Improving Energy Efficiency 2-3%/year to save money and avoid Global Warming.

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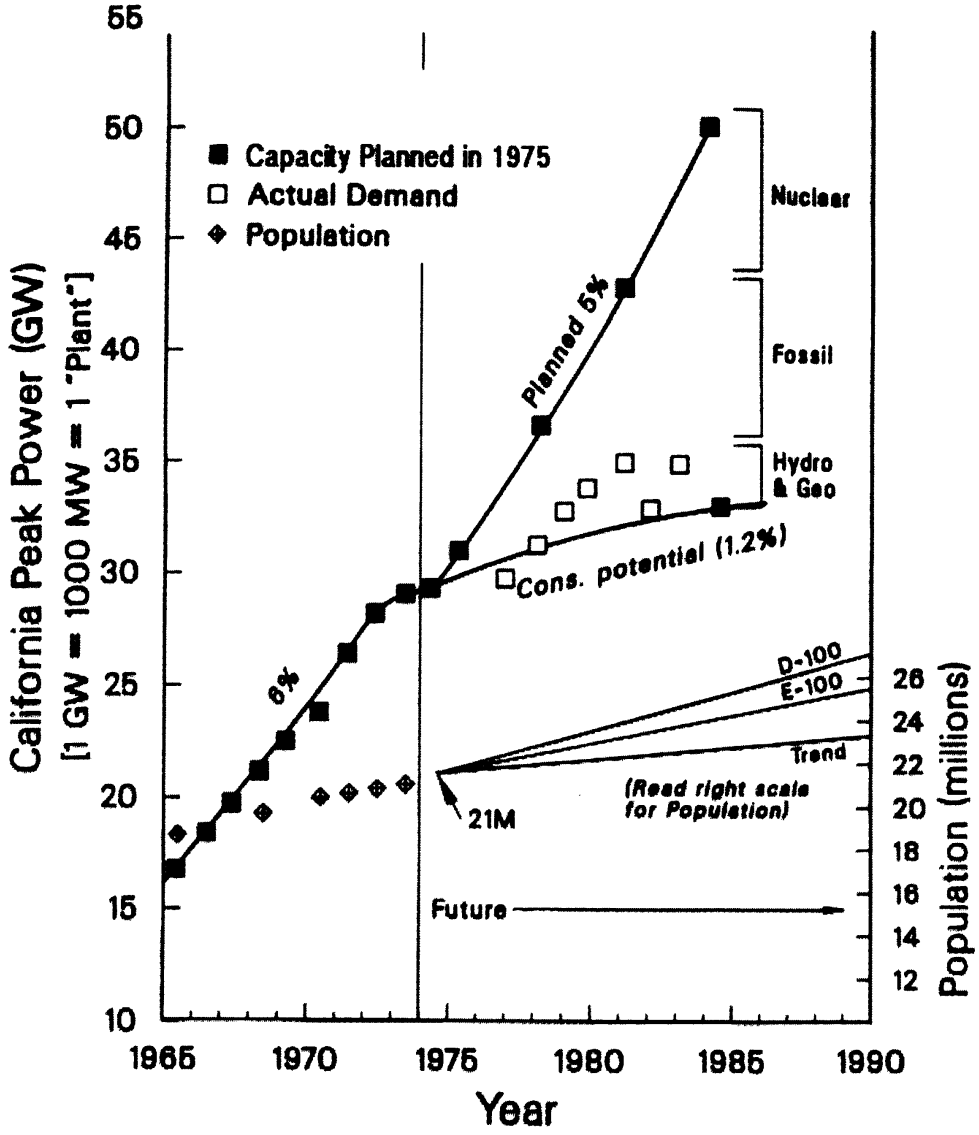
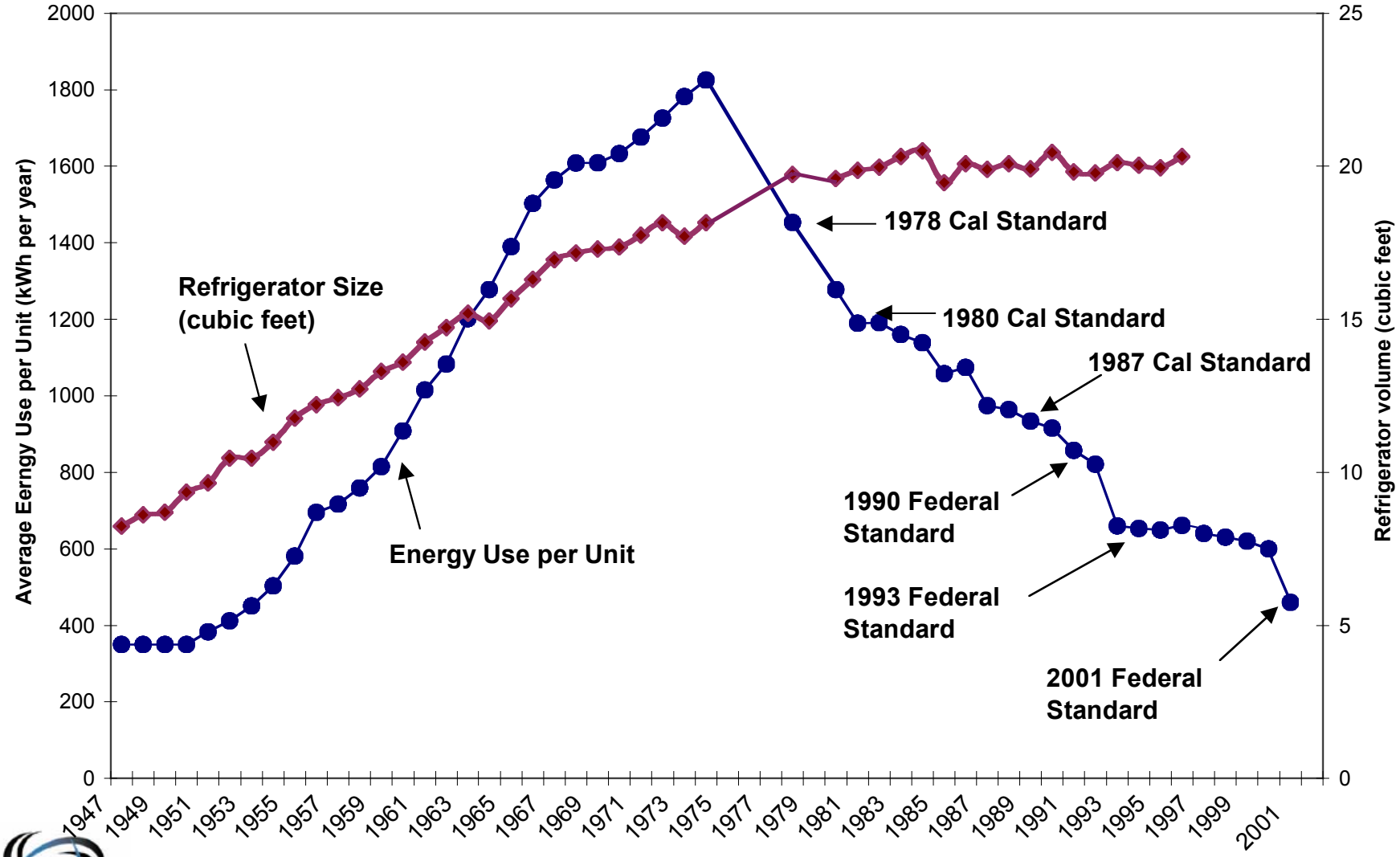
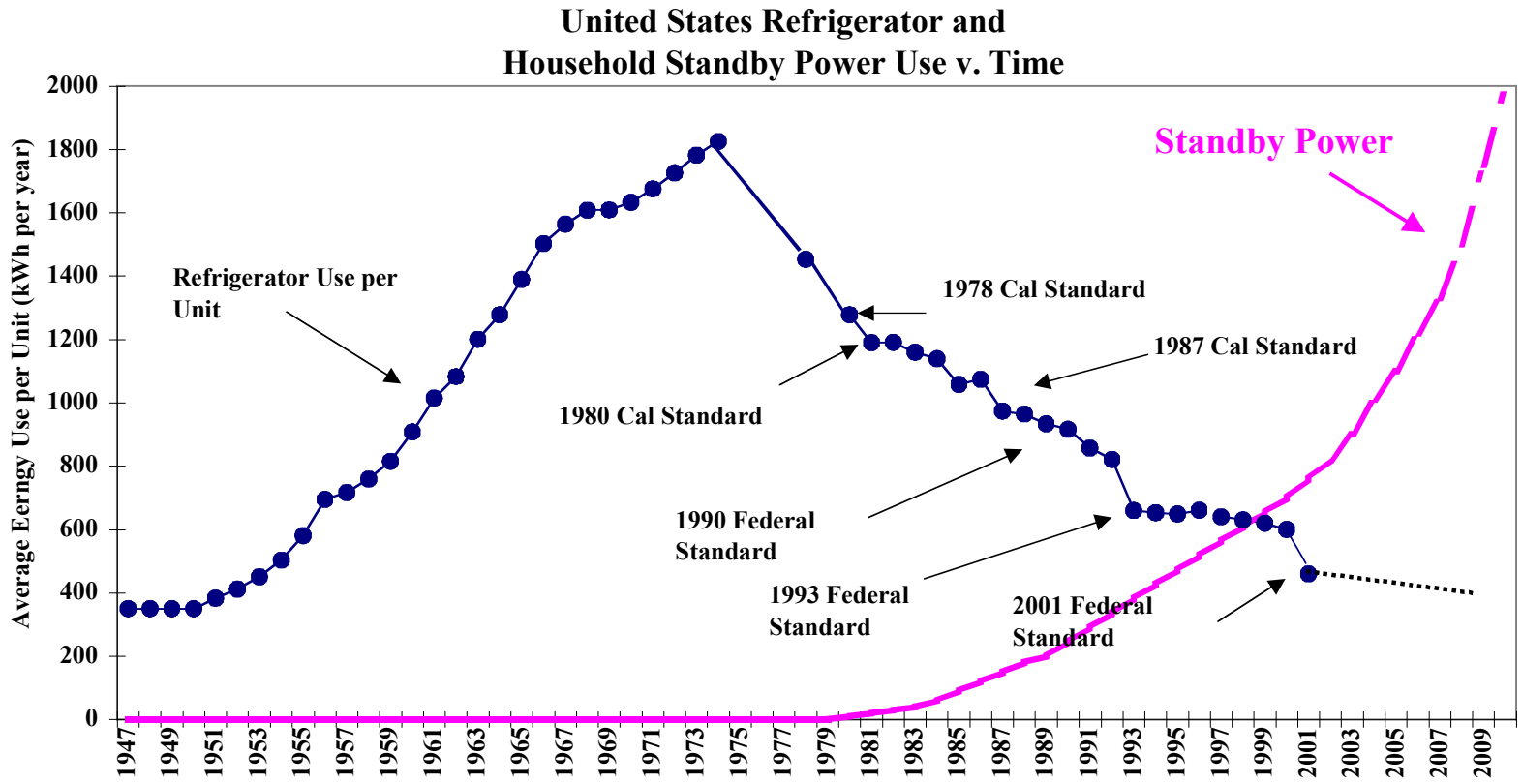
Efficiency
Energy for the Future

