



# Environmental Problems with Electricity Production

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**Green Power Webcast**  
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[www.ResponsiblePurchasing.org](http://www.ResponsiblePurchasing.org)



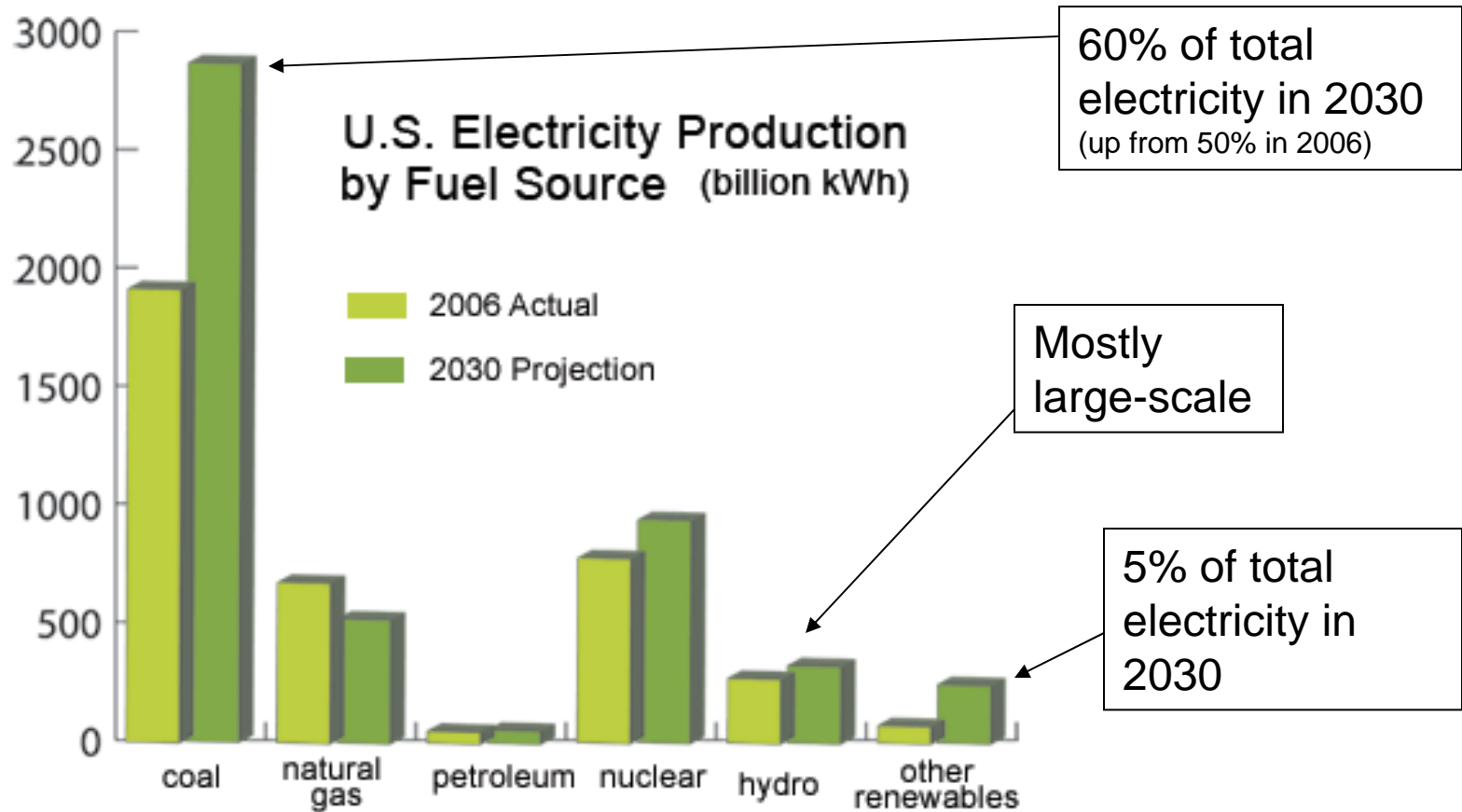


