



Climate Policy Impacts on Beet Sugar

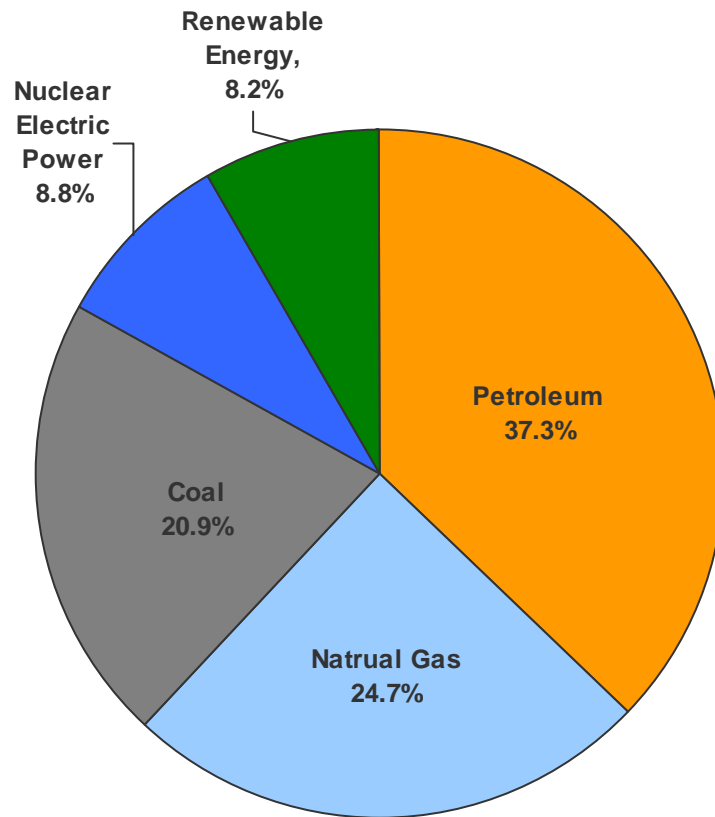
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American Society of
Sugar Beet
Technologists
Biennial Meeting
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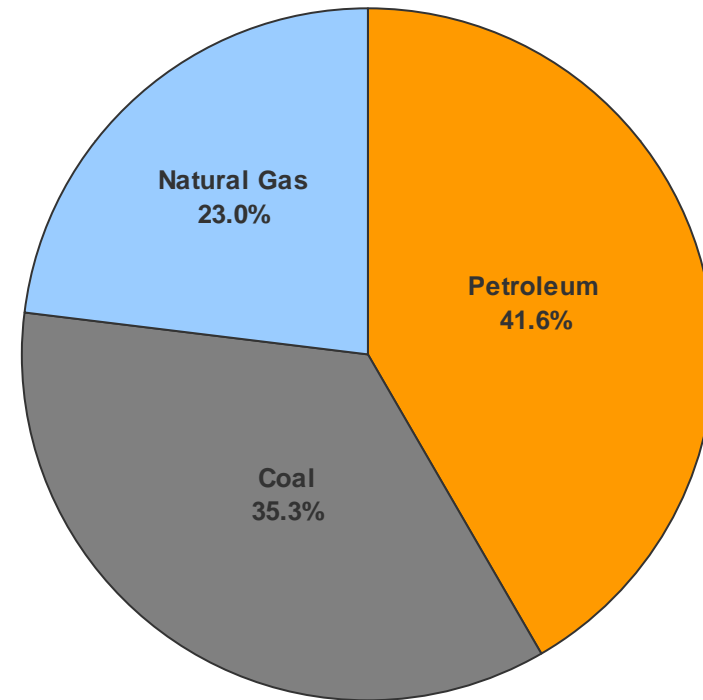
Greenhouse Gas Basics

- 2009 US emissions: 6640 million metric tons carbon dioxide equivalent (CO₂e)
 - down by 8.6% from 2007 high
- 83% of greenhouse gas emissions is CO₂
 - balance is methane, nitrous oxide, and manufactured gases
- 79% of greenhouse gas emissions is CO₂ from fossil fuel combustion
 - 41% electricity generation
 - 33% transportation
 - 14% industrial
 - 7% residential
 - 4% commercial

