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UNITED STATES NUCLEAR REGULATORY COMMISSION
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Eagle Rock Enrichment Facility Mandatory Hearing on Environmental Matters

July 12-14, 2011

NRC Staff Presentation Topic 3

Greenhouse Gas Impacts of Facility's Production Power Consumption

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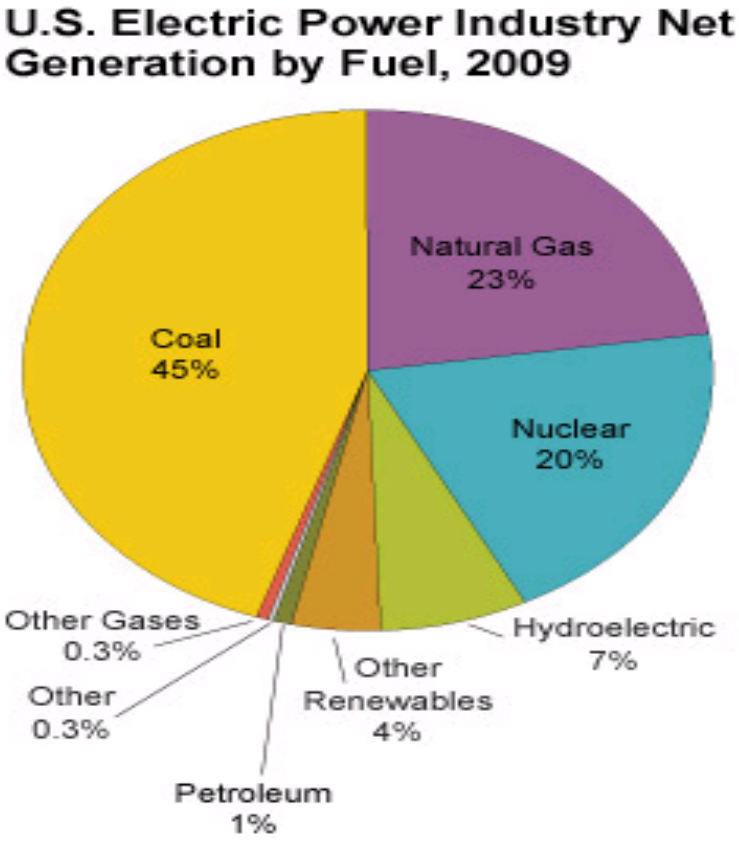
Electric Power Technologies Operational in the United States



Source: NRC000191

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Idaho Electricity Data 2009

Source: NRC000192

Idaho Electric Power Data 2009		
Generator and Primary Energy Source	Megawatt-hours	2009 Percentage
Electric Utilities	9,977,502	76.2
Petroleum	41	-
Natural Gas	286,865	2.2
Hydroelectric	9,690,596	74.0
Independent Producers and Combined Heat and Power	3,122,650	3.8
Coal	82,565	0.6
Petroleum	-	-
Natural Gas	1,356,730	10.4
Hydroelectric	743,668	5.7
Other Renewables	867,316	6.6
Other	72,371	0.6
State Total	13,100,152	100.0
United States Total	3,741,000,000	N.A.

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National Perspectives on GHG Emissions from Electricity Production

Source: NRC000193

- In the U.S. in 2009, energy-related activities accounted for 86.7 percent of total GHG emissions (based on CO_2e).
  - 98 percent of the nation's CO_2
  - 49 percent of the nation's CH_4
  - 13 percent of the nation's N_2O
- In the U.S. in 2009, the total CO_2e emissions from energy-related activities was 5,377.3 million metric tons (MMT).
  - 5,209.0 MMT from fossil fuel combustion, including:
    - 2,154.0 MMT for electricity production
    - 1,719.7 MMT from transportation
    - 1,293.6 MMT from industrial, residential, commercial activities

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State Perspective on GHG Emissions from Electricity Production

- In Idaho in 2009, Idaho electricity represented 0.35 percent of the national total, but the 1,024,000 metric tons of related GHG represented only 0.05 percent of the national electricity-related GHG emissions (NRC000194 and NRC000193).
- Idaho's three largest electricity sources in 2009 were: hydroelectric (79.6 percent), natural gas (12.5 percent) and, other renewables (6.6 percent). (NRC000192)
  - Compare this to the three largest generation sources in the United States: coal (45 percent), natural gas (23 percent), and nuclear (20 percent) (NRC000192).
  - Idaho's electricity-related CO_2 emission factor is lowest among the 50 states (NRC000194).