## Overview

- ▶ Electricity supply
- ▶ Climate
- ▶ Air quality
- ▶ Nuclear power
- ▶ Water



# U.S. Electricity Supply

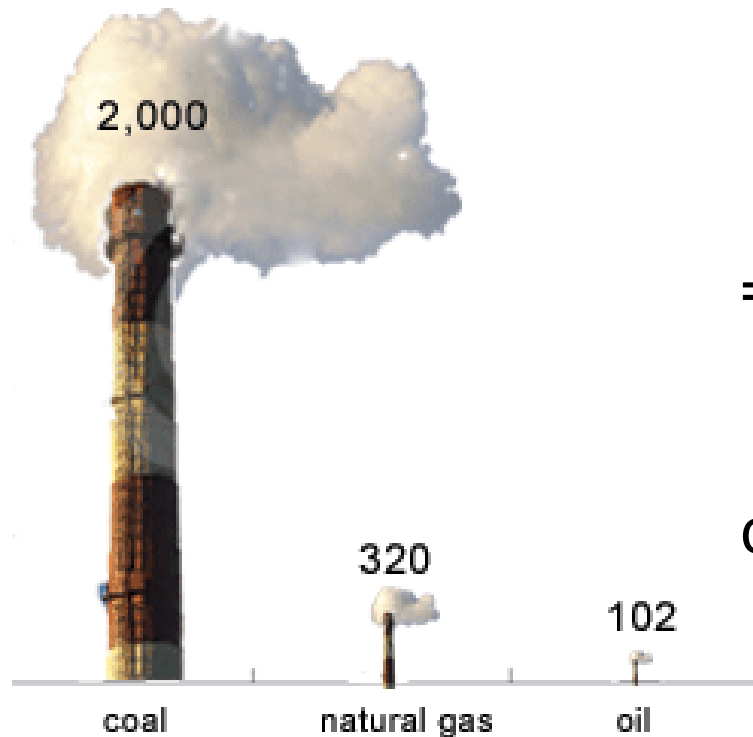


Source: AEO 2008 Tables A8 and A16



# Electricity and CO<sub>2</sub>

US CO<sub>2</sub> Emissions from  
Electricity Production  
by Fuel Source, 2005 (Tg)

