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Future of Domestic Oil

***Energy Information Administration
Annual Conference***

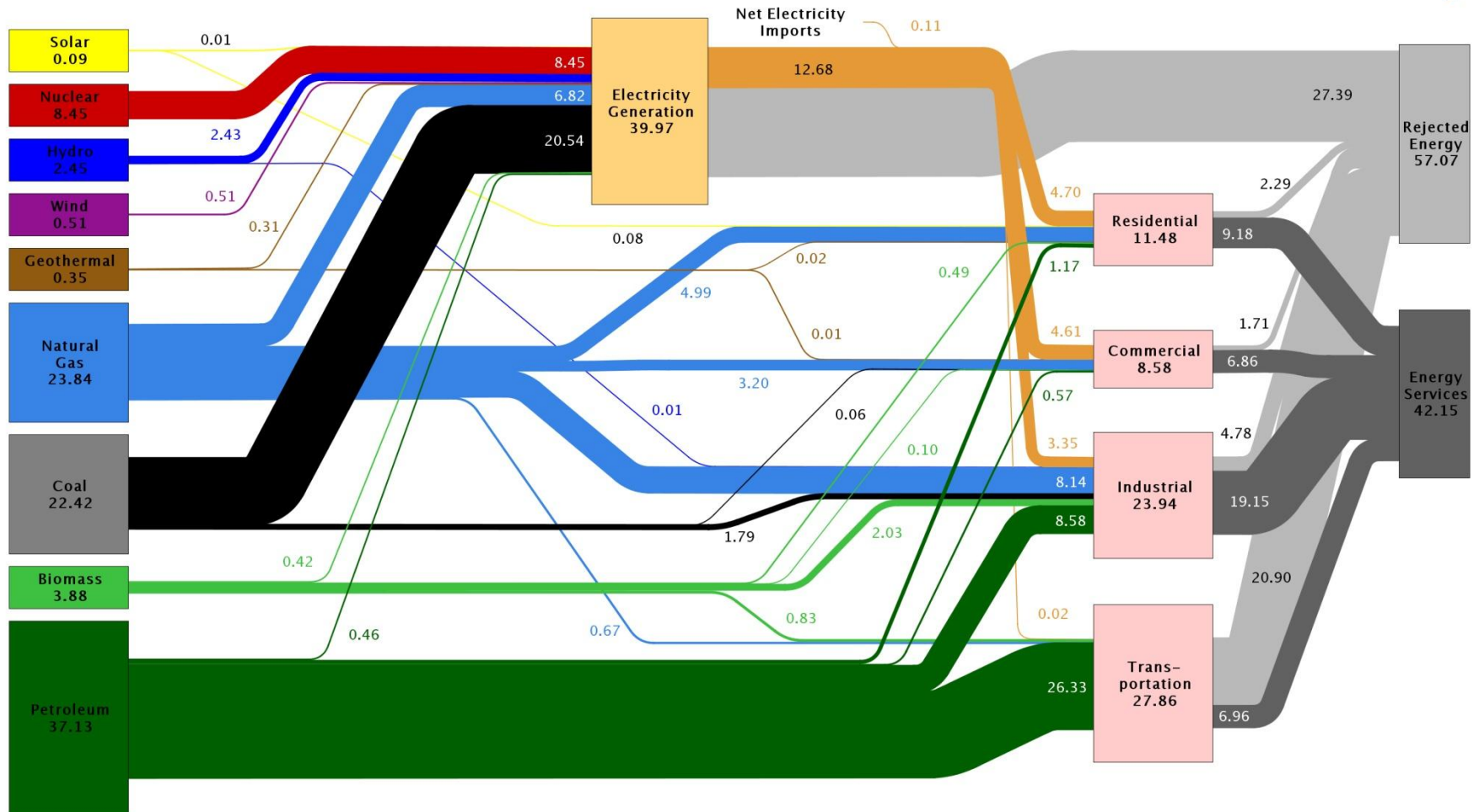
**Future of Domestic Onshore Gas and Crude Oil
Panel Discussion**

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Oil is Largest Supplier of US Energy

Estimated U.S. Energy Use in 2008: ~99.2 Quads



Source: LLNL 2009. Data is based on DOE/EIA-0384(2008), June 2009. If this information or a reproduction of it is used, credit must be given to the Lawrence Livermore National Laboratory and the Department of Energy, under whose auspices the work was performed. Distributed electricity represents only retail electricity sales and does not include self-generation. EIA reports flows for non-thermal resources (i.e., hydro, wind and solar) in BTU-equivalent values by assuming a typical fossil fuel plant "heat rate." The efficiency of electricity production is calculated as the total retail electricity delivered divided by the primary energy input into electricity generation. End use efficiency is estimated as 80% for the residential, commercial and industrial sectors, and as 25% for the transportation sector. Totals may not equal sum of components due to independent rounding. LLNL-MI-410527

Conventional Onshore

- **Production (2010)**
 - 2.37 million barrels per day
 - 30 states, thousands of fields
 - Declining production & exploration
- **Environmental Issues**
 - Abandoned wells
 - Soil & groundwater impacts
 - Salt water disposal
- **Policy Issues / Questions**
 - Tax breaks for stripper wells
 - Unitization reform to encourage EOR?



