



Presentation to the
California Commission for Economic Development
“Venture Investing in Cleantech”

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Principal, Lightspeed Venture Partners

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Our mission: We partner with
exceptional entrepreneurs to build
high-growth, market-leading
companies globally

Lightspeed: At a glance



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- \$2.1B of committed capital
 - ◆ Currently investing Fund VIII: \$800M
- 22 investment professionals
- Lead investor orientation
- Global platform
 - ◆ U.S.
 - ◆ India
 - ◆ China
 - ◆ Israel
- Top-quartile performance across all funds

Selected Managing Director Investments



Cleantech & Energy-Related Investments

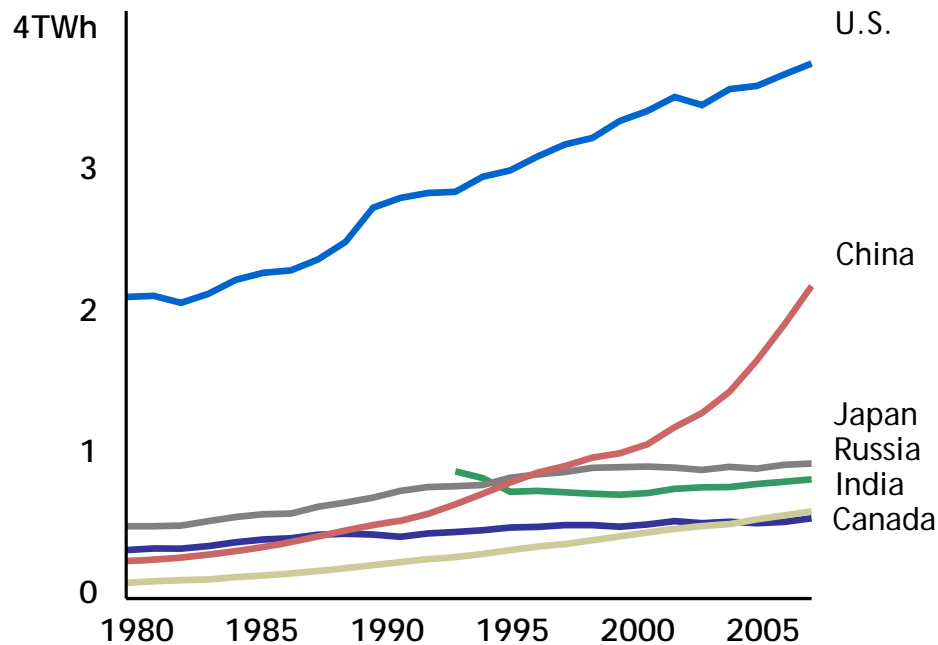


Global energy needs continue to rise along with dependence on carbon...

