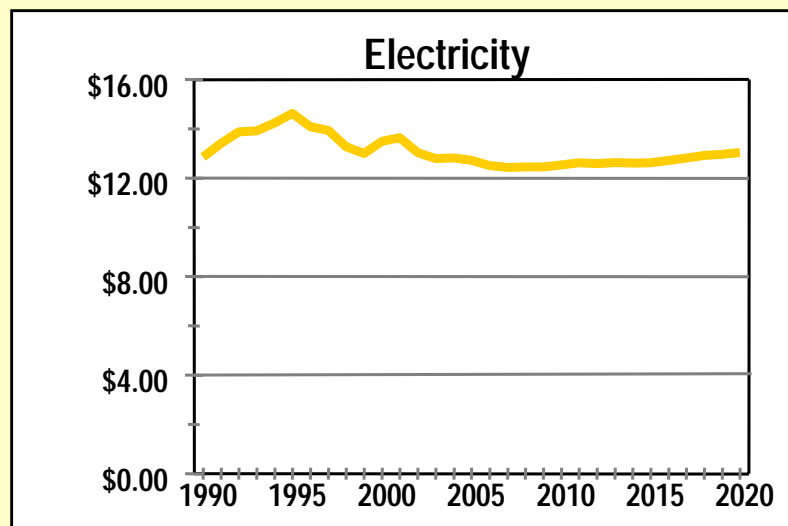
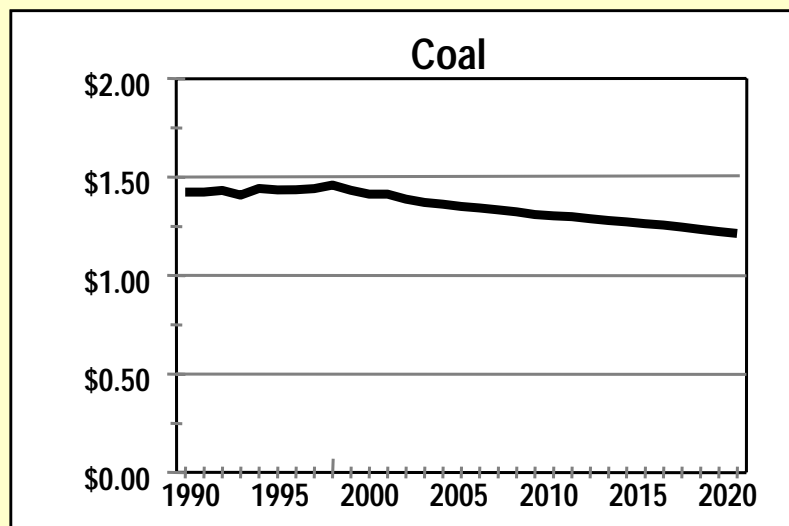
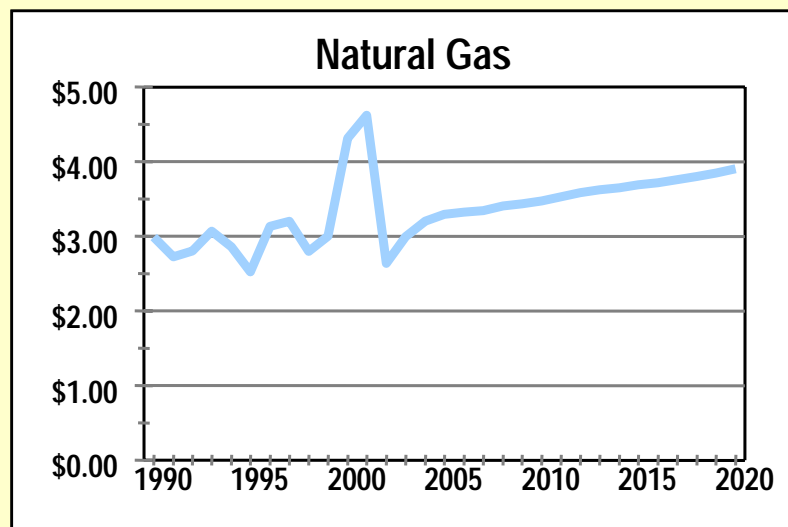
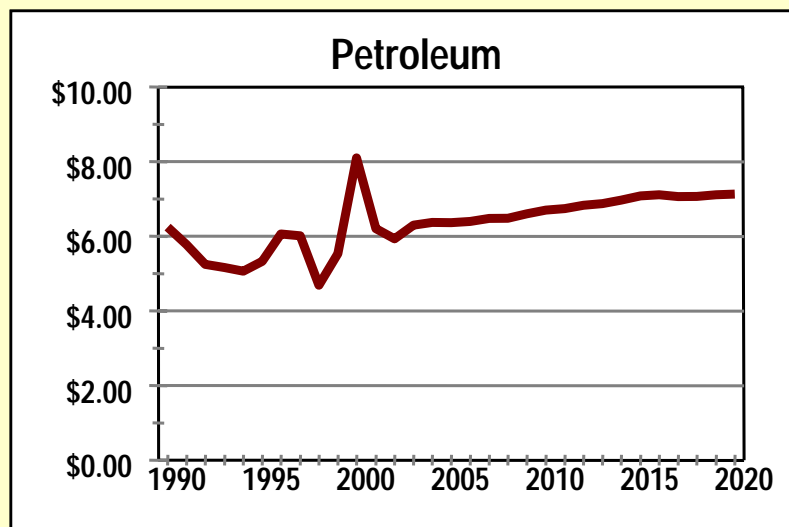


