



Low-Carbon Fuels and the Midwest Economy

*Midwestern Governor's Association
Bioenergy and Transportation Advisory Group*

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Policy Options Menu

BIOECONOMY/TRANSPORTATION ADVISORY GROUP							
Policy Option		GHG Reductions* (MMtCO ₂ e)			Net Present Value 2008-2025 (Million \$)	Cost-Effectiveness (\$/tCO ₂ e)	Level of Support
		2015	2025	Total 2008-2025			
BT-1	Market Pull and Distribution Infrastructure						Pending
BT-2	Conversion Technology Commercialization						Pending
BT-3	Bioenergy Incentives						Pending
BT-4	Next-Generation Regulation						Pending
BT-5	Advanced Tech Support						Pending
BT-6	Regional Research Collaboration						Pending
BT-7	Infrastructure for Biobased Product Manufacturing						Pending
BT-8	Biobased Product Development						Pending
BT-9.1	Perennial Biomass Supply						Pending
BT-9.2	Biomass Feedstock Supply Logistics						Pending
BT-10	Regional Low Carbon Fuels Policy						Pending
BT-11	Vehicular Fuel Efficiency						Pending
BT-12.1	Bioeconomic Wealth Creation						Pending
BT-12.2	Bioeconomic Workforce Development						Pending
BT-13	Transit, Vehicle Miles Traveled Reduction						



Low-Carbon Fuels Policy

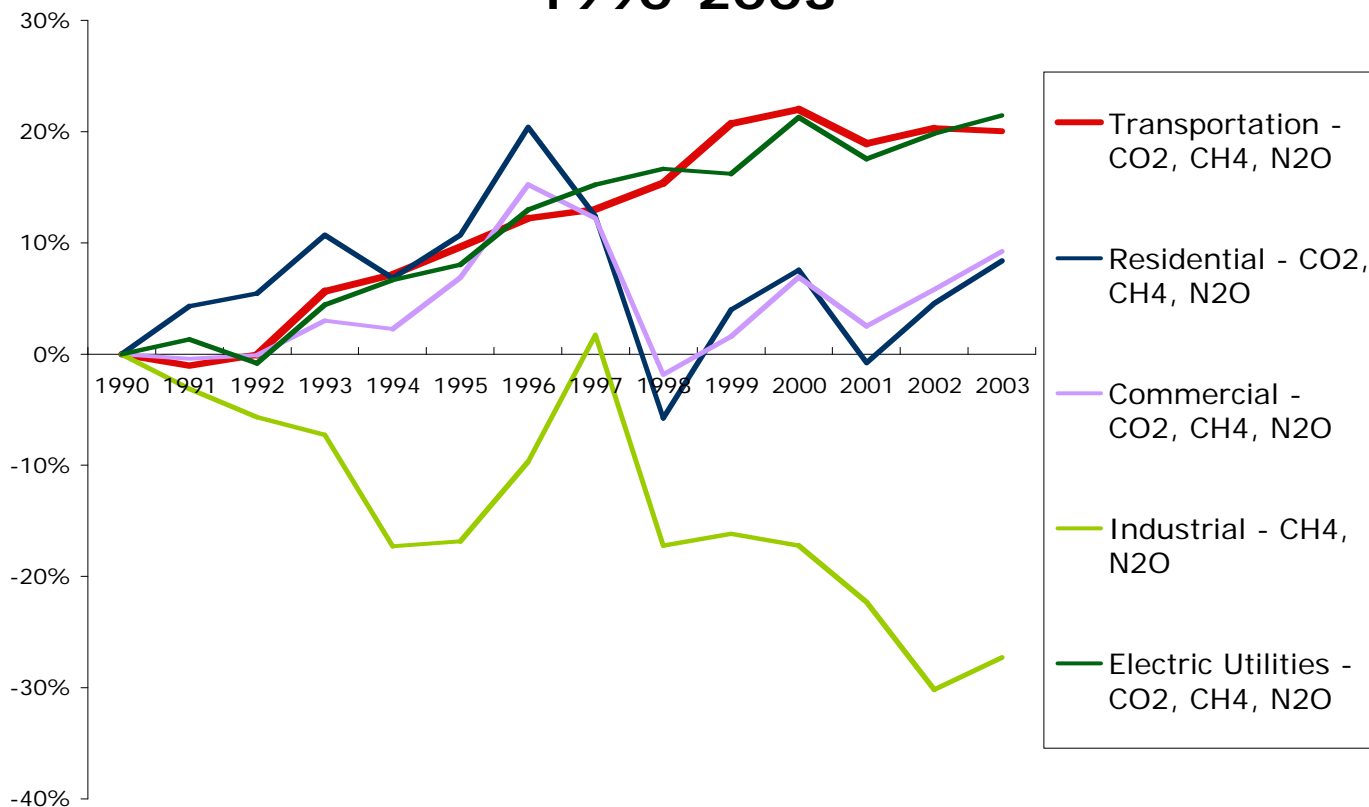
Important for several reasons:

