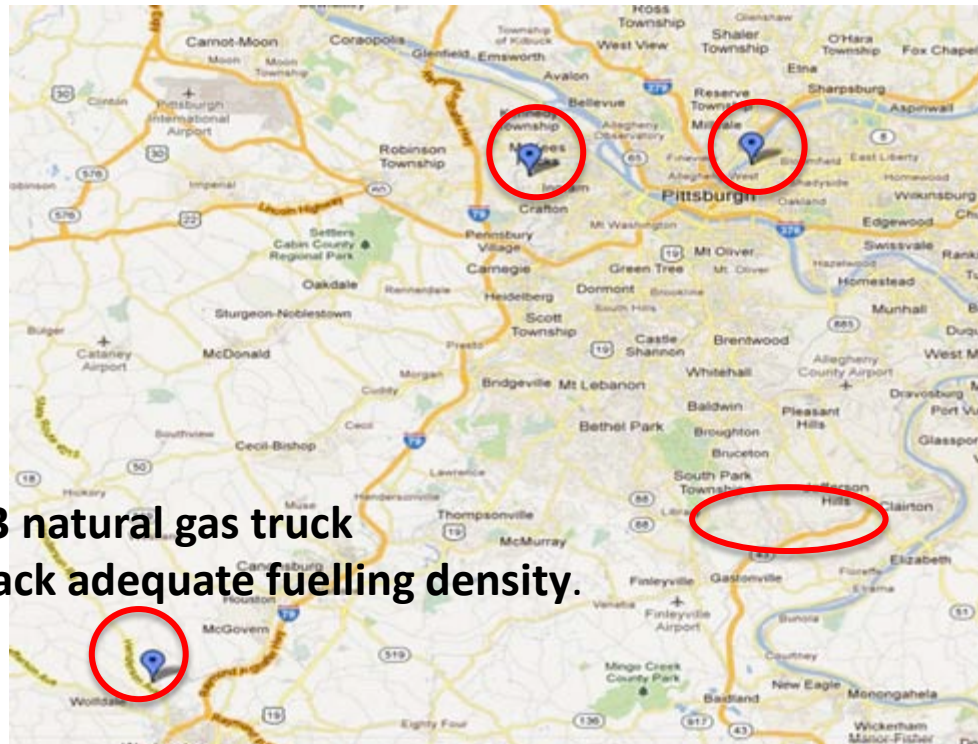
Natural Gas Trucks: upfront costs of up to \$70,000, but big lifetime savings

Lifetime Private Benefits of Switching from a Conventional Gasoline Vehicle to a Natural Gas Vehicle (Dollars)

	Pickup truck (15-MPG)	Sedan (30-MPG)	Heavy-duty truck (5-MPG)	Heavy-duty truck (7-MPG)
Savings on fuel	\$15,171	\$7,586	\$186,828	\$133,440
Extra cost of natural gas car	-\$11,000	-\$5,500	-\$70,000	-\$70,000
Total private benefits	\$4,171	\$2,086	\$116,828	\$63,449

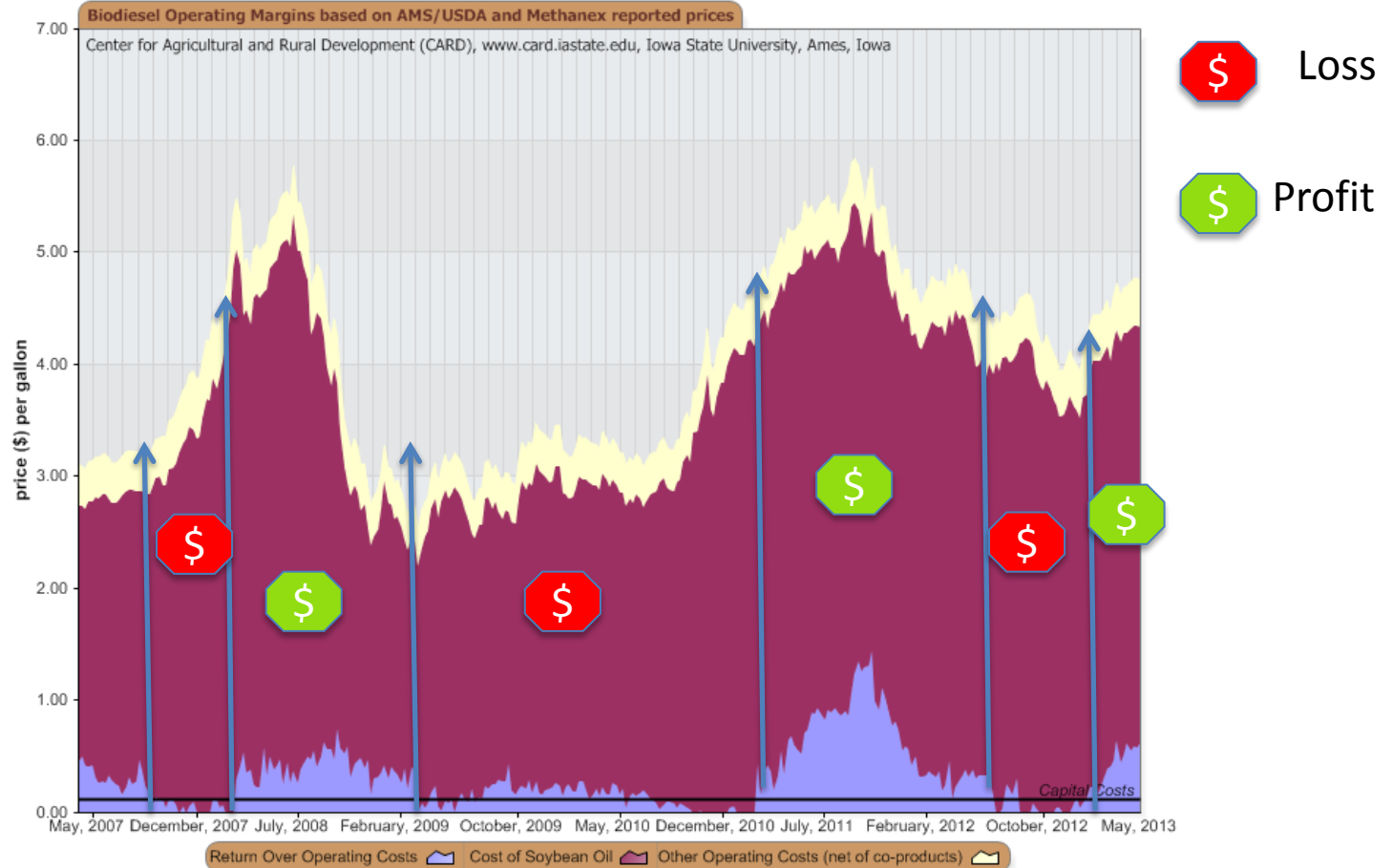
NOTE: Costs do not include the inconvenience associated with fewer refueling stations. The table assumes a gasoline price of \$3.46/gallon, a diesel price of \$3.81/gallon and a CNG/LNG price of \$2.00/gal. Calculations for the sedan and the pickup truck assume 15,000 miles driven annually and for a lifetime total of 200,000 miles. The heavy-duty truck is assumed to be driven 100,000 miles a year for a lifetime total of 500,000 miles. Future costs and benefits are discounted at 4 percent.