California Peak Power Demand:Planned in 1974, and Actual to 1990

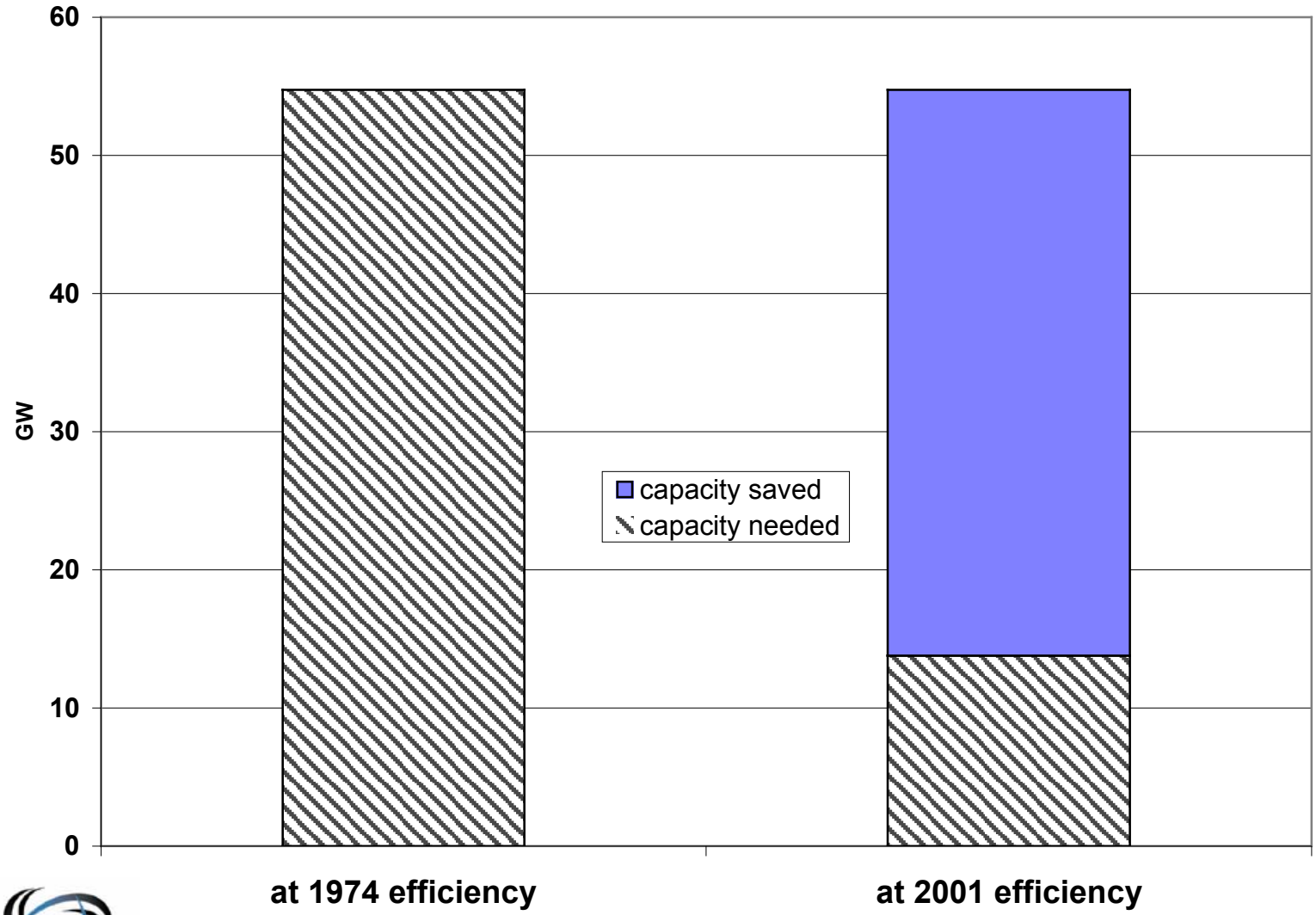


United States Refrigerator Use v. Time

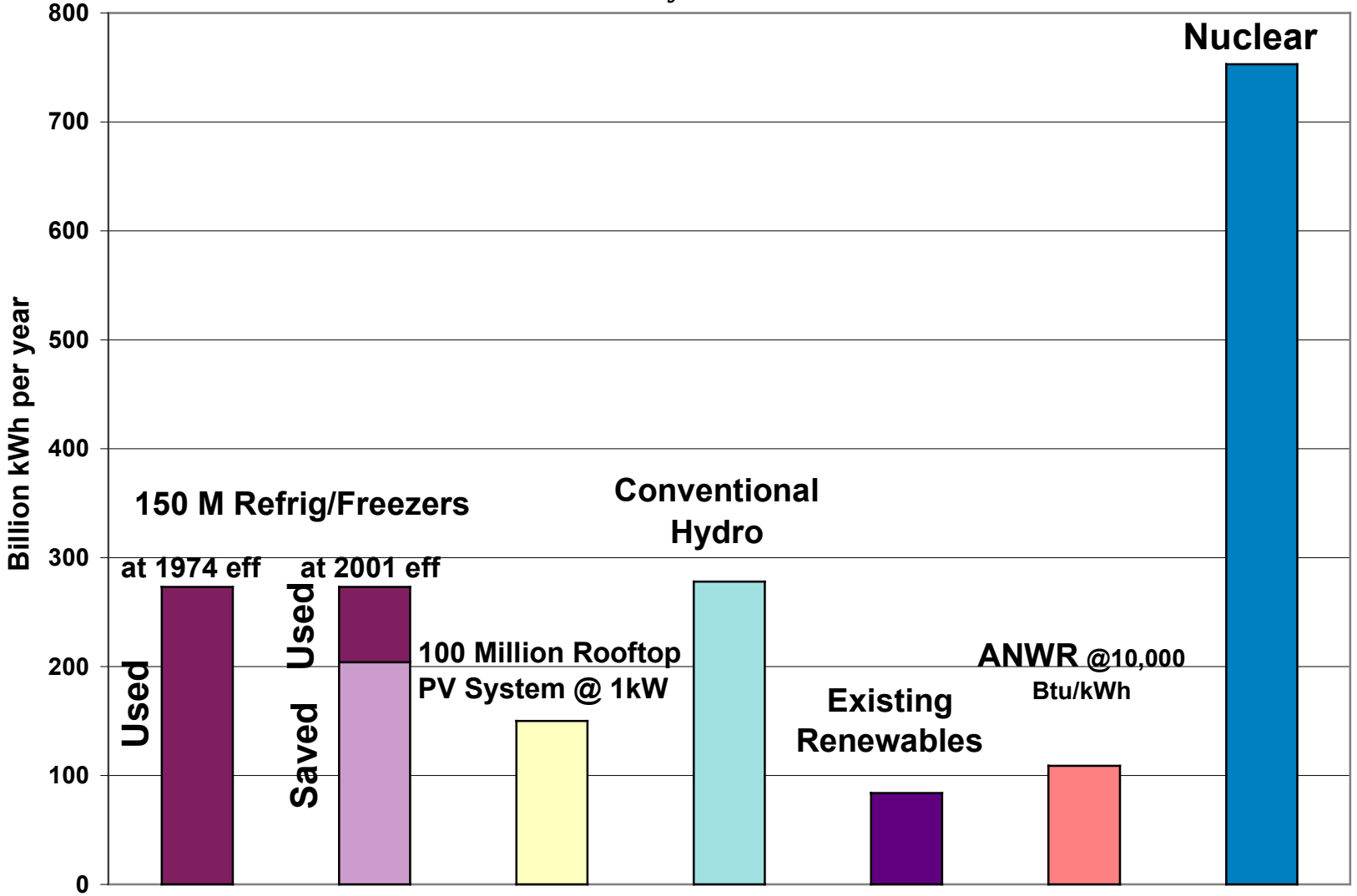



United States Refrigerator and
Household Standby Power Use v. Time
Average Eerngy Use per Unit (kWh per year)
2000
1800
1600
1400
1200
1000
800
600
400
200
0
1947
1949
1951
1953
1955
1957
1959
1961
1963
1965
1967
1969
1971
1973
1975
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009
Standby Power
Refrigerator Use per Unit
1978 Cal Standard
1987 Cal Standard
1980 Cal Standard
1990 Federal Standard
1993 Federal Standard
2001 Federal Standard

Electricity Generating Capacity for 150 Million Refrigerators + Freezers in the US