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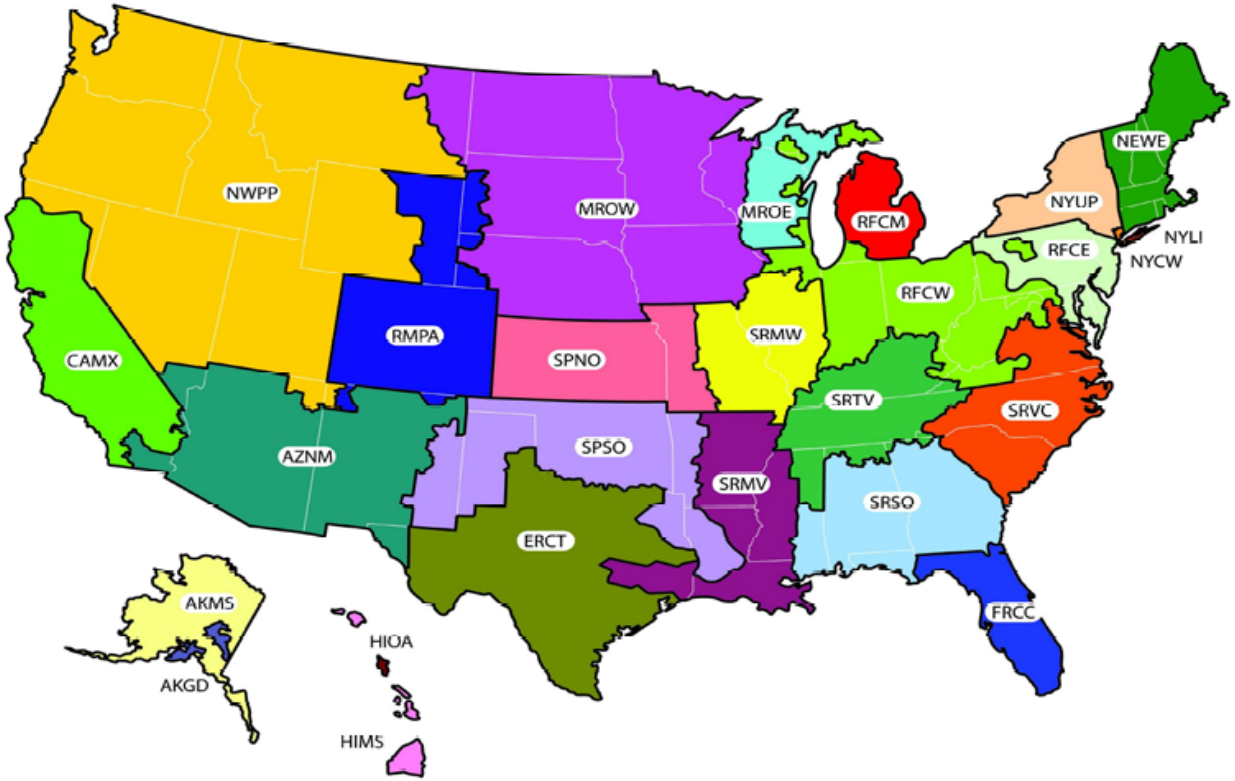
EPA e-GRID Regions for GHG Data

Source: NRC000195



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GHGs and Power Contribution

EREF Power Demand: (AES000070)	78 MW
EREF Annual Power Consumption: (NRC000176)	683,280 MWh
NWPP CO_2e Emission Factor (2009): (NRC000195)	858.8 lb CO_2e/MWh
Idaho CO_2 Emission Factor (2009): (NRC000194)	172.0 lb CO_2/MWh
U.S. Average CO_2e Emission Factor: (NRC000195)	1,293 lb CO_2e/MWh

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GHG Emissions from Idaho Electricity Generators

EREF Annual Power Demand: 683,280 MWh				
Generation Technology	**Percent contribution[a]**	**MWh Contributed**	**CO_2e Emission Factor[b] (lb/MWh)**	**CO_2e emissions (metric tons)**
Coal	0.6	4,100	858.8	1,600
Natural gas	12.5	85,410	858.8	33,341
Hydroelectric	79.6	543,890	Negligible	0.0
Other Renewables	6.6	45,096	858.8	17,604
Other	0.6	4,100	858.8	1,600
Total		682,596		54,145

[a] **NRC000192**
[b] **NRC000195**

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Comparisons of GHG Footprints in Satisfaction of EREF Power Demands

Annual EREF power demand (NRC000176):	683,280 MWh
Global CO_2 emissions (all fossil fuels) (2008) (NRC000196):	29,381 Million Metric Tons
Annual U.S. electricity-related GHG footprint (2009) (NRC000193):	2,154 Million Metric Tons
Annual Idaho electricity-related GHG footprint (2009) (NRC000194):	1,024,000 Metric Tons
Annual EREF GHG footprint (power provided by coal-fired plants):	266,749 Metric Tons
Annual EREF-related GHG footprint (power provided by ID generators):	54,145 Metric Tons

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Conclusions

- Estimated annual emissions of 266,749 metric tons of GHG from coal plants supplying power to EREF is 0.00091 percent of global GHG emissions and would, therefore, be expected to have only a SMALL impact on global climate.

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Conclusions (cont.)

- Satisfaction of EREF's annual power demands with proportional contributions of the compliment of existing Idaho electricity generators would result in estimated release of 54,145 metric tons of GHG
  - Estimated 54,145 Metric Tons of CO_2e from Idaho generators represents only 5.3% of statewide electricity-related GHG emissions, 0.0025% of the national GHG emissions in 2009, and only 0.00018% of the global GHG emissions in 2009.

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Conclusions (cont.)

- Projected annual indirect, power-related GHG emissions of 54,145 metric tons from EREF when combined with projected direct GHG emissions associated with EREF operation of 26,136 Metric tons (NRC000134 at 4-141) results in a total of 80,281 metric tons; representing approximately 0.0037percent of the annual national GHG emissions and approximately 0.00027 percent of the annual global GHG emissions
- Thus, the staff concludes the impact would be SMALL

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