Enhanced Oil Recovery (EOR)

- **Production (2010)**
 - 1.8 million barrels per day
 - Bulk of it uses CO₂
 - Increasing production & expansion to more fields
- **Environmental Issues**
 - Water requirements
 - Leakage of CO₂ to surface
- **Policy Issues / Questions**
 - Current shortage of CO₂
 - Encourage capture & transportation of anthropogenic CO₂?

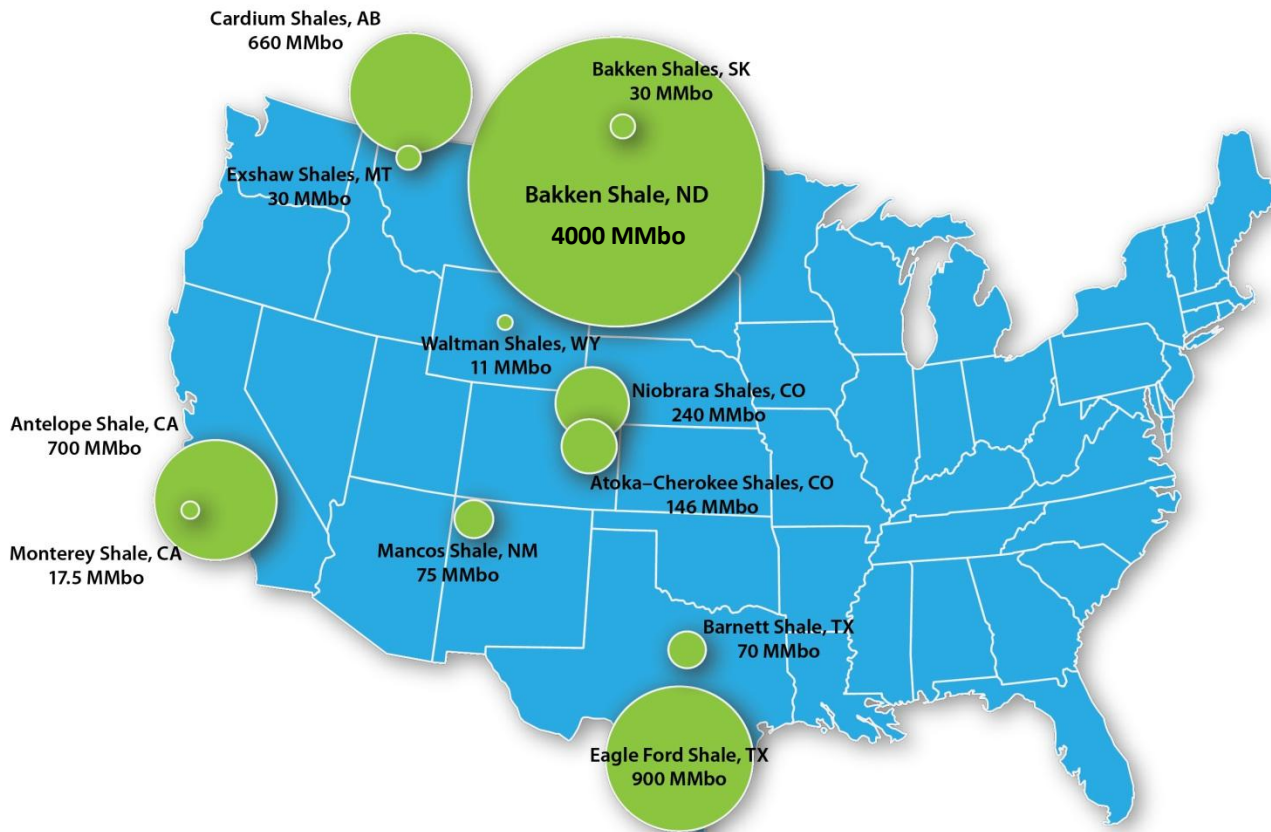


Tight Oil

- **Production (2010)**
 - North Dakota Bakken is over 300,000 bpd
 - Rapidly increasing production & development of new plays
 - Horizontal wells & hydraulic fracturing (fracking)
- **Environmental Issues**
 - Concerns with fracking
 - Competition for water
- **Policy Issues / Questions**
 - Regulation of fracking?
 - Impact of rapid development on infrastructure



“How many Bakken’s are there?”



Future of Domestic Oil

- **Expected to peak at 6.05 million bpd in 2020**
- **Expected to still be at 5.7 million bpd in 2035**
- **Conventional onshore production**
 - Declining resource
 - More stripper wells
- **Offshore production**
 - Plenty of resources
 - Exploitation depends on policy
- **Conventional EOR**
 - Will continue to increase
 - Anthropogenic CO₂ capture can be a game changer
- **Tight oil production**
 - Tremendous opportunities
 - Continued growth depends on policy