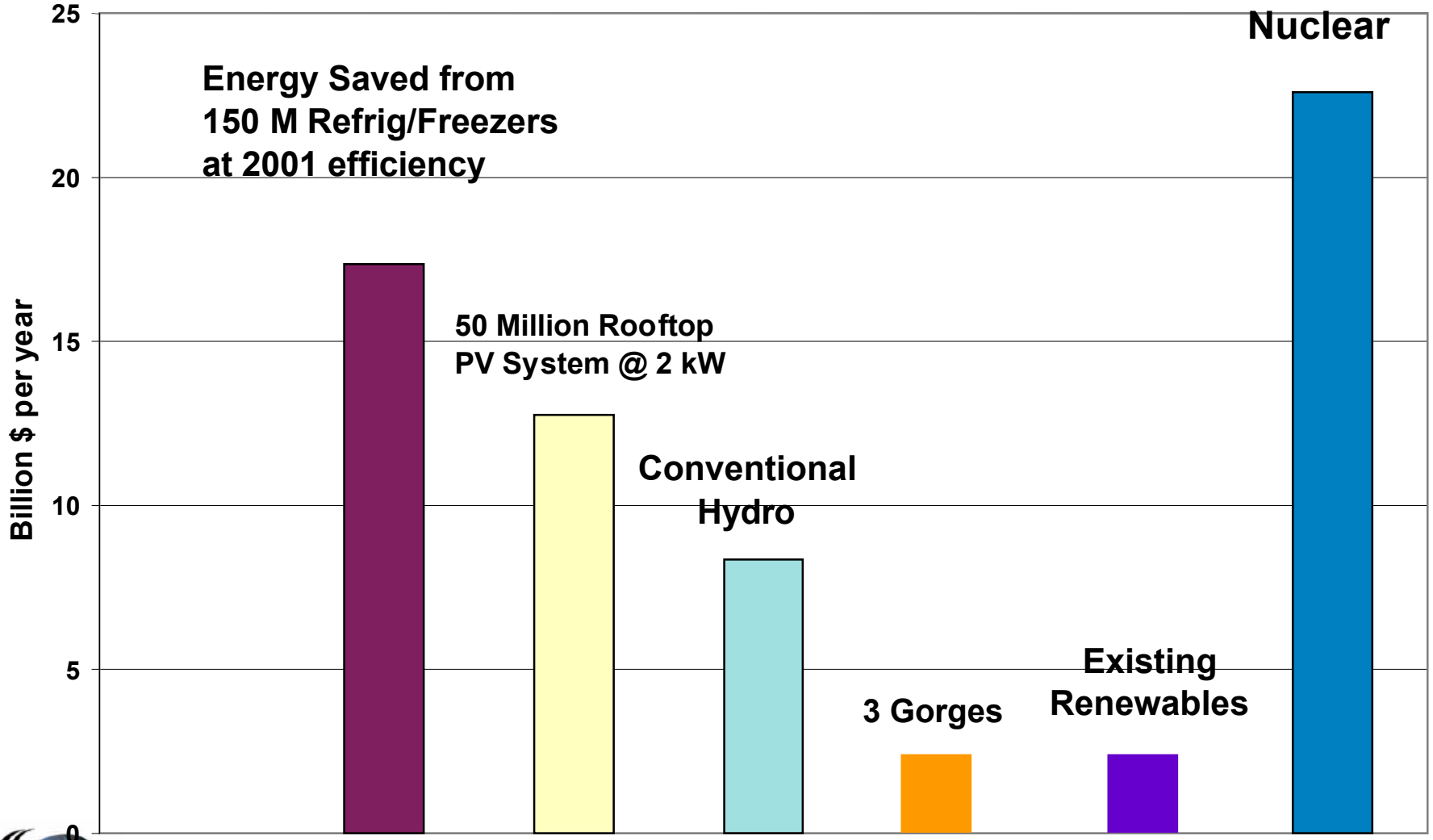


Electricity Use of Refrigerators and Freezers in the US compared to Generation from Nuclear, Hydro, Renewables and ANWR



The Value of Energy Saved and Produced

(production @ .03 and savings @ .085 $/kWh)



3 Gorges Dam vs. added Appliances in 2010

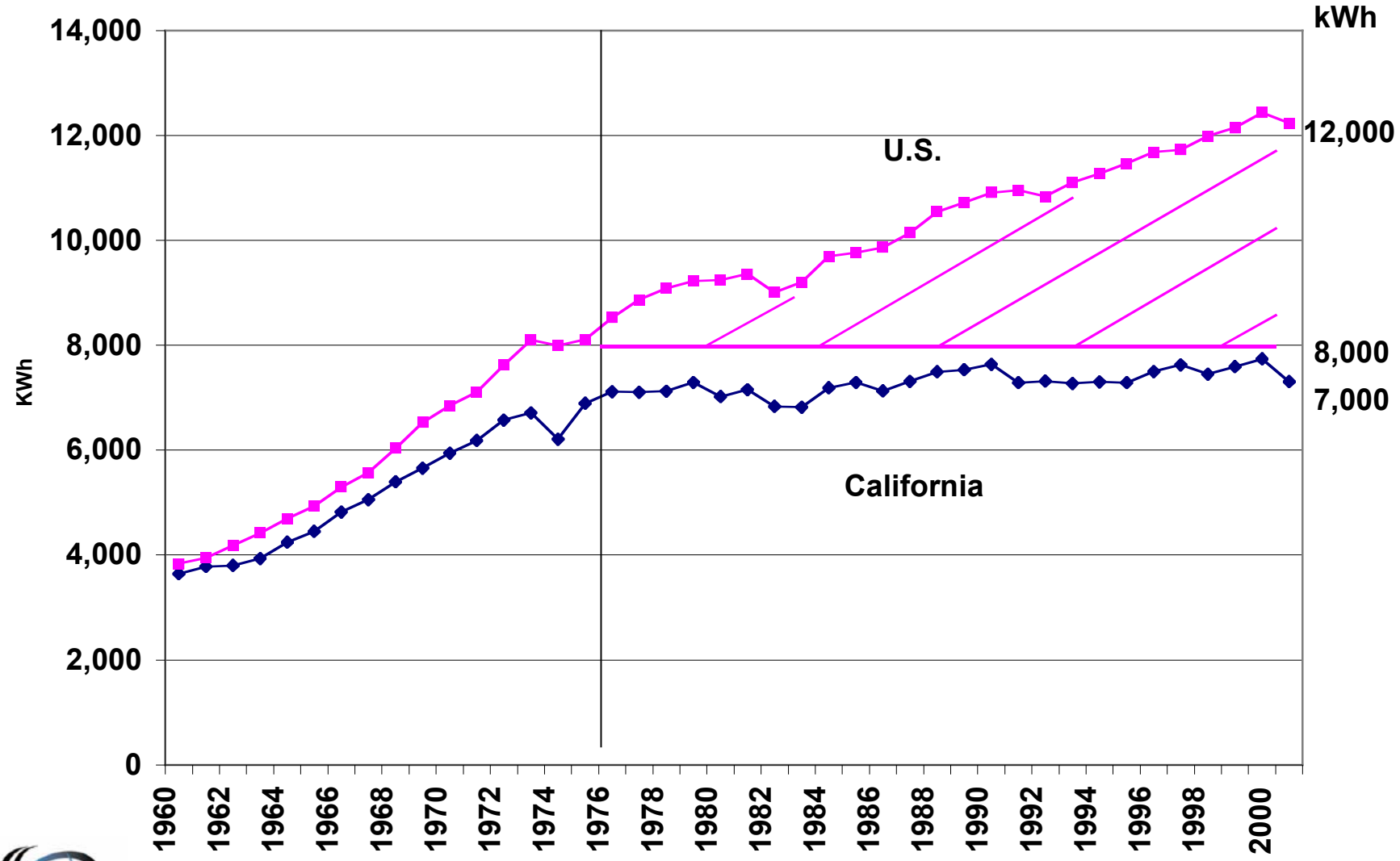
3 Gorges: 18 GW x 3,500 hours/year = 63 TWh at wholesale

		Refrigerators	Air Conditioning	Total
Estimated Sales 2003 - 2010		125 Million	100 Million	
Today's Use				
per unit per year		440 kWh	360 kWh	
2003-2010 sales at this efficiency		55 TWh	36 TWh	91 TWh
Least Cost Optimum				
per unit per year		265 kWh	233 kWh	
2003-2010 sales at high efficiency		33 TWh	23 TWh	55 TWh
Percent Saved		**40%**	**35%**	
Savings from Least Cost Optimum		**22 TWh**	**13 TWh**	**35 TWh**