- Helps meet MGA goals of low-carbon fuels leadership
- Ensures CO₂ reduction goals are met
- Applies to all fuels, not just biofuels
- Midwest perspective in national policy



Midwest CO2 Emissions

Percent Change in Midwest Emissions, 1990-2003



Source: Climate Analysis Indicators Tool (CAIT US) version 2.0. (Washington, DC: World Resources Institute, 2008). Available at <http://cait.wri.org>.



Transportation Sources

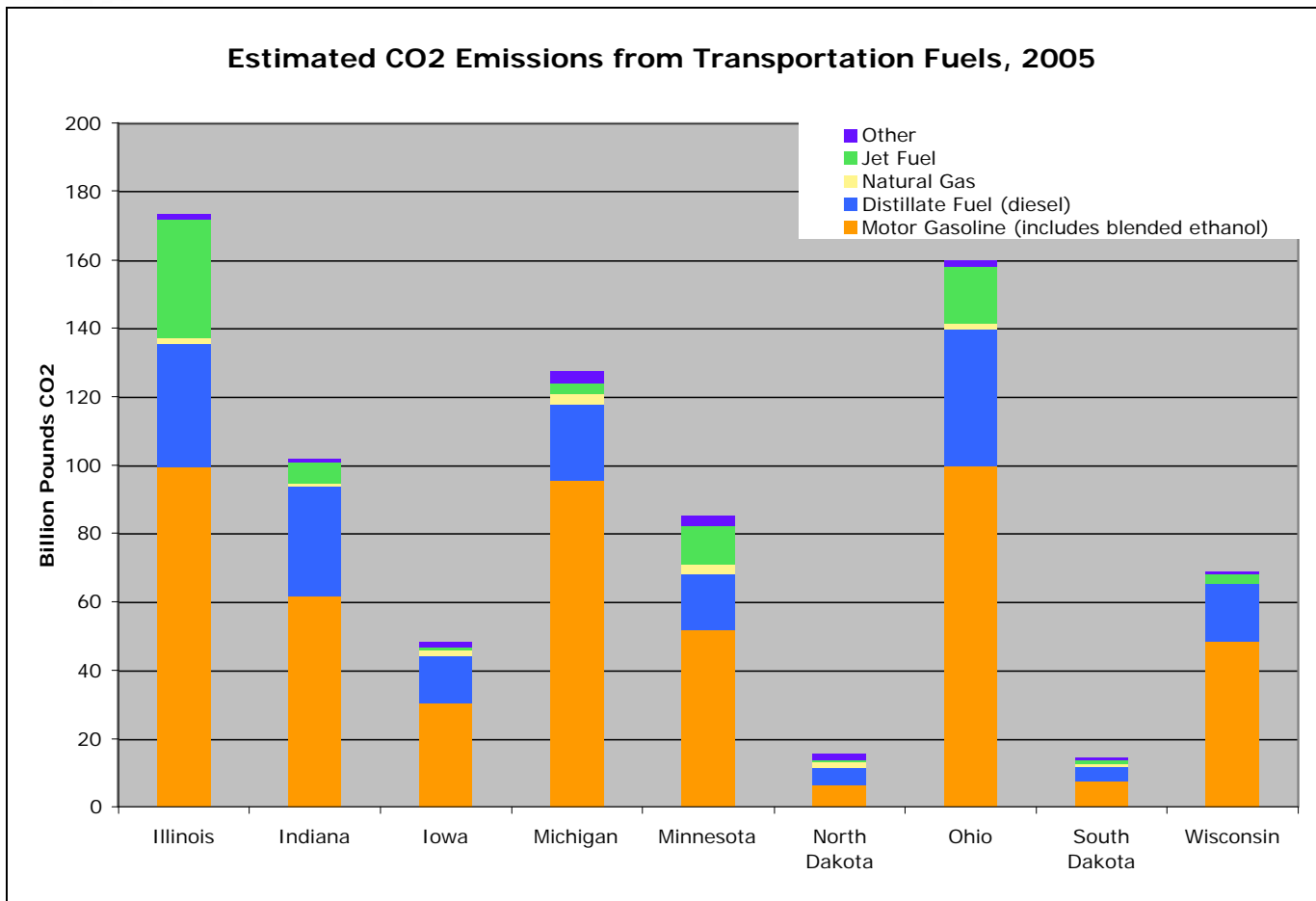
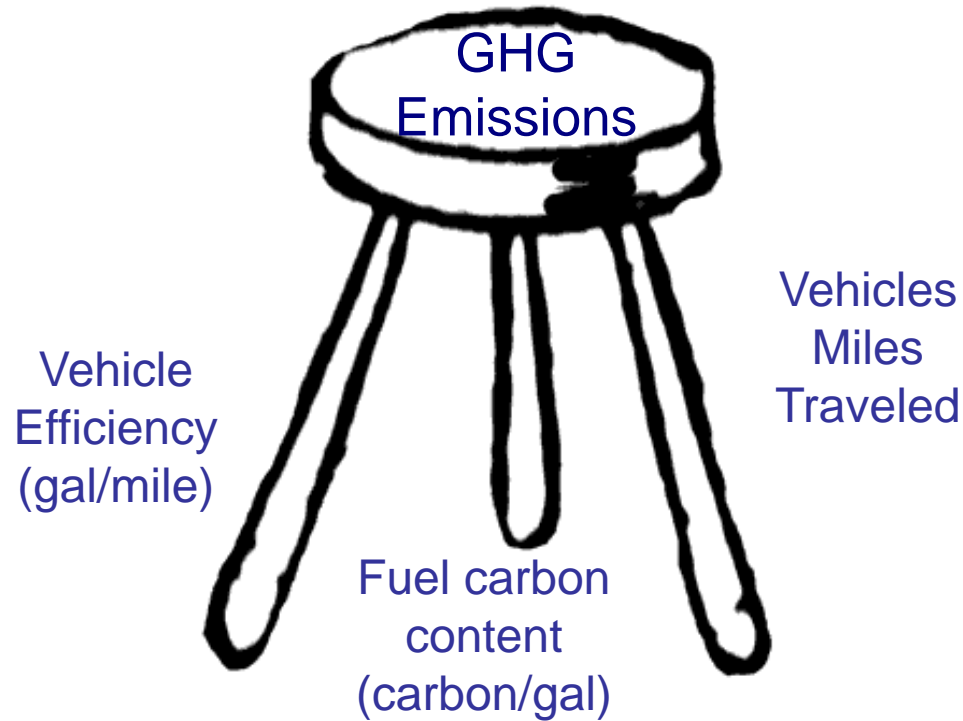


