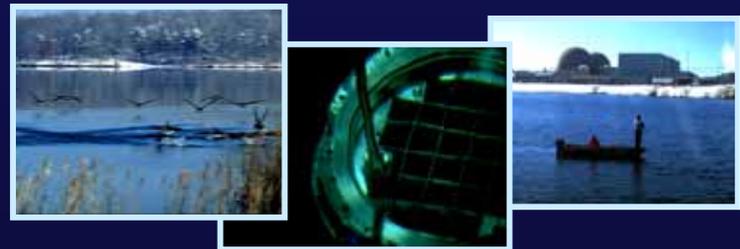


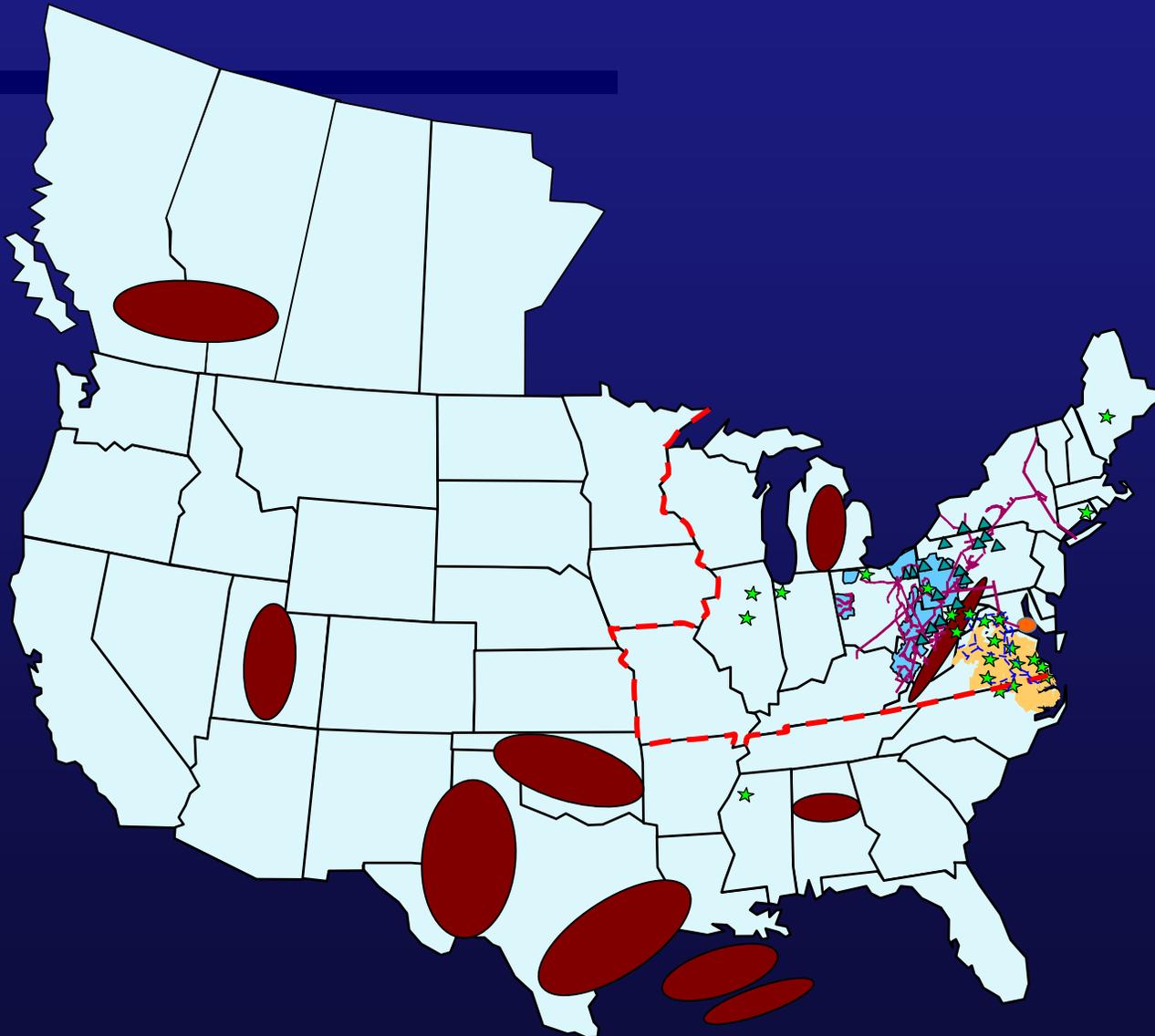
Nuclear Industry Perspective

David A. Christian
Senior Vice-President and
Chief Nuclear Officer

Presented to
Energy Options for the Future
Meeting at the US Naval Research Laboratory
11-12 March 2004



