

Greenhouse Gas Emissions and Energy Sources and Uses in the Fairbanks North Star Borough

What are Greenhouse Gases?

'Greenhouse Gases are gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation at specific wavelengths within the spectrum of thermal infrared radiation emitted by the earth's surface, the atmosphere itself, and by clouds'

Carbon Dioxide (CO₂)

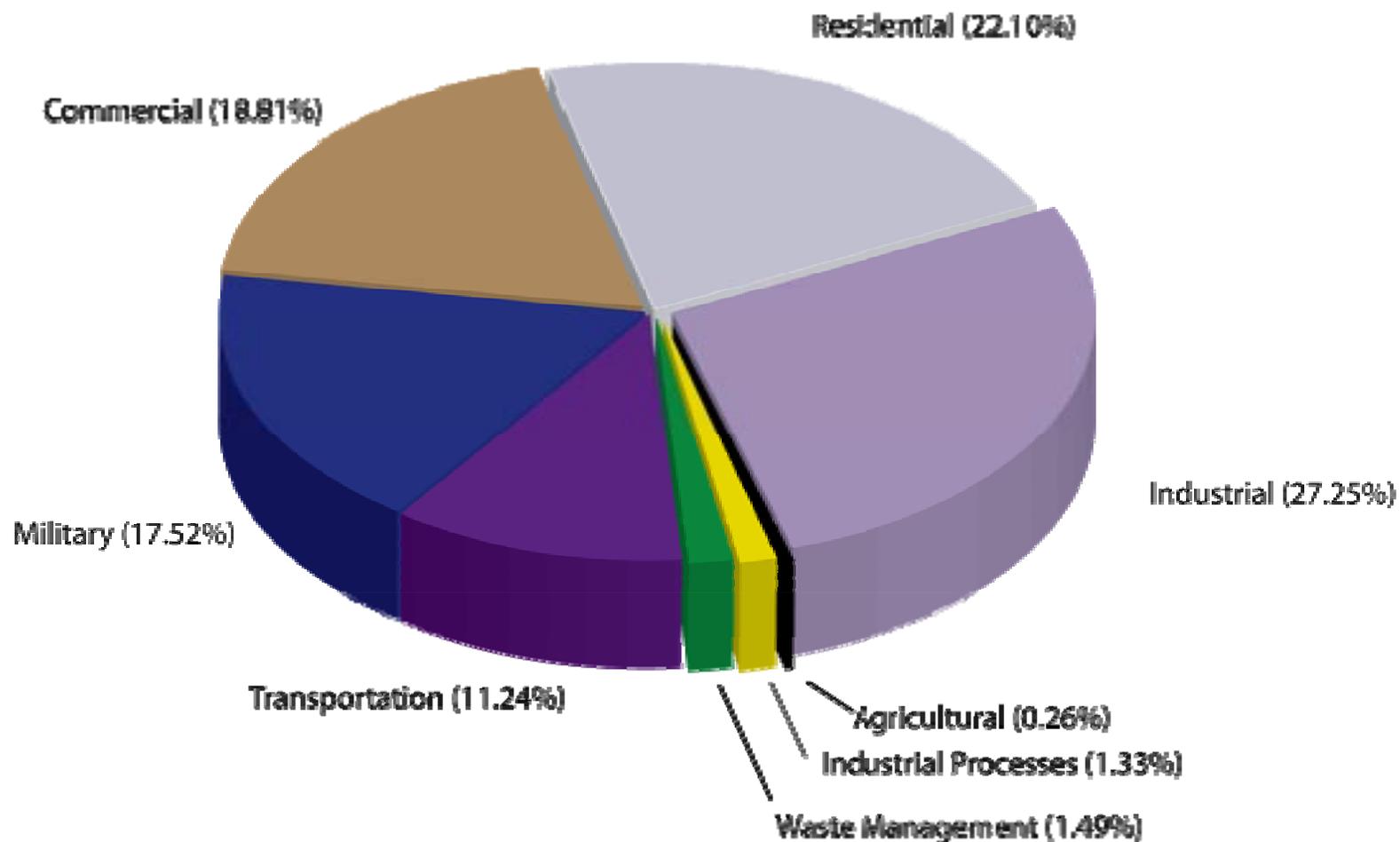
Methane (CH₄)

