

# An Introduction to Fossil Fuel Subsidies

**Webinar on Behalf of**  
The Vote Solar Initiative  
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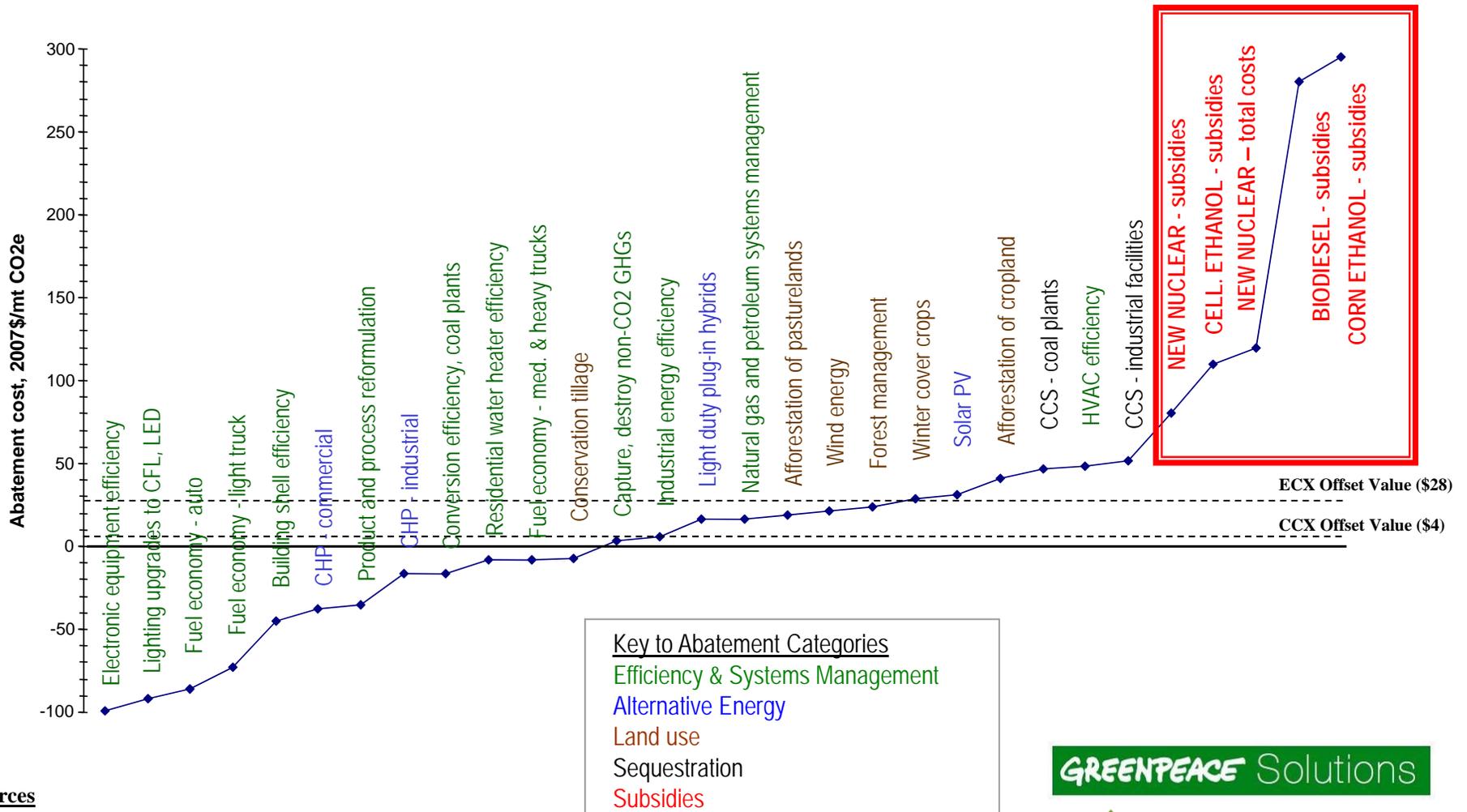
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# Understanding Energy Markets Requires Understanding Subsidies