Energy & Emission Sources - 2009



U.S. Energy Consumption
by Energy Source



U.S. Energy-Related CO₂ Emission by Fuel

Climate Legislation Design

■ Points of Regulation

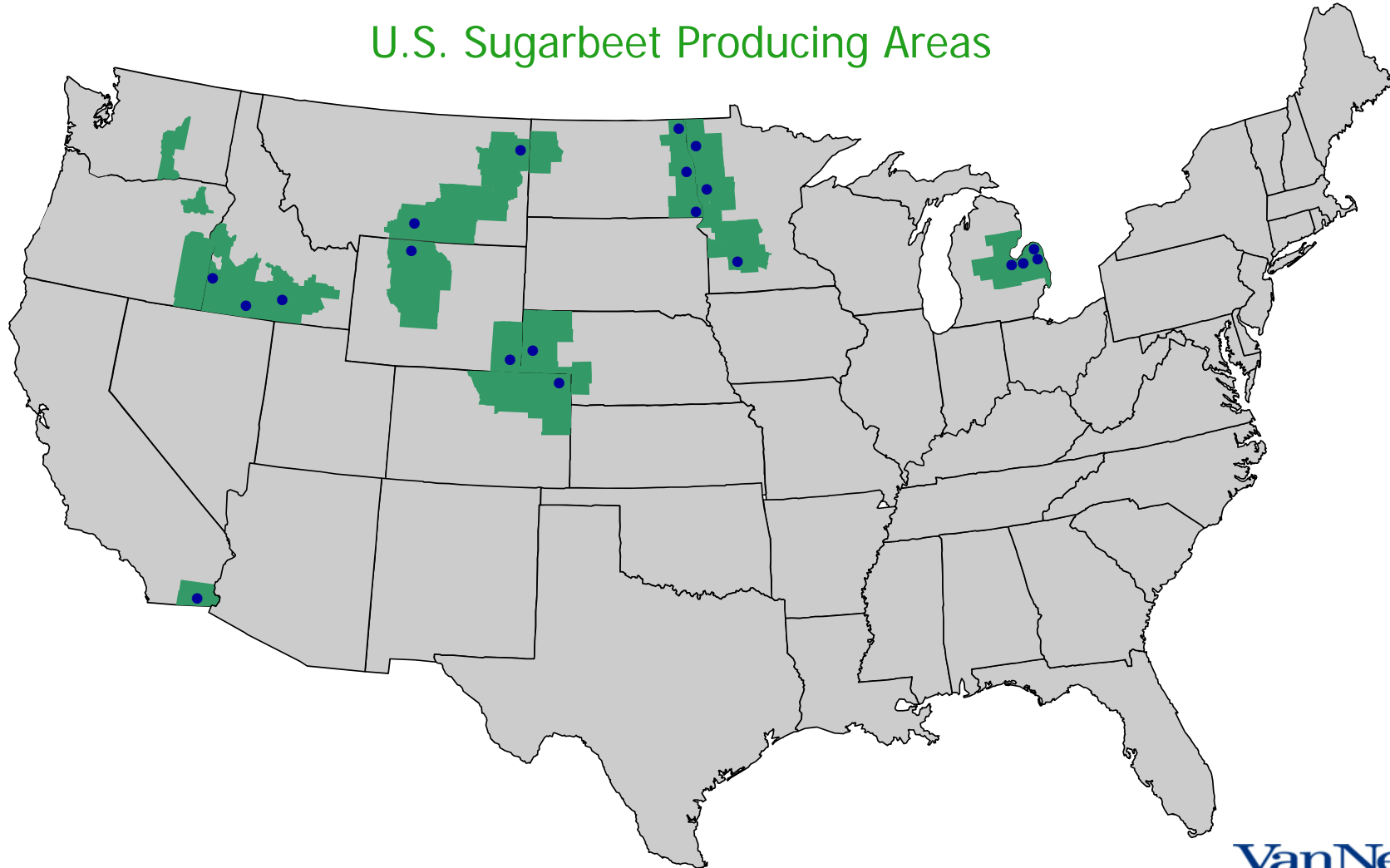
- regulate upstream (price signal on the fuel)
 - petroleum – transportation and heating oil
 - natural gas – residential and commercial use
- regulate downstream (price signal on emissions source)
 - coal – utility and industrial users
 - natural gas – industrial users

■ Settle with the government annually:

- cap-and-trade: turn over allowances (1 allowance per metric ton CO₂e emissions)
 - (*e.g.*, Waxman-Markey; Kerry-Lieberman)
- tax: pay the tax rate per ton of emissions or CO₂ content of fuel
 - (*e.g.*, Cantwell-Collins)

Sugarbeet Processing Facilities

U.S. Sugarbeet Producing Areas



Sugarbeet Processing Facilities (cont.)