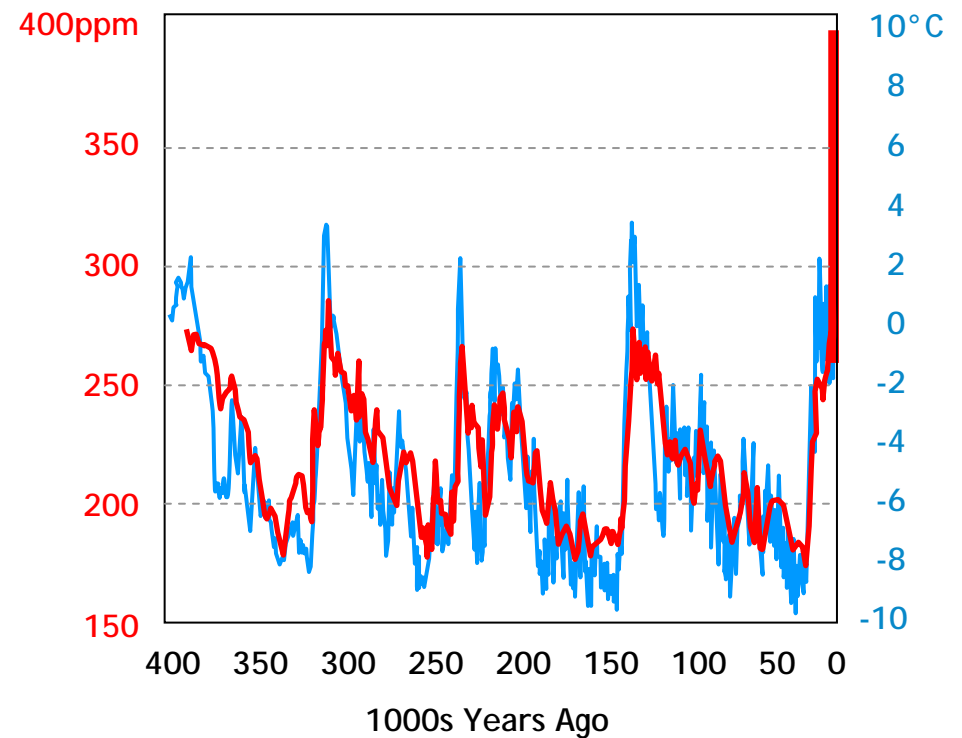


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Electricity Generation



CO₂ Levels vs. Temperature Change

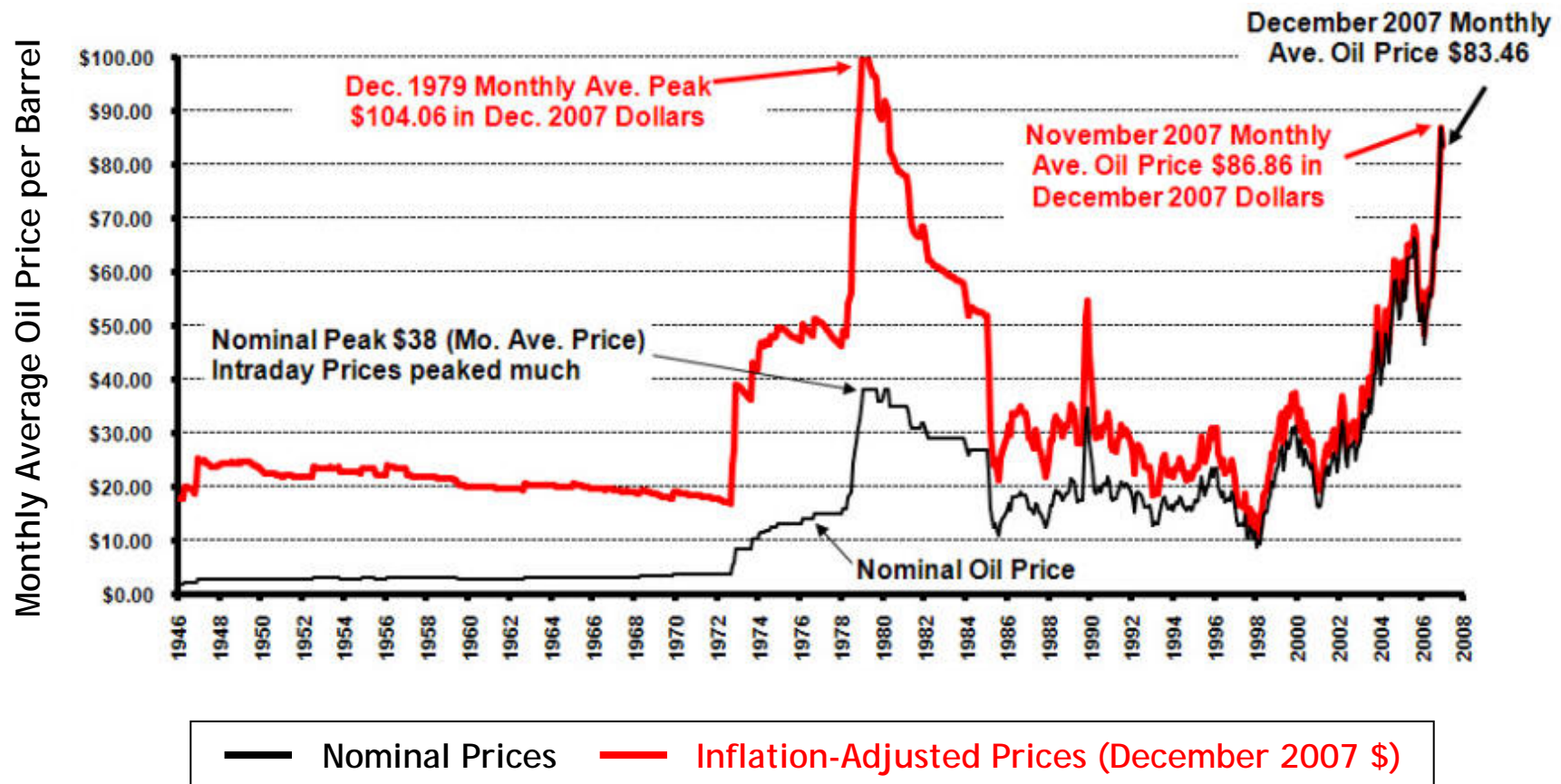


Source: IOGA, Bureau of Labor Statistics, US National Ocean and Atmospheric Administration (NOAA) / UK Climate Research Institute

...and the price of oil has reached levels unseen since early '80's



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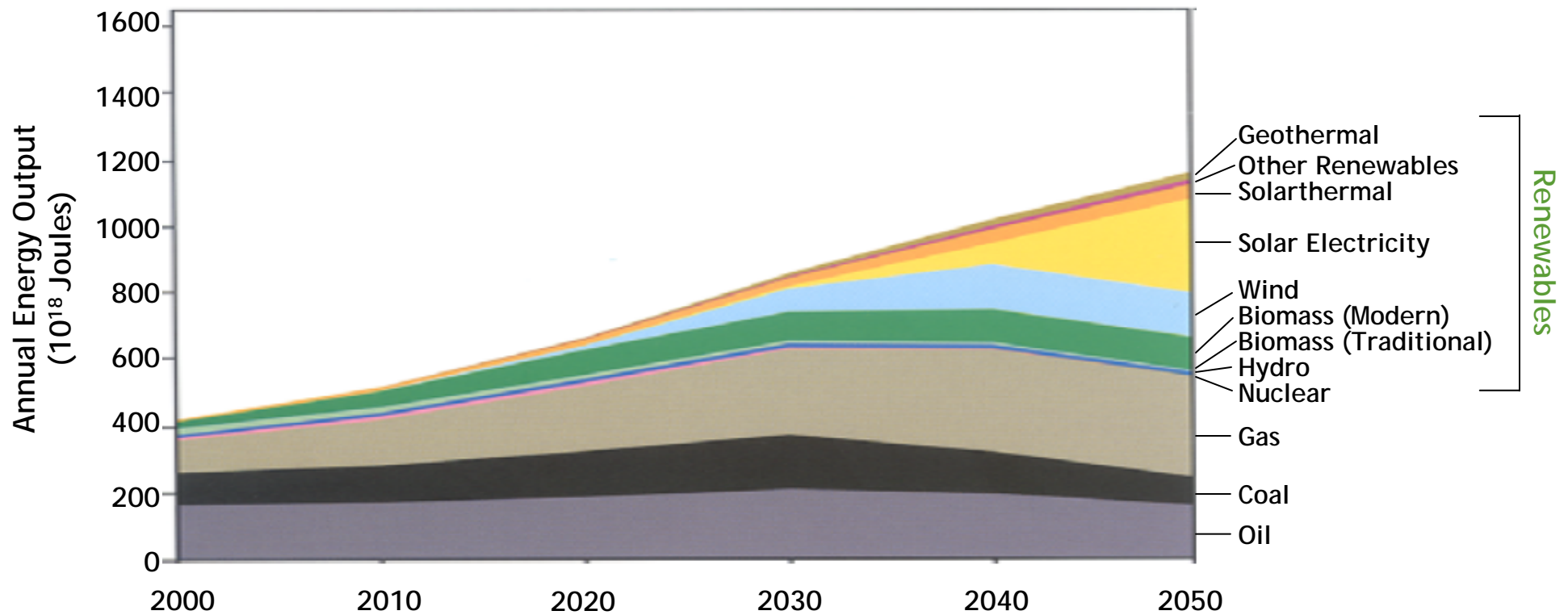
Source: IOGA, Bureau of Labor Statistics

Renewables expected to supply only 20% of energy by 2020...



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Global Sources of Energy



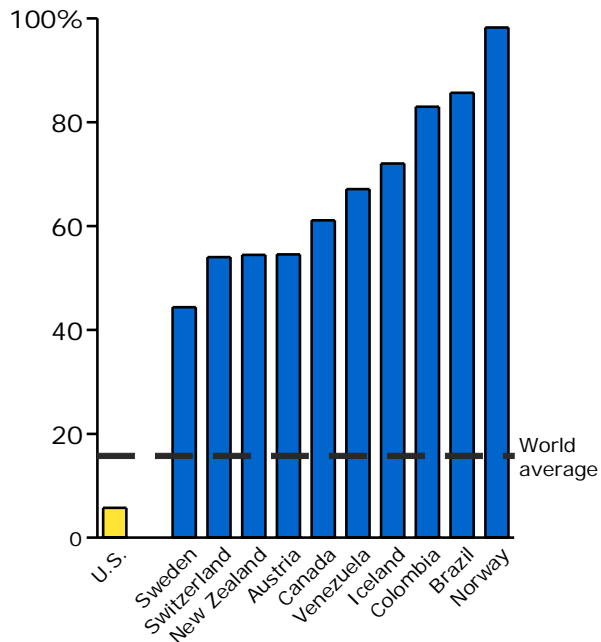
Source: Scientific Advisory Committee, German Government

...and the U.S. continues to lag in renewables adoption

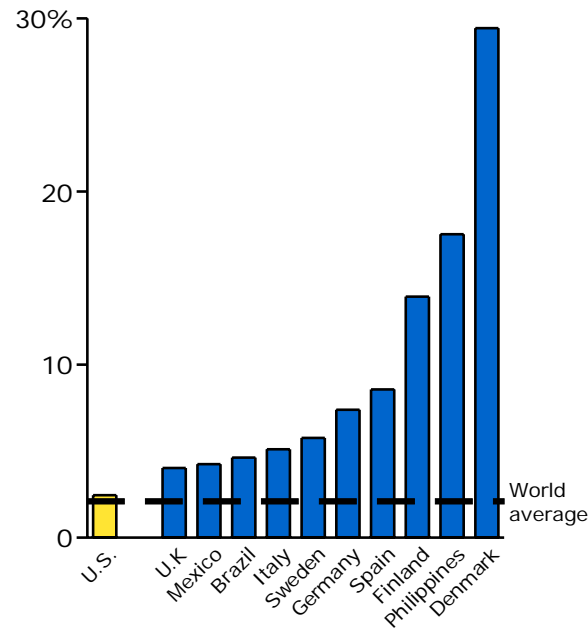


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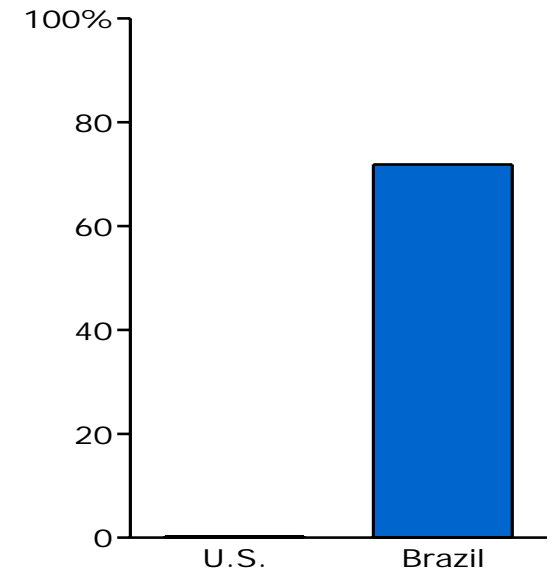
% Share of Hydroelectricity



% Share of Other Renewables



% Share of Biofuel Vehicles



Source: BP Statistical Review of World Energy 2008, Brazilian Automakers Association, U.S. Bureau of Transit Statistics, U.S. Energy Information Administration

Cleantech: a portfolio solution that comprises a broad set of sectors...



