



Energy Security, Economic Development and Environmental Enhancement: The Clean Coal Agenda

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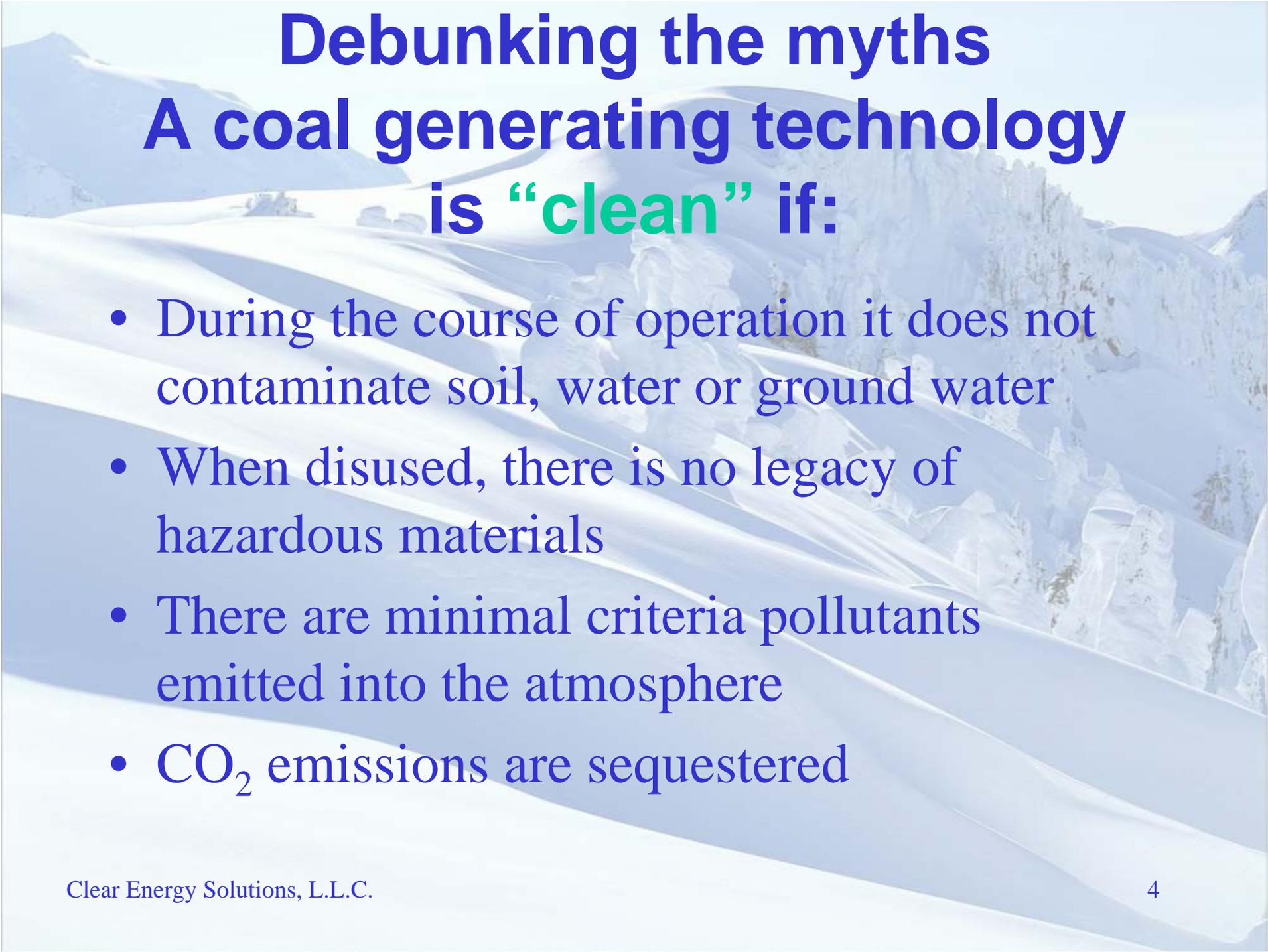


The Legacy of Oil vs. The Future of Coal

- With respect to energy, both private and public sector leaders in the United States face a fundamental choice: perpetuate a growing dependence on foreign sourced petroleum *or* shift large segments of America's demand to an abundant domestic resource.
- The emergence of the Chinese and Indian economies as major consumers of energy resources compounds a competition for petroleum resources controlled by political forces that are unstable at best and increasingly hostile to the values embodied in American society.

