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Transportation Energy Flows for 1976

University of California

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TRANSPORTATION ENERGY FLOWS FOR 1976

by

R. B. Kidman

ABSTRACT

Highly graphic, condensed, and informative illustrations of the 1976 transportation energy flows are presented for each of the 50 states, the 10 US Federal Standard Regions, the Military, and the United States. Each diagram shows the energy flow from primary energies, to fuel types, to the modes of transportation, plus the pollution emissions produced by each mode. The diagrams are an initial attempt to provide a convenient overview and standardized framework of the transportation system.

I. INTRODUCTION

Graphical displays can be a popular aid in understanding complex systems. This was the case when we produced¹ simplified diagrams of the total energy flow in each state. Judging from the numerous requests, the convenient overview and standardized framework of the diagrams found wide acceptance.

Such graphics for each state would be a prohibitive manual drafting effort. However, as computer graphics improve not only are such tasks possible, we can begin to think about much more complex illustrations that tell better and more complete stories.

For these reasons, the Department of Energy's (DOE) Office of Transportation Programs (CS/OTP) has asked us to explore the possibility of generating similar diagrams that focus on the transportation system. From these initial

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diagrams, which we present in this document, we hope to evolve more advanced transportation system graphics. If the reader has questions or ideas for improvements, please call the author at 505/667-7671 (commercial) or 843-7671 (FTS).

II. DIAGRAM DESCRIPTION

Each transportation energy flow diagram displays the flow of energy from the primary energy sources, through the various fuels, to the modes of transportation. The pollution produced by each mode is shown by change-of-scale flow lines leading to the residuals [carbon monoxide (CO), nitrogen oxides (NOX), and hydrocarbons (HC)].

The widths of the energy flow lines are proportional to the amount of flow through each path. The energy flow lines are labeled with their percentage of the total flows from the box where they originate. Each energy box is labeled with a name and the amount of energy in units of trillions of British Thermal Units (TBTU). The energy depicted in the diagrams refers only to the energy ultimately consumed by the various transportation modes. That is, no indirect energies or energy losses are carried along.

The widths of the pollution flow lines vary to accomodate the change of scale required to represent this different quantity. As these flow lines leave a box in the transportation modes column, their widths are proportional to the residuals produced in that box. As these flow lines enter the residual column, their widths are proportional to the amount of pollutant flowing through each path. The pollution flow lines and boxes are labeled with the amount of residuals in units of thousands of tons.

The scale of every diagram is automatically adjusted so that each state's flows occupy the same size physical space on a page. This allows a more accurate visual comparison of the flows within a state.

Flow lines or boxes whose magnitudes are less than 0.005 are not shown. The number of decimal places accompanying each number is not a statement of accuracy but merely an arbitrary presentation choice. When an energy flow line has no percentage number, it simply means that 100% of the left-hand box is flowing through the path.

III. ENERGY DATA

As much as possible, data from the End Use Energy Consumption Data Base² (ECDB) has been used to construct the diagrams. The ECDB is a definitive accounting of U.S. transportation energy use compiled by Oak Ridge National Laboratory* for the Energy Information Administration of DOE. It contains the methods and results of estimating transportation fuel and energy use for a multitude of categories within all sectors of the economy for each of the ten years 1967-1976.

The procedures used to compute the diagrams are described below. As will be seen, several modes (gasoline, LPG, and electricity to transit buses; diesel to intercity buses; diesel to recreational boats; and electricity to liquids pipelines) had only a national number and had to be given a state-by-state breakdown. Several other modes (gasoline and diesel to federal trucks; LPG to trucks; and diesel, natural gas, and electricity to natural gas pipelines) had to be derived by disaggregating lumped fuel numbers into various fuels.

In the fuel-mode descriptions that follow, you will find many instances of numbers appearing in parentheses. This is the author's method of specifically identifying the ECDB table that contains the mentioned data. For example, ... motorcycles (8.1) ... means that the motorcycle data of interest can be found in table 8.1 of the ECDB.

Gasoline to Highway Passenger - This flow is the gasoline consumed by motorcycles (8.1), school buses (6.2), federal buses (6.3), commercial autos (5.2), federal civilian autos (5.4), household autos (5.5), taxicabs (5.3), and transit buses (6.6), plus the LPG consumed by transit buses (6.5). The transit bus gasoline and LPG consumption was allocated among the states according to the state breakdown of transit bus diesel fuel consumption (6.6).