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Solar

- Polysilicon/wafer
- Cell/modules
- Balance of systems
- Financing

Wind

- Horizontal-axis turbines
- Vertical-axis turbines
- Small form factor
- Off-coast

Fuels

- Petroleum substitutes
- Coal-to-liquids
- Gas-to-liquids
- Ethanol production
- Biodiesel production

Other Generation

- Coal gasi-/purification
- Solar thermal
- Transportation tech
- Oil & gas solutions
- Hydropower
- Wave kinetics

Storage

- Batteries
- Ultracapacitors
- Grid storage services
- Fuel cells

Energy Efficiency

- Demand response
- Lighting/HVAC control
- Distributed generation management
- Automated metering

Water/Air

- Water purification
- Air purification

Other

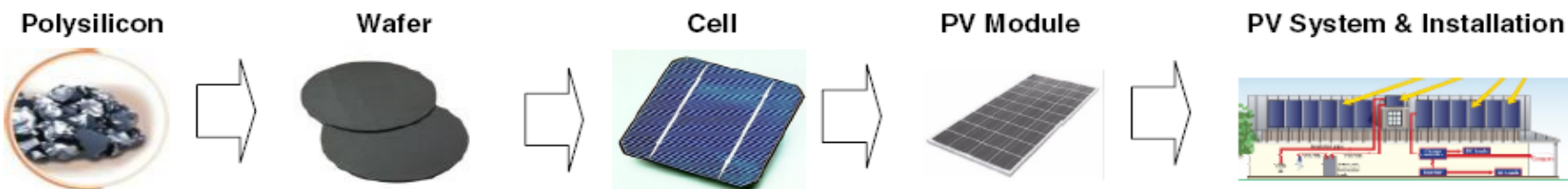
- Building materials
- Waste management
- Recycling

...each providing a depth of entrepreneurial opportunities

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Example: SOLAR

Traditional



Sample areas of innovation

- **Polysilicon**
 - ♦ Metallurgical-grade
 - **Wafering**
 - ♦ Continuous CZ method
 - ♦ Ribbon technology
 - **C-Si cells**
 - ♦ Back-contact cells
 - ♦ Sliver cells
 - **Thin-film**
 - ♦ a-Si/CdTe/CIGS/CIS
 - ♦ Dye, organics
 - ♦ New materials
 - **Concentrated PV**
 - **Module packaging**
 - **Balance of systems**
 - ♦ Inverters
 - ♦ MPP tracking
 - ♦ Systems monitoring
 - **Solar financing**
 - ♦ Residential
 - ♦ Commercial
- Solarthermal
 - Combined heat & power (CHP)
 - Capital equipment

Lightspeed's cleantech/energy investments



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Solar



High-efficiency thin-film modules

Wind

Fuels



Renewable petroleum biofuels



Algae-based biofuels/chemicals

Other Generation



Coal pre-treatment systems



Oil & gas exploration equipment

Storage



Next-generation lithium-ion batteries

Energy Efficiency



Power management for LED lighting

Water/Air

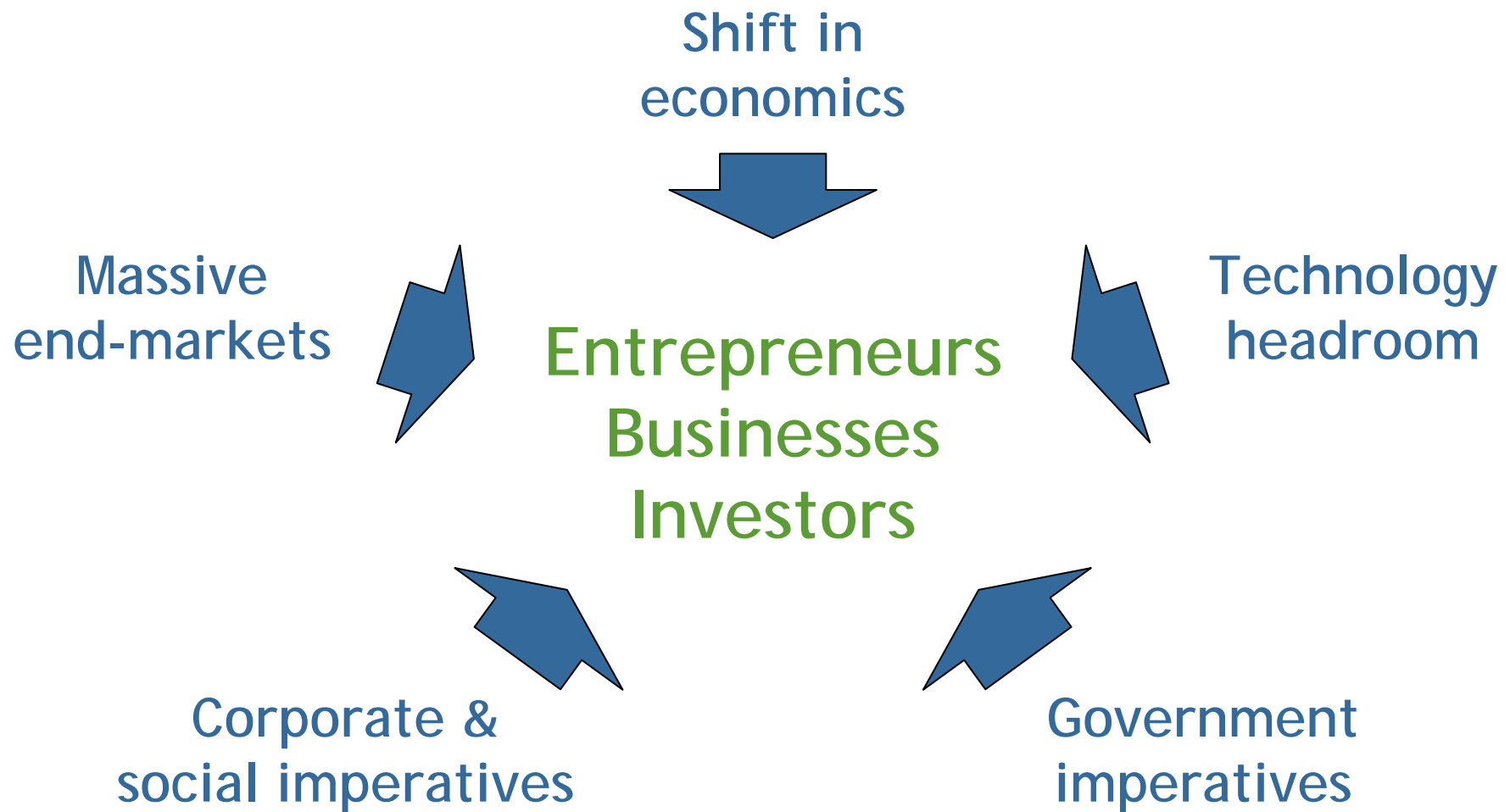
Other



Cleantech media & research

Why cleantech now?