Perpetuating a dependence on oil based on our misperception of coal

- Commentators who deplore our entanglement with the politics of declining global oil reserves seem blinded to coal as a domestic energy resource.
- Popular perceptions of coal as the mortal enemy of the environment; the inevitably polluting “fossil of fossil fuels.”
- In the belief that “clean coal” is a myth we fight for oil and dream of hydrogen



Debunking the myths

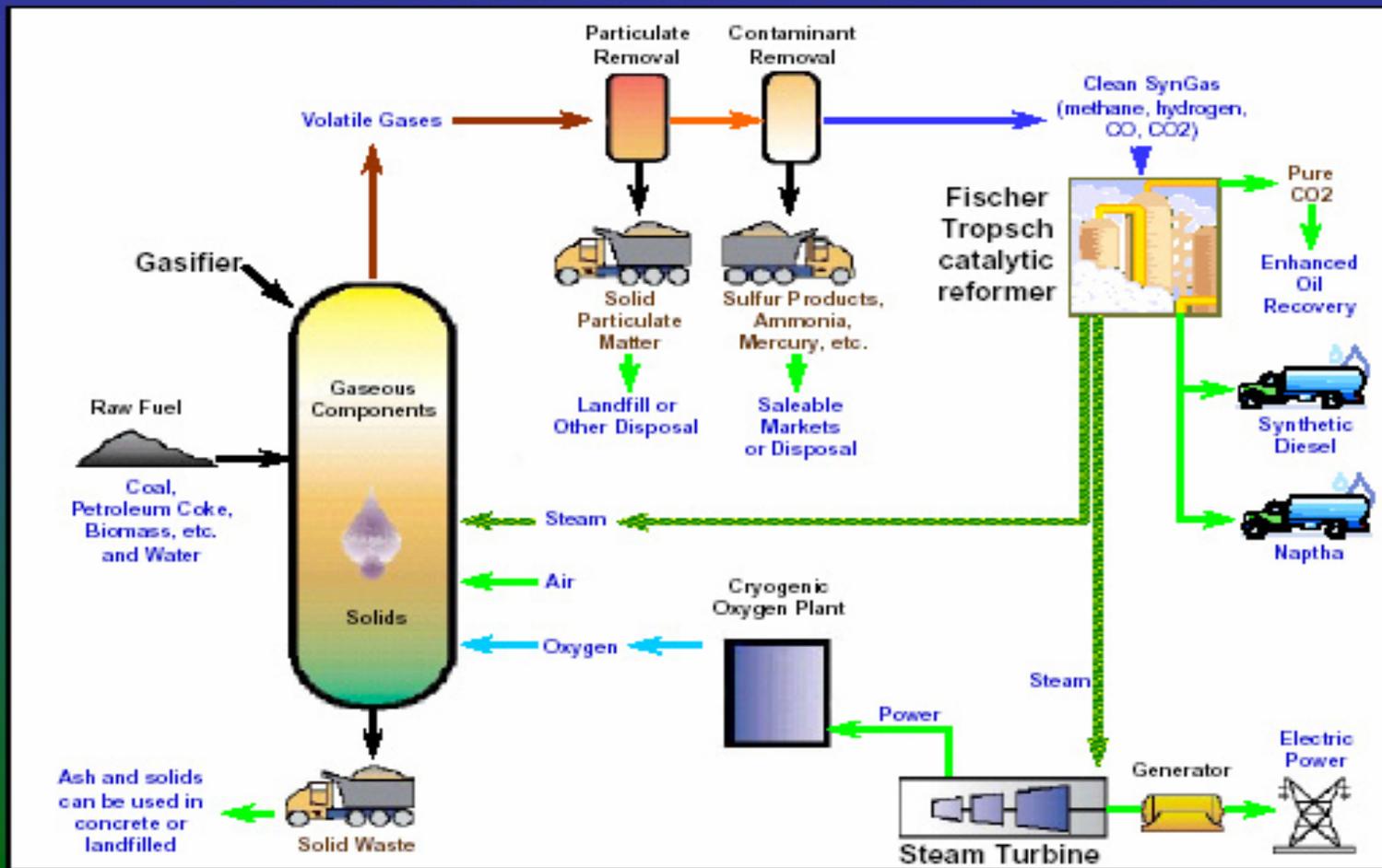
A coal generating technology is “clean” if:

- During the course of operation it does not contaminate soil, water or ground water
- When disused, there is no legacy of hazardous materials
- There are minimal criteria pollutants emitted into the atmosphere
- CO₂ emissions are sequestered

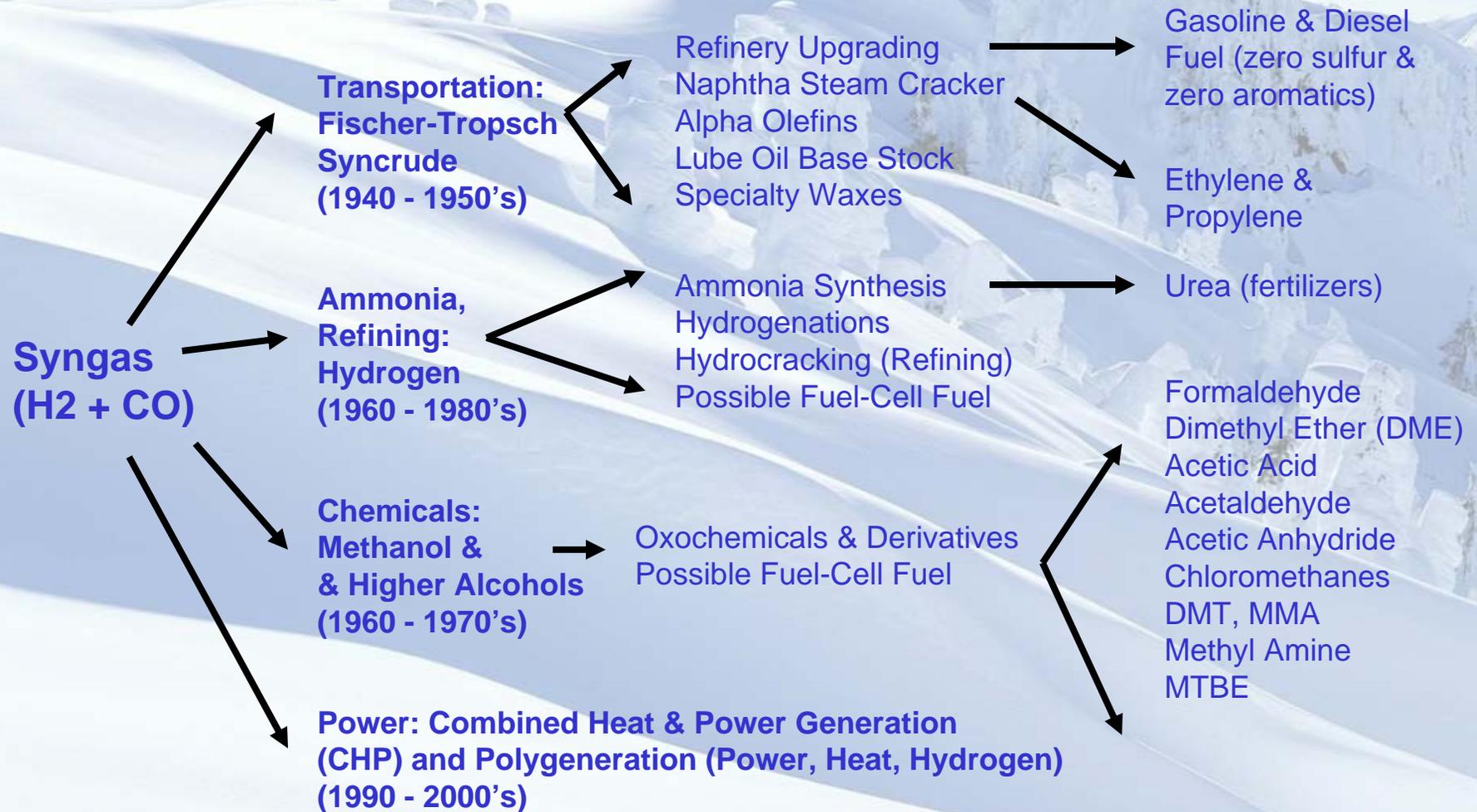
Basic Proposal

- Meeting each of these criteria with proven technology by constructing the first US Coal to Synthetic Fuels and Electricity Plant (CTSF&E®)
 - 300 MW of electric co-generation capacity using waste heat
 - 25,000 bbl/day of ultra-clean synthetic diesel fuel
 - 18,000 tons/day coal demand