- Choices made based on relative prices, but relative prices affected by subsidies.
- Government subsidies reflect the political power of recipients as much or more than social goals of the country.
  - Older industries and larger firms tend to have more political power.
  - Once established, recipients invest to protect their subsidies politically, making them difficult to eliminate.
- Subsidies replace economics with political connections as a major driver of market success.
  - Alter which suppliers succeed.
  - Increase barriers to entry for new approaches.
  - Can prolong or worsen environmental problems.

# Least-cost GHG Abatement: How Government Subsidies Misdirect Investment



**Sources**

Abatement technologies: McKinsey & Company, mid-range case.

Offset prices: Average of contract values from CCX (2008-10) and ECX (2008-12).

Subsidy data: Earth Track, Inc.



# Market Overlap Between Solar and Fossil Energy

Market Segment	Solar/Fossil Competition
Electric Power	Large, both for PV and centralized solar. Main competitors are coal and natural gas (plus nuclear, wind).
Space Heating	Some overlap in buildings reliant on electric heat.
Water Heating	Solar thermal competes with natural gas, oil, and electric hot water.
Transport	Little competition until electric vehicles gain significant market share.

# Subsidies in the Press and Policy Debates: Comparing Apples, Oranges, and Puppies

- **Subsidy data.** Early stage of development, similar to corporate financial reporting in the 1930s before the Securities and Exchange Commission.
- **Coverage**
  - No comprehensive inventory exists.
  - Multiple levels of government, many subsidy transfer mechanisms.
  - Sector as intended target vs. key beneficiary.
  - International linkages.
  - Studies routinely select different definitions, sometimes based on political motivations.
- **Valuation**
  - Single year vs. multiple years?
  - Cost to government (key for budgeting) versus value to recipients (critical for market distortions).
  - Wide variation, even across agencies in the same government.
- **Metrics**
  - Total dollars of support.
  - Subsidy per unit energy produced.
  - Subsidy per unit emissions created or avoided.

# Valuation Challenges: U.S. “Official” Estimates Well Below Others

Study, Publication Date, Sponsor	Data Year(s)	Fuels Included	Total Subsidies/Year, Average Values
<b>B. Fossil fuels</b>			
EIA (1992)—oil and gas portion only	1992	O&G portion	(\$0.5)
EIA (1999 and 2000)—oil and gas portion only	1999	O&G portion	\$2.1
EIA (2008)—oil and gas portion only*	2007	O&G portion	\$2.1
Koplow and Martin (1998) for Greenpeace	1996	Oil only	\$32.2
International Center for Technology Assessment (2005)	2003	Oil, mostly defense-related	\$133.2
Wahl (1996) for the Institute for Local Self Reliance	1996–97	Oil, with some natural gas	\$257.8
Hwang (1995) for the Union of Concerned Scientists	1990–91	Oil, with some natural gas	\$270.4
International Center for Technology Assessment (1998)	1998	Oil, with some natural gas	\$1,412

