

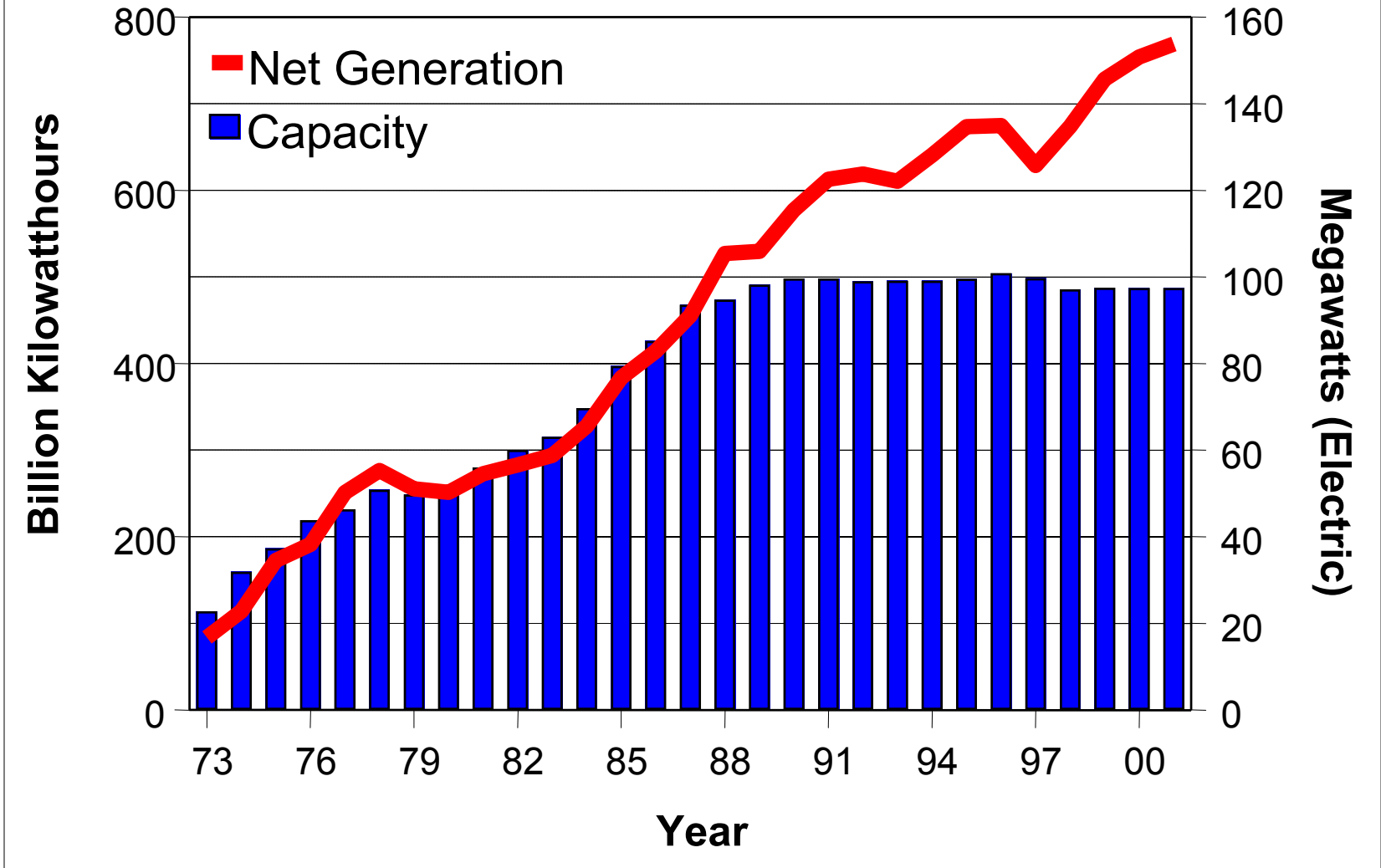
Nuclear Power: 12 Percent of America's Capacity, 20 Percent of the Electricity

Energy Information Administration

Opinions vary about the future of nuclear power, but it is a fact that existing plants perform well

- Plants now average around 90 percent capacity factor
- Fuel costs are low & stable, perhaps 0.45 cents/kWh
- Production costs (fuel, operations, maintenance) average around 1.8 cents/kWh
 - slightly less than coal
 - less than fuel costs alone for gas
- Capacity uprates: future range 4 GW (EIA) -10 GW (NEI)
 - A new reactor is around 1 GW
- But, so far, no new construction
 - Nuclear power risks come before construction ends
 - Fossil fuel risks (market & fuel price uncertainty) come later

Nuclear Power's Performance



U.S. Nuclear Reactors by License Year

License Year	Reactors Licensed	Share of Reactors	Closed Reactors	Operable Reactors	Share of Operable
1968-74	38	33.6%	6	32	30.8%
1975-78	23	20.4%	3	20	19.2%
1979-96	52	46.0%	0	52	50.0%
Total	113	100.0%	9	104	100.0%

Note: Includes only light water reactors beginning commercial production in 1968 or later.