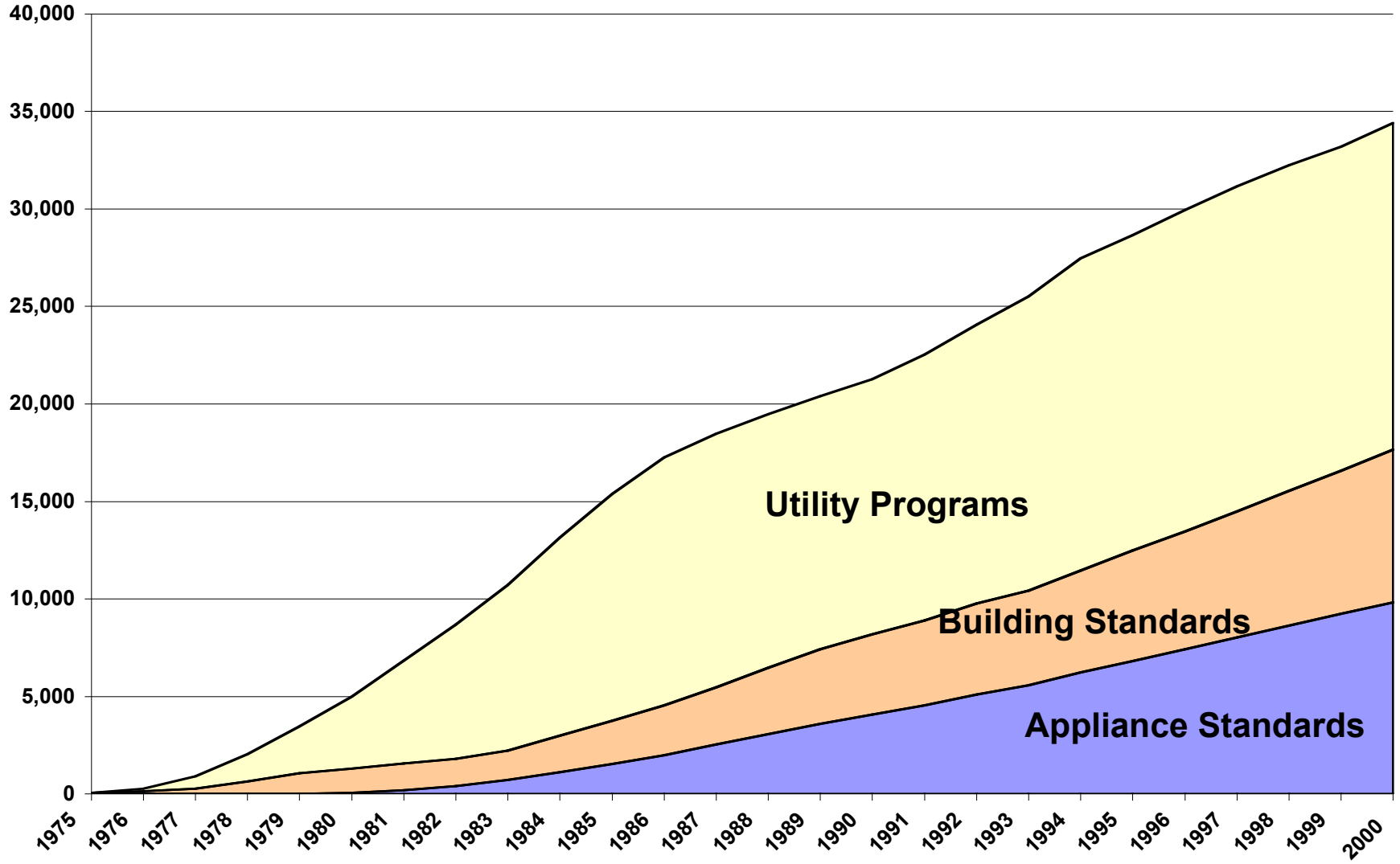
Conclusion: Optimum appliances could save 35 TWh/year, about one-half of 3 Gorges generation in 2010. Savings at retail at least twice as valuable as wholesale, so economically equivalent to the entire 3 Gorges project.

Source: David Fridley - LBNL

Total Electricity Use, per capita, 1960 - 2001

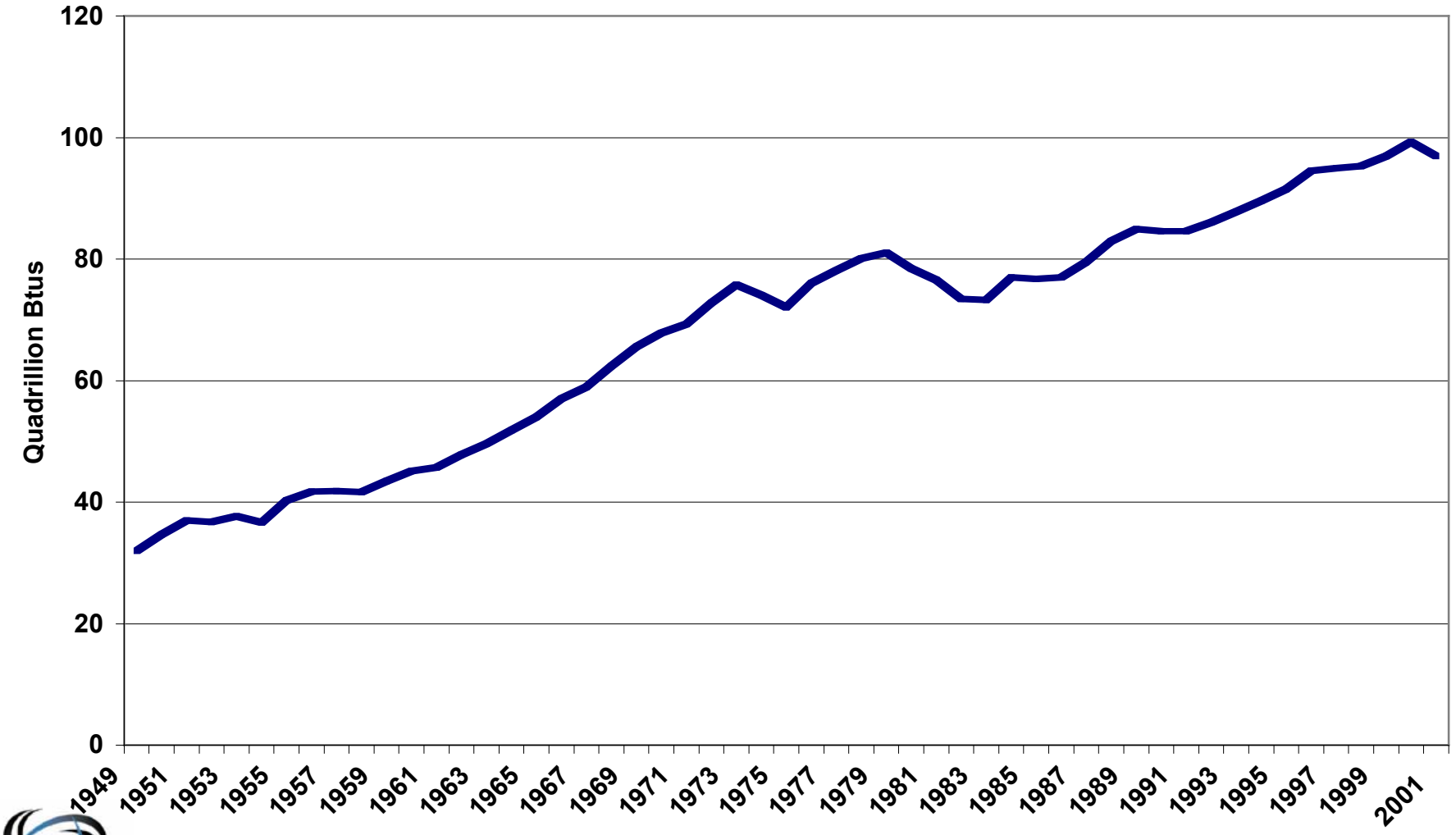


GWH Impacts from Programs Begun Prior to 2001



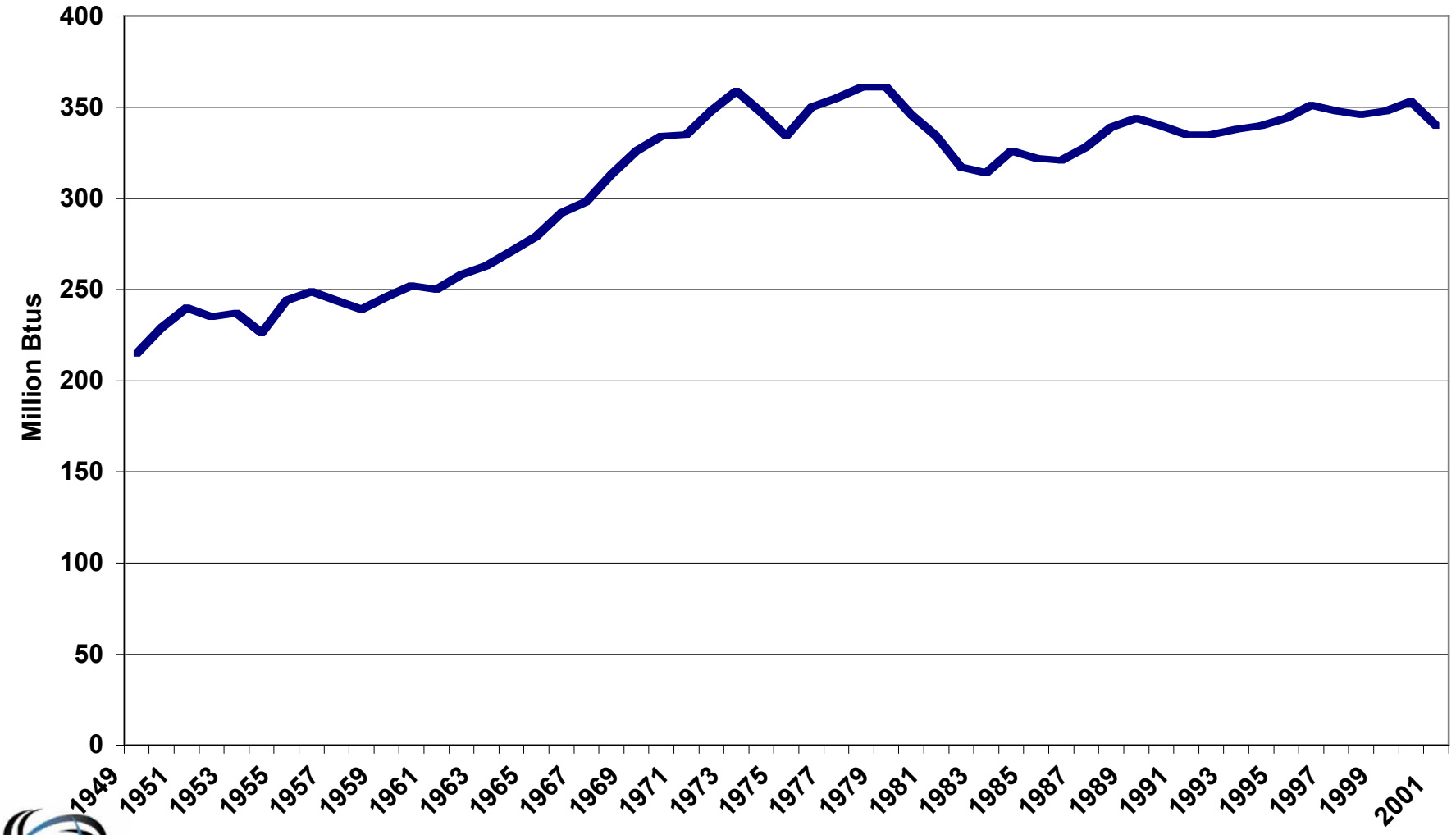
United States Energy Consumption 1949 to 2001