Gasoline to Trucks - This flow is the gasoline consumed by intercity non-government trucks (7.9), local non-government trucks (7.6), and federal trucks, plus the LPG consumed by trucks. The gasoline consumed by federal trucks was assumed to be 80.3% (as suggested by Method 336 in ECDB) of the fuel consumed by federal trucks (7.12). The LPG consumed by trucks was assumed to be the total local truck energy use minus the total local truck gasoline and diesel fuel use ($7.4 + 7.5 - 7.6 - 7.7$).

*End Use Energy Consumption Data Base: Transportation Sector

Gasoline to Air - This flow is aviation gasoline consumed by aircraft (3.11).

Gasoline to Marine - This flow is the gasoline consumed by recreational boats (9.2).

Diesel to Highway Passenger - This flow is the diesel fuel consumed by transit buses (6.6) and intercity buses (6.4). The intercity bus contribution was given the same state-wise break down as intercity truck fuel, (7.8 and 7.9).

Diesel to Trucks - This flow is the diesel fuel consumed by intercity non-government trucks (7.8), local non-government trucks (7.7), and federal trucks. The federal truck contribution was assumed to be 19.7% (as suggested by Method 336 in ECDB) of the fuel consumed by federal trucks (7.12).

Diesel to Marine - This flow is the diesel fuel consumed by commercial vessels (9.3) and recreational boats (9.1). The recreational boat contribution was given the same state-wise breakdown as recreational boat gasoline consumption (9.2).

Diesel to Pipeline - This flow is the energy consumed by steam-powered pipeline pumps. The energy was assumed to be provided by diesel fuel and the state-wise values were obtained by multiplying the total energy consumed by natural gas pipelines (10.2) by the factor 0.008/1.023 (as suggested by Method 510 in ECDB).

Diesel to Rail - This flow is the diesel fuel consumed by commuter rail (4.3), intercity passenger rail (4.4), and freight rail (4.5).

Jet to Air - This flow is the jet fuel consumed by aircraft (3.11).

Residual to Marine - This flow is the residual fuel consumed by commercial vessels (9.3).

Residual to Rail - This flow is the residual fuel consumed by freight rail (4.5).

Natural Gas to Pipeline - This flow was obtained by multiplying the total energy consumed by natural gas pipelines (10.2) by the factor 1/1.023 (as suggested by Method 510 in ECDB).

Electricity to Highway Passenger - This flow is the electricity used by transit buses (6.5), which was broken down state-wise in the same fashion as transit bus diesel fuel use (6.6).

Electricity to Pipeline - This flow is the electricity used by natural gas and liquids pipelines. The electricity used by natural gas pipelines was obtained by multiplying the total energy consumed by natural gas pipelines (10.2)

by the factor 0.015/1.023 (as suggested by Method 510 in ECDB). The electricity used by liquids pipelines (crude oil, oil products, and water) (10.3) was allocated to the states in the same way the gas pipeline energy was allocated (10.2). Arizona's coal slurry pipeline electricity use of 1.076 TBTU³ was also added to this flow.

Electricity to Rail - This flow is the electricity used by transit rail (4.2), commuter rail (4.3), and intercity passenger rail (4.4).

Oil, Nat. Gas, Hydro, Nuclear, and Coal to Electricity - The amounts of oil, natural gas, hydro, nuclear, and coal energies converted to electricity for transportation consumption were obtained for each state by assuming their percentages were the same as the percentages that fed the total 1975 electricity generation in each state.¹

Imported - The percentage of each state's transportation petroleum that was imported was assumed to be the same as each state's 1975 imported percentage for all petroleum.¹

Military - The military consumption of jet (11.3), gasoline (11.2) and diesel (11.2), and residual (11.2) fuels were assumed to be used by the air, land, and sea modes, respectively. There is no data available for the nuclear energy used by the U.S. Navy.

Population - Our source for population data is the Bureau of the Census.⁴ The MBTU/CAPITA in the diagram legends refers to the average energy consumption per person in units of millions of BTU.