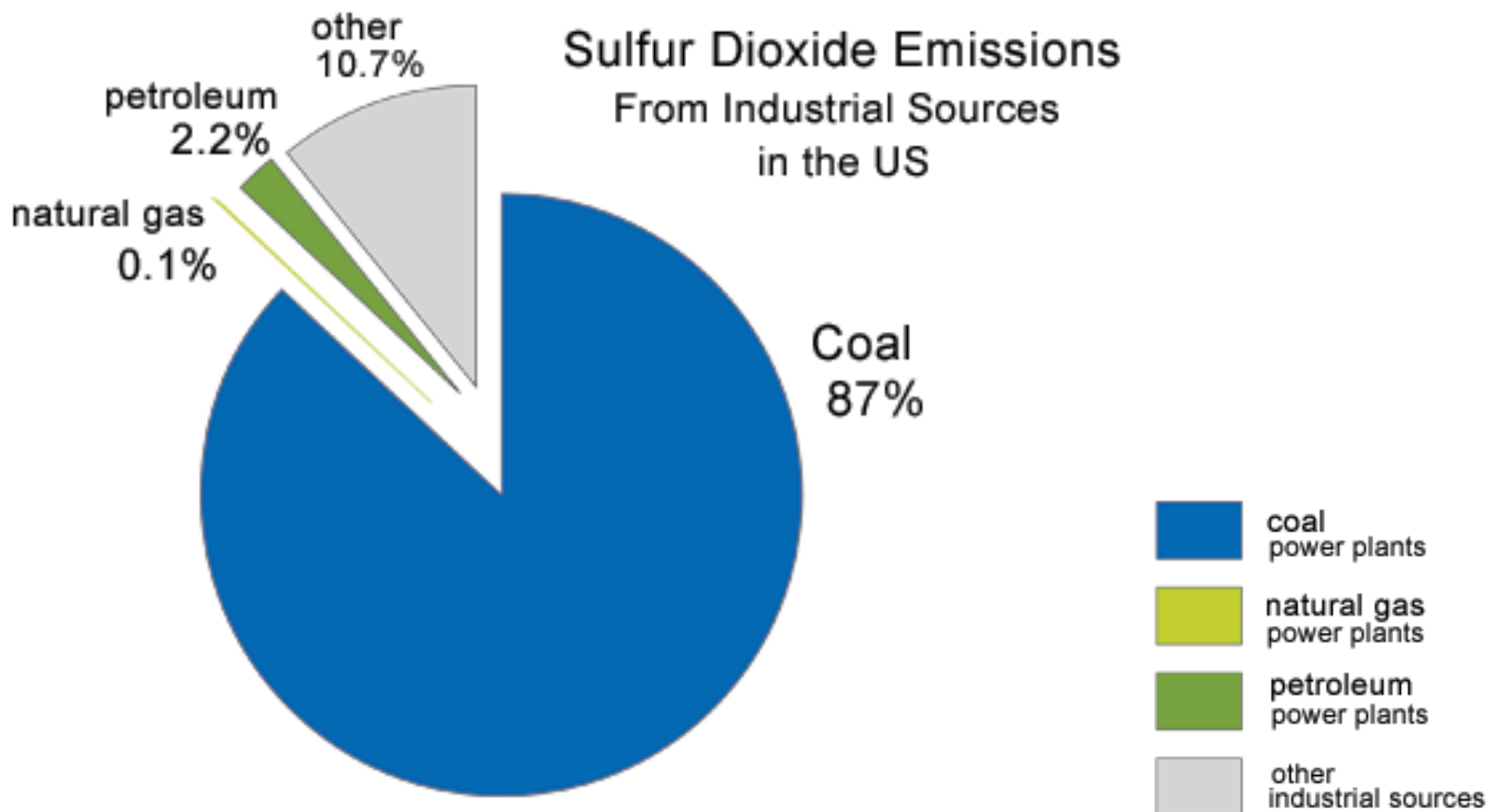


Source: EPA, 2007(a)

- ▶ 1 Tg = 1 million metric tons
- ▶ Coal CO<sub>2</sub> emissions in 2005 = 2 billion metric tons
  - ▶ 30% of U.S. GHG emissions
- ▶ 3 billion tons of CO<sub>2</sub> from coal by 2030?