Source: Table 1.5 Annual Energy Review; data for 2001 is preliminary



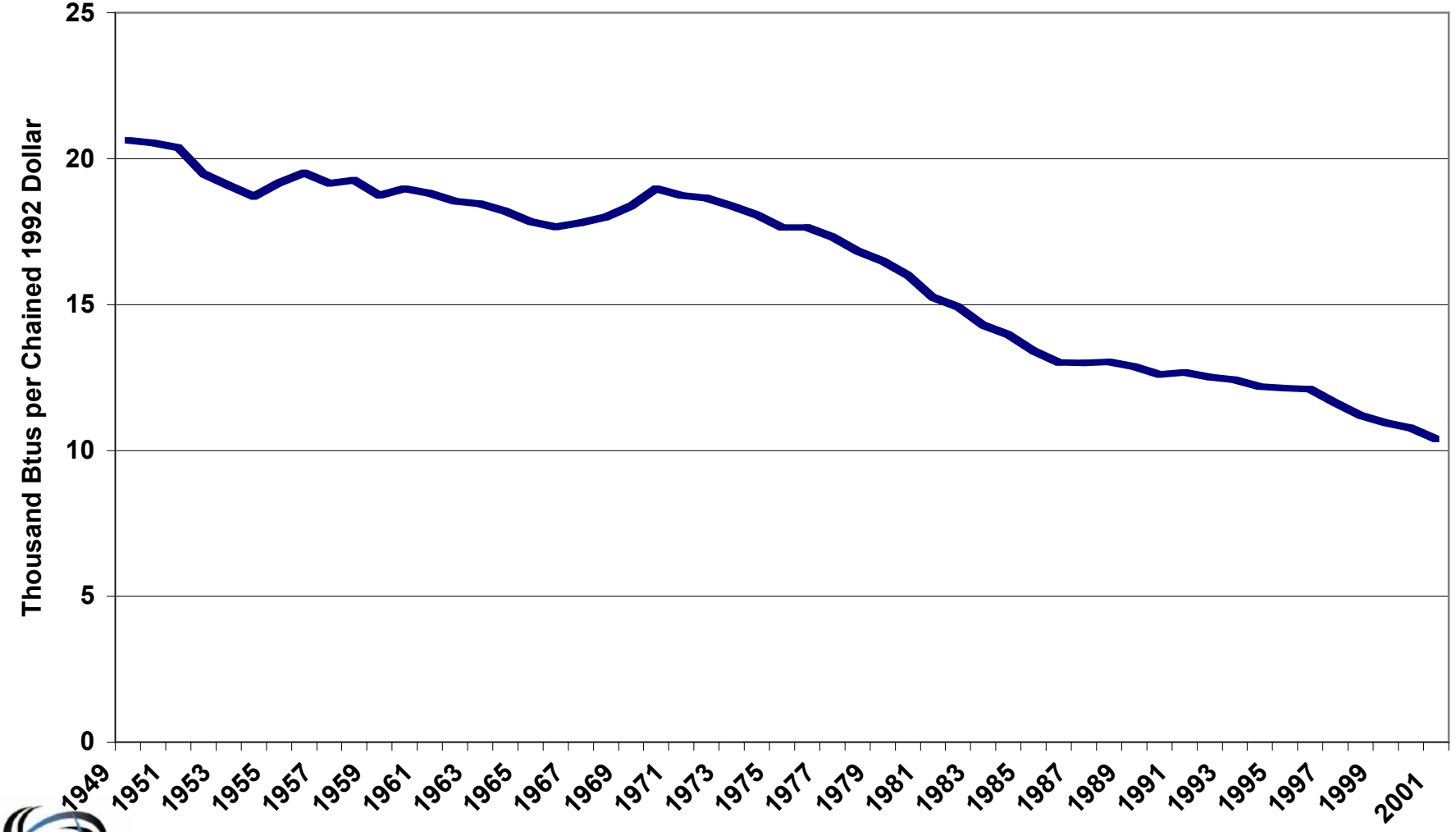
Energy Consumption Per Person 1949 to 2001

Source: Table 1.5 Annual Energy Review; data for 2001 is preliminary

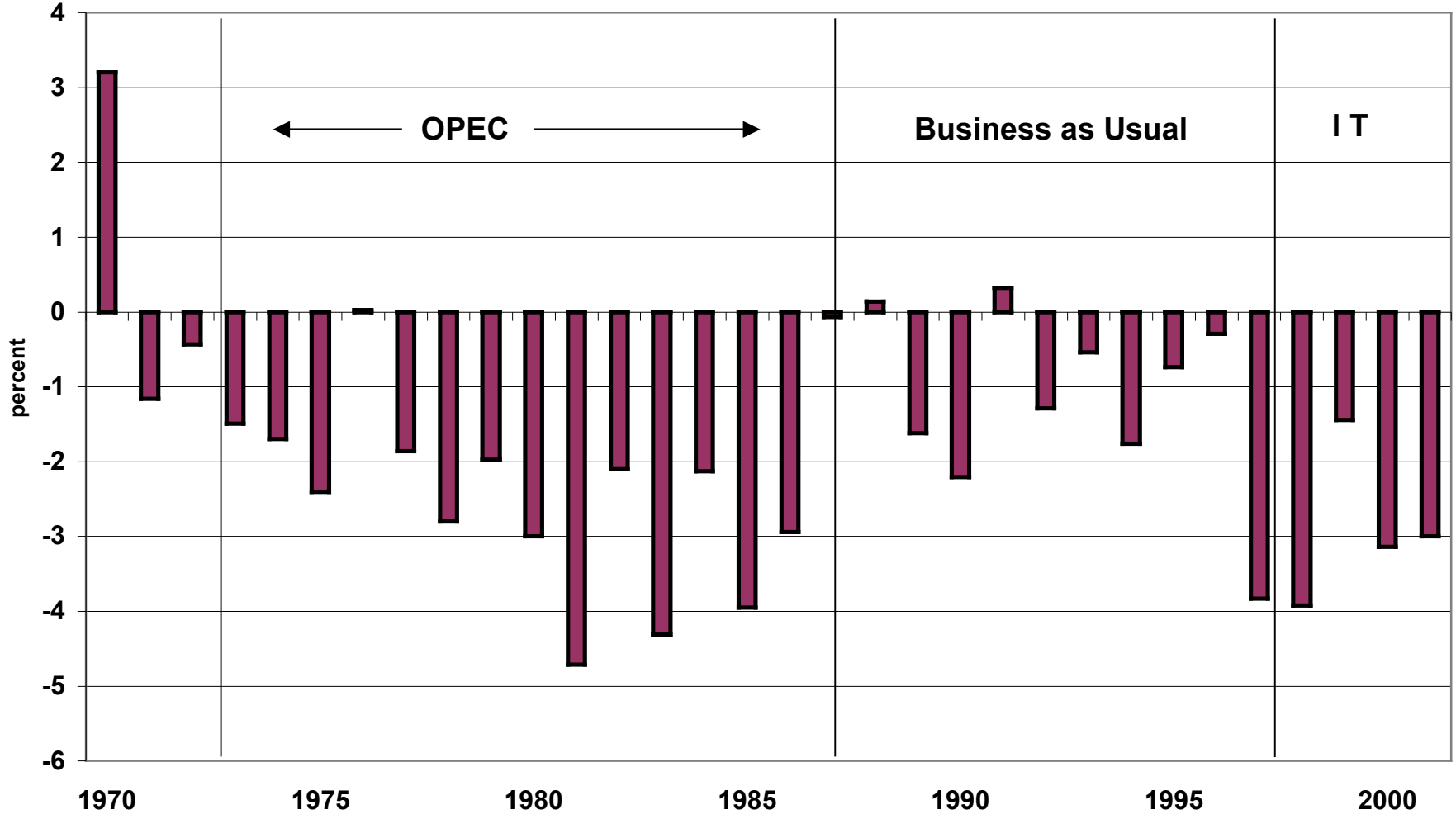


Energy Consumption Per $ of Gross Domestic Product 1949-2001

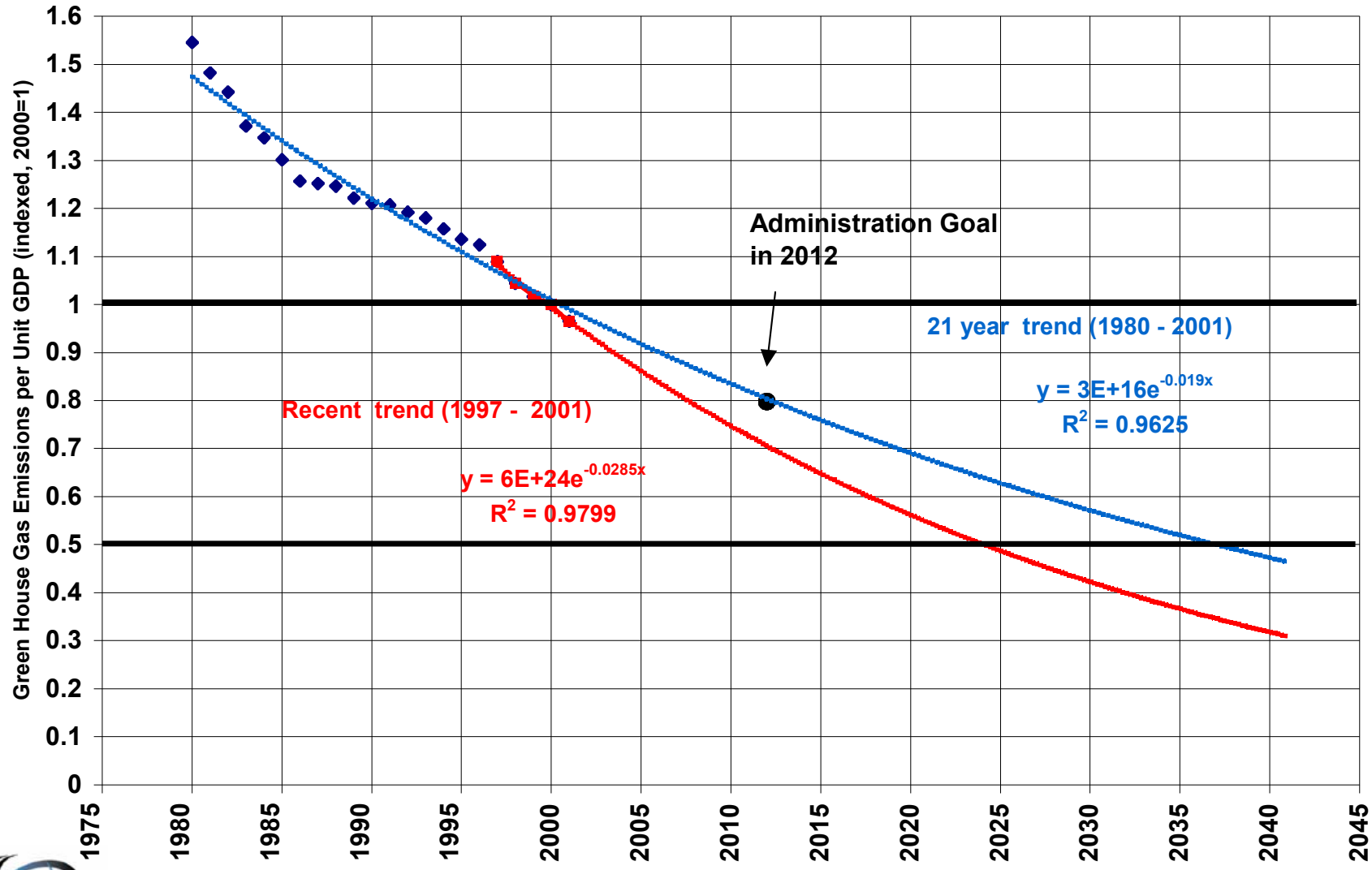
Source: Table 1.5 Annual Energy Review; data for 2001 is preliminary



