

Coal 101 - The Environmental Cost

How much coal are we using for energy?

- Coal provides **40% of US energy**
- There are **150 proposed new coal-fired power plants** across the US

What are the dangers of coal-fired power plants?

- **Coal is the single most polluting energy source** used in electricity generation.
 - o Burning coal releases more carbon dioxide (CO₂), mercury (Hg), sulfur dioxide (SO₂) and nitrogen oxide (NO_(x)) than any other fuel source
 - o Of the US electric industry, coal produces 88% of CO₂ emissions, 93% of NO_(x) emissions, 96% of SO₂ emissions, and 99% of Hg emissions¹
- **CO₂ is the most prevalent greenhouse gas**
 - o CO₂ accounts for 84% of all US greenhouse gas emissions²
 - o The US produces 25% of all global CO₂ emissions³
 - o Coal-fired power plants produce 36% of all US CO₂ emissions³
- **Hg is a developmental neurotoxin**
 - o Coal-fired energy produces 33% of atmospheric Hg, making it the **largest manmade producer**³
 - o Hg in atmospheric emissions can travel **600miles** from the emission site³, and is then concentrated in waterways via rain
 - o Fish consumption is the primary cause of human exposure to dangerous levels of Hg
 - o **1 in 6** American women of childbearing age have dangerous blood levels of Hg⁴
 - o Hg can affect fetal development, and in higher concentrations can be harmful to adults
 - o In March, 2005 the EPA finalized a plan to increase the limit of Hg emissions to **three times** that which is allowed in the Clean Air Act³
- **SO₂ contributes to acid rain**
 - o Acid rain accumulates in water bodies and soil, killing fish and the surrounding vegetation, and can make lakes uninhabitable.
- **NO_(x) is a major contributor to ground-level ozone (smog)**
 - o The small airborne particles that make up smog and soot cause permanent and potentially fatal respiratory problems, such as “black lung” and increased risk of asthma attack⁵
 - o Smog pollution harms wild plant life as well as agricultural crop yields⁶

What is the problem in Virginia?

- Aside from the environmental risks, **there is a supply problem in VA**
 - o **45%** of Virginia’s electricity comes from coal-fired plants⁷
 - o Dominion Power already imports coal from other nations to fill demand⁷
 - o The decreasing coal supply will become more expensive as demand continues to increase
- **There is no law that requires public utilities to use renewable energy sources** – only a voluntary program exists
- Dominion Power is already spending your money to keep VA locked into coal power
 - o A **new coal-fired plant** is planned for construction in Wise Co.
 - o A massive **high voltage transmission line** is proposed in northern VA, which would cut through ecologically and historically important areas.

What is mountaintop removal?

- Mountaintop removal is method of coal mining that is found most commonly in, TN, WV, VA and eastern KY.
- Blasting and excavation are used to **remove the top of a mountain** in order to access the coal seams. The resulting soil and rock are then dumped into valleys and waterways, effectively leveling the mountain
- Trees, plants and topsoil are cleared from the mining area, which destroys not only wildlife habitat, but increases soil erosion, floods, and dust pollution in the air
- More than **320,000 acres** of Appalachian mountain ecosystems have been destroyed in the past 10 years, and more than **60,000,000 board feet** of new growth hardwood has been cleared³
- If this mining continues, it is estimated that **1.4 million acres will be lost by 2020**, the time the coal is predicted to run out in Appalachia⁸
- **Previously illegal** under the Clean Water Act, The Bush administration recently amended the Act to allow an unlimited amount of discarded material to be **dumped directly into waterways**³
- Dumping from mountaintop removal mining has damaged **1200 miles** of streams, destroyed forests, disrupted drinking water supplies, and flooded towns⁹
- Waste from mountaintop removal, as well as the waste from coal preparation, is stored in impoundments, which hold billions of gallons of toxic slurry, and are prone to seepage and breaches.

What is “clean coal”?

- “Clean coal” has been touted by the government and the coal industry
- Carbon Capture and Sequestration is a process to contain CO₂ emissions in underground storage
 - o This technology has yet to be proven. Experts are not in agreement as to how long it will take, or if it is possible to develop the technology for power plants¹⁰
- Integrated Gasification Combined Cycle converts coal to a gas to be burned for electricity
 - o This technology emits less soot and smog, however it emits the same amount of CO₂ emissions¹⁰
- **These forms of technology are not ready to be used in power plants**, and the majority of the 150 proposed coal-fired plants across the country will use the same technology that is currently in place¹⁰

What are the alternatives?

- The most common energy alternatives are **solar, wind, and geothermal**
 - o **Wind energy is the least expensive** of these options, and uses large turbines to create electricity
- While a large amount of federal money is being put into the production of biofuels, it comes with the added detriment of still requiring coal to make the fuels, and requires the clearing of forested land. Forested land provides an efficient and natural way to reduce atmospheric CO₂ by photosynthesis.
- **Using only non-coal based alternatives could reduce CO₂ emissions by up to 90%, with only a 1-3% increase in most energy bills**¹

1 Greenpeace, <http://www.greenpeace.org/seasia/en/asia-energy-revolution/dirty-energy/facts-about-coal>

2 Cassady, Alison “The Carbon Boom” US PIRG Education Fund. 2007

3 Chesapeake Climate Action Network, http://www.chesapeakeclimate.org/pages/page.cfm?page_id=20, 2007

4 US Environmental Protection Agency, “Methyl-mercury : Epidemiology Update,” presentation by Kathryn Mahaffey, PhD at the National Forum on Contaminants in Fish, San Diego, CA, January 25-28, 2004*

5 American Lung Association. “State of the Air: 2006.”**

6 US National Park Service, “Effects of Air Pollution on Ecological Resources,” <http://www2.nature.nps.gov/air/AQBasics/ecologic.cfm>**

7 Chesapeake Climate Action Network, http://chesapeakeclimate.org/pages/page.cfm?page_id=160, 2007

8 US Geological Survey, “2000 Resource Assessment of Selected Coal Beds and Zones in the Northern and Central Appalachian Basin Coal Regions, updated May 2003**

9 Draft Environmental Impact Statement. 68 Federal Register 32487. <http://www.epa.gov/region3/mtntop/eis.htm> 68 Federal Register 29 [Final Rules] [p7176-7274]

10 McKeown, Alice. “The Dirty Truth About Coal” <http://www.sierraclub.org/coal>. 2007

*as cited on <http://www.sierraclub.org/mercury/overview/>

** as cited in McKeown, 2007