Industrial Sector Energy Demand Projections Annual Energy Outlook 2002

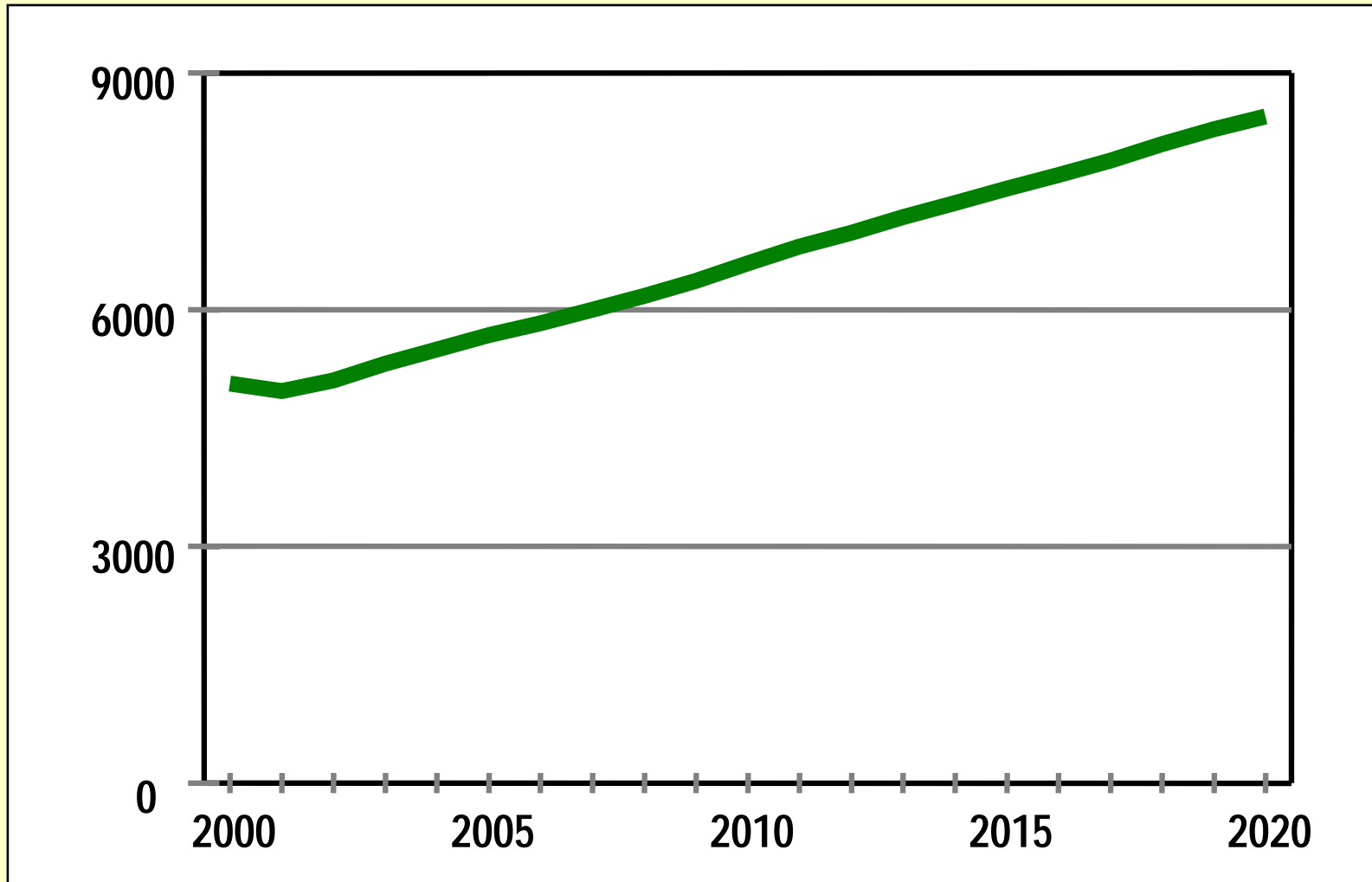
Brian Unruh
Energy Information Administration