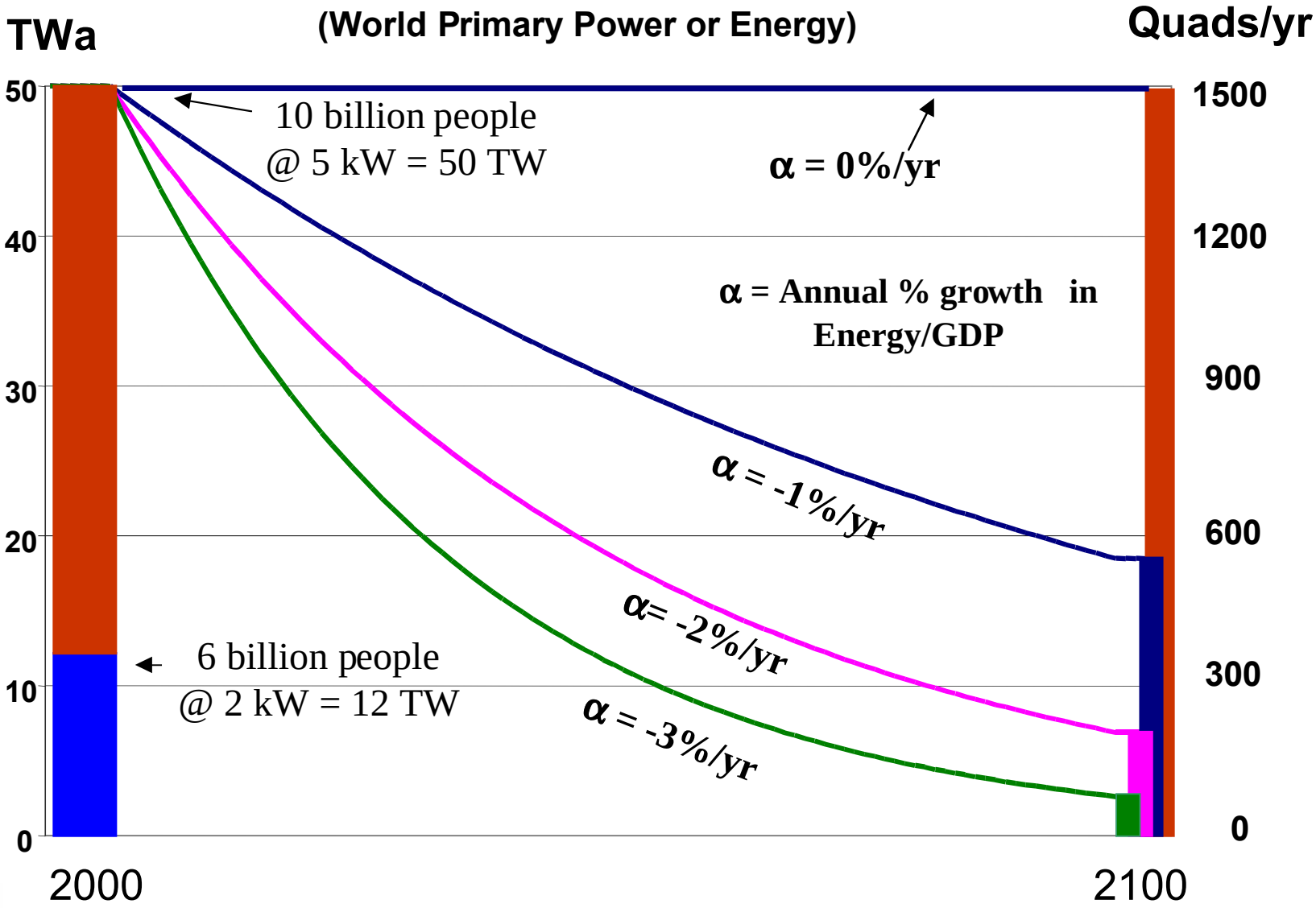
Annual Rate of Change in U.S. Energy Intensity (energy/GDP)
1970 - 2001

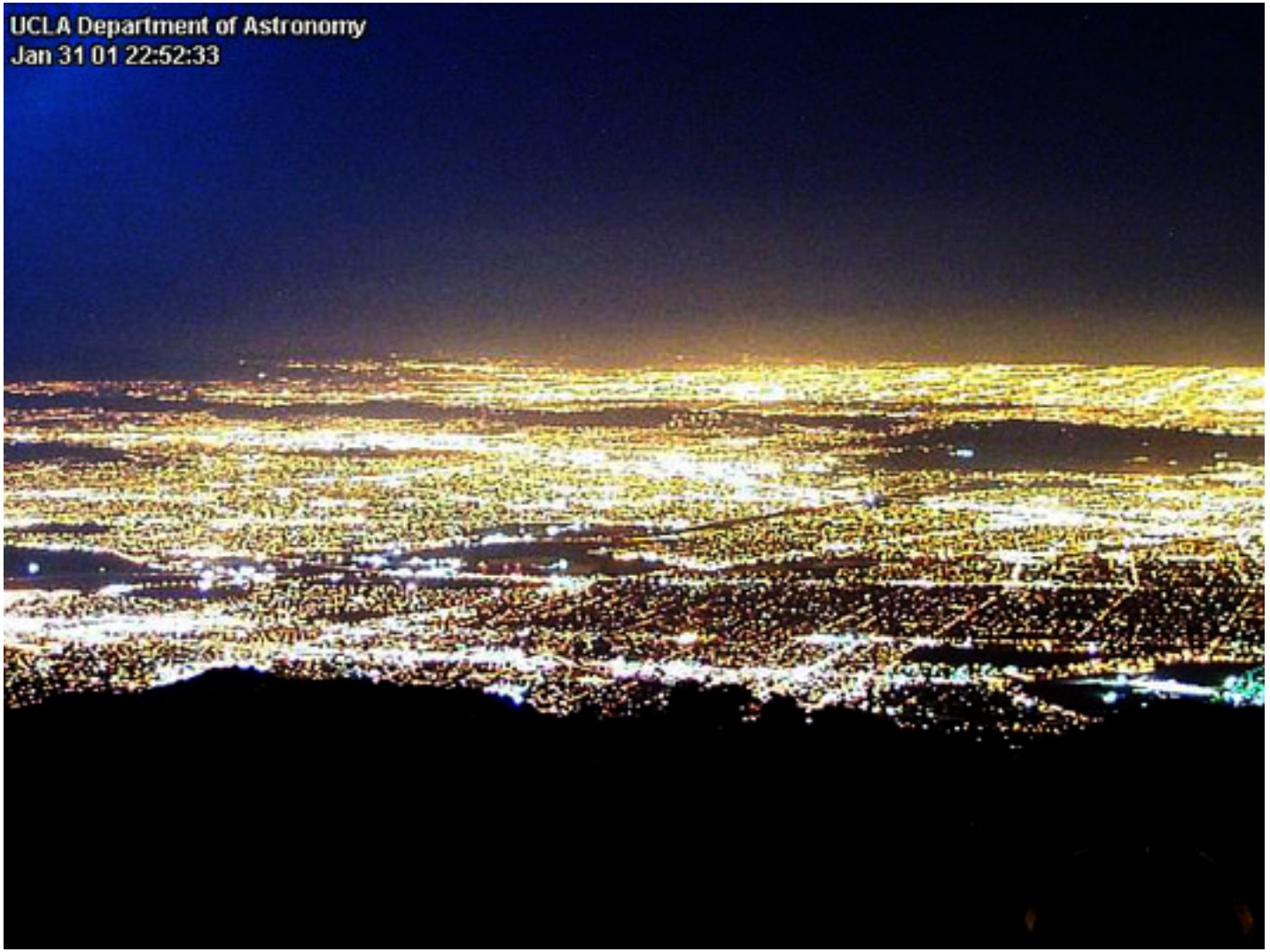


Green House Gas Intensity (GHG/GDP indexed, 2000=1)



The "Conservation Bomb"