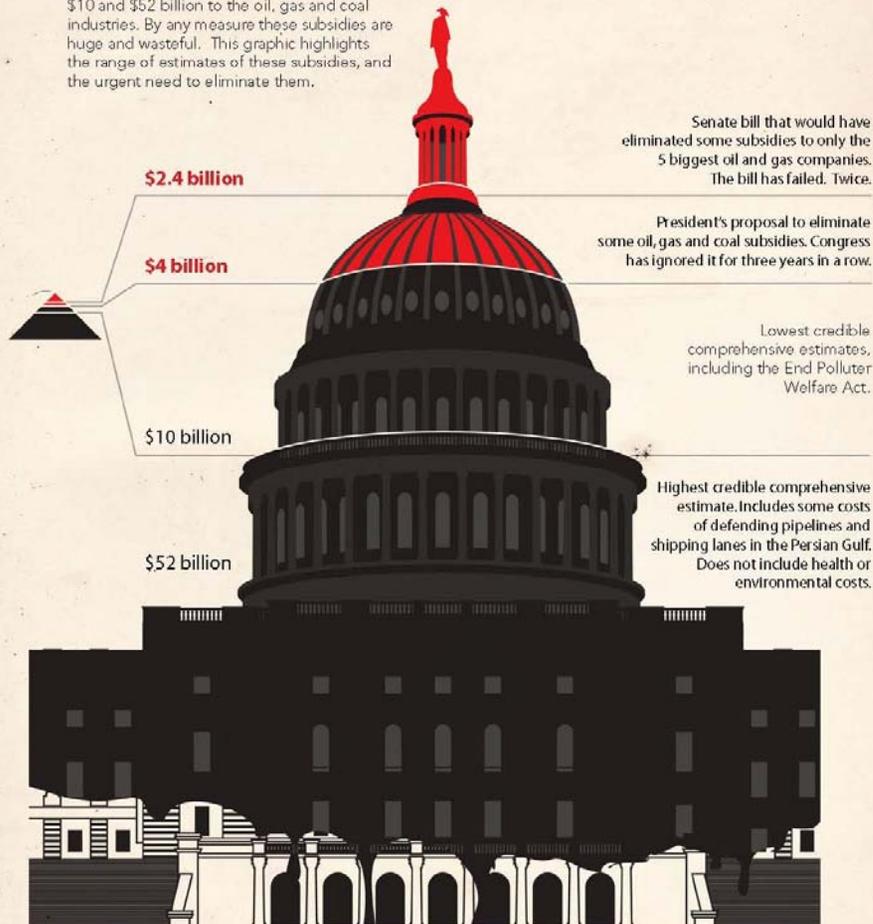
Source: Koplow, *EIA Energy Subsidies Estimates: A Review of Assumptions and Omissions*, 2010.

\*Oil and gas portion for EIA’s 2011 study (2010 data) is not materially different, at \$2.8 billion.

# CAPITOL SPILL

## How Congress Leaks Favors to Fossil Fuels

Each year, Congress provides between \$10 and \$52 billion to the oil, gas and coal industries. By any measure these subsidies are huge and wasteful. This graphic highlights the range of estimates of these subsidies, and the urgent need to eliminate them.



Beneath these subsidies lie a host of other expenses that also support the oil, gas and coal industries. States provide billions more in subsidies. The National Academy of Sciences estimates that health costs from fossil fuels totals \$120 billion annually. Export Credit Agencies and Multilateral Development Banks provide billions more in annual taxpayer-backed financing. And the costs associated with climate change will go much, much higher.

### PLUG THE LEAK!

Visit [DirtyEnergyMoney.com](http://DirtyEnergyMoney.com) to find out why the oil, gas and coal industries still receive these subsidies and to get involved in the movement for a Separation of Oil and State.

OILCHANGE

## Subsidy Magnitude: Estimation Problems Continue

- Reform attempts by executive and legislative branches have focused on small slice of total support.
- Even at that level, they have been soundly defeated.

Source: [Oil Change International](http://OilChangeInternational.com), Washington, DC.

## Cause of the Problem: Many Types of Subsidies are Hard to Measure

- **Financial transfers (grants, R&D support)**
- **Below-market provision of goods or services, including risk-bearing, intermediation benefits**
  - Loans, loan guarantees
  - Indemnification
  - Government-owned enterprises
  - Provision of market intelligence
- **Tax breaks [special taxes] for particular activities**
- **Purchasing preferences or mandates [bans]**
- **Insufficient financial accrual for facility closure, known externalities**
- **Granting [revocation] of property rights**