Coal Gasification to Diesel Fuel



Coal Gasification Technology is used now in many Industries, worldwide



An Energy Future: Electricity Supply

- Western CTSF&E[®] Facility
 - First large-scale North American application
 - Proven technology
 - Utilizing North America's most abundant fossil fuel – coal
 - The waste heat from the CTSF&E[®] plant co-generates 300 MW of electric energy for wholesale markets

An Energy Future: Transport Fuels

- The synthetic fuel displaces reliance on foreign oil even as it relieves environmental pollution from petroleum based diesel.
- The CTSF&E® facility produces a zero sulfur, ultra-low aromatics, and high cetane substitute for #2 diesel
- Transforms existing engines from the #1 source of urban and rural NO_x, SO_x and PM emissions through fuel substitution
 - No need for mechanical modification in any stationary or mobile compression engine to achieve these benefits
- Uses existing diesel fuel delivery and storage infrastructure to supply synthetic substitute

A Unique Opportunity

- Ultimate alignment of consumer and private capital interests
 - Low cost, reliable supply of electricity
- Sponsorship of a CTSF&E[®] facility allows Entities to:
 - Establish a leadership position in implementing a “total energy solution” for the Western U.S. economy
 - Attract major partnership opportunities with both private and public sector actors

Alignment of Interests

- Reducing dependence on imported oil and natural gas through CTSF&E® facilities resolves various energy, environmental and economic development issues
 - Benefits to a broad spectrum of current stakeholders
- Aligns a variety of Interests

Project Sponsors:

- Low-cost source of generating capacity and energy
- Decrease dependence on natural gas-fired generation
- Increased flexibility for meeting emissions through acquisition of emission credits from mobile sources
- Showcases project sponsors as consumer of green energy and a facilitator of green fuels and technology
- Places sponsors at the forefront in the development of an environmentally sound use of abundant coal resources
- Investment option to replicate technology through-out North American and World

Federal Government:

- Meaningfully reduces energy dependence
- Reduces single largest commodity debit in America's balance of payments: \$350,000 per minute cost of imported petroleum
- Facilitator of green fuels and next generation technology
- Resolves public health issues associated with combusting diesel fuel
- Addresses largest remaining mobile source for criteria pollutants