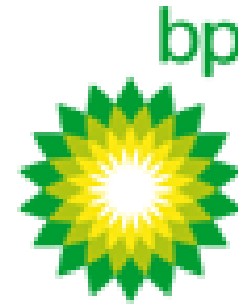
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Sampling of corporate and social initiatives



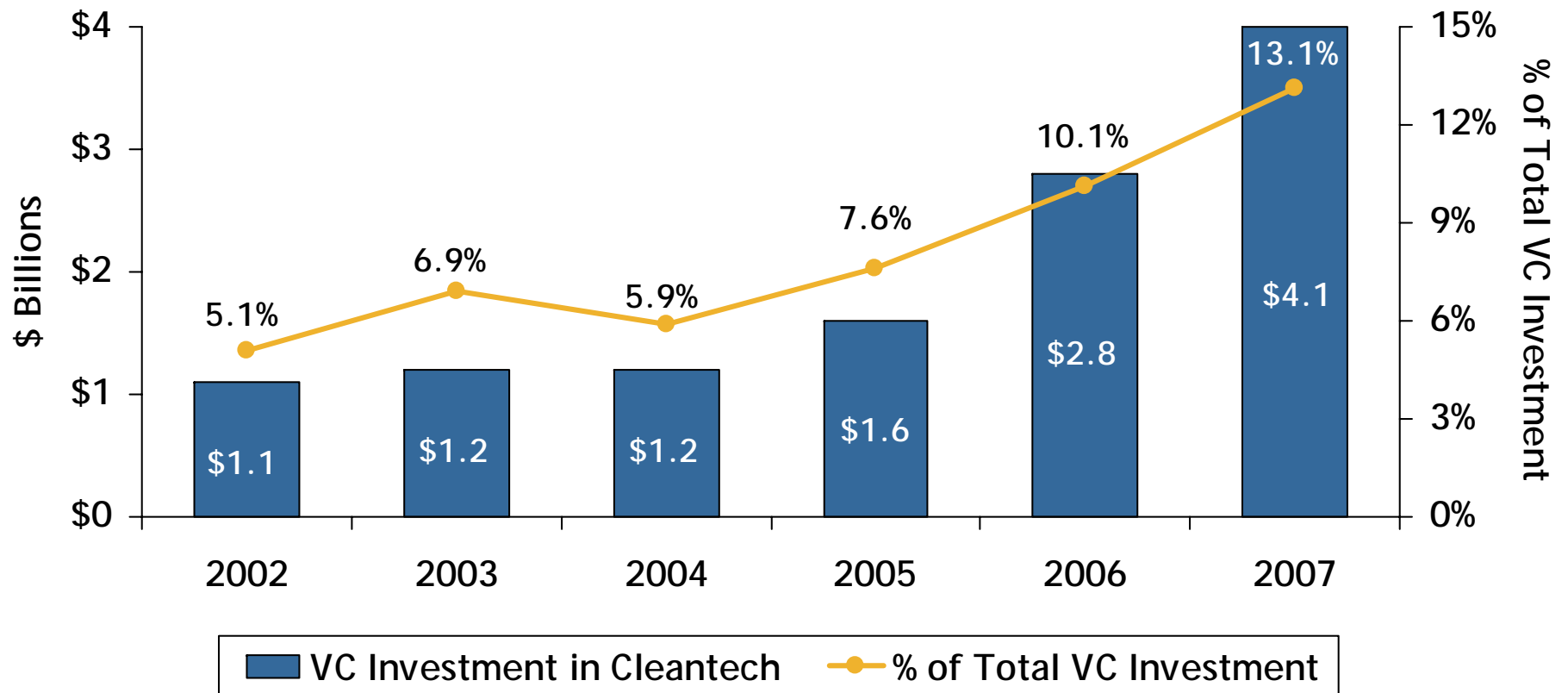
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Cleantech venture investment up significantly since 2002...



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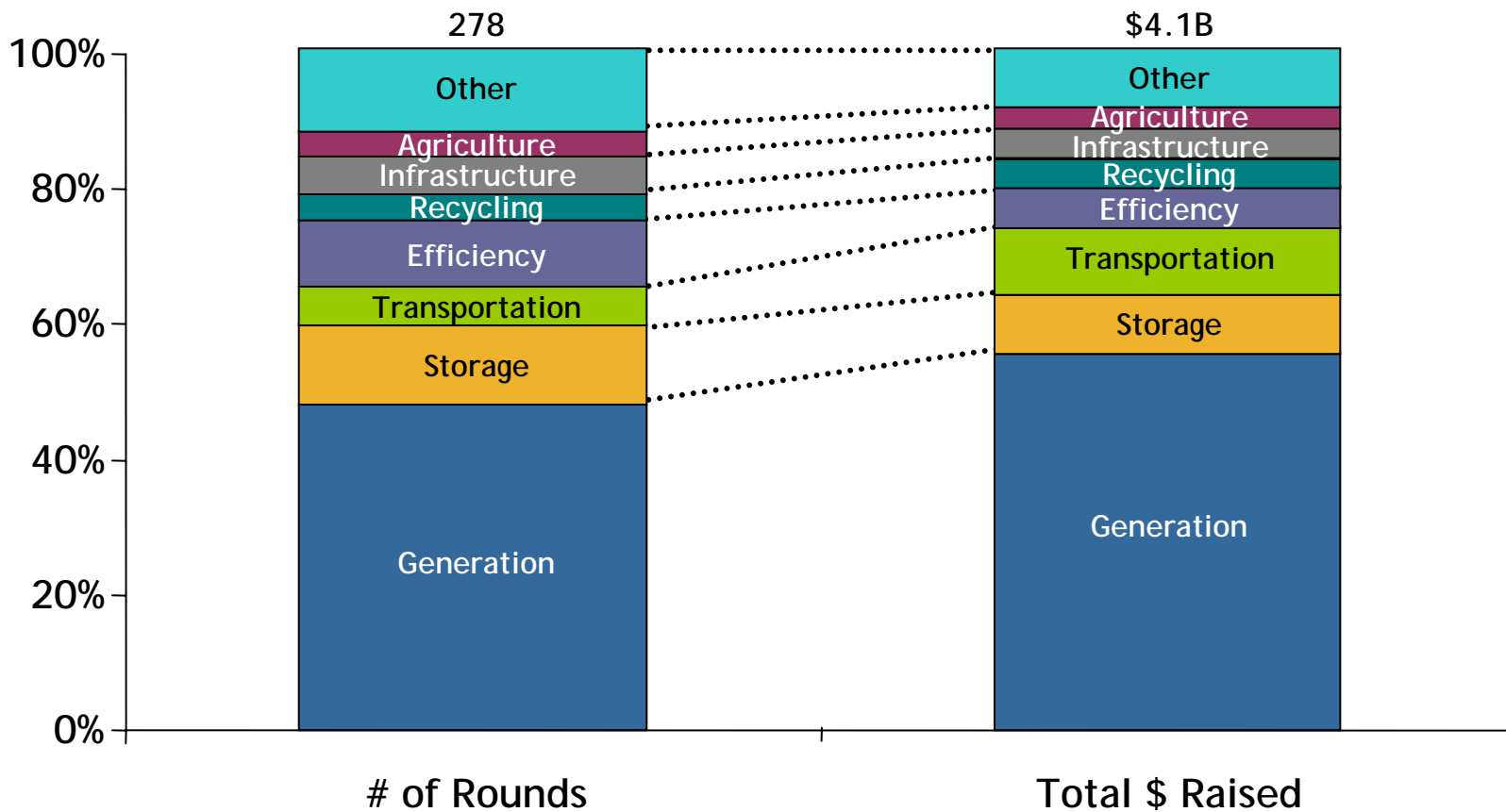


Note: Includes only North American deals; Source: Cleantech Venture Monitor

...with the bulk of capital going into generation during 2007



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 Source: Cleantech Venture Monitor