IV. POLLUTION DATA

Table I contains estimates of the residuals produced when a unit of energy is consumed by the various transportation modes. The total pollution emitted by any mode is simply its total energy multiplied by the appropriate emission factor. These emission factors were applied to the fuel-mode combinations shown in the first column. The last column identifies the 1977 data units of Ref. 5 from which the various emissions data were obtained. Sometimes the emission data from several units were averaged with their respective unit energies to provide weighted emission averages.

V. FEDERAL REGIONS

The U.S. diagram and the 10 regional diagrams were produced by adding the constituent state contributions for each component of the diagram. Please note

that the Military is not included in the US diagram and that the District of Columbia is included with Maryland. The states comprising each region are as shown in Table II.

TABLE I
POLLUTION EMISSIONS

Application <u>Fuels;Modes</u>	Emissions (Tons/TBTU)			Data Source
	NOX	HC	CO	Unit No. ID's
Gasoline;Autos,Taxi : LPG;Buses	119.66	49.07	1076.93	76,77
Gasoline,LPG;Trucks	463.75	762.26	5191.90	72
Gasoline;Air	36.36	72.73	2181.82	89
Gasoline;Marine	26.61	4434.78	2695.65	85
Diesel;Trucks,Pipelines	1413.22	141.32	859.50	71
Diesel;Rail	282.61	188.41	263.77	73
Diesel;Marine	1264.55	83.33	505.29	69
Jet Fuel;Air	10.42	33.15	31.06	74,75,82,83,90
Residual;Marine,Rail	258.79	42.21	492.46	70
Nat. Gas;Pipelines	29.19	3.89	9.73	61
Diesel;Intercity Buses	1299.07	127.10	789.72	79
Gasoline;Buses	225.00	385.42	3229.17	80
Diesel;Transit Buses	1295.65	127.39	768.96	81
Gasoline;Motorcycles	41.45	6282.89	25986.84	84
Diesel;Passenger Rail	229.31	152.76	213.79	88
Jet Fuel;Military Air	8.57	44.36	41.35	93
Gasoline;Military Land	636.00	1040.00	6880.00	94
Diesel;Military Land	1258.99	83.45	503.60	95
Residual;Military Sea	223.33	42.00	493.33	96

TABLE II
FEDERAL REGIONS

<u>Region I</u>	<u>Region II</u>	<u>Region III</u>	<u>Region IV</u>	<u>Region V</u>
Connecticut Maine Massachusetts New Hampshire Rhode Island Vermont	New Jersey New York	Delaware Maryland + DC Pennsylvania Virginia West Virginia	Alabama Florida Georgia Kentucky Mississippi North Carolina South Carolina Tennessee	Illinois Indiana Michigan Minnesota Ohio Wisconsin
<u>Region VI</u>	<u>Region VII</u>	<u>Region VIII</u>	<u>Region IX</u>	<u>Region X</u>
Arkansas Louisiana New Mexico Oklahoma Texas	Iowa Kansas Missouri Nebraska	Colorado Montana North Dakota South Dakota Utah Wyoming	Arizona California Hawaii Nevada	Alaska Idaho Oregon Washington

ACKNOWLEDGMENTS

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4. U. S. Department of Commerce, "Population Estimates and Projections," Bureau of the Census, Series P-25, No. 876 (Feb. 1980).
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TRANSPORTATION ENERGY FLOWS ALABAMA 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 364.75
POPULATION = 3633000
MBTU/CAPITA = 100.40

LOS ALAMOS SCIENTIFIC LABORATORY
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TRANSPORTATION ENERGY FLOWS ALASKA 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 76.69
POPULATION = 380000
MBTU/CAPITA = 201.82

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TRANSPORTATION ENERGY FLOWS ARIZONA 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 216.84
POPULATION = 2217000
MBTU/CAPITA = 97.81

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TRANSPORTATION ENERGY FLOWS ARKANSAS 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 216.80
POPULATION = 2103000
MBTU/CAPITA = 103.09

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TRANSPORTATION ENERGY FLOWS CALIFORNIA 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 1911.61
POPULATION = 21,267,000
MBTU/CAPITA = 89.88

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TRANSPORTATION ENERGY FLOWS COLORADO 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 245.53
POPULATION = 2541000
MBTU/CAPITA = 96.63

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TRANSPORTATION ENERGY FLOWS CONNECTICUT 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 230.90
POPULATION = 3087000
MBTU/CAPITA = 74.80