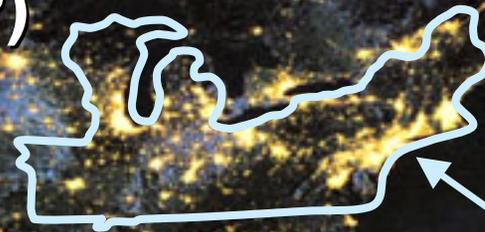
Dominion's Energy Portfolio and Market Area



- ★ Power generation portfolio: ~24,000 MW
 - Gas reserves: 6.1 Tcfe
 - ▲ Gas storage: 960 Bcf
 - LNG facility
 - - - Electric transmission lines: (bulk delivery) 6,000 miles
 - Gas pipeline: 7,900 miles
 - Gas franchise territory: 3 states, 1.7 million customers
 - Electric franchise territory: 2 states, 2.2 million customers
- Plus, 1.1 million unregulated retail customers in 8 states
- - - "MAIN-to-Maine" Market: World's 2nd largest economy

Why MAIN to Maine?

- 40% of U.S. energy consumption
- 121 million people, or 44% of U.S. population
- World's 2nd largest economy (based on GDP)
- Rapid deregulation
- High production costs
- Dual peaking markets



MAIN to Maine

*Infrared satellite photo

Social Security (Stability)