National Energy Modeling System Conference
March 12, 2002

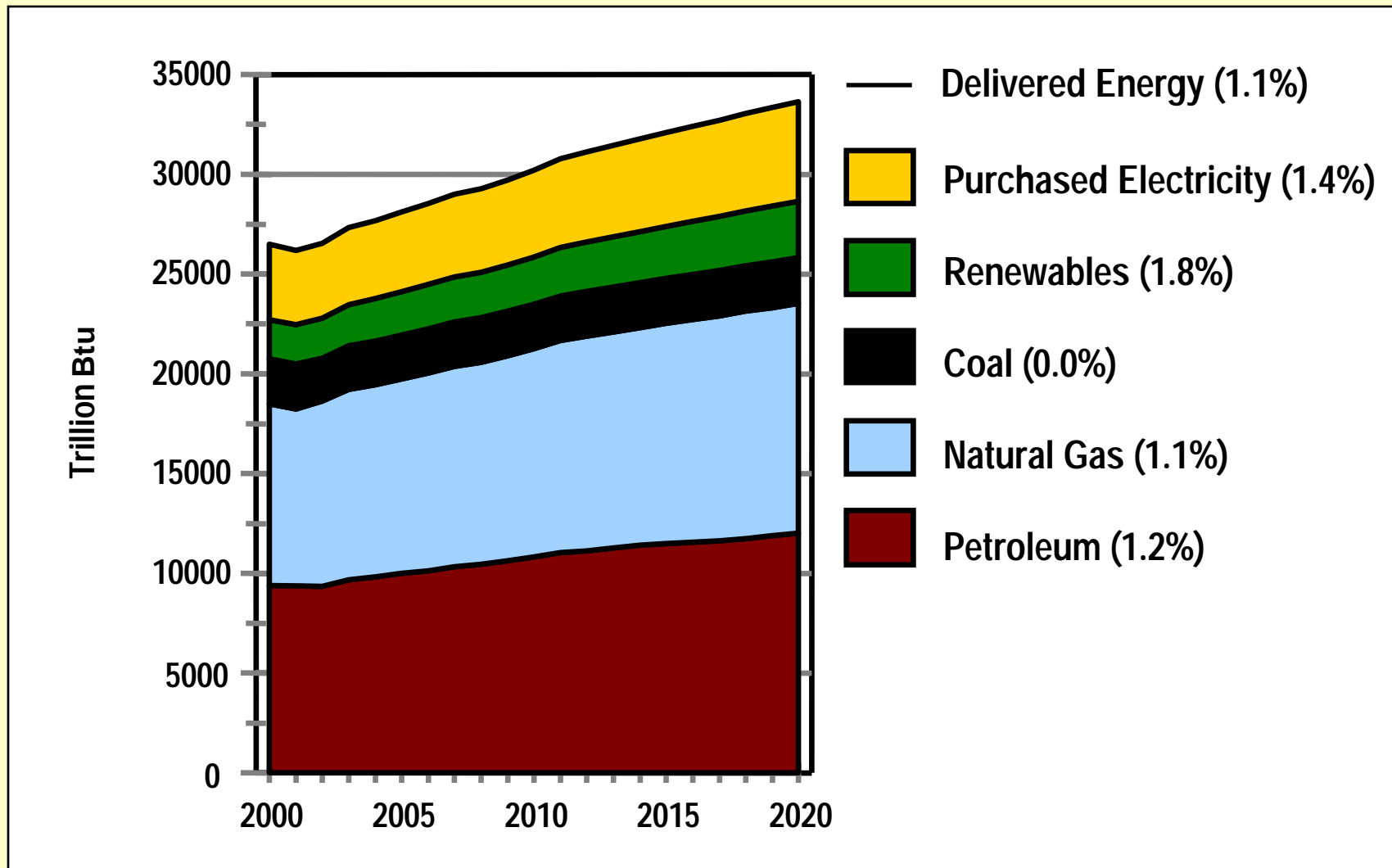
Industrial Sector Delivered Energy Prices 2000 Dollars per Million Btu



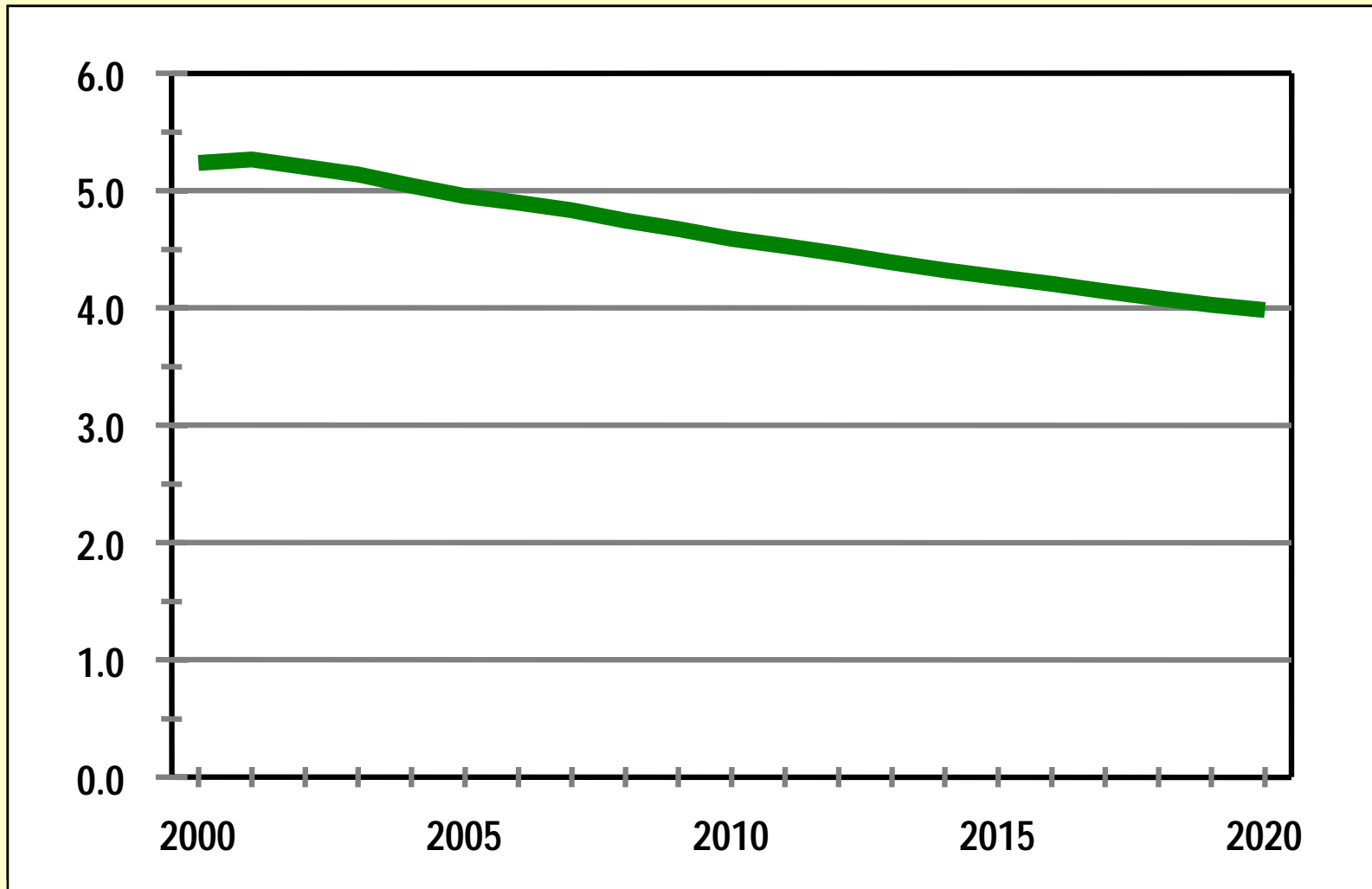
Industrial Sector Gross Output billion 1992 dollars