High



Budget  
Visibility and  
Ease of  
Quantification

Low

# Assessing Subsidy-Related Distortions Requires a Review of All Subsidy Types

1. **Government owned energy minerals.** Non-competitive auctions, extraction subsidies (e.g., road building), inaccurate payment or collection of royalties due.
2. **Government ownership of energy-related enterprises.** Energy security-related enterprises (Persian Gulf, SPR), bulk fuel transport (mostly waterborne), ownership of assets (e.g., public power).
3. **Market price support and regulation.** Consumption mandates or restrictions; price controls; border protection; regulatory loopholes. Loopholes remain relevant; price regulation has been important historically for fossil fuels, but is not significant now.
4. **Direct spending.** Energy-related agencies and related contracts; funding for R&D.
5. **Tax breaks and special taxes.** Tax expenditures; excise taxes or special targeted taxes on energy industry; ability to use corporate forms that more easily bypass corporate income taxes entirely.
6. **Credit support.** Below-market loans and loan guarantees, including to state-owned-enterprises (SOEs) or export credit agencies.
7. **Insurance and indemnification.** Liability caps, below market provision of risk management services, including to SOEs, gaps in required liability coverage such as for fracking sites.
8. **Health and safety oversight.** Oversight of existing extraction operations; legacy health costs.
9. **Environmental issues, site closure, and post-closure care.** Legal structure for financial assurance, rights to litigate for compensation, enforcement stringency for existing laws, legacy costs at mine and well sites.
10. **Emerging issues.** "Watch" list of emerging issues of potential benefit to fossil fuel industries. Subsidies to CCS; grants of ghg permits or exemptions from carbon controls; below market payments for use of process or cooling water.

# Below the Surface: Largest Subsidies to Fossil Fuels Routinely Left Out of Tallies

## Solar, Wind, Geothermal

### Visible and Quantified

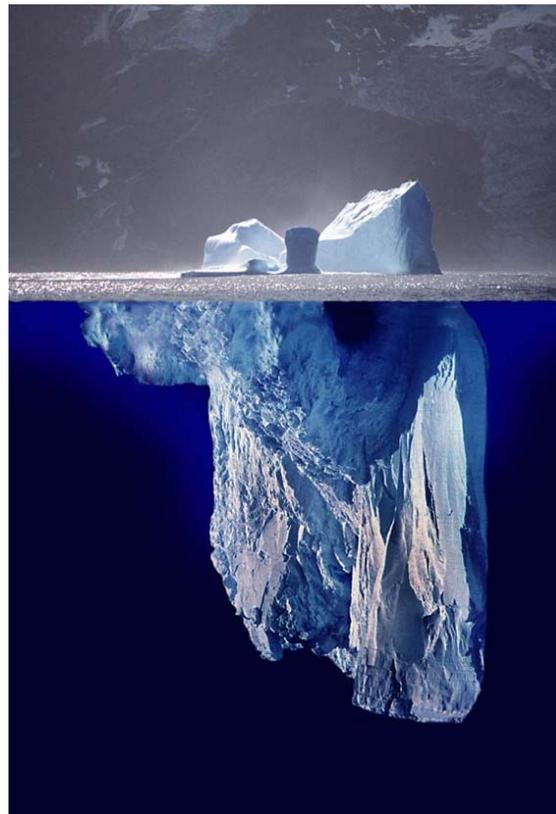
- Tax credits.
- Accelerated depreciation.
- Price premiums via RPS or Feed-in-tariff programs.
- Government R&D.

### Visible but Poorly Quantified

- Federal loan guarantees.

### Excluded from Subsidy Tallies

- Water use, centralized solar plants.



Photomontage credit: Uwe Kils

## Fossil Fuels

### Visible and Quantified

- Special depletion and expensing rules and deductions.
- Government R&D.
- Manufacturer's tax credit.

### Visible but Poorly Quantified

- Federal loan guarantees.
- Dual-use taxpayers/FTC.
- Accident liability caps.
- Accelerated depreciation.