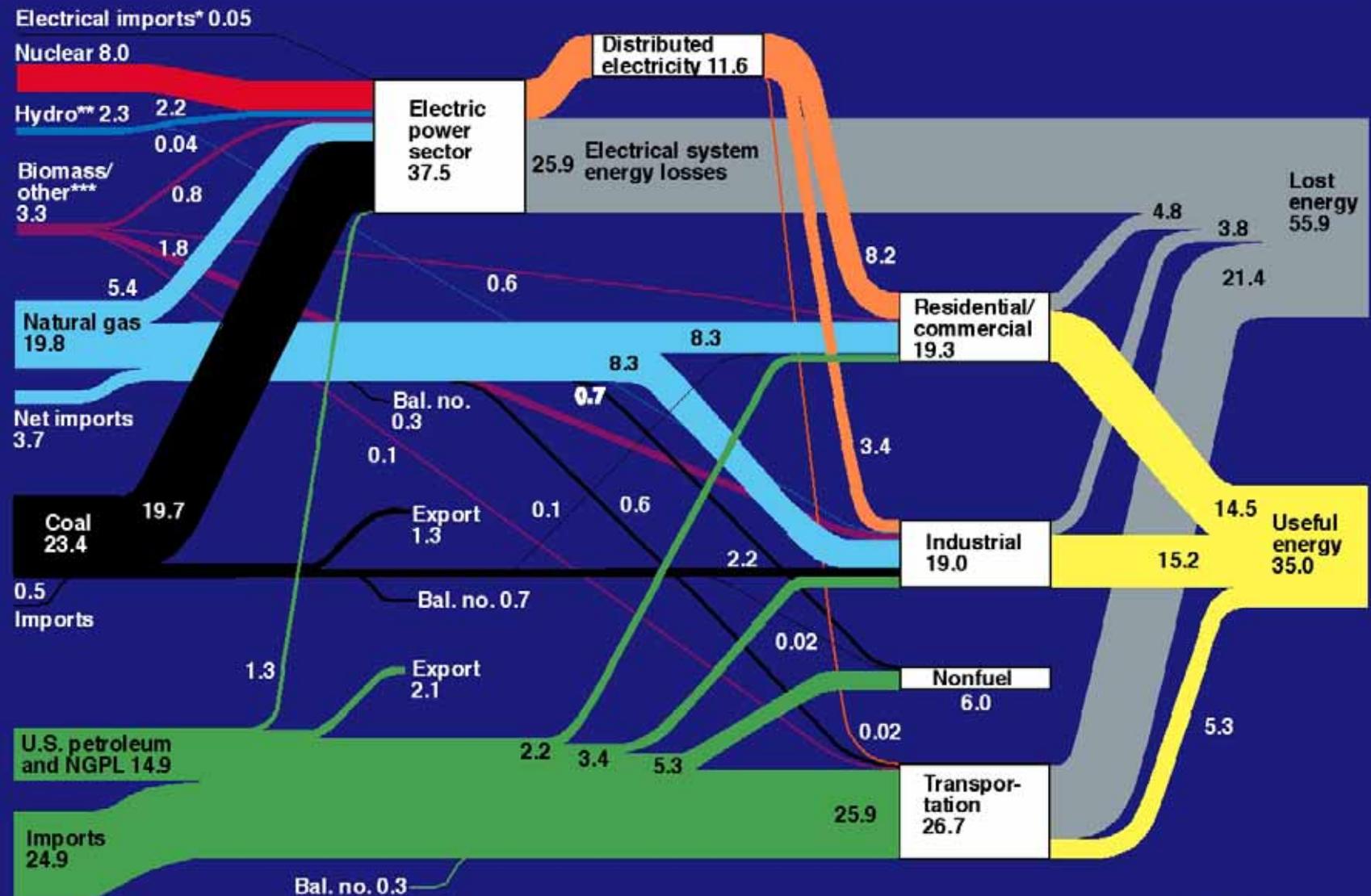
 Economic Security

 Energy Security

 Diversity Of Supply
Including Nuclear

U.S. Energy Flow Trends – 2001

Net Primary Resource Consumption ~97 Quads



Source: Production and end-use data from Energy Information Administration, *Annual Energy Review 2001*
 *Net fossil-fuel electrical imports
 **Includes 0.2 quads of imported hydro
 ***Biomass/other includes wood, waste, alcohol, geothermal, solar, and wind.

A Bright Future for Natural Gas Business

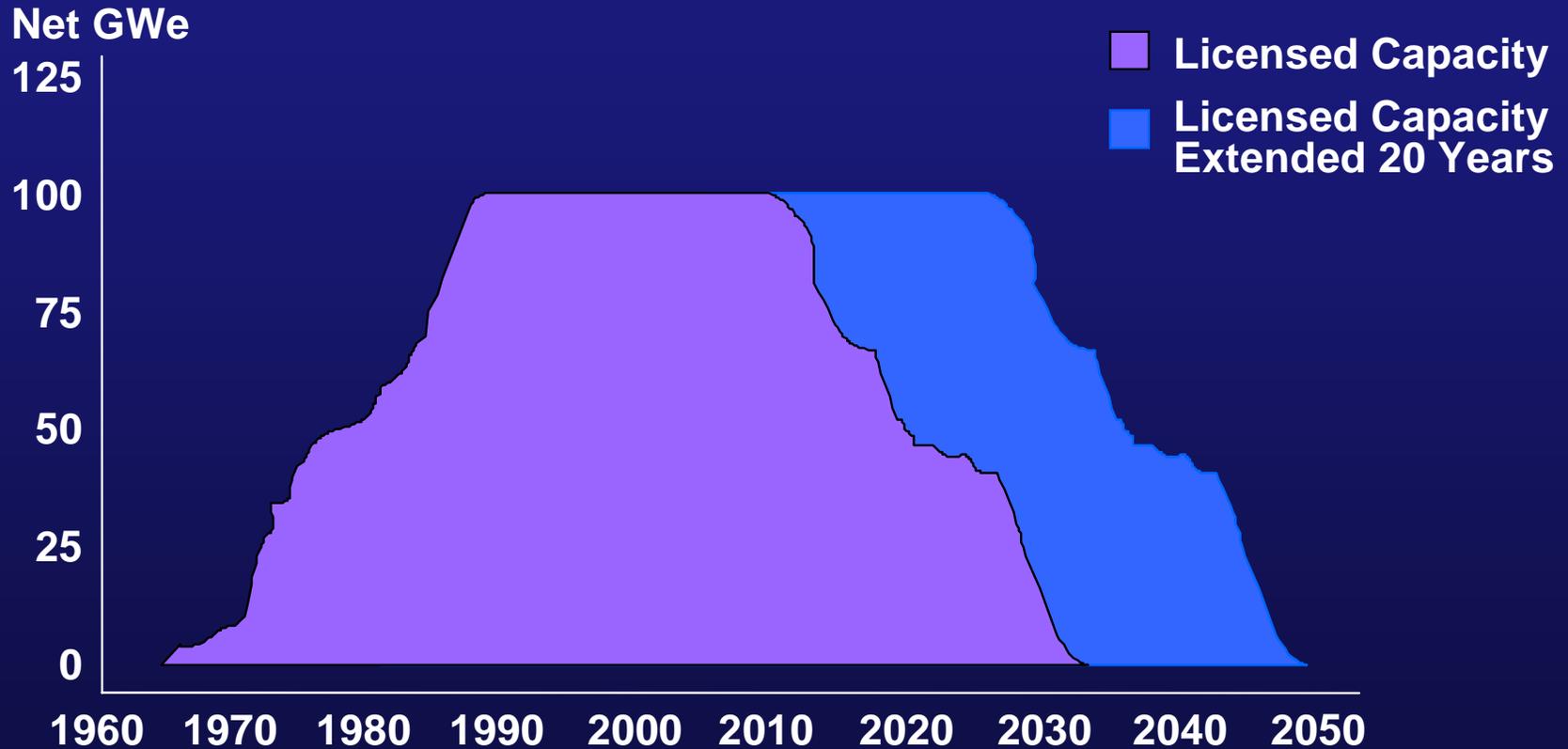
“I am quite surprised at how little attention the natural gas problem has been getting because it is a very serious problem. . . If on the one hand we have encouraged, as we have, very significant growth in demand for natural gas but are very readily constrained by our ability to increase supply, then something has got to give and what is giving of course is price.”