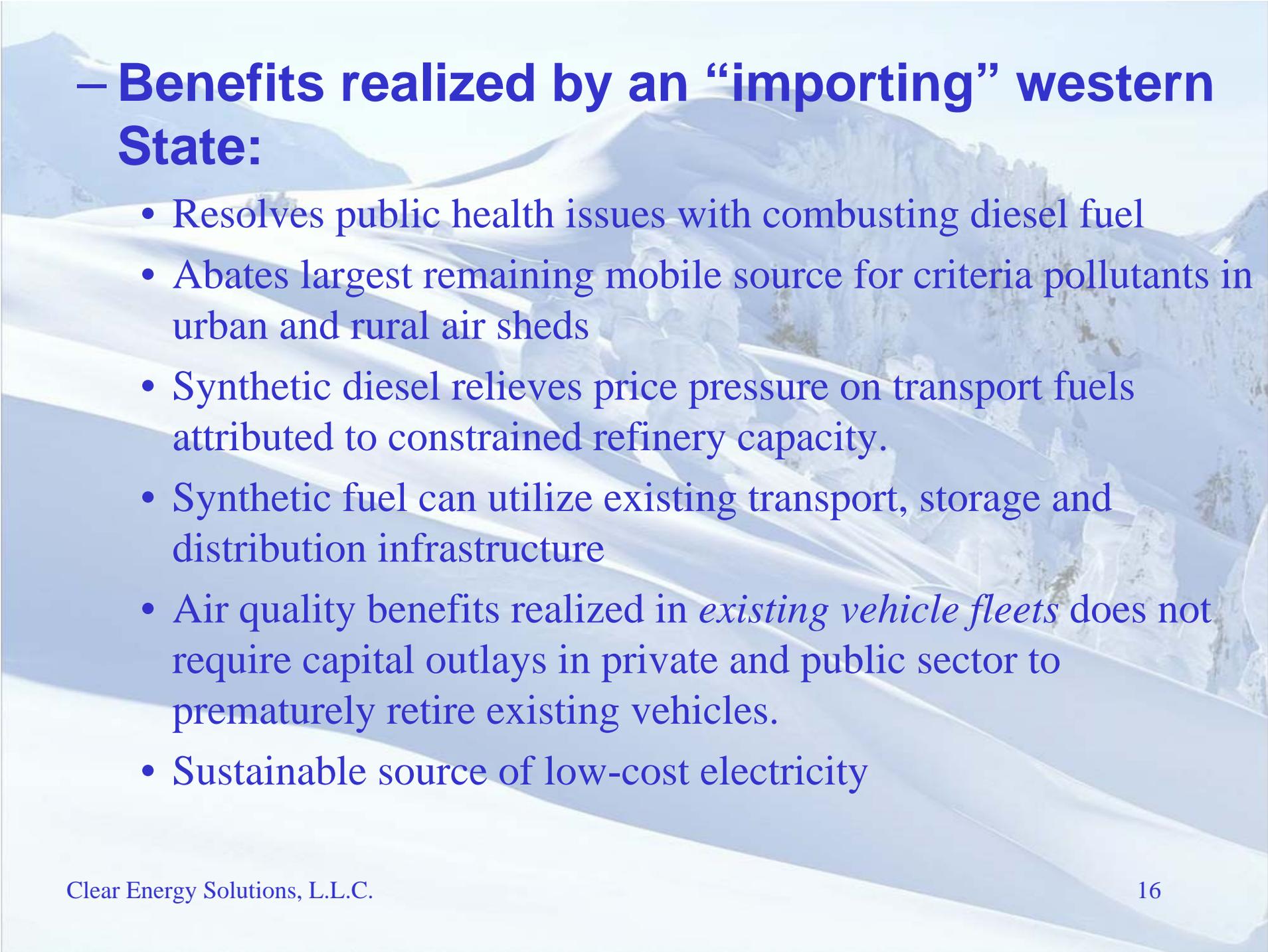
Federal Government:

- Alleviates regional refinery capacity shortage: synthetic diesel may be burned “neat” or used as a blending agent
- Burning synthetic diesel relieves market shortages of refinery products
- Synthetic diesel may be blended with the refinery output of marginal units to produce a fuel that meets EPA reformulation requirements avoiding large capital outlays

Western States Energy Consumers:

Low-cost source of new generating capacity and energy

- If plant is replicated, technology relieves dependency on natural gas
- Supplies clean mobile fuels for non-attainment air basins
- Greater flexibility and cost-effective means for meeting NAAQS
- Means of addressing shortage of diesel fuel in the Western U.S.



– Benefits realized by an “importing” western State:

- Resolves public health issues with combusting diesel fuel
- Abates largest remaining mobile source for criteria pollutants in urban and rural air sheds
- Synthetic diesel relieves price pressure on transport fuels attributed to constrained refinery capacity.
- Synthetic fuel can utilize existing transport, storage and distribution infrastructure
- Air quality benefits realized in *existing vehicle fleets* does not require capital outlays in private and public sector to prematurely retire existing vehicles.
- Sustainable source of low-cost electricity

-Benefits secured by an “exporting” or “host” state:

- Opportunity to declare and achieve a “no regrets” energy and economic development policy.
- Unlock long-term, sustainable market for low and mid-rank coal reserves
- Attract inbound investments in 1.5 billion dollar projects
- Increased tax revenues from mineral severance and property assessments
- Secure high-tech, high paying employment
- Utilize carbon dioxide emissions for enhanced oil and coal bed methane recovery prior to sequestration