Industrial Sector Delivered Energy Consumption



Industrial Sector Delivered Energy Intensity thousand Btu / 1992 dollar of output



Sectors Included in the NEMS Industrial Model

Manufacturing

- Food
- Paper
- Bulk Chemicals
- Refining *
- Glass
- Cement
- Steel
- Aluminum
- Metal-Based Durables
- Balance of Manufacturing

Non-Manufacturing

- Agriculture – Crops
- Agriculture – Livestock
- Coal Mining
- Oil & Gas Extraction *
- Other Mining
- Construction

Summary of Industrial Model Structure For Manufacturing Sectors

Buildings Component

- Lighting
- HVAC
- Facility Support
- Onsite Transportation

Boiler Component

- Steam Demand
- Cogeneration

Process and Assembly Component

Process Step Industries

- Paper
- Glass
- Cement
- Steel
- Aluminum

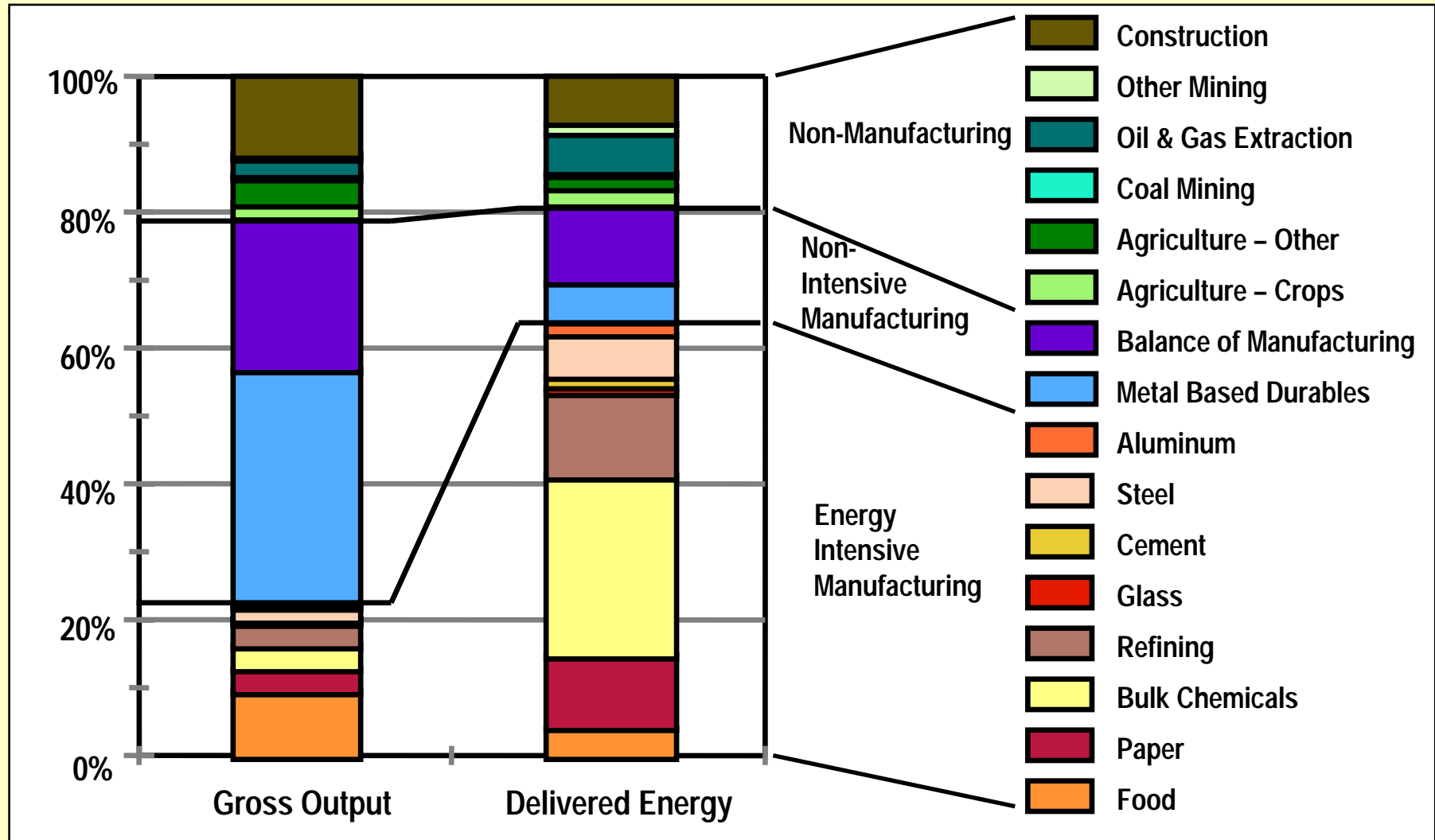
End Use Industries

- Food
- Bulk Chemicals
- Metal-Based Durables
- Balance of Manufacturing

Changes for AEO2002 Model

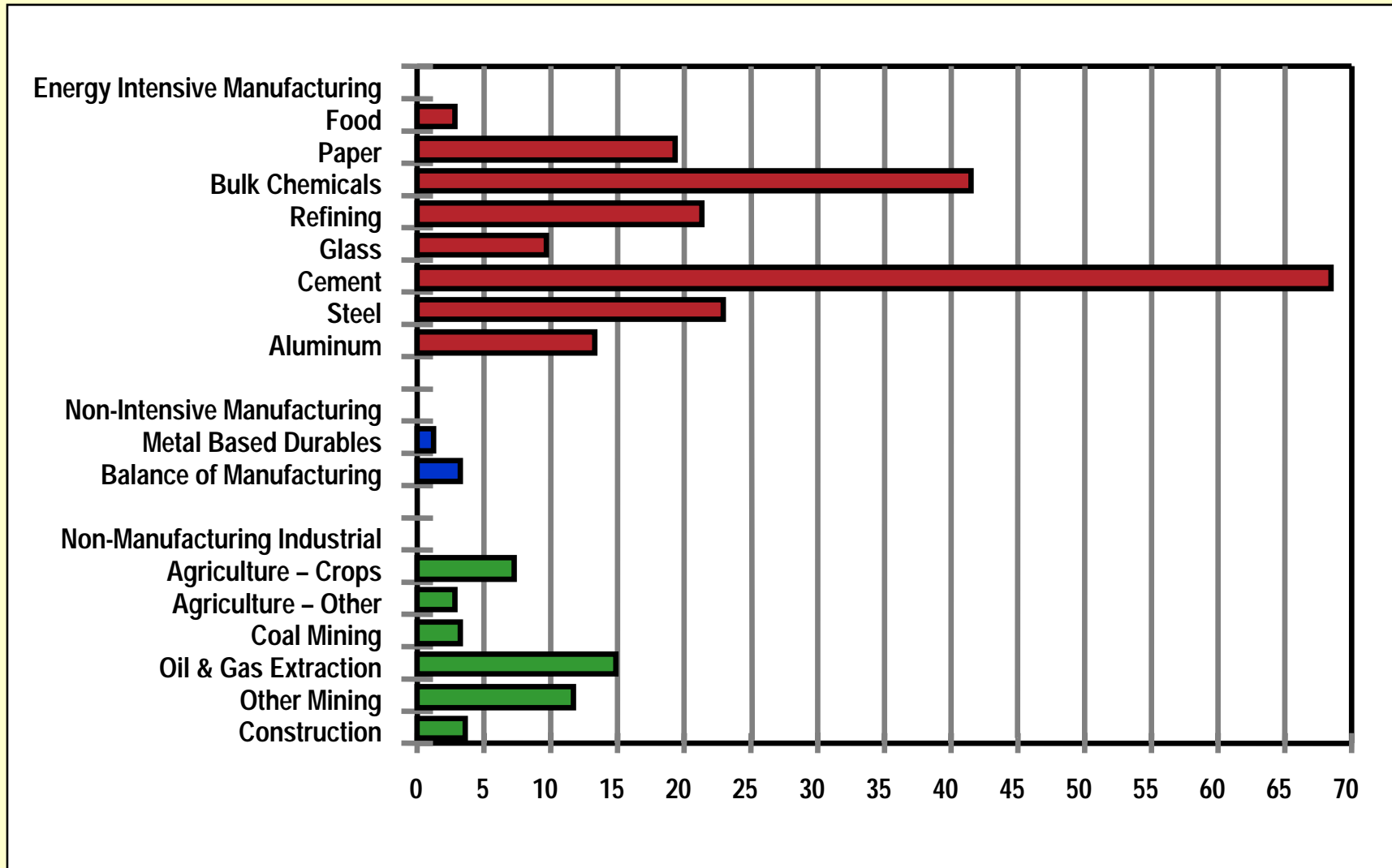
- Updated Manufacturing parameters based on MECS98
- Updated Non-Manufacturing parameters based on information from EIA, the U.S. Department of Agriculture and the U.S. Census Bureau
- Industries now classified based on NAICS
- Aluminum Industry includes primary and secondary