### Excluded from Subsidy Tallies

- Leasing and royalty subsidies.
- Tax-exempt corporate structures.
- Tax-exempt debt for plants, subsidized pollution controls.
- Energy security, stockpiling costs.
- Free use of water for mining and power.
- Bulk shipping infrastructure.
- Insufficient user fees.
- Mine and well closure, reclamation.
- Health, environmental damages

# Assessing Fossil Fuel Industry Claims of High Taxation: The Subsidy-Tax Continuum

Fees Needed to Reach Parity with Other Goods and Services	Form of Payments
1) Pay market rates for property rights granted.	Royalties, rents, bonus payments.
2) Reimburse government for activities of benefit to, or required because of, your industry.	User fees, remediation or disposal charges.
3) Pay tax rate on goods or services produced equal to that paid by other sectors.	Income and sales taxes. Excise taxes sometimes substitute for sales taxes in resource sectors.
4) Environmental surcharges reflective of external costs.	This is the start of environmental taxes. Economically inefficient only if rate exceeds environmental damages.

# Federal Minerals at a Discount

- Many renewables have zero fuel cost; fossil fuel technologies use prodigious amounts.
- Mineral sales from federal lands not always well managed.
  - Non-competitive bidding for extraction rights.
  - Royalty reduction or exemptions for particular production areas.
- Both state and federal leasing agencies often ignore road building and maintenance costs.

# Poor Management of Resource Base Costs Taxpayers Tens of Billions

Resource and Area	Details
<p>Oil and Gas, Outer Continental Shelf, Gulf of Mexico</p> <p>Deep Water Royalty Relief Act of 1995 and subsequent litigation by Kerr-McGee (now Anadarko Petroleum)</p>	<ul style="list-style-type: none"> <li>-Leases signed 1996-2000.</li> <li>-Price thresholds overturned in court; no royalties now being paid.</li> <li>-Loss to taxpayers estimated as high as \$80 billion, with \$54 billion as best-guess (GAO, TCS).</li> </ul>
<p>Coal, Powder River Basin (MT and WY)</p>	<ul style="list-style-type: none"> <li>-Region produces ~44% of total US coal</li> <li>-Non-competitive bidding, problems with assessing FMV.</li> <li>-Estimated losses \$28.9 billion over last 30 years (Sanzillo).</li> </ul>
<p>Deep Gas in Shallow Water, Gulf of Mexico</p> <p>Section 344 of the Energy Policy Act of 2005</p>	<ul style="list-style-type: none"> <li>-No royalty on 15-25 billion cubic feet of gas.</li> <li>-Reduced royalty on 35 billion cubic feet more.</li> <li>-Losses ~\$170 million/year (FOE).</li> </ul>

# Escaping Corporate-Level Taxation Entirely: Master Limited Partnerships

*“The allure of master limited partnerships gets stronger, based on robust operating profits, tax breaks and a booming U.S. energy sector.”*

-Andrew Bary in [Barrons](#), 6/2/12.

- Political reform efforts focus on % depletion, expensing, other tax breaks targeting fossil fuels.
- Corporate forms that bring corporate taxes to zero are ignored:
  - MLPs allow for publicly-listed stock, complex businesses, and zero tax at the corporate level.
  - Of 78 MLPs in the US as of earlier this year, nearly 85% were oil, gas, and coal; almost 5% of the remaining were for fossil-fuel intensive fertilizer industry.
  - Oil and gas investments that are not publicly-traded routinely use a Limited Partner structure, also bypassing corporate taxes.