UCLA Department of Astronomy
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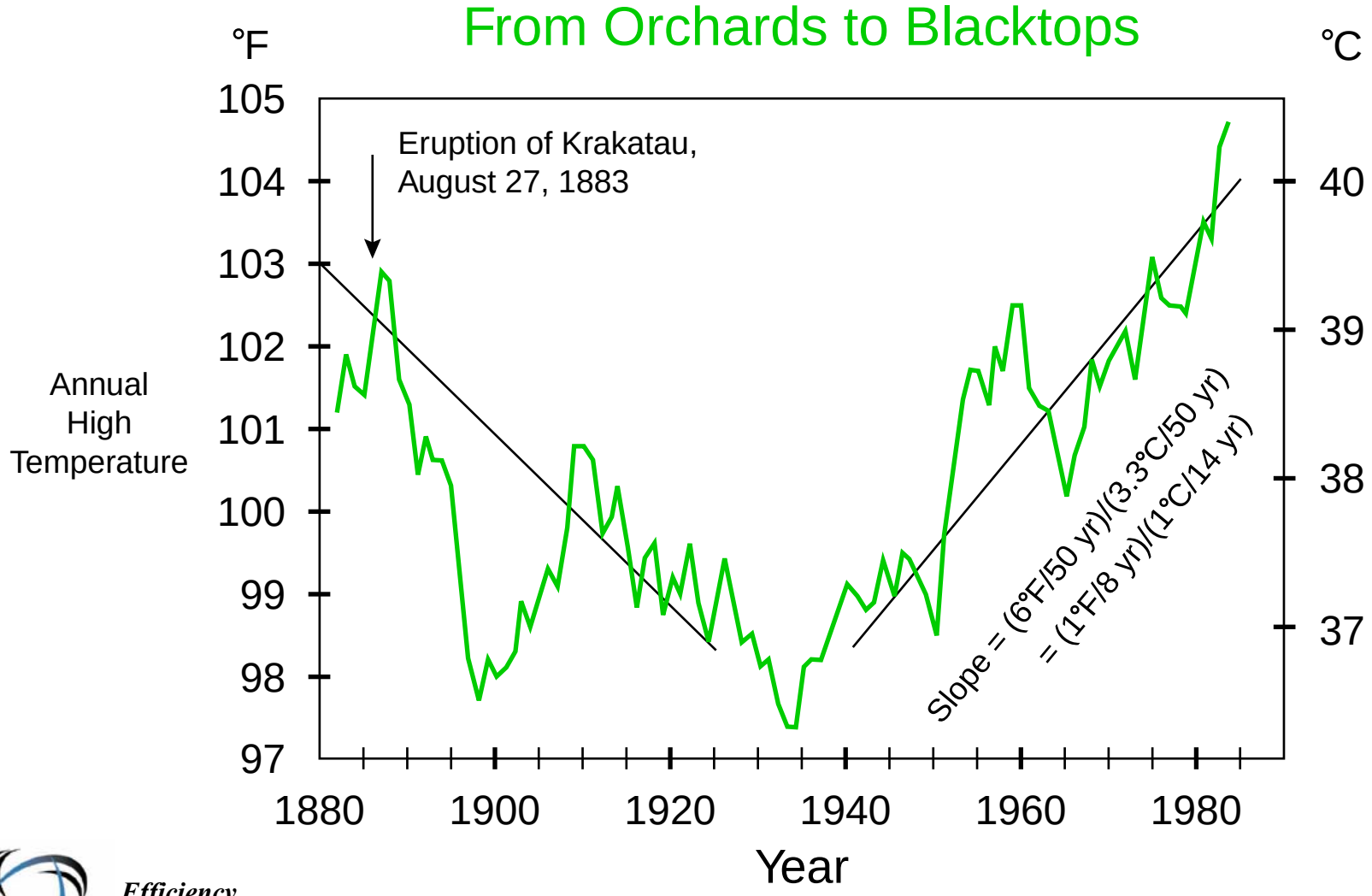
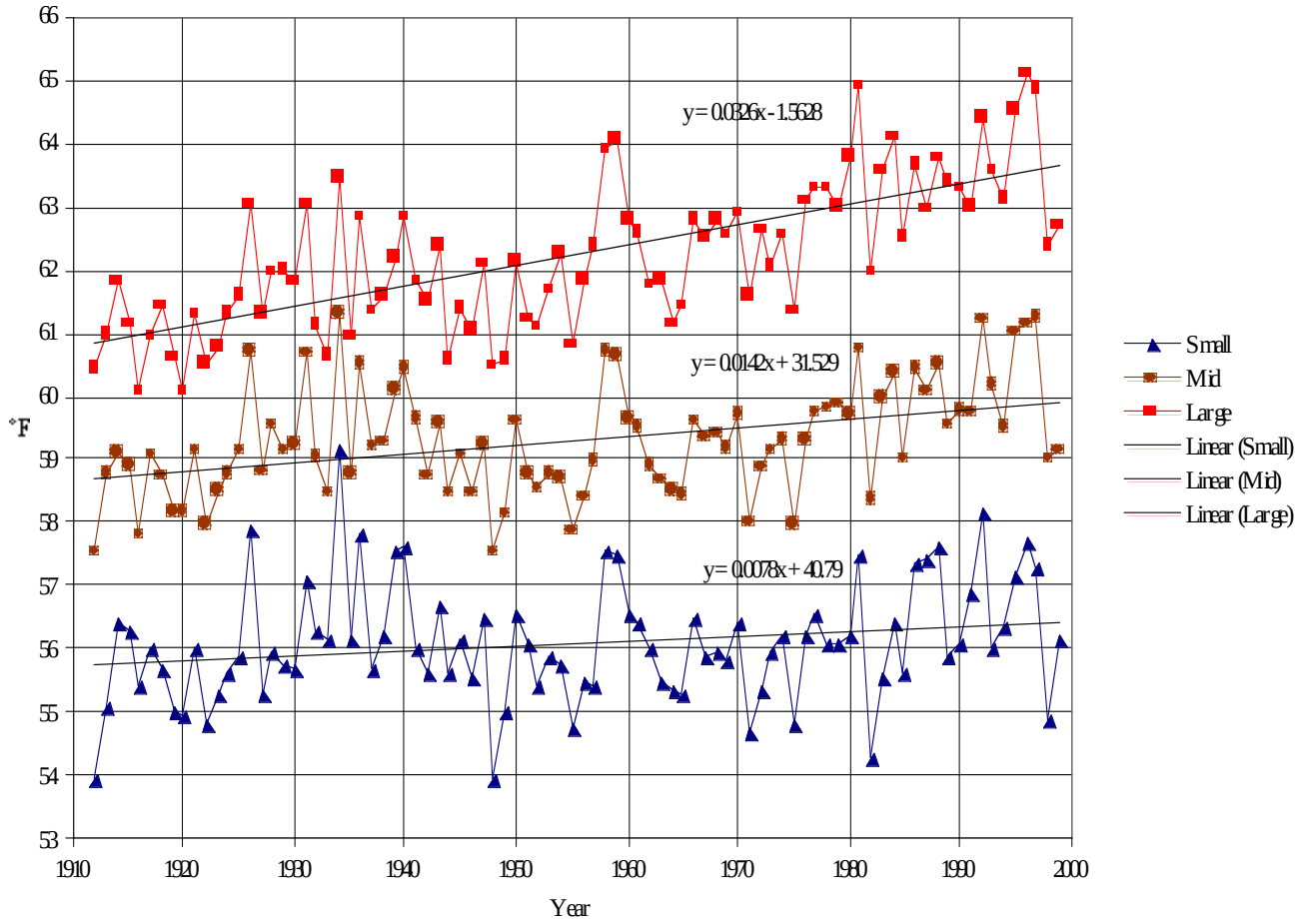
Temperature Trends in Downtown Los Angeles



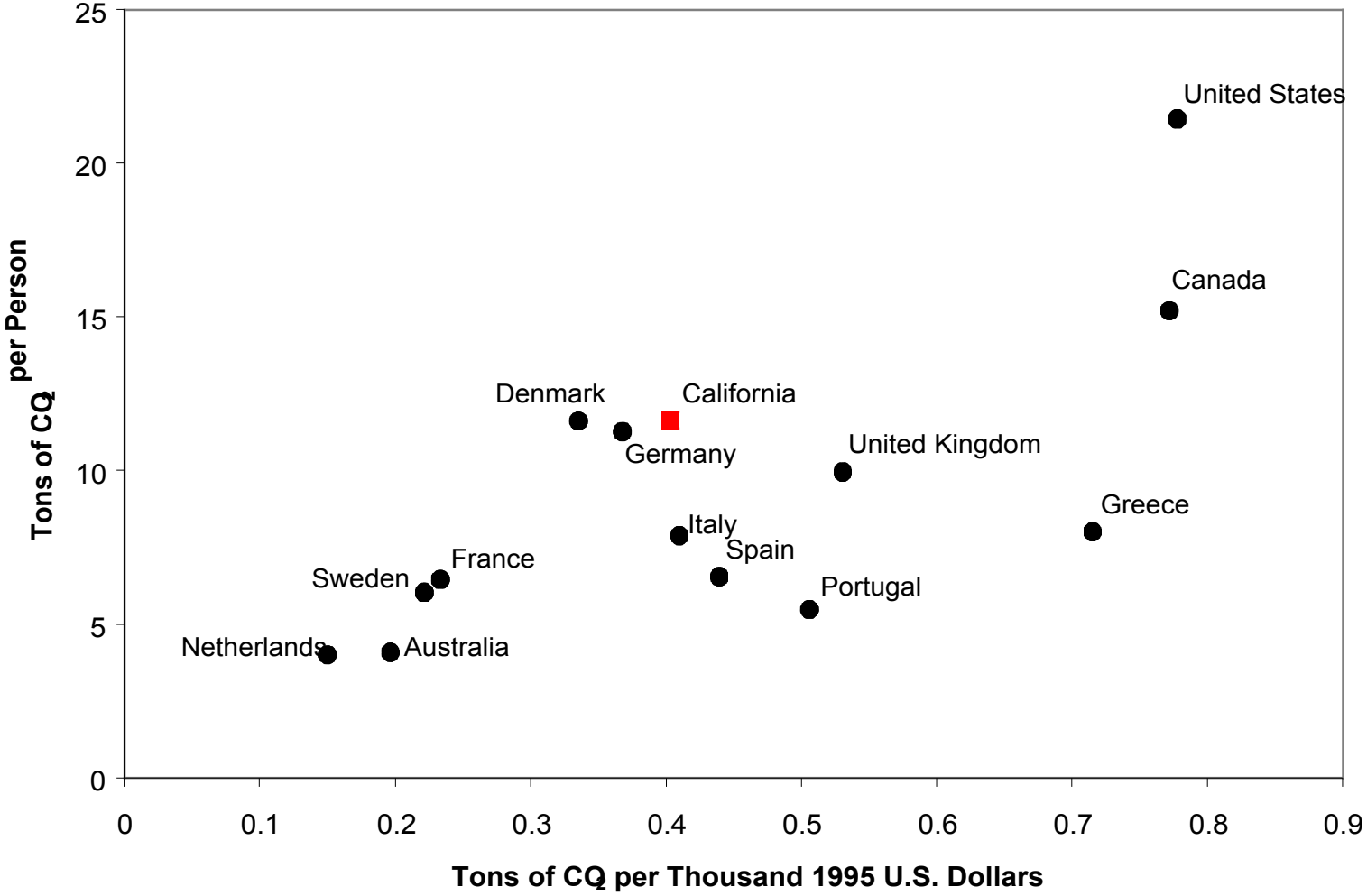
Average Temperature at 93 California Stations