Figure 2: EIA, State Energy Profiles Transportation Sector Energy Consumption Estimates, 2005

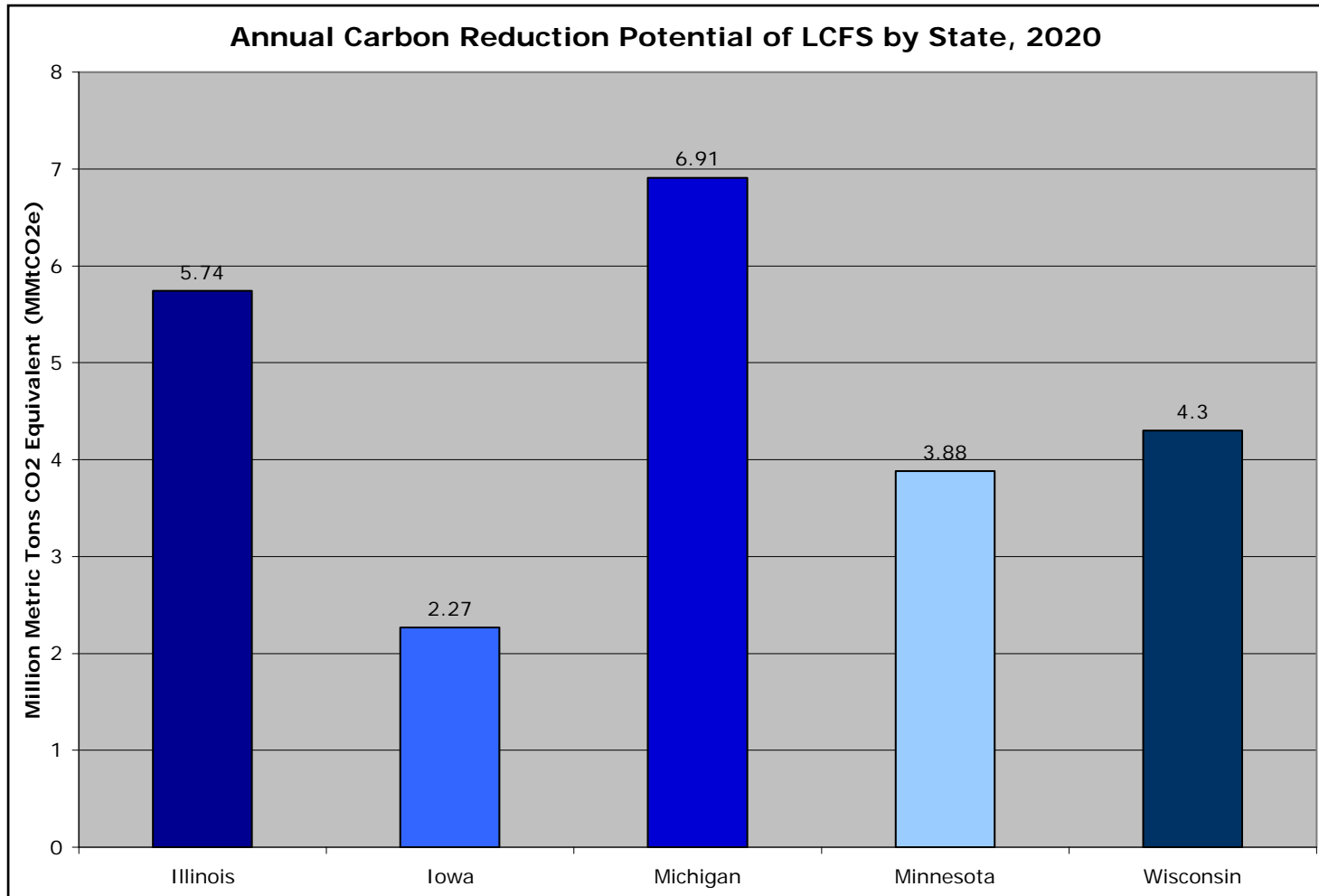


3-Legged Stool of Transportation CO2 Emissions





CO2 Reduction Potential (10% reduction)





Low-Carbon Fuels Policy

- Background
 - California and federal RFS
- Several Midwest states
 - included in climate plans
- NCBC webinar/discussion series
 - Explored range of issues and policies
- Key emerging issue
 - indirect land-use impacts



California Executive Order

- Requires reduction in the carbon intensity of transportation fuels, on a life cycle basis (field to wheels)
 - 10% by 2020
 - Onus on fuel providers
- Rules expected in Dec. of this year



Federal RFS “2”

- Passed Dec. 2007 (EISA)
- 36 b. gallons by 2022
- New fuel categories
 - Conventional
 - Advanced
 - Cellulosic
 - Biodiesel

QuickTime™ and a
TIFF (LZW) decompressor
are needed to see this picture.



Reduction of Life Cycle GHG Emissions

Life Cycle Definition includes direct and *significant indirect emissions* (such as land use changes)

- Conventional biofuels: 20% reduction compared to gasoline/diesel
- Advanced biofuels: 50% reduction
- Cellulosic ethanol: 60% reduction



Other Environmental Safeguards

RFS eligibility restricts materials from:

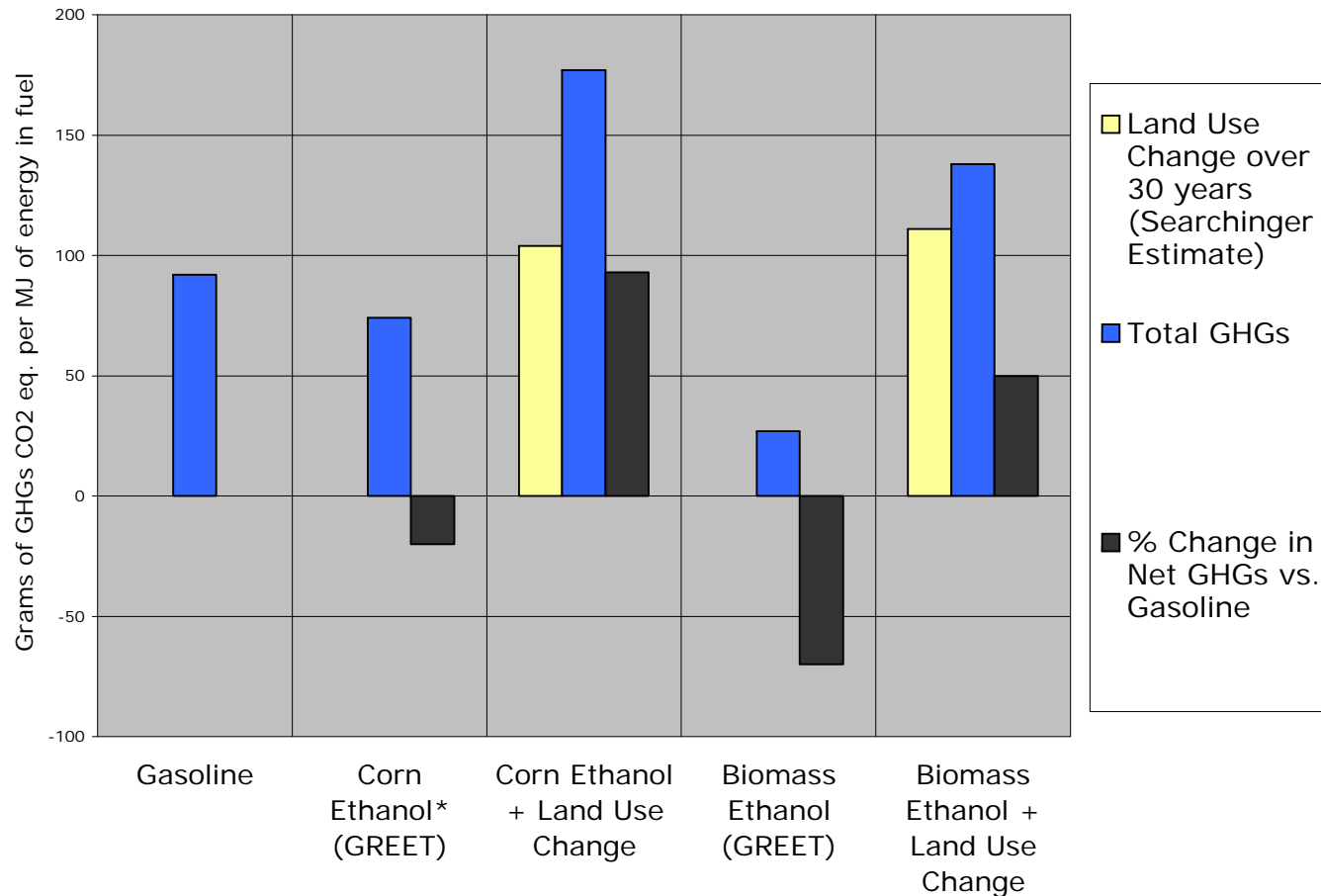
- Sensitive lands
- Important wildlife habitat
- National forests
- Lands cleared after RFS enactment



Indirect Land Use Impact Debate

Comparison of corn and biomass ethanol to gasoline GHG CO₂ eq's with and without indirect land use change

Source: Searchinger, et al. Use of U.S. Croplands for Biofuels Increases Greenhouse Gases Through Emissions from Land Use Change





Indirect Land Use Debate - Concerns

- Science on impacts still being developed
- Risk of disrupting biofuel development
- Little ability of U.S. biofuel producers to address impacts
- Favors production of animal feed

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TIFF (Uncompressed) decompressor
are needed to see this picture.



NCBC Preliminary Recommendations

- Include mechanisms that incentivize producers to reduce GHG's
 - Versus using only default values
 - Include carbon capture/sequestration
- Ensure best science and impacts on biofuels industry in setting indirect land use values
 - Allow offsets or credits to mitigate?
- Analyze land-use impacts of *all* fuels
 - Not just biofuels



Commercialization of Next Gen biofuels

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Development of Next Gen Feedstocks

- Encourage sustainably grown feedstocks
 - Expand programs and incentives for landowners
 - Sustainable forestry harvesting guidelines
- Minnesota's RIM - Clean Energy program
 - CRP-like program to encourage perennials

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