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TRANSPORTATION ENERGY FLOWS DELAWARE 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 50.47
POPULATION = 576000
MBTU/CAPITA = 87.62

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TRANSPORTATION ENERGY FLOWS FLORIDA 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 727.78
POPULATION = 8256000
MBTU/CAPITA = 88.15

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TRANSPORTATION ENERGY FLOWS IDAHO 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 110.37
POPULATION = 830000
MBTU/CAPITA = 132.97

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TRANSPORTATION ENERGY FLOWS ILLINOIS 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 890.86
POPULATION = 11171000
MBTU/CAPITA = 79.75

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TRANSPORTATION ENERGY FLOWS INDIANA 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 436.27
POPULATION = 5319000
MBTU/CAPITA = 82.02

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TRANSPORTATION ENERGY FLOWS IOWA 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 253.31
POPULATION = 2893000
MBTU/CAPITA = 87.56

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TRANSPORTATION ENERGY FLOWS KANSAS 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 272.21
POPULATION = 2283000
MBTU/CAPITA = 119.23

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TRANSPORTATION ENERGY FLOWS KENTUCKY 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 308.95
POPULATION = 3401000
MBTU/CAPITA = 90.84

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TRANSPORTATION ENERGY FLOWS LOUISIANA 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 531.58
POPULATION = 3857000
MBTU/CAPITA = 137.82

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TRANSPORTATION ENERGY FLOWS MAINE 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 90.00
POPULATION = 1062000
MBTU/CAPITA = 84.75

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TRANSPORTATION ENERGY FLOWS MARYLAND 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 360.63
POPULATION = 4765000
MBTU/CAPITA = 75.68

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TRANSPORTATION ENERGY FLOWS MASSACHUSETTS 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 367.53
POPULATION = 5757000
MBTU/CAPITA = 63.84

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TRANSPORTATION ENERGY FLOWS MICHIGAN 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 684.68
POPULATION = 9086000
MBTU/CAPITA = 75.36

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TRANSPORTATION ENERGY FLOWS MINNESOTA 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 321.98
POPULATION = 3968000
MBTU/CAPITA = 81.14

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TRANSPORTATION ENERGY FLOWS MISSISSIPPI 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 238.42
POPULATION = 2349000
MBTU/CAPITA = 101.50

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TRANSPORTATION ENERGY FLOWS MISSOURI 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 441.60
POPULATION = 4776000
MBTU/CAPITA = 92.46

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TRANSPORTATION ENERGY FLOWS MONTANA 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 111.70
POPULATION = 750000
MBTU/CAPITA = 148.94

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TRANSPORTATION ENERGY FLOWS NEBRASKA 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 172.76
POPULATION = 1543000
MBTU/CAPITA = 111.96

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TRANSPORTATION ENERGY FLOWS NEVADA 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 89.42
POPULATION = 601000
MBTU/CAPITA = 148.78

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TRANSPORTATION ENERGY FLOWS NEW HAMPSHIRE 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 62.96
POPULATION = 825000
MBTU/CAPITA = 76.32

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TRANSPORTATION ENERGY FLOWS NEW JERSEY 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 531.65
POPULATION = 7282000
MBTU/CAPITA = 73.01

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TRANSPORTATION ENERGY FLOWS NEW MEXICO 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 157.94
POPULATION = 1156000
MBTU/CAPITA = 136.63

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TRANSPORTATION ENERGY FLOWS NEW YORK 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 1031.20
POPULATION = 17961000
MBTU/CAPITA = 57.41

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TRANSPORTATION ENERGY FLOWS NORTH CAROLINA 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 426.90
POPULATION = 5369000
MBTU/CAPITA = 79.51

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TRANSPORTATION ENERGY FLOWS NORTH DAKOTA 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 67.67
POPULATION = 635000
MBTU/CAPITA = 106.57

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TRANSPORTATION ENERGY FLOWS OHIO 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 786.26
POPULATION = 10689000
MBTU/CAPITA = 73.56

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TRANSPORTATION ENERGY FLOWS OKLAHOMA 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 303.21
POPULATION = 2738000
MBTU/CAPITA = 110.74

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TRANSPORTATION ENERGY FLOWS OREGON 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 230.88
POPULATION = 2327000
MBTU/CAPITA = 99.22