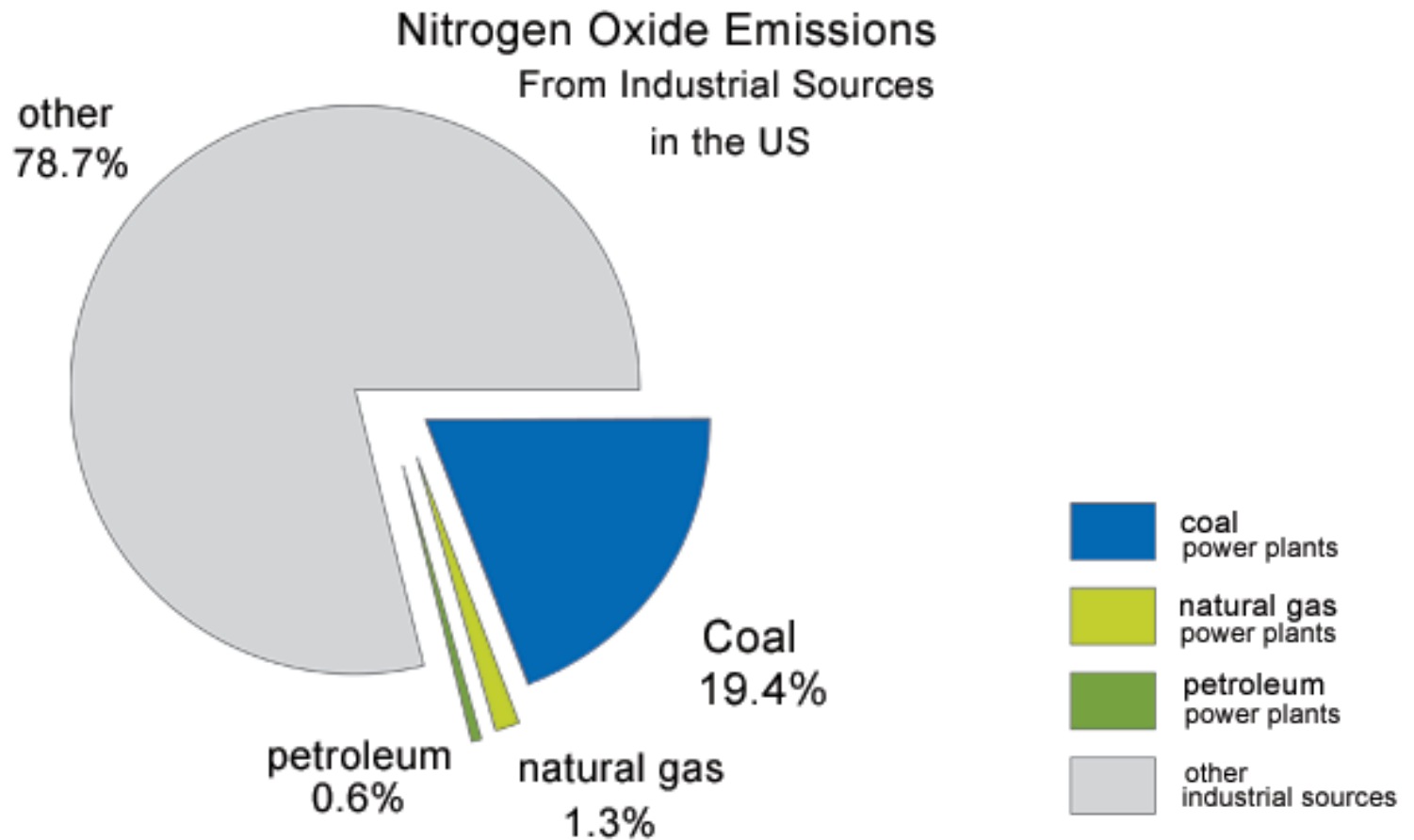


# Electricity and SO<sub>2</sub>



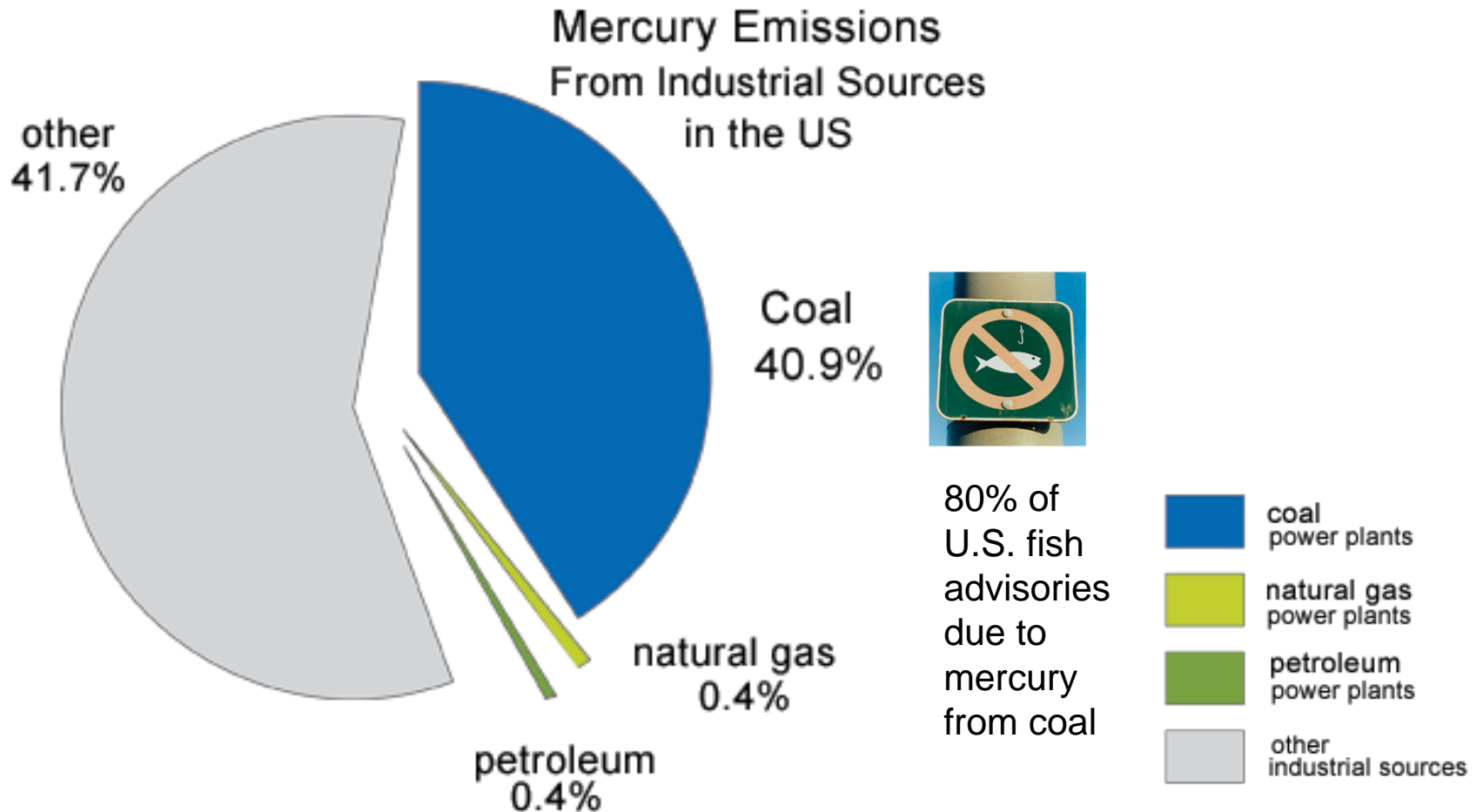


# Electricity and NO<sub>x</sub>