Alan Greenspan

Testimony to Joint Economic Committee

May 21, 2003

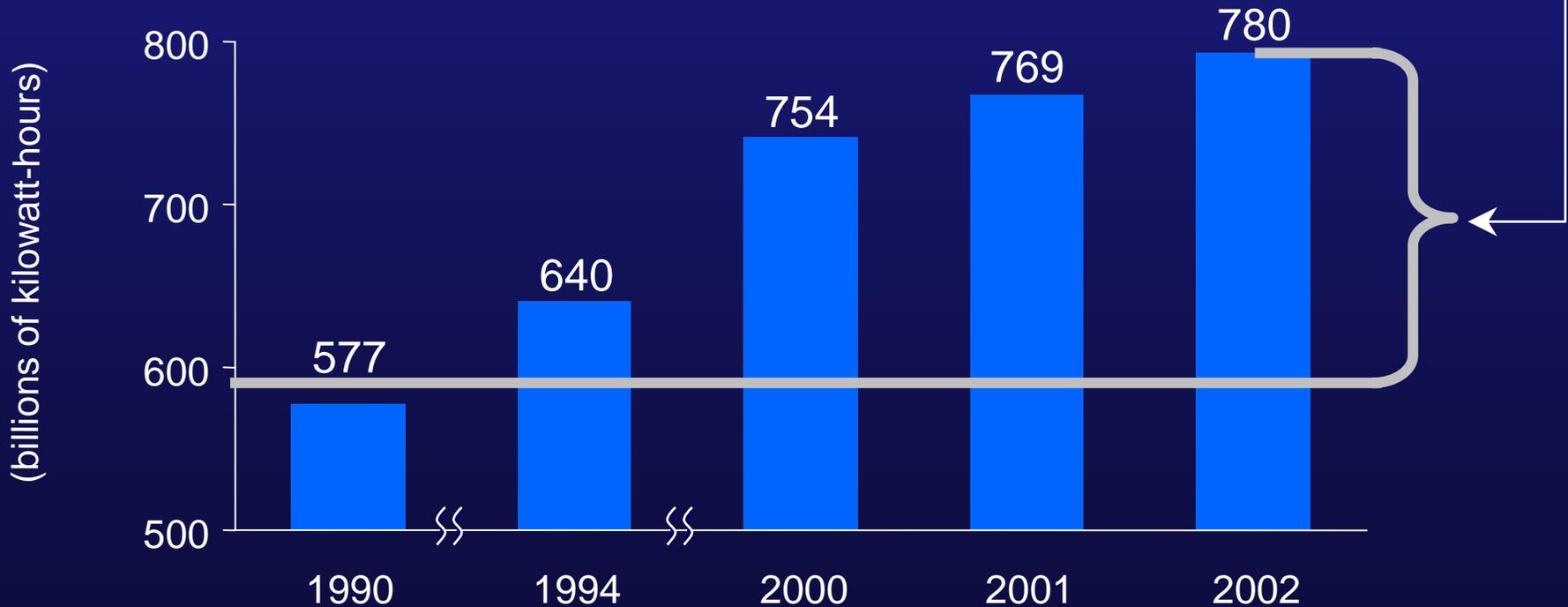
U.S. Commercial Nuclear Power Reactor Generation Capacity