1998 Shares of Gross Output & Delivered Energy Consumption

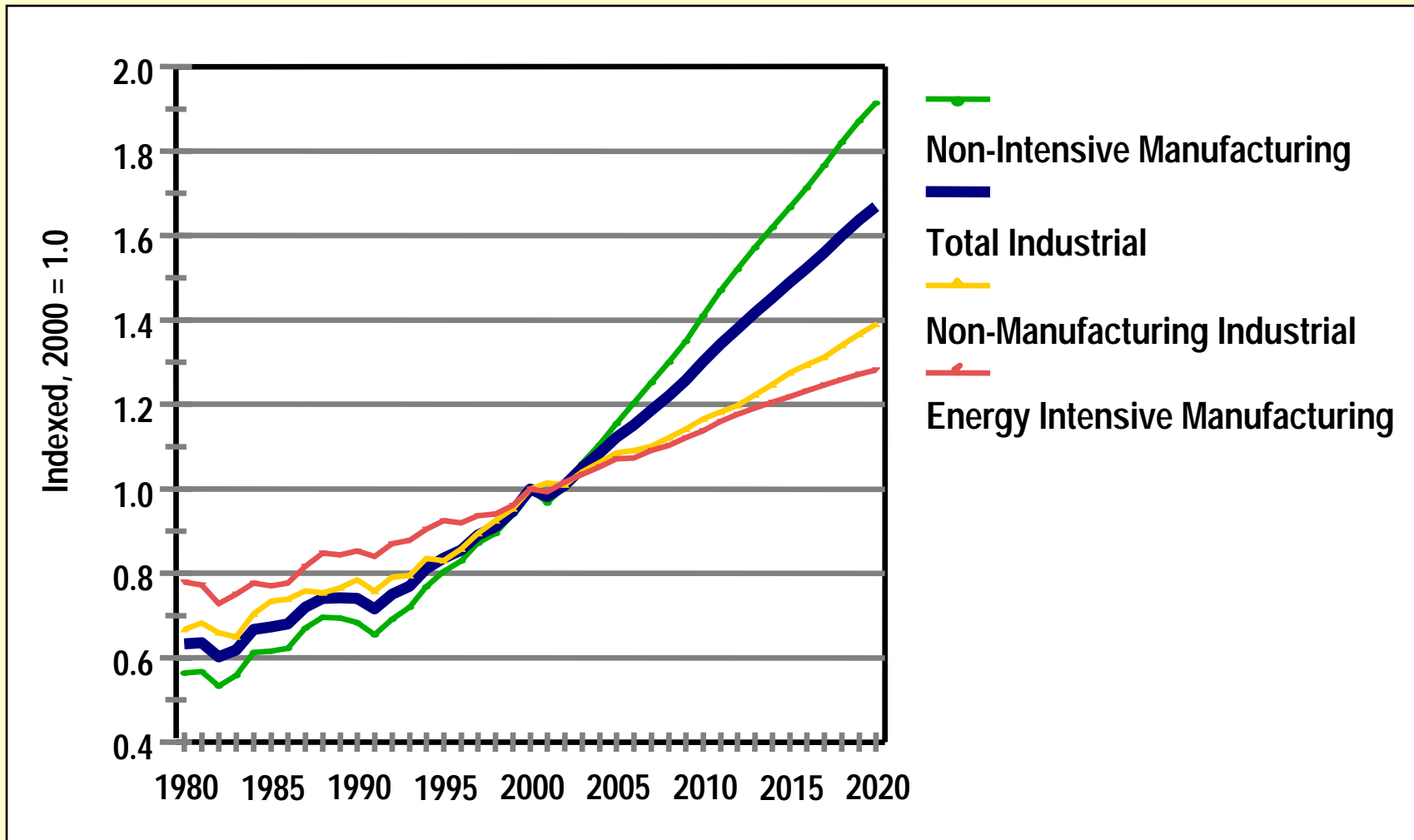


1998 Delivered Energy Intensity

thousand Btu / 1992 dollar of output



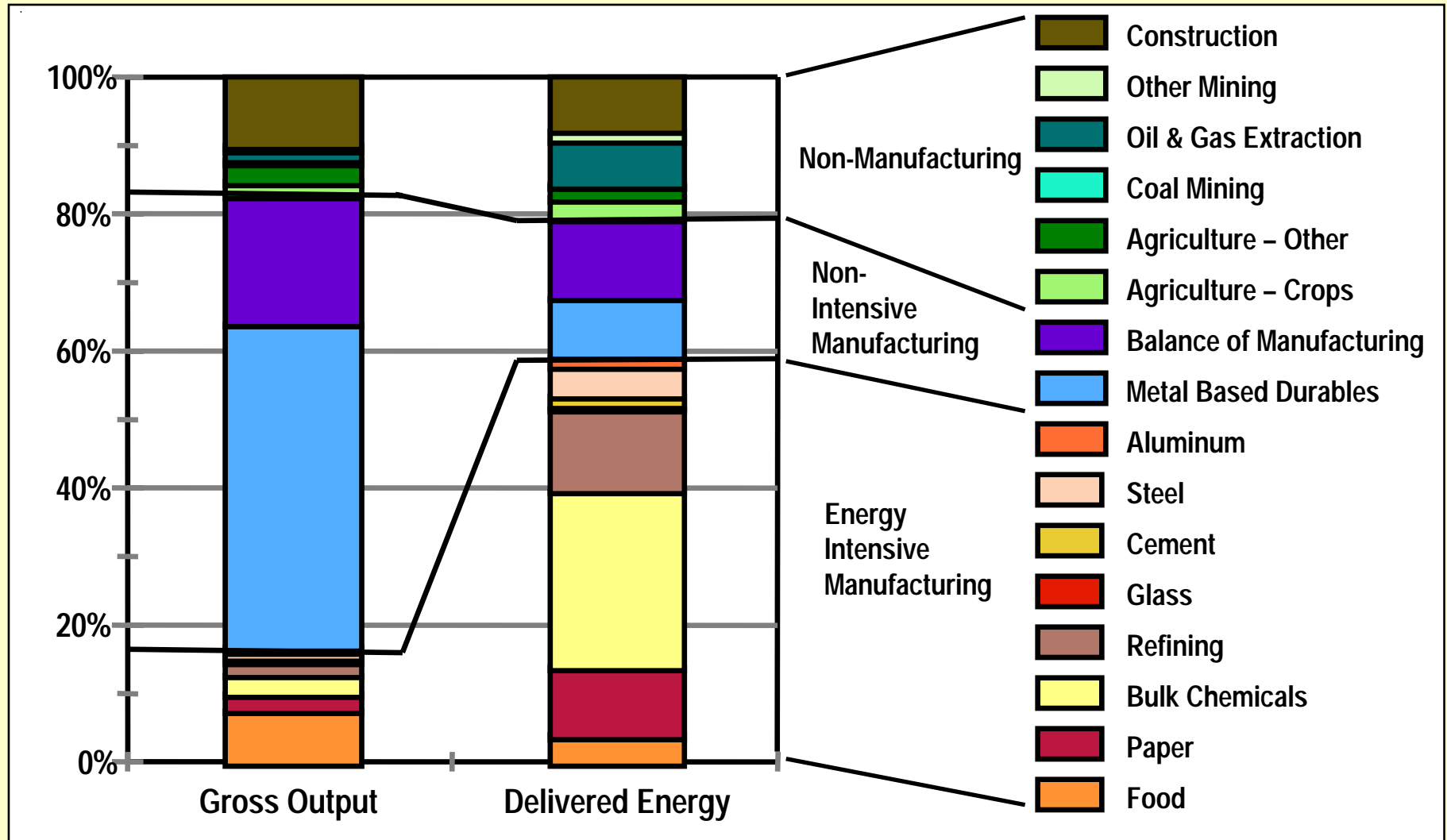
Energy Intensive Manufacturing Output Grew the Slowest in the Past, and the Trend is Projected to Continue