A Record of Capacity Improvement

- Capacity Factor:
 - 1980: 56%
 - 1990: 66%
 - 2000: 88%
 - 2002: >90% (estimate)

Rather clearly we are approaching a performance limit

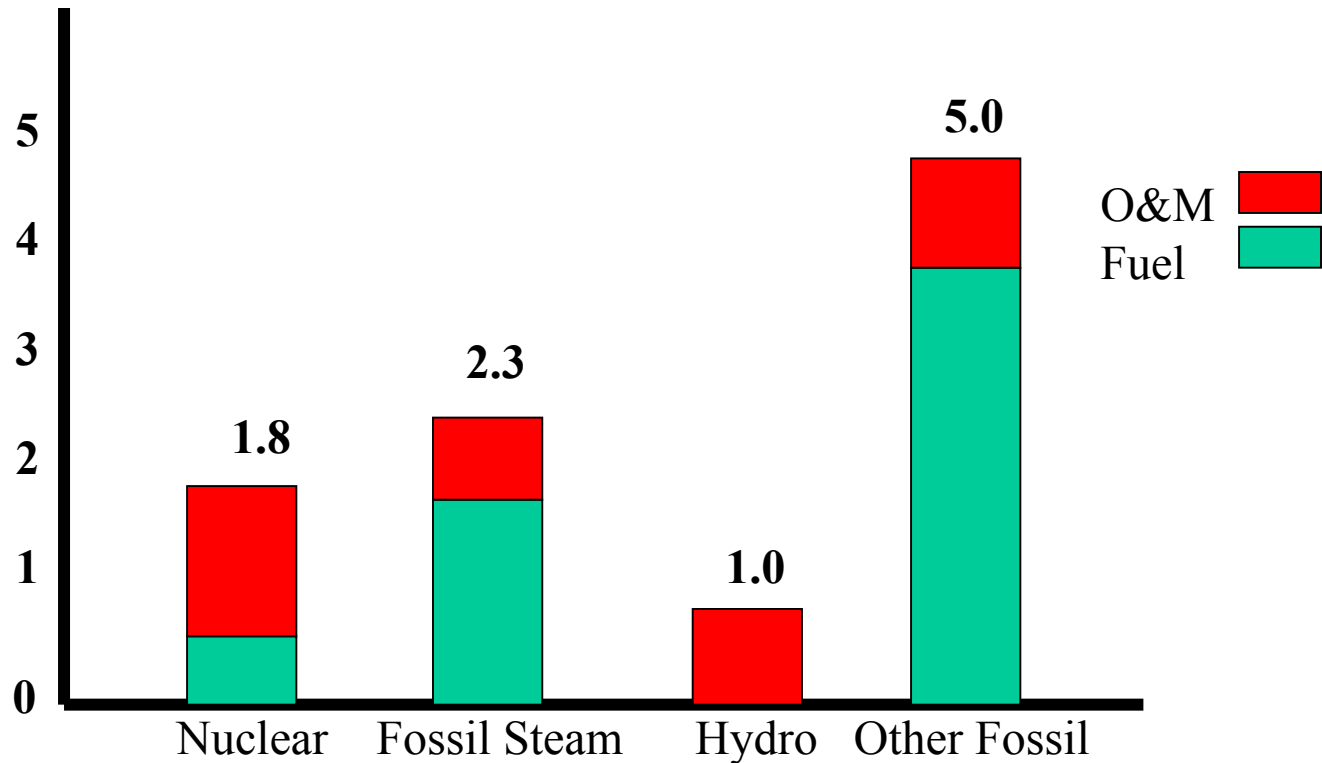
U.S. Generating Capacity & Market Share by Fuel (2000)

	Capacity Factor (%)	Generation Share (%)	Generation (billion kWh)
Coal	71.0	51.7	1966
Oil & Gas	29.1	19.0	724
Nuclear	87.9	19.8	754
Hydro	39.6	7.3	276
Geothermal	57.6	0.4	14
Biomass	69.1	1.6	61
Wind	26.8	0.1	6
Photovoltaic	15.1	<0.1	0.5

Notes: “Oil & Gas” covers a wide variety of generation types & often idle units 2002 Nuclear Capacity Utilization is in 90-91 percent range.

Source: Electric Power Annual 2000

Average Operating Expenses (Cents/kWh, 2001)



Source: Electric Power Annual 2000

Management Concentration

(Capacity in MW and Share of U.S. Total)