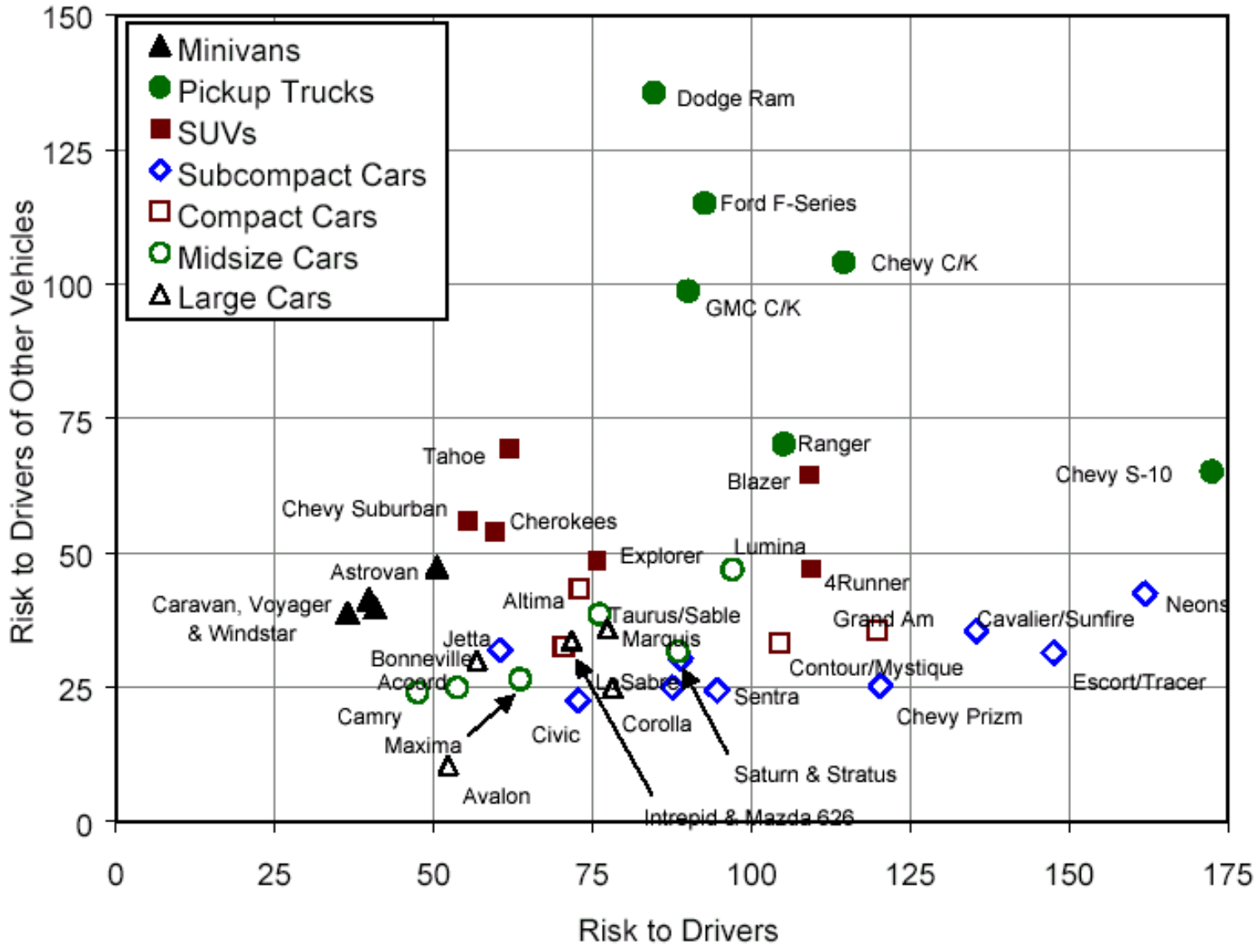
Stratified by 1990 County Population

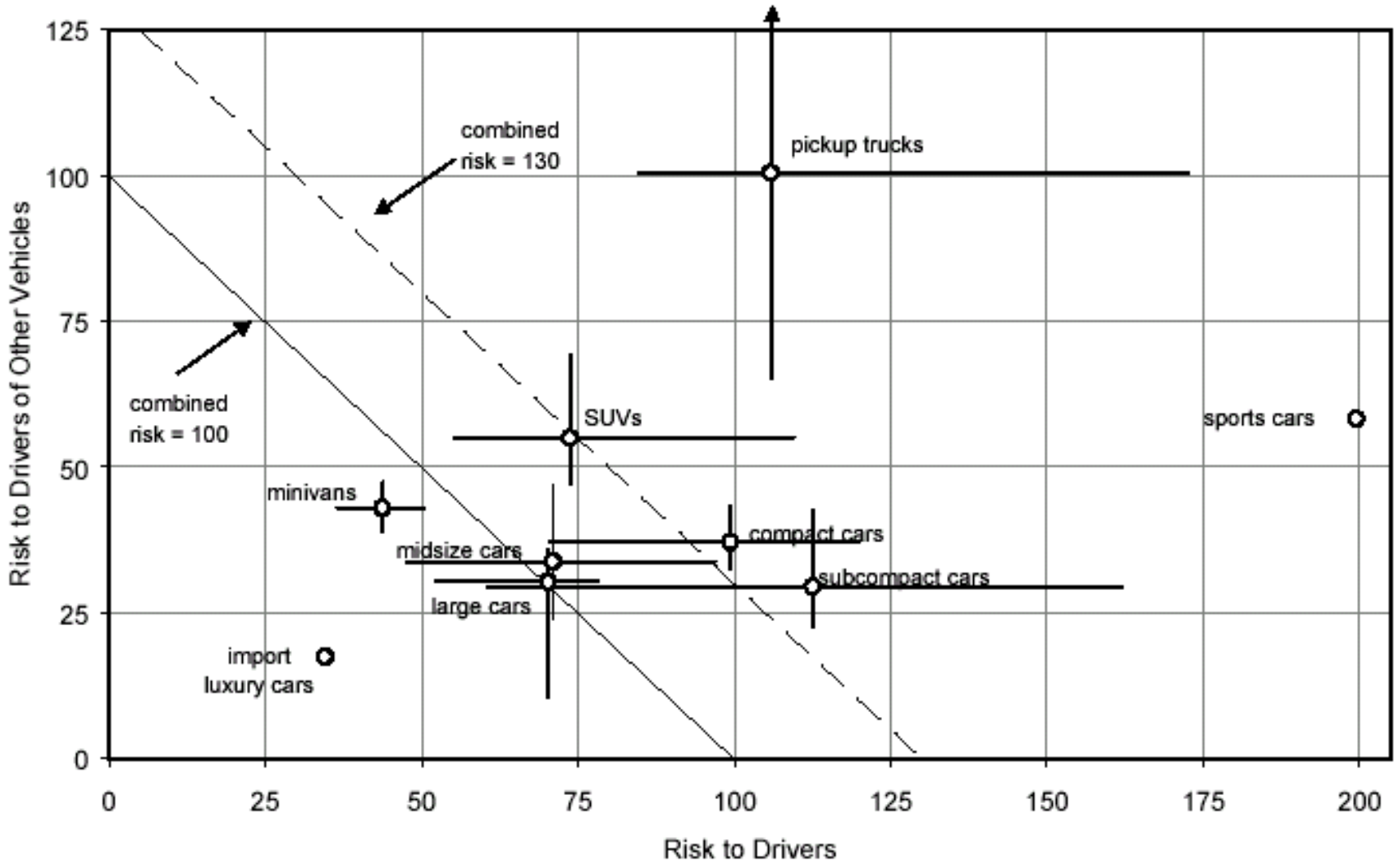
Large over 1 Million, Small less than 100,000



Carbon Intensities for California and Selected Countries - 1995




Minivans
Pickup Trucks
SUVs
Subcompact Cars
Compact Cars
Midsize Cars
Large Cars
Risk to Drivers of Other Vehicles
Risk to Drivers
0
25
50
75
100
125
150
175
Dodge Ram
Ford F-Series
Chevy C/K
GMC C/K
Ranger
Tahoe
Blazer
Chevy S-10
Chevy Suburban
Cherokees
Explorer
Lumina
Astrovan
4Runner
Caravan, Voyager & Windstar
Altima
Taurus/Sable
Grand Am
Cavalier/Sunfire
Neons
Jetta
Marquis
Bonneville
Contour/Mystique
Escort/Tracer
Accord
LeSabre
Sentra
Camry
Chevy Prizm
Maxima
Civic
Corolla
Saturn & Stratus
Avalon
Intrepid & Mazda 626


125
100
75
50
25
0
0
25
50
75
100
125
150
175
200
Risk to Drivers of Other Vehicles
Risk to Drivers
combined
risk = 130
combined
risk = 100
pickup trucks
SUVs
sports cars
minivans
compact cars
midsize cars
subcompact cars
large cars
import
luxury cars