Cleantech-specific deal evaluation criteria

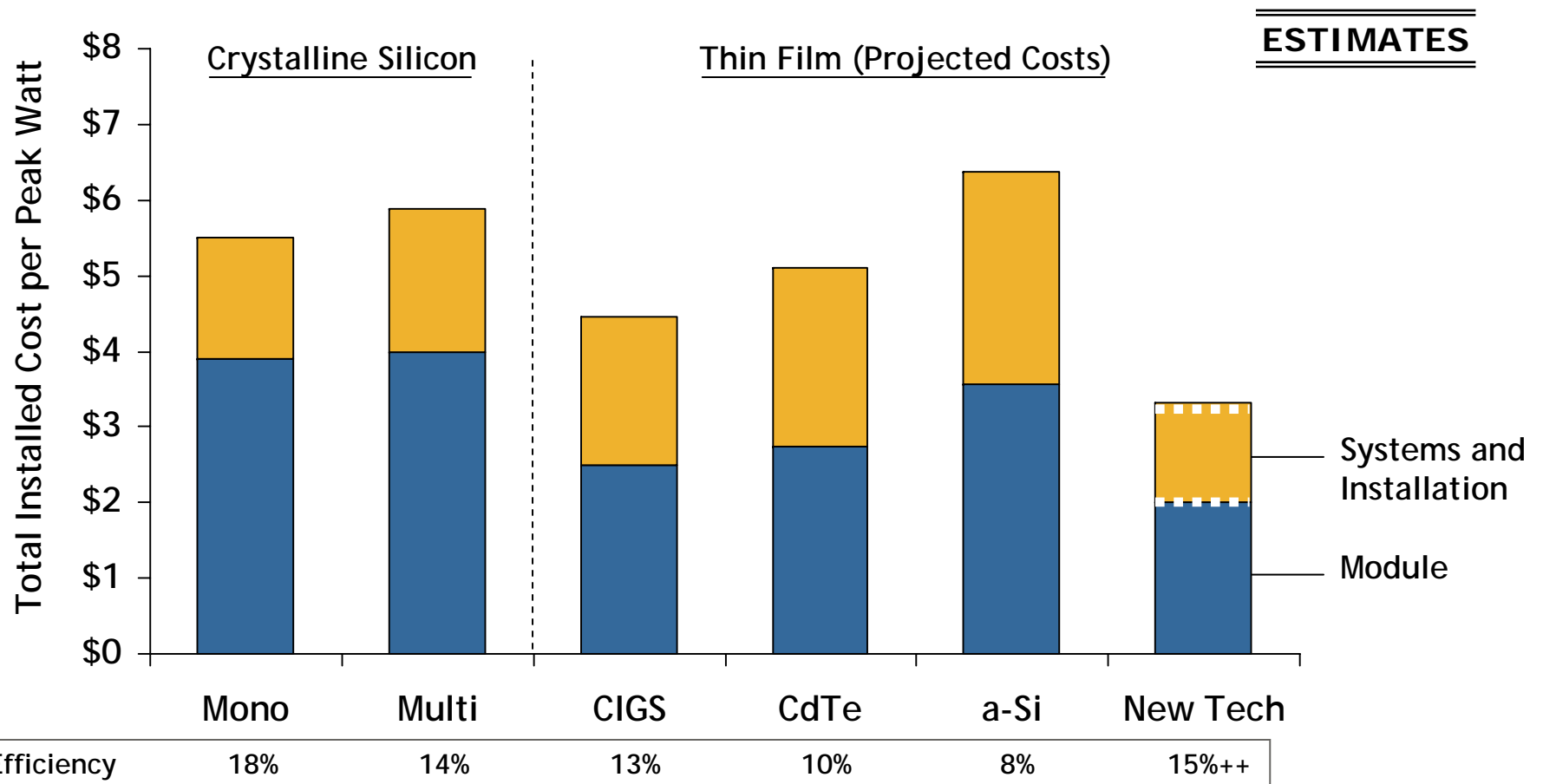


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- Massive addressable market opportunity
- Strong technology, process defensibility
- Convincing fundamental economics
- Viable distribution, infrastructure compatibility
- Capital efficiency, milestones tiered for risk reduction
- Time-to-market consistent with investment horizon
- Macroeconomic, regulatory, and public policy tailwinds
- Team with start/scale-up experience and domain expertise

Solar: Cost economics

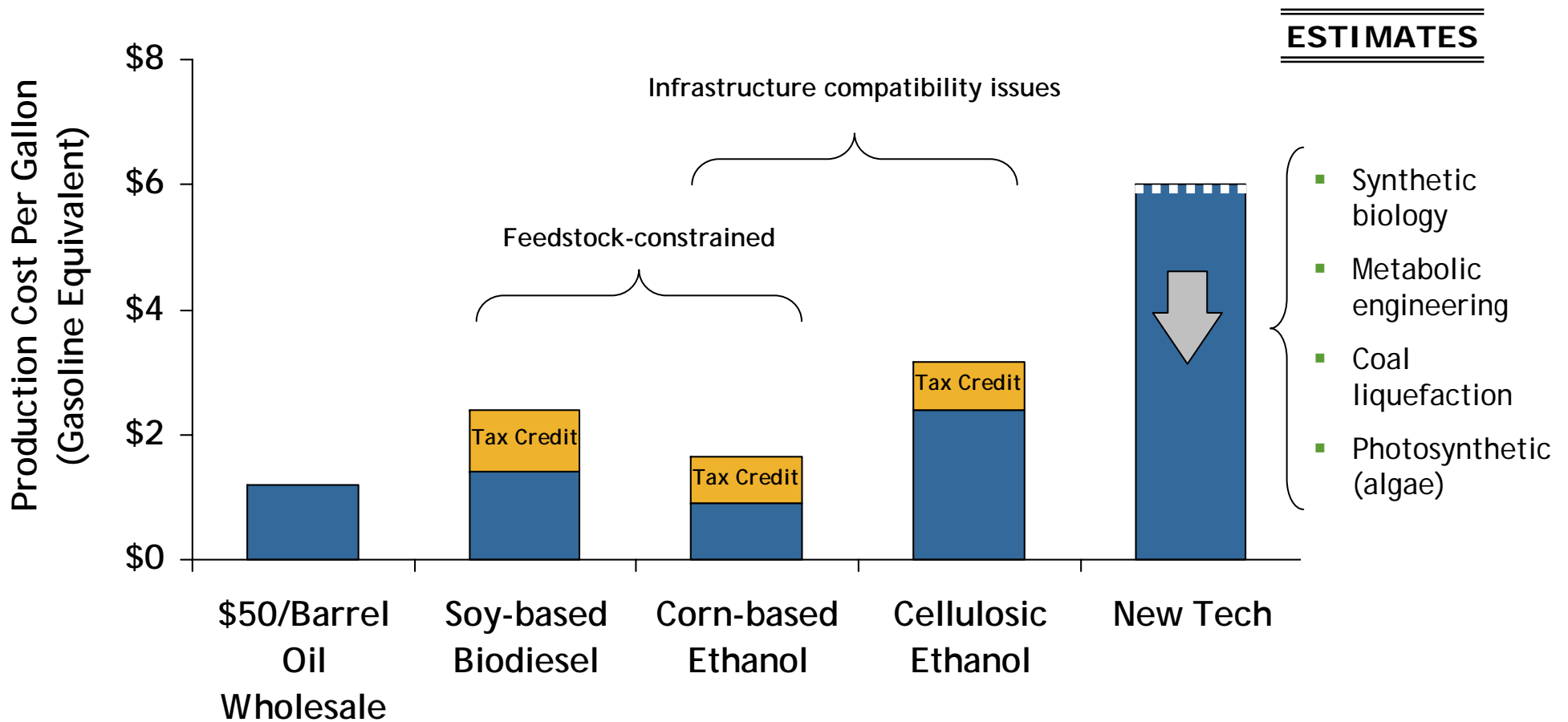
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Source: Lightspeed analysis