# Stated Recipient or Not, Subsidies Flow to the Powerful

## Fossil Fuel Sector Capture of Post-Hurricane Katrina Gulf Opportunity Zone Bonds\*

Category/Project	Issued Amount	% of Total Issued
Fossil Fuel Infrastructure	\$ 4,502,193,000	57.4%
Joint use infrastructure, including fossil fuels	\$ 620,000,000	7.9%
All applicants	\$ 7,839,749,820	
<b>Four of five largest projects were in fossil fuels Sector</b>		
Recipient	Amount Issued	Project
Marathon Oil, refinery	\$ 1,000,000,000	Oil refinery
Lake Charles Cogen Project	\$ 1,000,000,000	Petroleum coke gasification
Exxon Capital Ventures	\$ 300,000,000	Expansion of existing refinery
Valero Energy Corporation	\$ 300,000,000	Hydrocracker unit
FF in Top Five, total	\$ 2,600,000,000	
% of all Issues	33%	

Source: Earth Track tabulations based on data provided by the Louisiana State Bond Commission, applications as of 3 January 2012.

*\*Gulf Opportunity Zone Bonds are a special class of tax-exempt bonds allowed to help rebuild the Gulf after Hurricane Katrina in 2005. They greatly increased the allowable issuance of tax-exempt bonds for private activities in the affected states, including Louisiana. The tax-exempt status of interest payments enables borrowers to obtain a lower interest rate on the debt.*

# Externalities: Hard to Value, But Important Not to Ignore

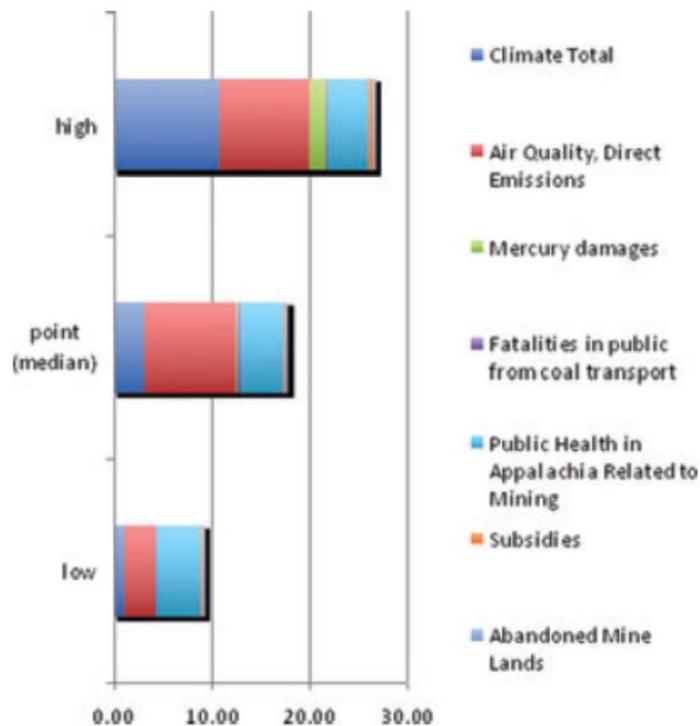


Figure 1. This graph shows the best estimates of the externalities due to coal, along with low and high estimates, normalized to ¢ per kWh of electricity produced. (In color in *Annals* online.)

- Wide ranging, often difficult to value.
- Correcting fiscal subsidies alone often enough to tip energy markets.
- Nonetheless, numbers can be staggering.
- Externalities to US coal sector estimated at **\$175-\$523 billion/year (9-27 ¢/kWh)**.
- This is more than the value of the power produced.

# Bringing Fossil Fuel Subsidies into the Discussion More Effectively

- Don't assume the subsidies to your competitors have been identified or properly valued. Systematically review:
  - All policy types and venues of support.
  - Multiple levels of government.
  - Capture of “general” subsidies (general tax breaks, job incentives, tax-exempt bond capacity).
  - Systems of support that depress final prices (e.g., to coal reserves, transport links, water inputs, power plant construction & operation, residuals and emissions management).
- Acknowledge your own support, and adjust debates accordingly.
- Include other relevant factors in debate:
  - Negative externalities.
  - Market impediments that erode market access or pricing unfairly (e.g., not getting peak for peak power; grid access).