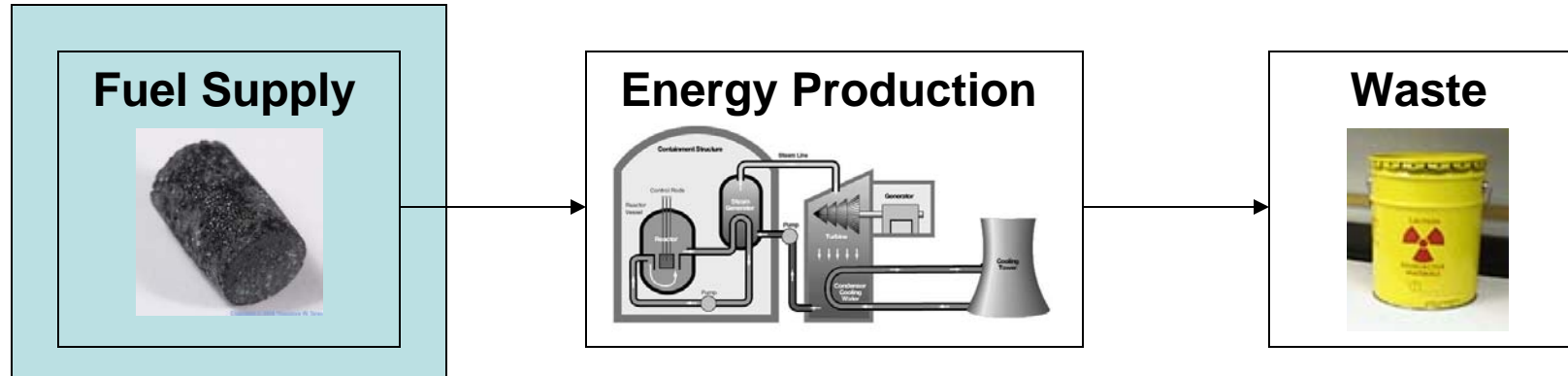


# Electricity and Hg





# Nuclear Power

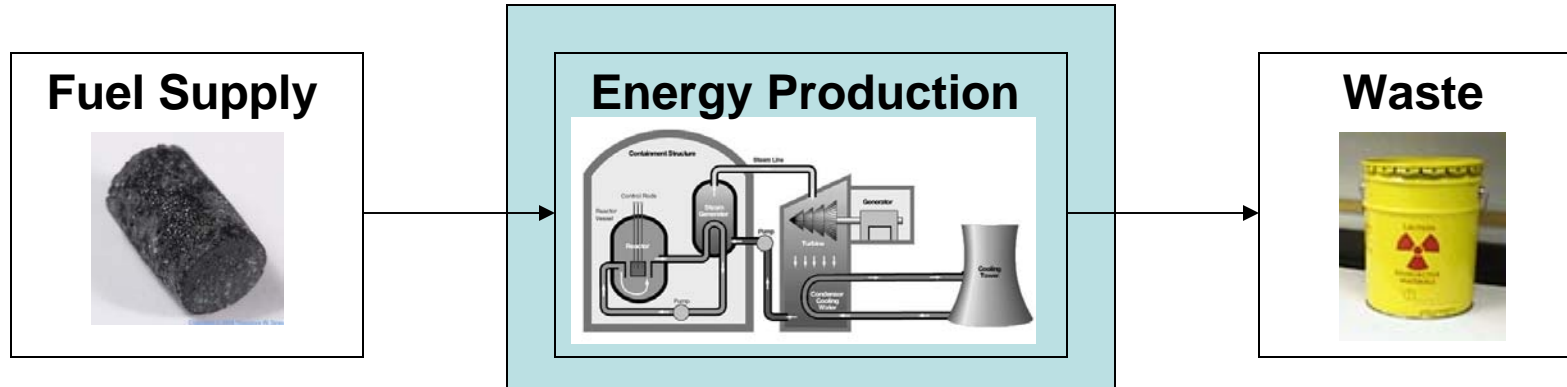


- ▶ Uranium is limited natural resource
- ▶ “Secondary sources” now provide ½ of supply
  - ▶ This share is falling
- ▶ Uranium demand may exceed supply by 2050