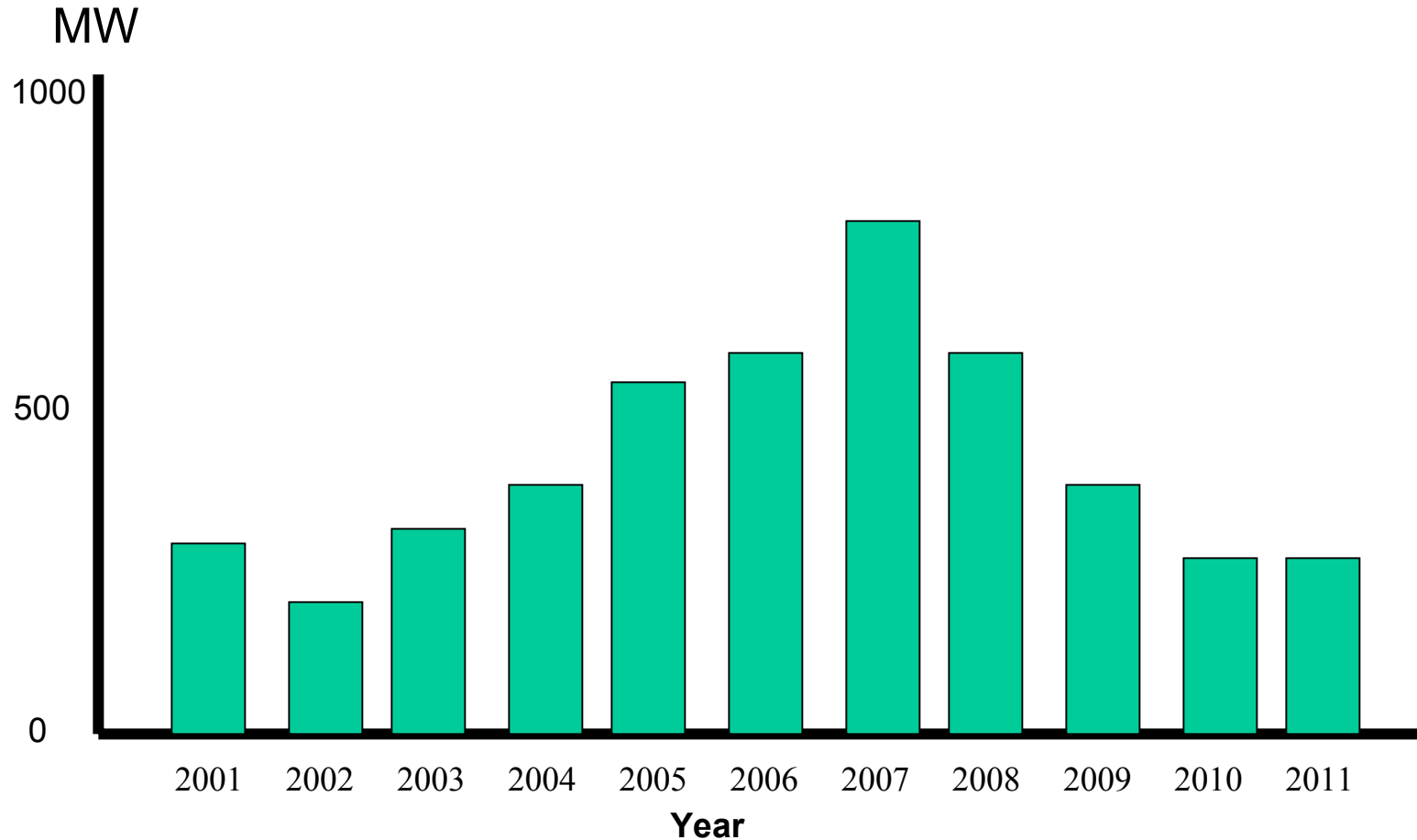
Exelon-AmerGen	16,850 MW	17.3%
Entergy	9,033	9.2
Duke	6,996	7.2
TVA	6,658	6.8
Southern	5,698	5.8
2 nd Five Firms	22,680	23.2
Others (3+ reactors)	7,164	7.3
Others (<3 reactors)	22,588	23.1

- Notes:**
- 1) excludes some service consolidation (i.e. Stars)
 - 2) some small, not merged, units have been run profitably
 - 3) most consolidation is now among 2nd tier firms

Nuclear Capacity Uprates

- Uprates are capacity increases at operating plants
- Potential is 5-20 percent more capacity per reactor
- Balance of plant issues make uprates highly variable
- Uprates are often low cost capacity additions
- Little change in aggregate operating costs
- Uprates can be profitable even if uprated capacity costs more than new capacity of any type

Anticipated Capacity Upgrades at U.S. Nuclear Plants



Sources: Nuclear Regulatory Commission, Press Reports

U.S. Nuclear Power Plant License Renewal Status

License Year	Number of Reactors	Closed	On NRC List	Not On NRC List
1968-74	38	6	22	10
1975-78	23	3	15	5
1979-96	52	0	15	37
Total	113	9	52	52

New Nuclear Construction

- No construction initiated since 1970s
- Last plant completed: Watts Bar 1 in 1996
- One plant Brown's Ferry 1, not operating since 1985, to restart circa 2007
- Three new site license applications anticipated in 2003, not a commitment to build
- Three government sites being examined
- Utilities have not set new build plans

Why Is No One Building New Nuclear?

- Most regions have surplus base load capacity
- Relatively high capital costs
- High financial costs & risks
- Regulatory concerns & risks
- Challenges: Spent fuel, Liability allocation, Safety, Political acceptance
- Is competition good or bad for nuclear? Mixed answer
- Have any of these conditions changed sufficiently to lead to new construction? No clear until an actual order appears