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TRANSPORTATION ENERGY FLOWS PENNSYLVANIA 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 817.27
POPULATION = 11796000
MBTU/CAPITA = 69.28

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TRANSPORTATION ENERGY FLOWS RHODE ISLAND 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 58.15
POPULATION = 927000
MBTU/CAPITA = 62.73

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TRANSPORTATION ENERGY FLOWS SOUTH CAROLINA 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 236.78
POPULATION = 2767000
MBTU/CAPITA = 85.57

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TRANSPORTATION ENERGY FLOWS SOUTH DAKOTA 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 65.47
POPULATION = 682000
MBTU/CAPITA = 96.00

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TRANSPORTATION ENERGY FLOWS TENNESSEE 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 399.77
POPULATION = 4211000
MBTU/CAPITA = 94.94

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TRANSPORTATION ENERGY FLOWS TEXAS 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 1512.03
POPULATION = 12417000
MBTU/CAPITA = 121.83

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TRANSPORTATION ENERGY FLOWS VERMONT 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 34.99
POPULATION = 477000
MBTU/CAPITA = 73.35

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TRANSPORTATION ENERGY FLOWS VIRGINIA 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 443.52
POPULATION = 4906000
MBTU/CAPITA = 90.40

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TRANSPORTATION ENERGY FLOWS WASHINGTON 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 348.89
POPULATION = 3570000
MBTU/CAPITA = 97.73

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TRANSPORTATION ENERGY FLOWS WEST VIRGINIA 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 175.38
POPULATION = 1832000
MBTU/CAPITA = 95.73

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TRANSPORTATION ENERGY FLOWS WISCONSIN 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 326.61
POPULATION = 4621000
MBTU/CAPITA = 70.68

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TRANSPORTATION ENERGY FLOWS WYOMING 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 69.47
POPULATION = 387000
MBTU/CAPITA = 179.50

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TRANSPORTATION ENERGY FLOWS REGION I 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 844.54
POPULATION = 12135000
MBTU/CAPITA = 69.60

TRANSPORTATION ENERGY FLOWS REGION II 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 1562.37
POPULATION = 25243000
MBTU/CAPITA = 61.91

TRANSPORTATION ENERGY FLOWS REGION III 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 1847.04
POPULATION = 23875000
MBTU/CAPITA = 77.37

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TRANSPORTATION ENERGY FLOWS REGION IV 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 3189.80
POPULATION = 34896000
MBTU/CAPITA = 91.41

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TRANSPORTATION ENERGY FLOWS REGION V 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 3446.57
POPULATION = 44854000
MBTU/CAPITA = 76.84

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TRANSPORTATION ENERGY FLOWS REGION VI 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 2722.36
POPULATION = 22271000
MBTU/CAPITA = 122.24

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TRANSPORTATION ENERGY FLOWS REGION VII 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 1139.87
POPULATION = 1495000
MBTU/CAPITA = 99.16

TRANSPORTATION ENERGY FLOWS REGION VIII 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 670.70
POPULATION = 6229000
MBTU/CAPITA = 107.67

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TRANSPORTATION ENERGY FLOWS REGION IX 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 2328.36
POPULATION = 24910000
MBTU/CAPITA = 93.49

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TRANSPORTATION ENERGY FLOWS REGION X 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 766.82
POPULATION = 7107000
MBTU/CAPITA = 107.90

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TRANSPORTATION ENERGY FLOWS UNITED STATES 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 18519.72
POPULATION = 213015000
MBTU/CAPITA = 86.94

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TRANSPORTATION ENERGY FLOWS MILITARY 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 595.34
POPULATION = 1669000
MBTU/CAPITA = 356.70

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TRANSPORTATION ENERGY FLOWS UNITED STATES 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 18519.72
POPULATION = 213015000
MBTU/CAPITA = 86.94

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TRANSPORTATION ENERGY FLOWS GEORGIA 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 486.60
POPULATION = 4910000
MBTU/CAPITA = 99.10

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TRANSPORTATION ENERGY FLOWS HAWAII 1976

UNITS
ENERGY = TRILLIONS OF BTU
POLLUTION = THOUSANDS OF TONS

TOTAL ENERGY CONSUMED = 111.08
POPULATION = 825000
MBTU/CAPITA = 134.64

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