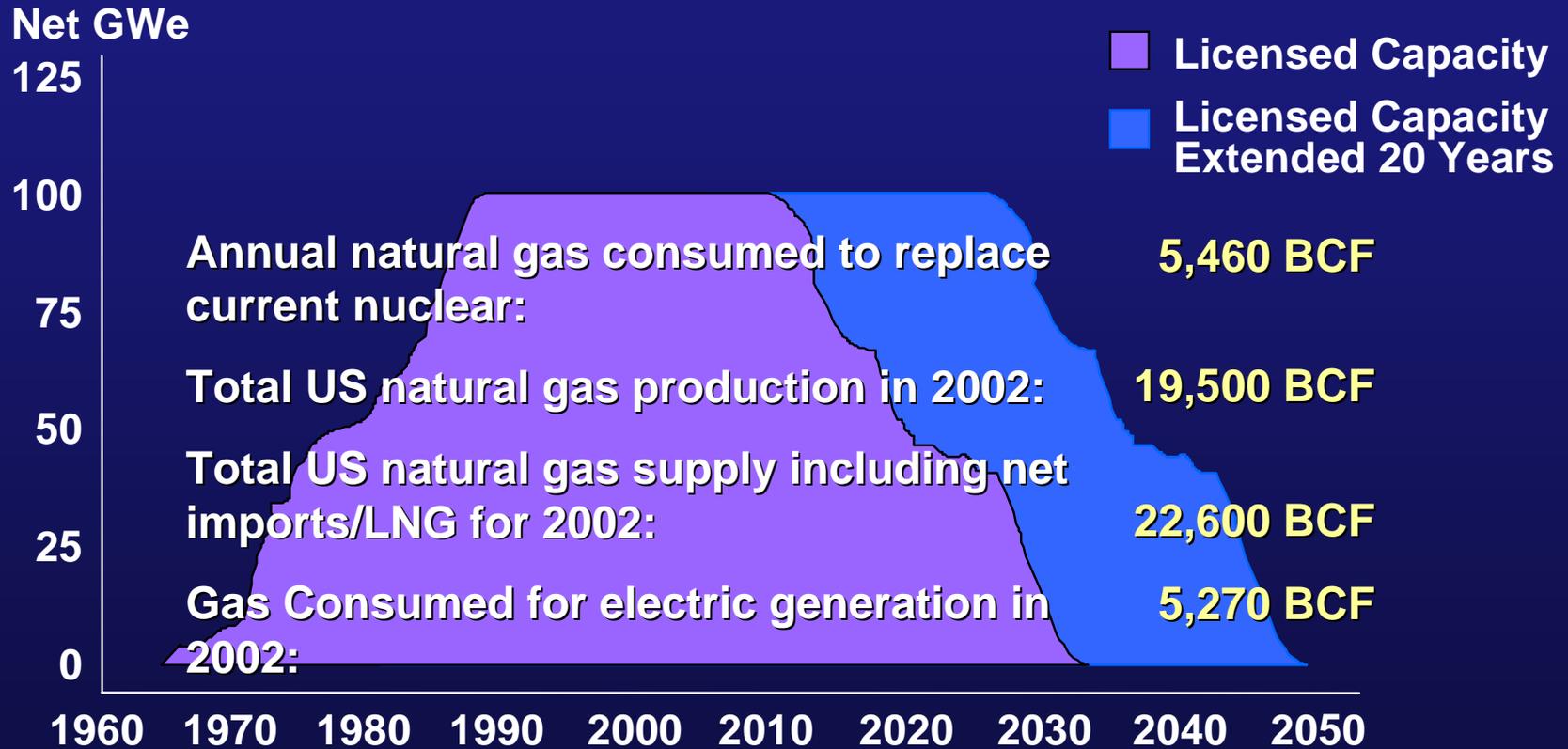
Source: NRC

Nuclear Plant Output: Historical Growth

- Equivalent to 25 1,000-megawatt power plants
- Satisfied approximately 30% of growth in U.S. electricity demand