- About 30 million tons of beets processed annually
- 4.3 million metric tons of CO₂ emissions per year
 - equivalent to one medium size coal-fired power plant (600 total in US)
- Emissions create liabilities under legislation to deal with climate change

Options to Mitigate Impacts Within Legislation

- EITE – energy intensive, trade exposed industry designation
 - allocated “free” allowances to help offset costs for 10 years
 - impacts remained high: \$20-29M in first year; \$500M (\$2007) in first 12 years
- Consider as part of agricultural sector instead of industrial sector

Options to Reduce CO₂ Emissions

- Fuel switch from coal to natural gas
 - current fuel split for all facilities is 85 coal/15 natural gas
 - from EIA fuel price projections, full conversion would result in a five-fold increase in annual fuel costs to over \$400 million per year
- Utilize renewable energy
 - wind
 - solar
 - biomass
- Increase energy efficiency

Energy Efficiency is Key

- Improved performance: since 1990, sugarbeet processors reduced energy intensity by 24%
 - reduced CO₂ intensity by over 20%
 - invested \$225 million in projects to improve efficiency since 2000
 - investigate new ways to use waste products from processing to reduce CO₂ emissions, e.g.,
 - methane collection and use
 - fuel utilization of spent pulp
- Combined Heat and Power (CHP)
 - more than 80% of beet sugar is produced at facilities utilizing CHP
 - CHP provides electricity at efficiency double that of the electric power sector

Outlook for 112th Congress

- Comprehensive legislation on climate policy won't happen in this session
 - unlikely in the near-to-mid term
- Potential actions on complimentary measures – positive impacts on emissions without a regulatory program
 - Renewable Electricity Standard (RES)/Clean Energy Standard (CES)
 - incentives for energy efficiency
 - appliance standards
- RES/CES could provide incentives to sugar beet processors
 - CHP systems received benefits in previous Senate bill

EPA Regulation of Greenhouse Gases

- Supreme Court decision in April 2007 (Massachusetts v. EPA)
 - EPA must regulate if greenhouse gases endanger public health and the environment
- Endangerment finding – December 2009
- Greenhouse gas standards for motor vehicles – April 2010
 - begins model year 2012
 - GHG now “subject to regulation” under the Clean Air Act
 - triggers regulation of stationary sources under the prevention of significant deterioration (PSD) and Title V permit programs
- Greenhouse gas standards for stationary sources – June 2010
 - “Tailoring” Rule phased in PSD/Title V permit regulations as of 1/2/2011
- New Source Performance Standards (NSPS) for greenhouse gases – proposals later in 2011
 - affects new, modified, and existing sources in 2 categories:
 - electric generating units and refineries

EPA Regulation of Greenhouse Gases – PSD

- PSD permits required for new or modified stationary sources
 - >75,000 tons of CO₂e per year
- PSD program implemented by states in most cases
- Permitting authority determines emissions limitation
 - best available control technology (BACT)
 - evaluate economic, energy, environmental impacts of each option to choose BACT
- EPA BACT guidance to permitting authorities in November 2010
 - did not prescribe specific technologies as BACT
 - maintained discretion of permitting authorities
 - highlighted energy efficiency as a control option
 - created more uncertainty in permitting process

Congressional Challenges to EPA Greenhouse Gas Regulations

- Republicans in the House and some Senate Democrats introducing bills to:
 - defund EPA's greenhouse gas programs (use appropriations process)
 - remove EPA's legal authority (Sen. Barrasso (R-WY), Rep. Upton (R-MI,6th))
 - suspend program for 2 years (Sen. Rockefeller (D-WV))
- Senate passage unlikely
 - Administration veto threat
- Funding limitations do not remove the existing legal requirement to comply with the PSD program
- Bottom line: stay tuned