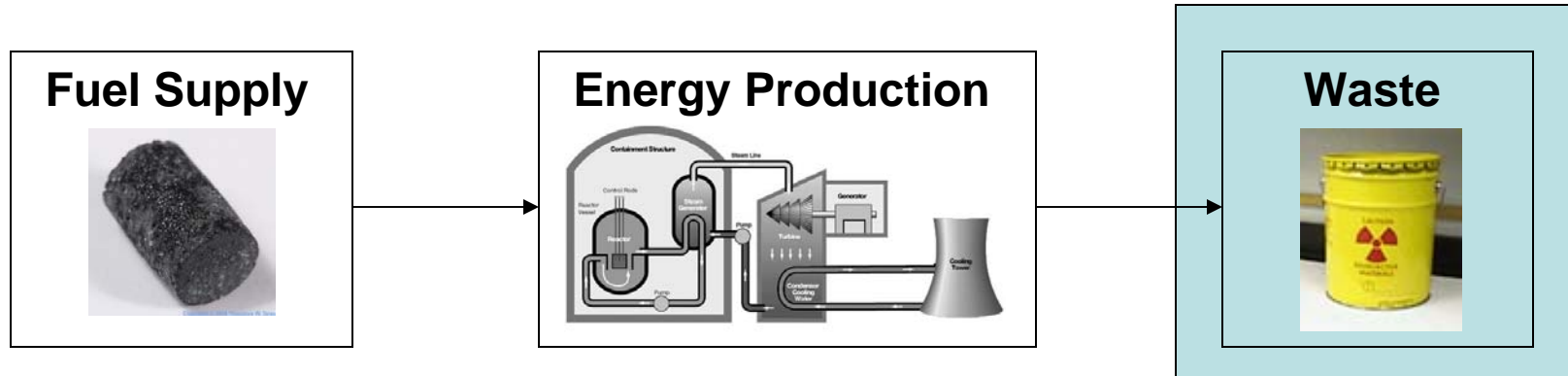
# Nuclear Power



- ▶ 2<sup>nd</sup> largest form of U.S. electricity
- ▶ Could increase by 20% by 2030
- ▶ 30,000 tons of uranium annually



# Nuclear Power



- ▶ 1 lb of waste per 150 MWh
- ▶ On-site cooling tanks
- ▶ Yucca Mountain
  - ▶ Requires transport
  - ▶ Geologically unstable
  - ▶ Too small for all waste



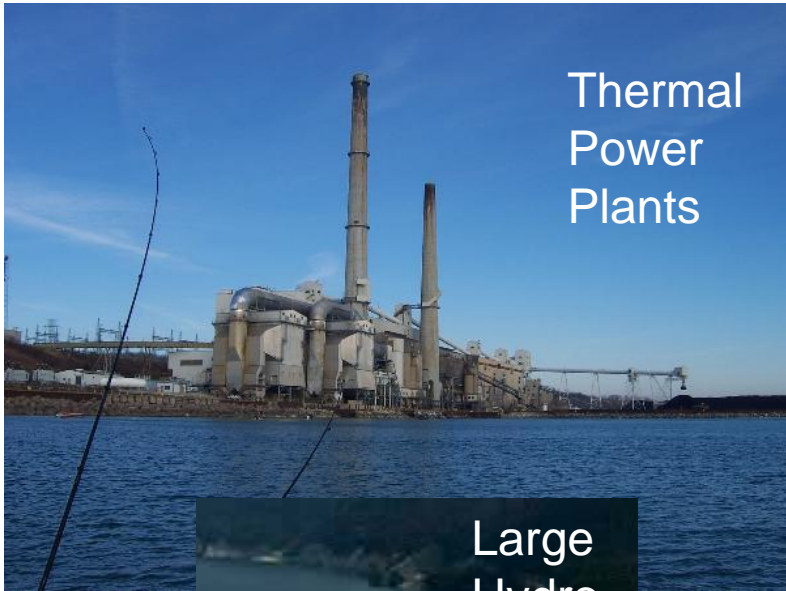
# Power Plants and Water

**25,000 gallons per MWh**  
(200 billion gallons in U.S. per day)

**Most goes back to original source**

**500 gallons evaporate per MWh**  
(6 billion gallons in U.S. per day)

**Large-scale hydro:  
18,000 gallons evaporate per MWh**  
(9 billion gallons in U.S. per day)





## Other Social & Environmental Problems

- ▶ Mining
- ▶ Solid waste
- ▶ Power plant siting
- ▶ Decommissioning
- ▶ Subsidies



## Solutions

- ▶ Conservation
- ▶ Efficiency
- ▶ Green power
- ▶ Clean conventional power (e.g., natural gas)



## Responsible Purchasing Guide for Green Power

[www.ResponsiblePurchasing.org/purchasing\\_guides/green\\_power](http://www.ResponsiblePurchasing.org/purchasing_guides/green_power)

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