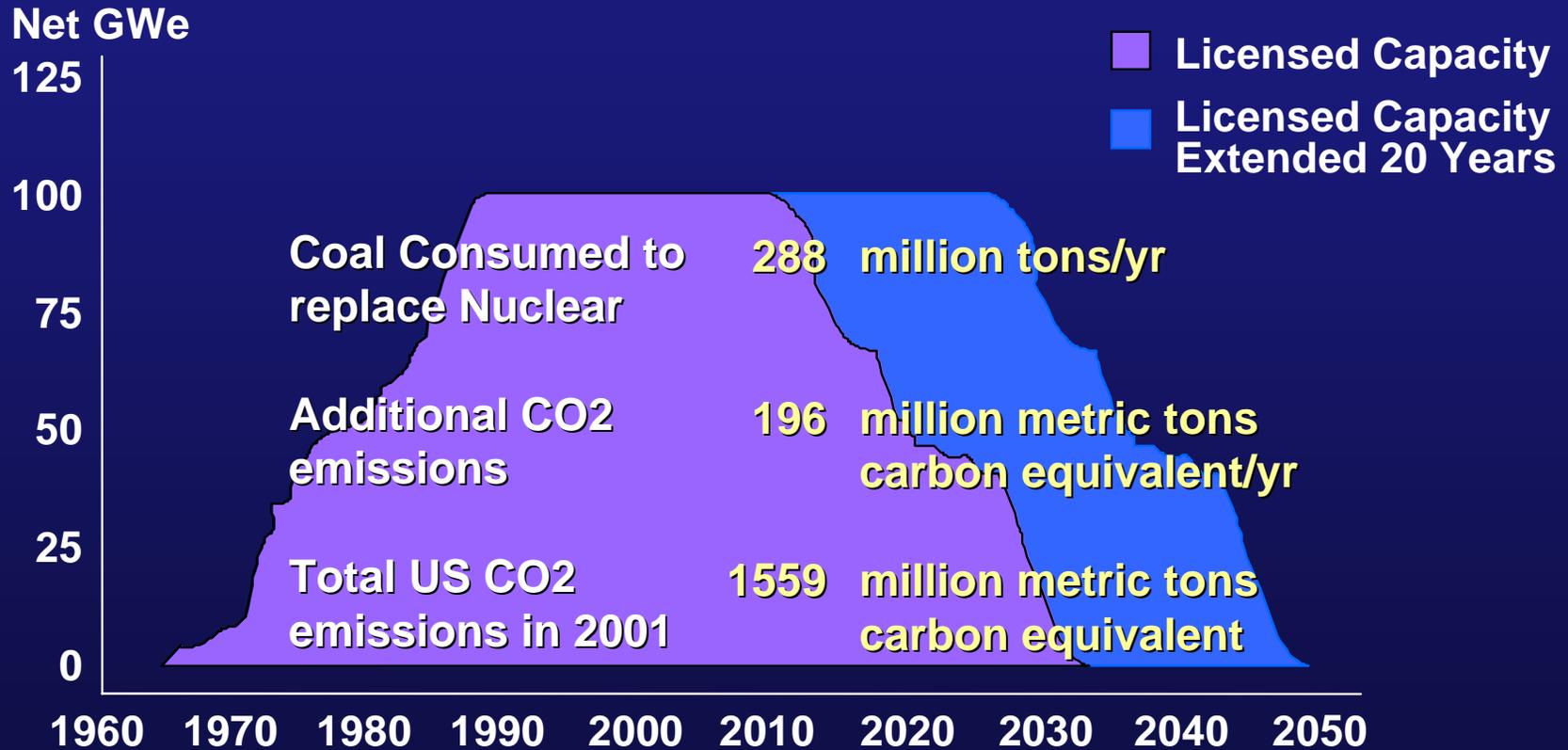


U.S. Commercial Nuclear Power Reactor Generation Capacity/ Natural Gas Supplementation