Nitrous Oxide (NO₂)

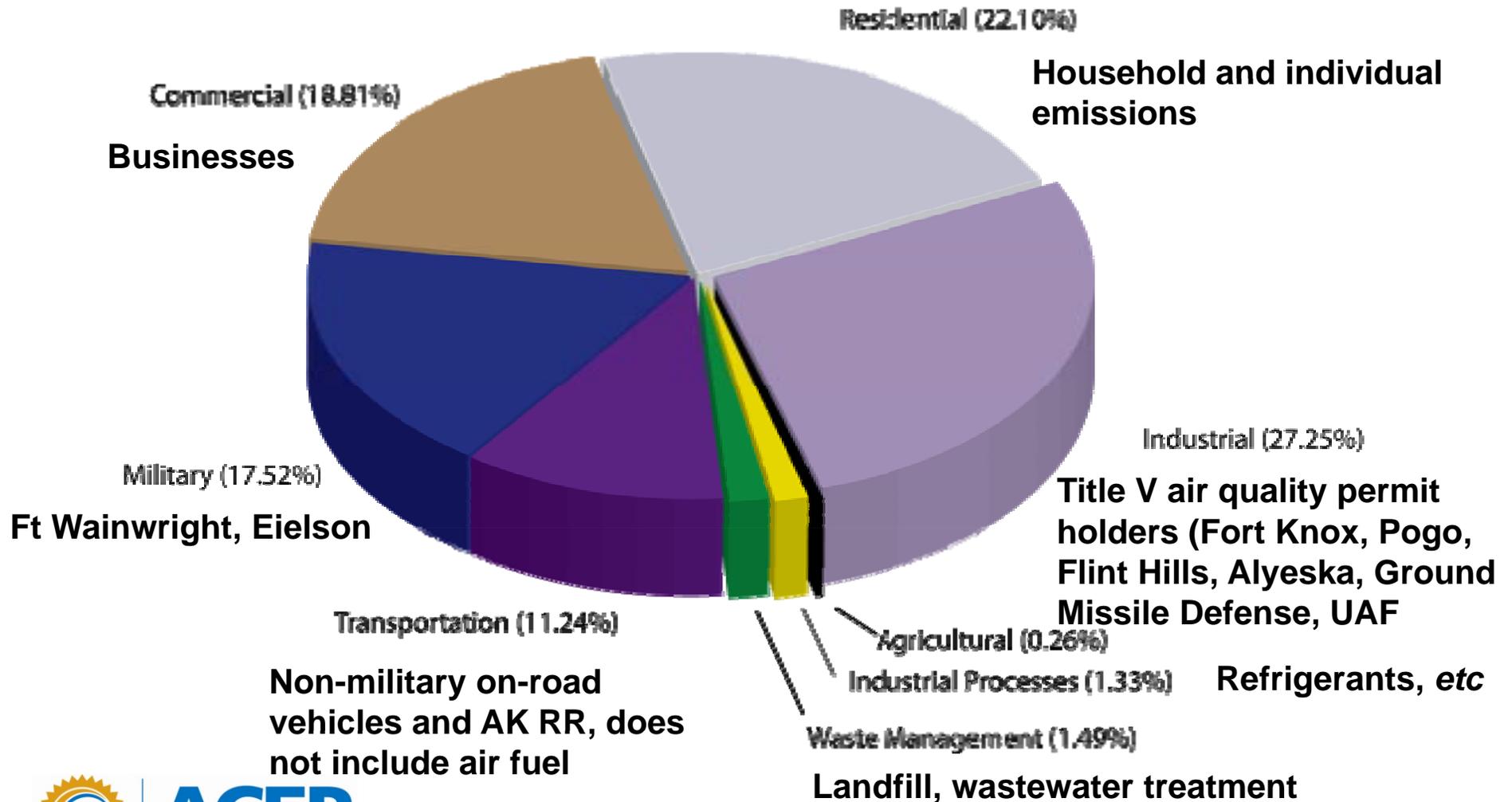
*hydrofluorocarbons, perfluorocarbons,
sulfur hexafluoride*