2000 – 2020 Projected Annual Growth Rates

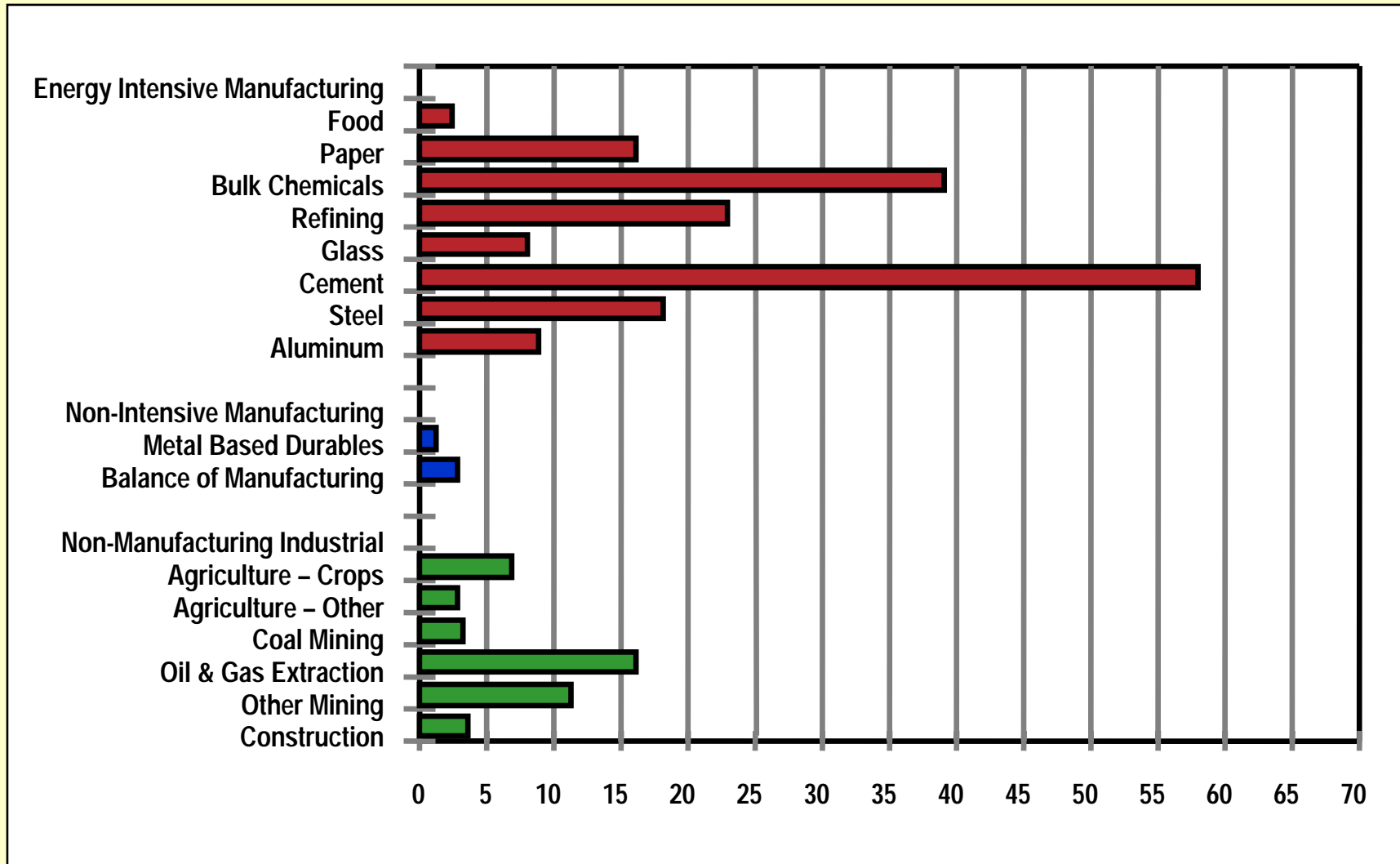
	Gross Output	Delivered Energy Consumption
Energy Intensive Manufacturing	1.2%	0.8%
Food	1.3%	0.9%
Paper	1.6%	0.8%
Bulk Chemicals	1.1%	0.9%
Refining	0.9%	1.4%
Glass	1.2%	0.4%
Cement	1.2%	0.5%
Steel	0.9%	-0.2%
Aluminum	1.2%	-0.7%
Non-Intensive Manufacturing	3.3%	2.0%
Metal-Based Durables	4.0%	2.9%
Balance of Manufacturing	2.0%	1.4%
Non-Manufacturing Industrial	1.7%	1.6%
Agriculture – Crops	1.3%	1.0%
Agriculture – Livestock	1.1%	0.9%
Coal Mining	1.1%	0.8%
Oil & Gas Extraction	1.3%	2.2%
Other Mining	1.1%	0.7%
Construction	2.0%	1.7%