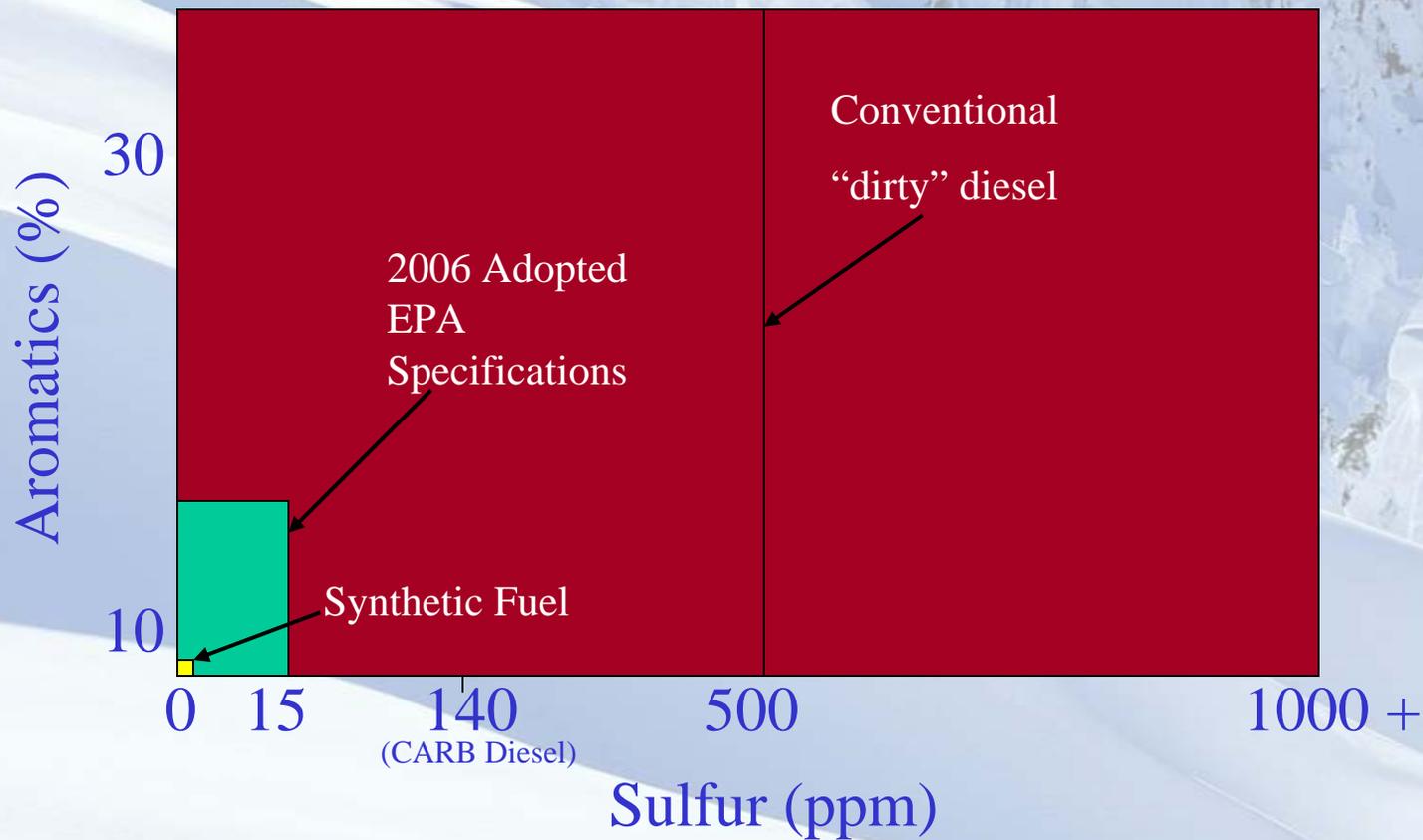
Environmental Benefits of CTSF&E®

- US Congress Approved coal-derived synthetic diesel as an “Alternative” Fuel Under 1992 EPACT
- EPA Approved as Nontoxic - Biodegradable
- Reduces Exhaust Pipe Particulate Matter
- Reduces NO_x
- Point of production sequestration of CO₂ emissions

Environmental Benefits of CTSF&E[©]

- Synthetic Fuel is Environmentally Superior Choice
 - Synthetic Fuel Properties
 - Low Aromatics <0.05 vol %
 - High Cetane Number > 70
 - No Sulfur <0.01 ppm
- Synthetic Fuel exceeds EPA Standard for 2006 (on-road) and 2008 (off-road)
 - both on fuel quality and exhaust emissions

Synthetic Fuels Exceed EPA Requirements



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