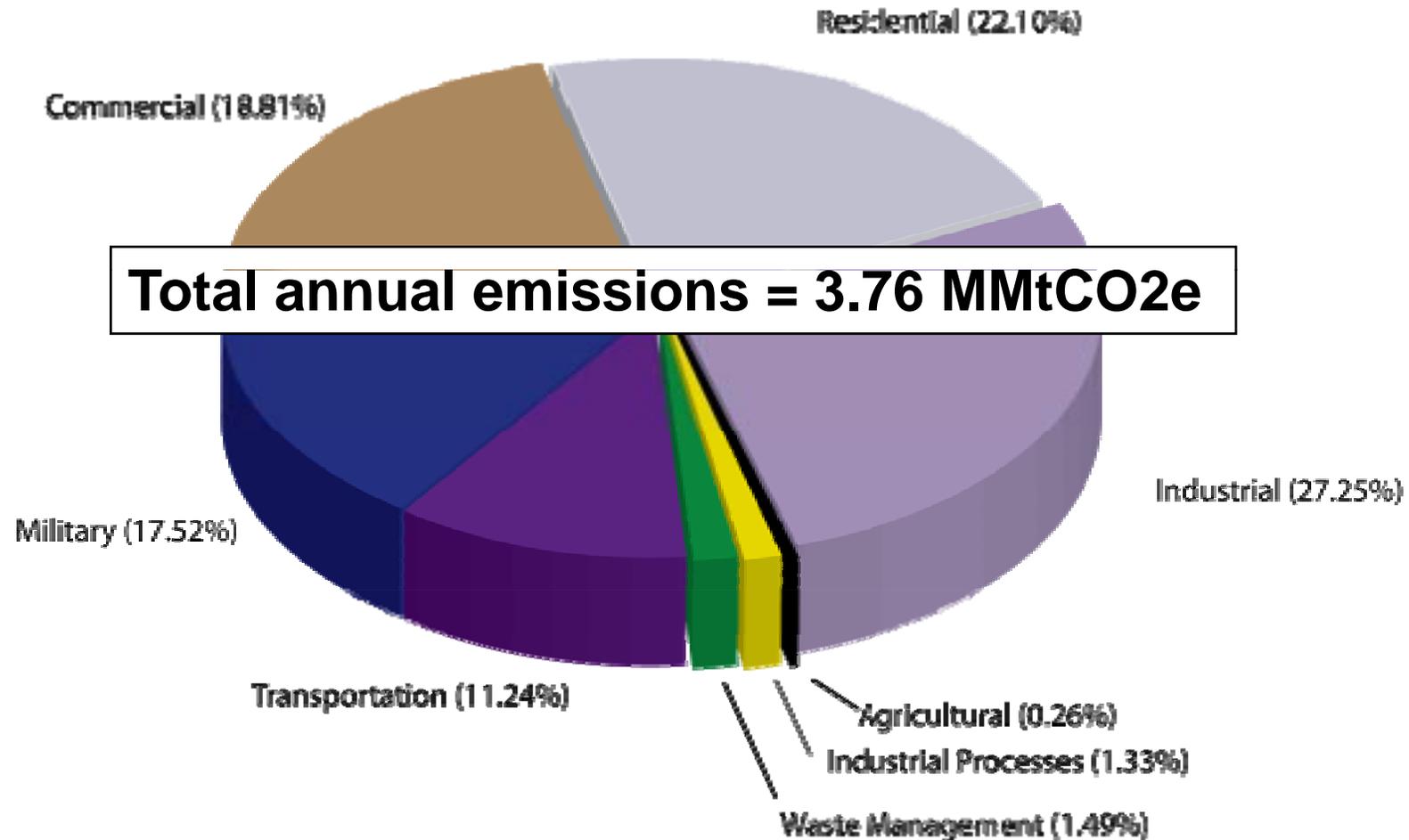
GHG Emissions in the FNSB



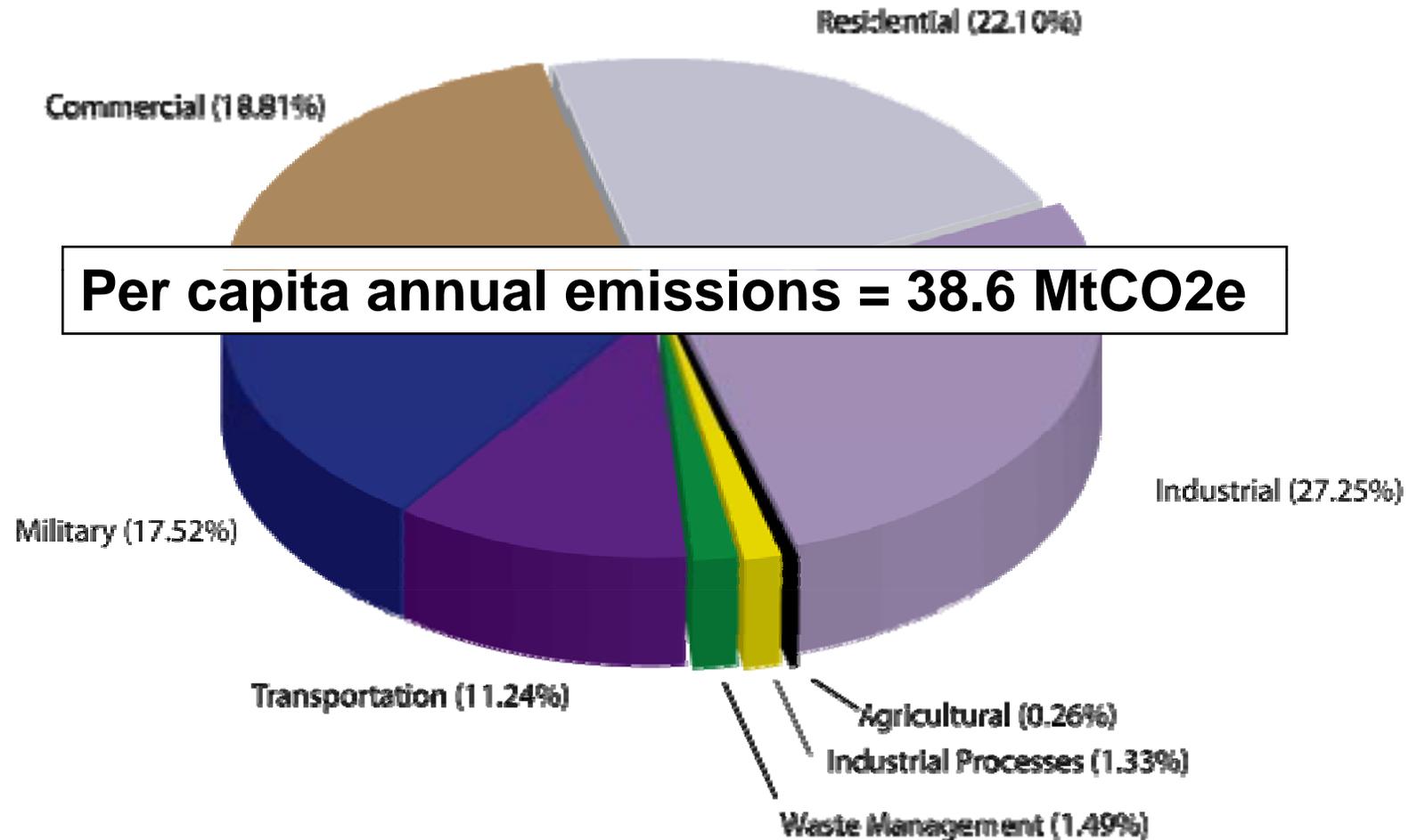
GHG Emissions in the FNSB



GHG Emissions in the FNSB



GHG Emissions in the FNSB



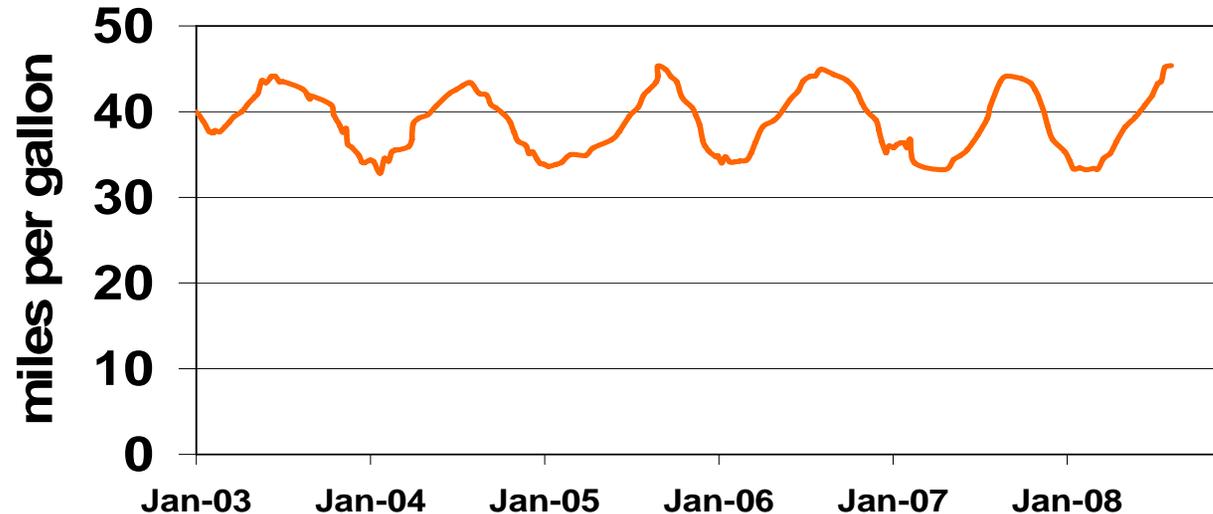
Nation and Statewide Comparison

- FNSB per capita emissions is 64% higher than national average
Heating Loads

Nation and Statewide Comparison

- FNSB per capita emissions is 64% higher than national average

**fuel economy
1998 Chevy Metro
(running average of 8 fill-ups)**



Nation and Statewide Comparison

- FNSB per capita emissions is 64% higher than national average

Heating Loads

Temperature effects on engine operation

Higher rolling resistance

- Lubricant viscosity
- Snow on roads
- Winter tires

Increased idling times



Nation and Statewide Comparison

- FNSB per capita emissions is 64% higher than national average
- FNSB emissions 50% lower than average for Alaska