If you bought a natural gas vehicle in Pittsburgh, where to gas up?



Daimler US rejects 2 out of every 3 natural gas truck Customers because their regions lack adequate fuelling density.

Another: Price Volatility Makes Oil Substitutes Non-Investable

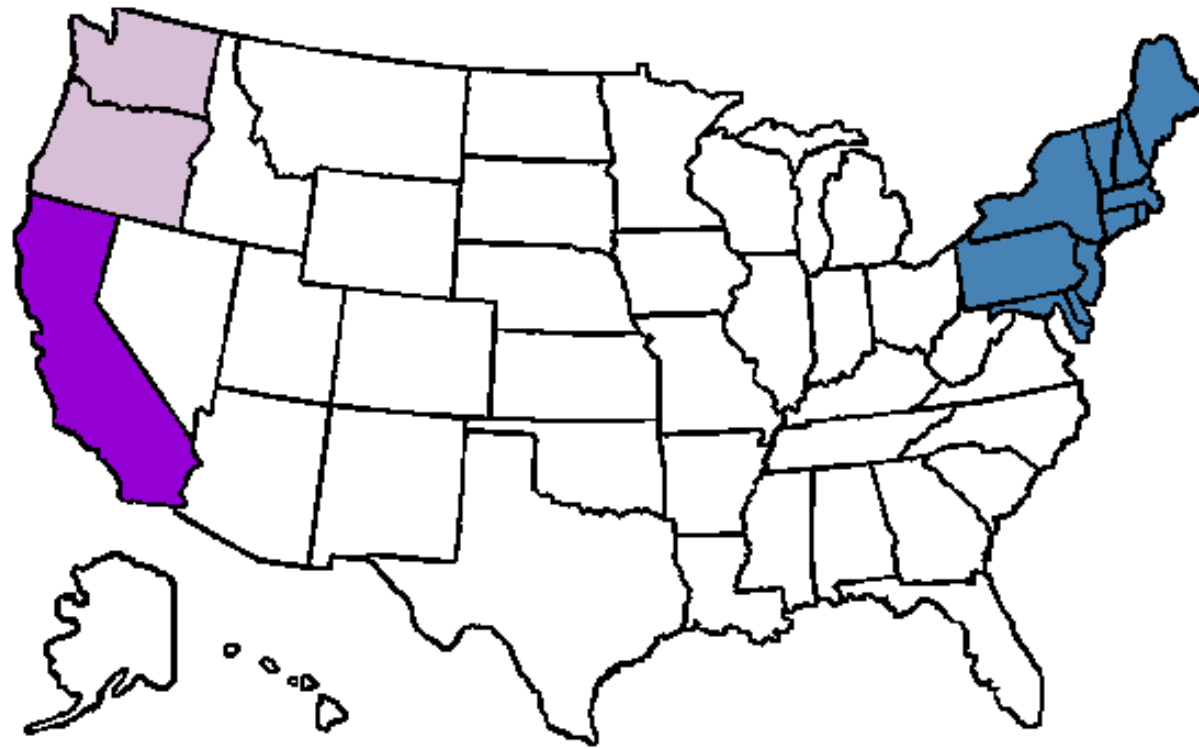


Periods of profit and loss for bio-diesel wiped out early investors; send markets for oil substitutes the message that investment is too risky

Breaking a Sovereign Monopoly: A Policy Suite of Market Reforms

- Test new Anti-Trust Theories
- Distribution Diversity Mandates
- Price Indexed Oil Taxes
- Vehicle Purchase Mandates or Feebates
- **Ring Fenced Portfolio Markets**
- Global Oil Substitution Partnerships

The Key Intervention: Ring-Fenced Portfolio Markets for Oil Substitutes



- LCFS adopted
- Northeast & Mid-Atlantic LCFS (in dev.)
- LCFS in development**