Biofuels: Cost economics

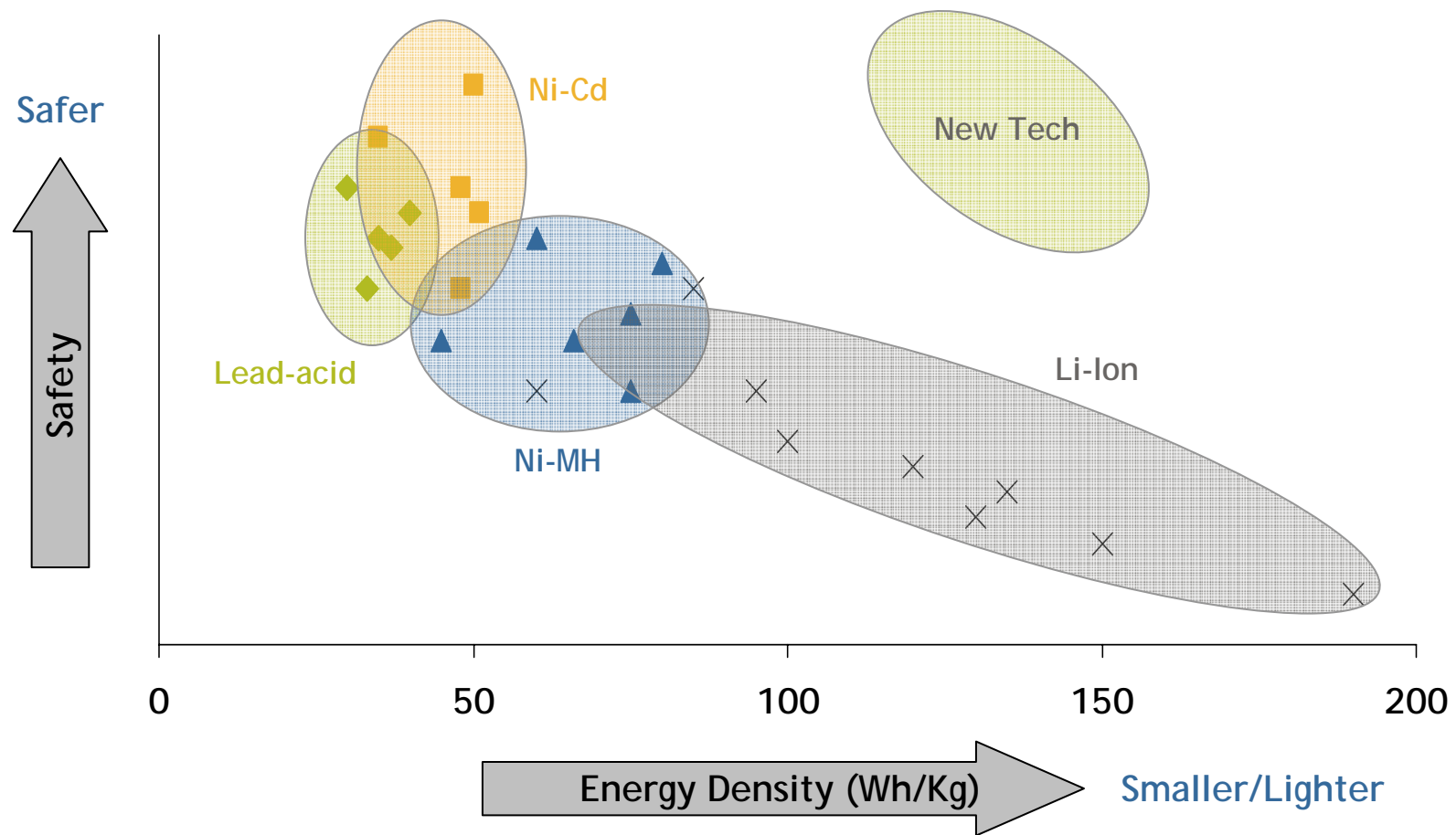
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Source: USDA, DOE, ILSA, Lightspeed analysis

Storage: Battery technologies

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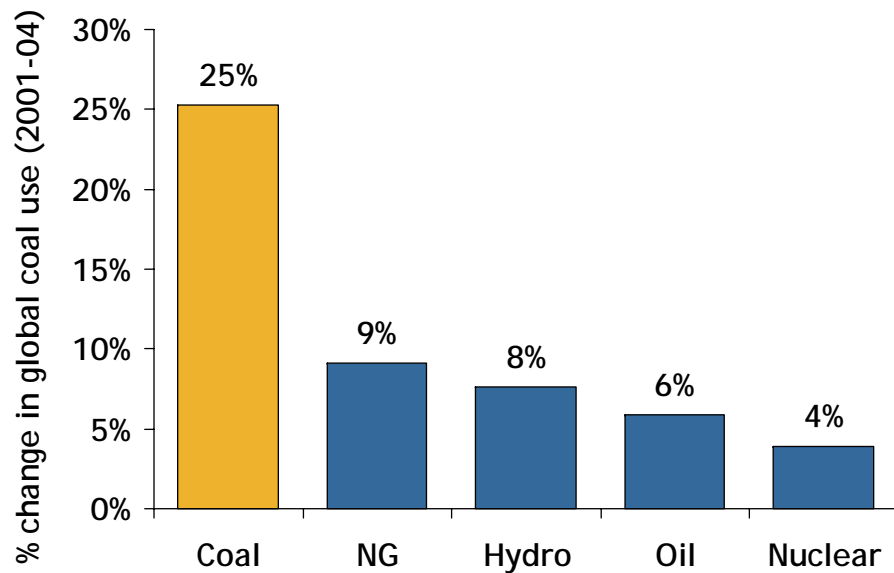


Source: Merriman, Curhan, Ford; IEA; Lightspeed analysis

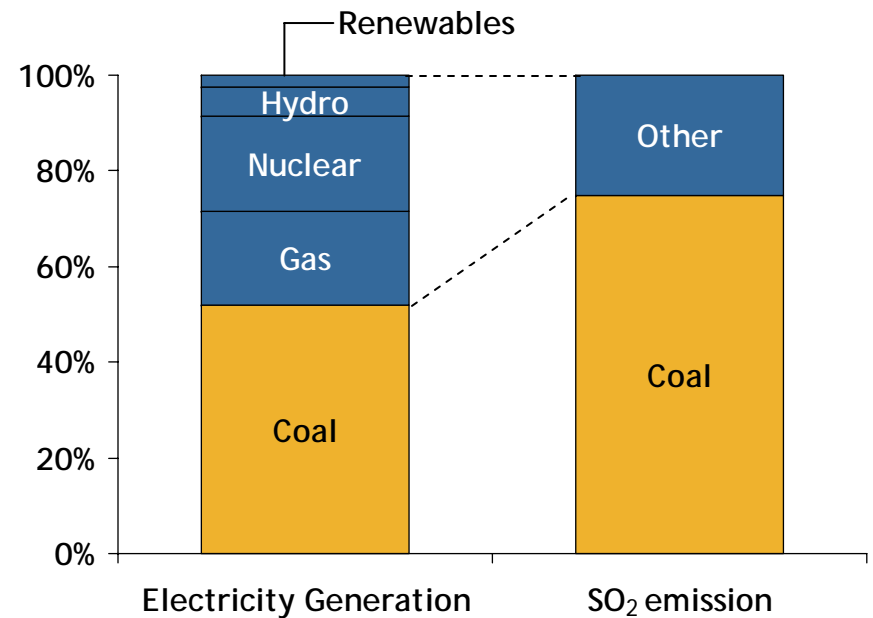
Coal: primary source of SO₂ emissions

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Growth in Global Energy Sources