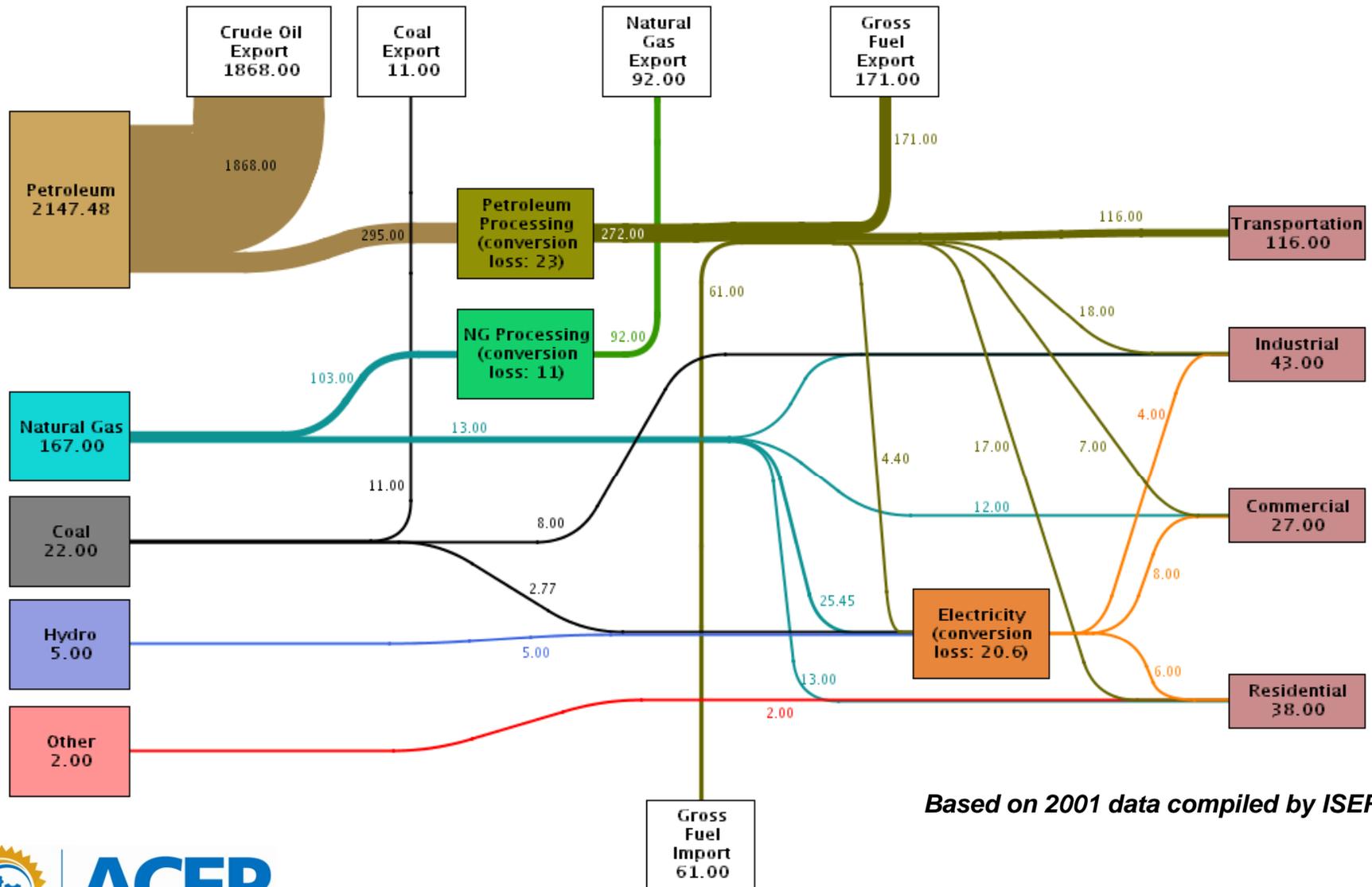
Does not include bulk industrial emissions from oil & gas industry, Agrium, etc

Industrial Fuel Sources in FNSB

Source	Fuel Type	Amount	Units	Emissions (MMt CO ₂ e)
Aurora Energy Coal	Coal (sub-bituminous)	220,531	Tons	0.368
Flint Hills Resources Diesel	Distillate Fuel	32,361	Gallons	<0.001
Flint Hills Resources Fuel Gas	Natural Gas	519,000	Mscf	0.028
Flint Hills Resources LSR	LSR/Gasoline	33,800,000	Gallons	0.295
Flint Hills Naphtha	Naphtha	1200	Gallons	<.001
Golden Valley Coal	Coal (sub-bituminous)	193,553	Tons	0.323
Golden Valley Distillate (Diesel + HAGO)	Distillate Fuel	18409986	Gallons	0.185
Golden Valley Jet A	Jet Fuel	234360	Gallons	0.002
Golden Valley Naphtha	Naphtha	26203380	Gallons	0.253
Petro Star Fuel Gas	Natural Gas	37261.554	Mscf	0.002
Petro Star Fuel Oil #1	Residual Fuel	410	Gallons	<.001
Petro Star LAGO (Diesel)	Distillate Fuel	149016	Gallons	0.001
Petro Star LSR	LSR/Gasoline	1509732	Gallons	0.013
UAF Coal	Coal (sub-bituminous)	69795	Tons	0.117
UAF Diesel	Diesel	1222813	Gallons	0.0123
UAF Natural Gas	Natural Gas	11975	Mscf	0.001
Total				1.600



Energy Flow Diagram for Alaska (in trillion BTU's)



Based on 2001 data compiled by ISER

What does this mean?

- FNSB per capita emissions in line with national emissions when taking into account climate factors
- Report provides a baseline for energy flow and emissions in FNSB
- Relevant to future projects
- Opportunity to seek ways to reduce emissions in the future
- Shows how future policies may impact the FNSB

For more information visit:

www.uaf.edu/acep