2020 Shares of Gross Output & Delivered Energy Consumption

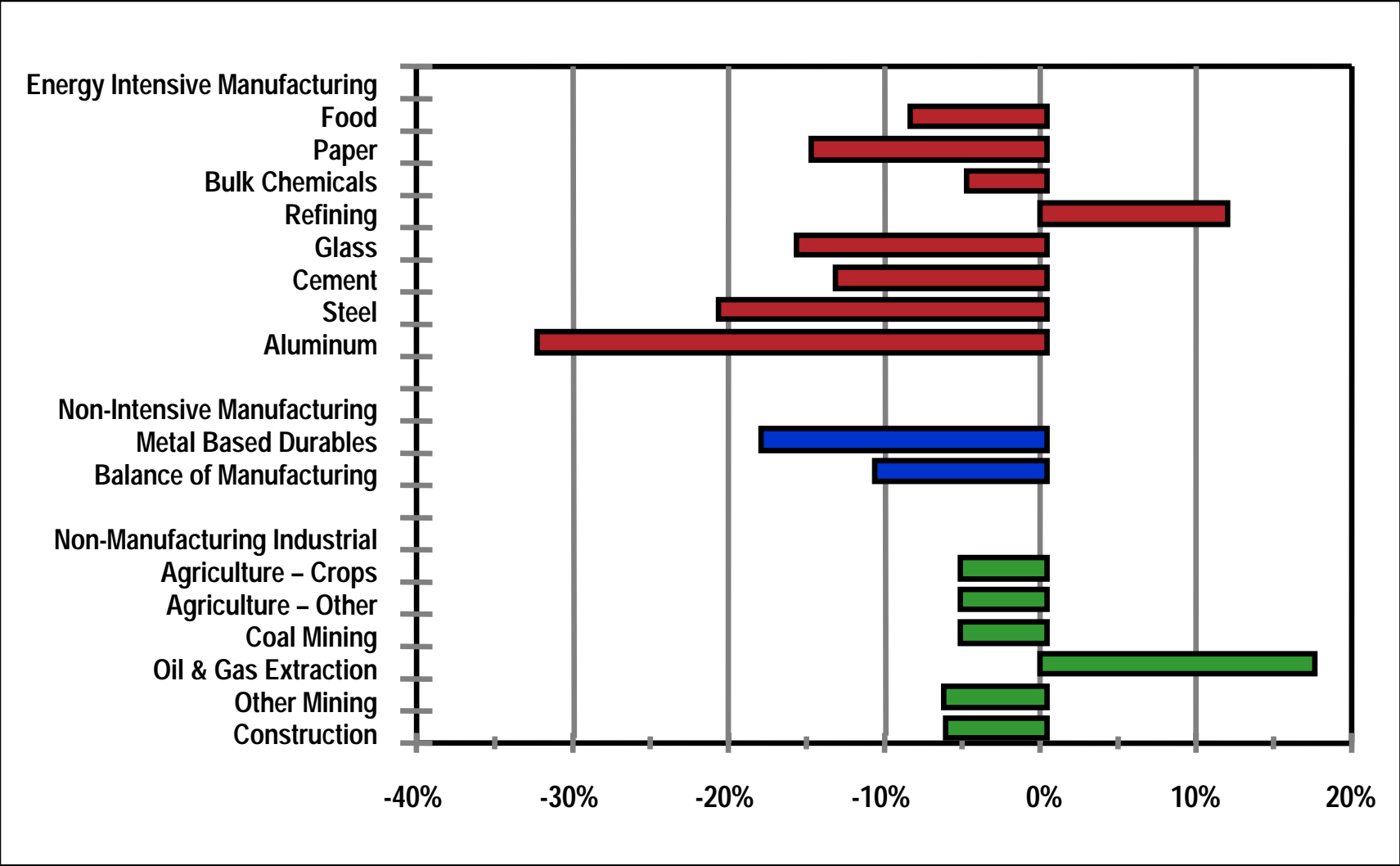


2020 Delivered Energy Intensity

thousand Btu / 1992 dollar of output



Change in Delivered Energy Intensity between 2000 and 2020 thousand Btu / 1992 dollar of output



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