US Electricity vs. SO₂

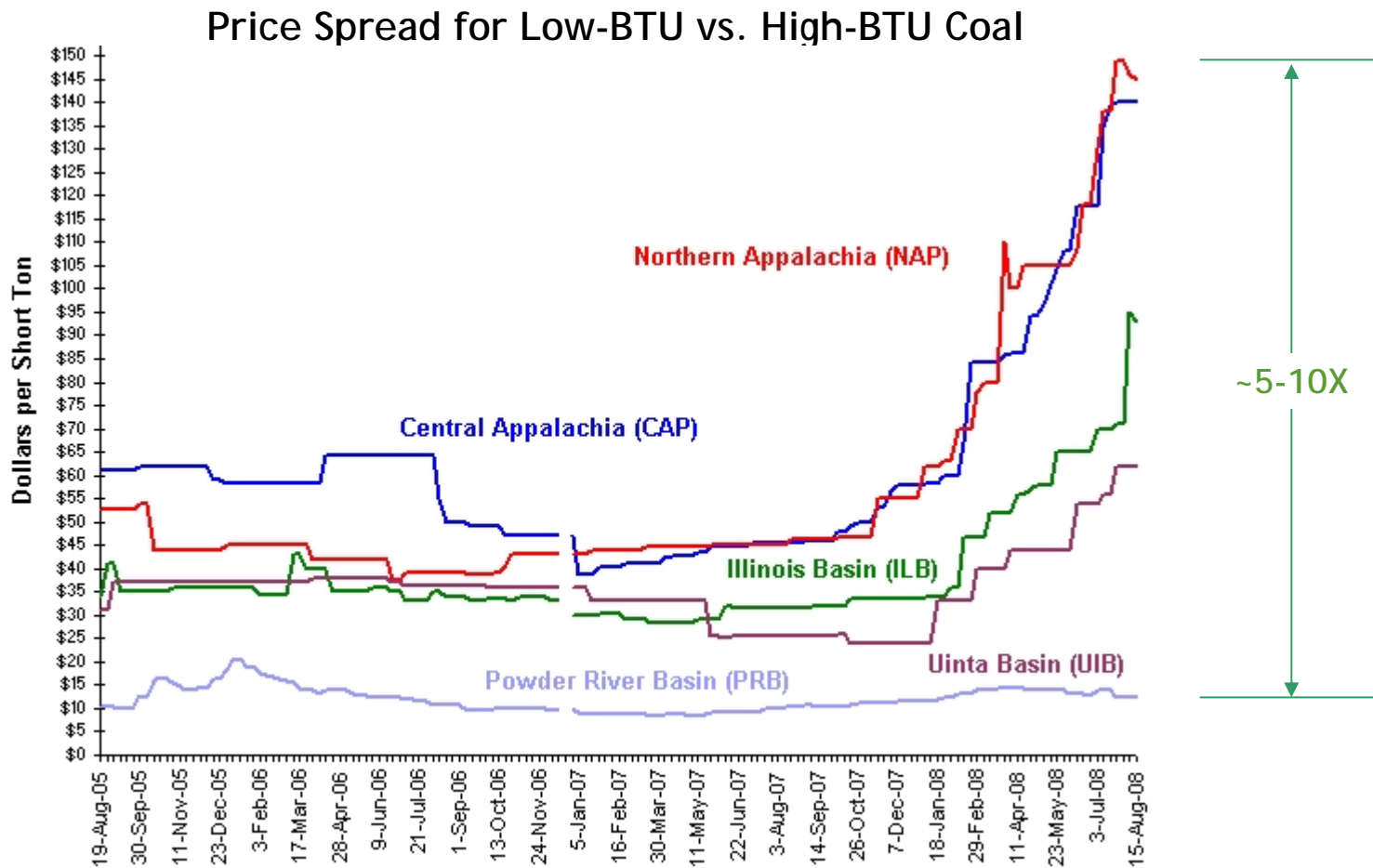


Source: National Coal Council, Deutsche Bank, US Department of Energy

High-efficiency coal carries significant market premium



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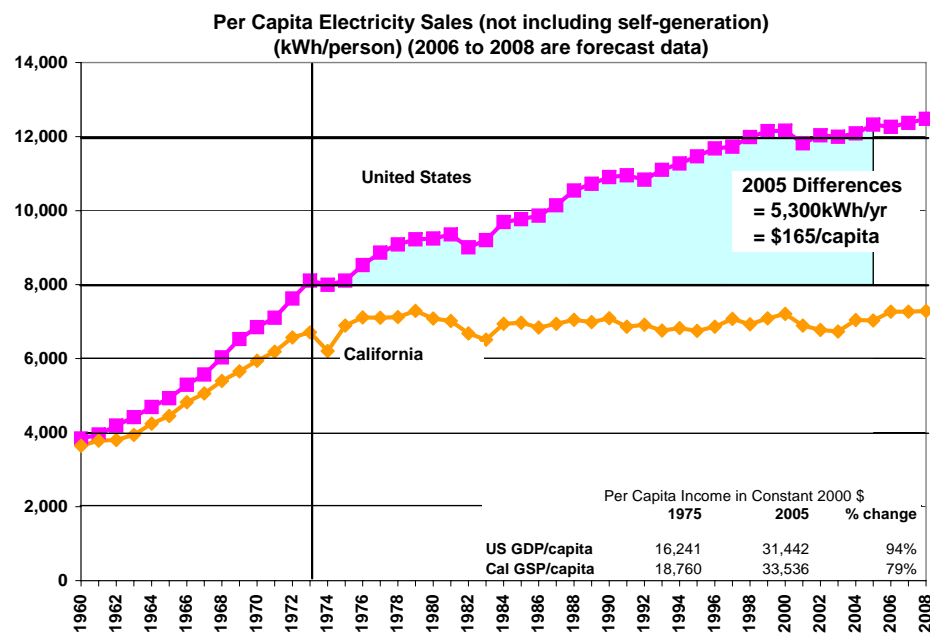
Source: US Department of Energy

Government & public policy support has had strong “greening” impact



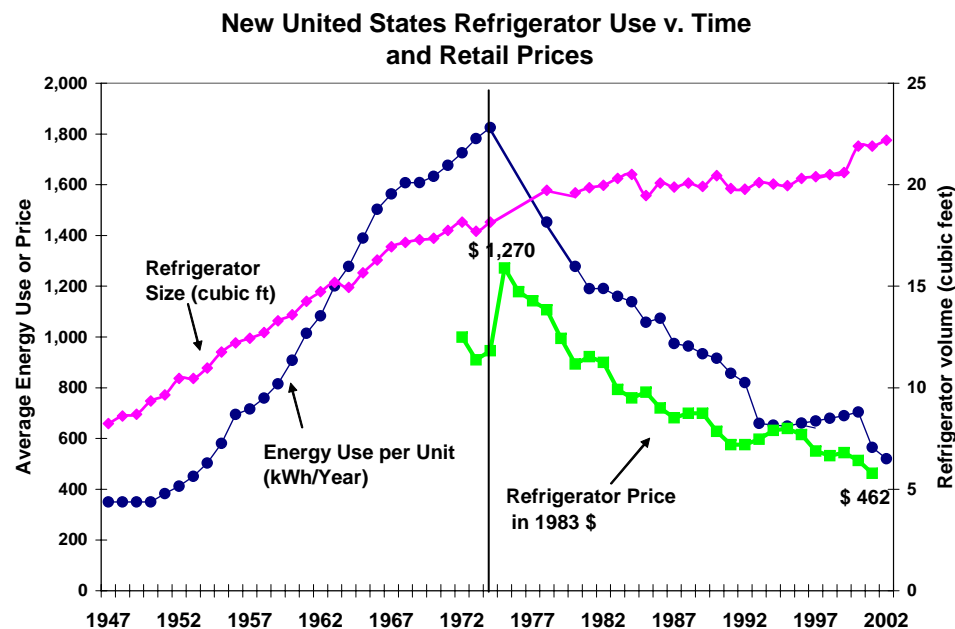
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Per Capita Electricity Sales



Key regulatory changes

U.S. Refrigerator Energy Use



Key regulatory changes

Source: Art Rosenfield, California Energy Commission

How can policy support contribute to cleantech innovation today?



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Support Initiatives

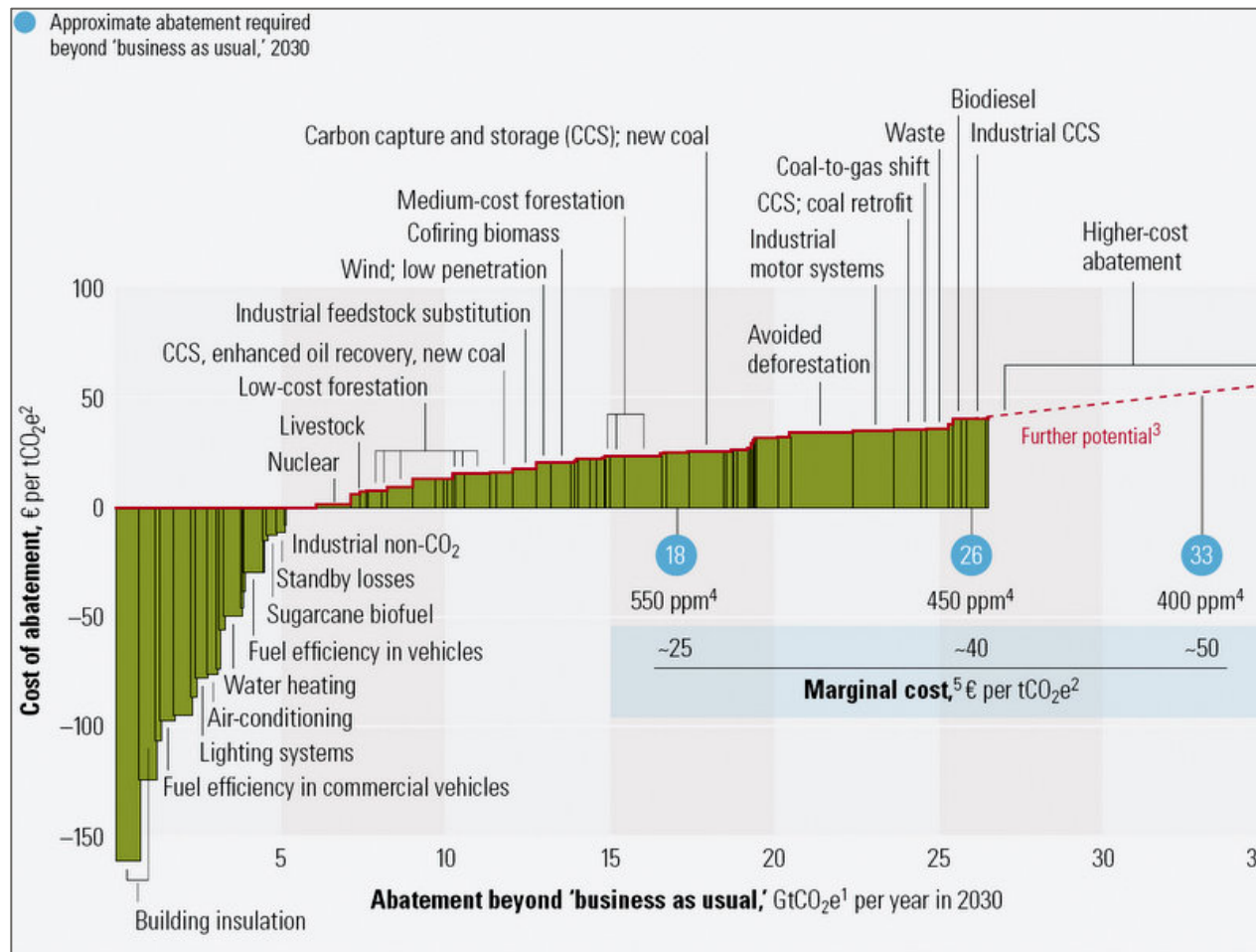
- Providing **funding aid** for cleantech startups and R&D efforts (grant monies, loan guarantees, tax breaks)
- Support creation of **cleantech clusters** and facilitate ecosystem communication
- Connecting startups to key **export markets**
- **Setting example** in adopting clean, energy efficient products for government use
- Reduce uncertainty by making **multiyear commitments to environmental policy**
- Expanding **consumer and commercial incentives** for cleantech adoption

Sample Policy Mechanisms

- **Solar**: investment tax credit, residential/commercial/utility-based PPA incentives
- **Biofuel**: blending/production credit, fuel distribution and performance requirements
- **Wind**: production tax credit
- **Energy efficiency**: demand response, HVAC, lighting, heating & green building incentives
- **Smart grid**: grid storage, net metering
- **Transportation**: incentives for fleet emissions/GHG reduction, ZEV credits
- **Carbon reduction**: cap & trade, carbon capture/sequestration, coal retrofitting

Greenhouse gas abatement necessitates a portfolio approach

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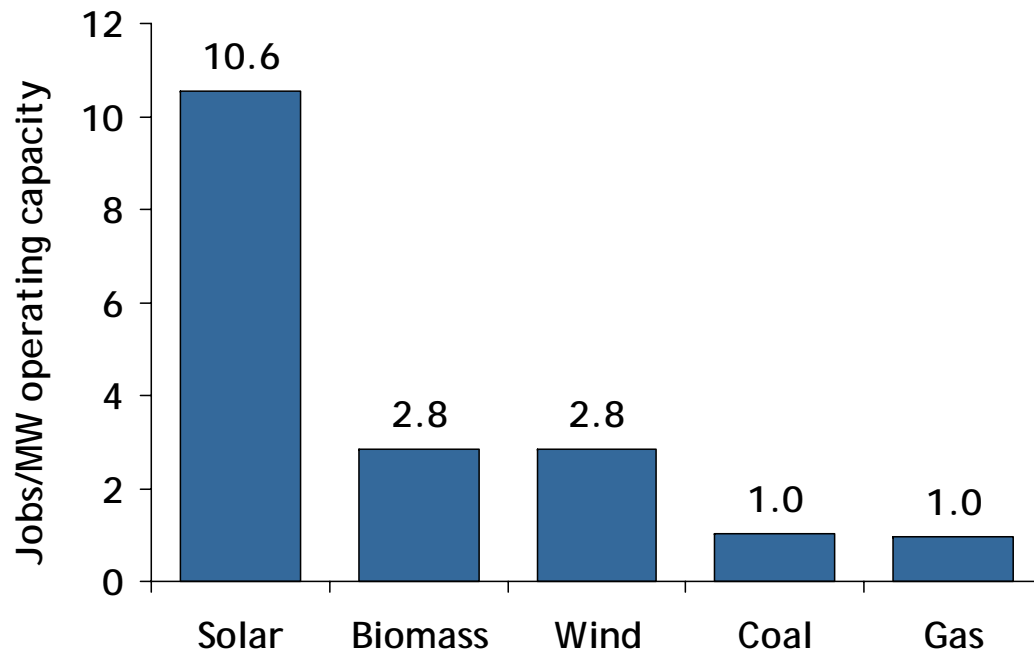
Source: McKinsey

Cleantech companies could have strong impact on the economy



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Average Employment for Energy Facilities



- REPP: each MW of installed solar generates 35.5 new jobs
- CVN: 2007-10 cleantech VC-backed companies
 - ◆ ~\$14-19B investment
 - ◆ 400-500K new jobs
 - ◆ \$70-100B new revenue
- Stern Review: cost of *not* addressing climate change: 5-20% of global GDP/yr

Source: UC Berkeley, Cleantech Venture Network, Renewable Energy Policy Project

Cleantech: A multitude of opportunities



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Questions?

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