Source: NRC

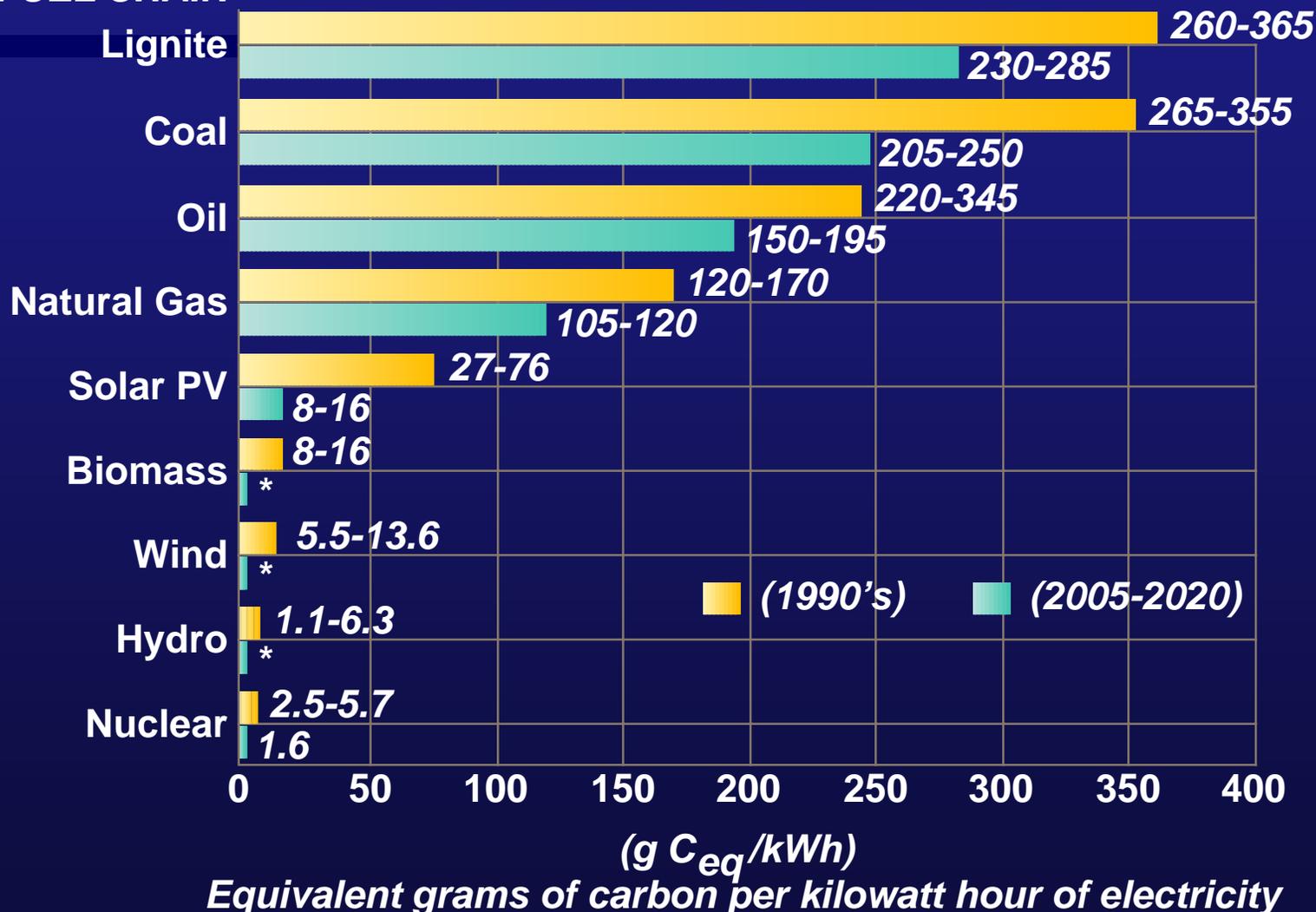
U.S. Commercial Nuclear Power Reactor Generation Capacity/ Coal Supplementation



Source: NRC

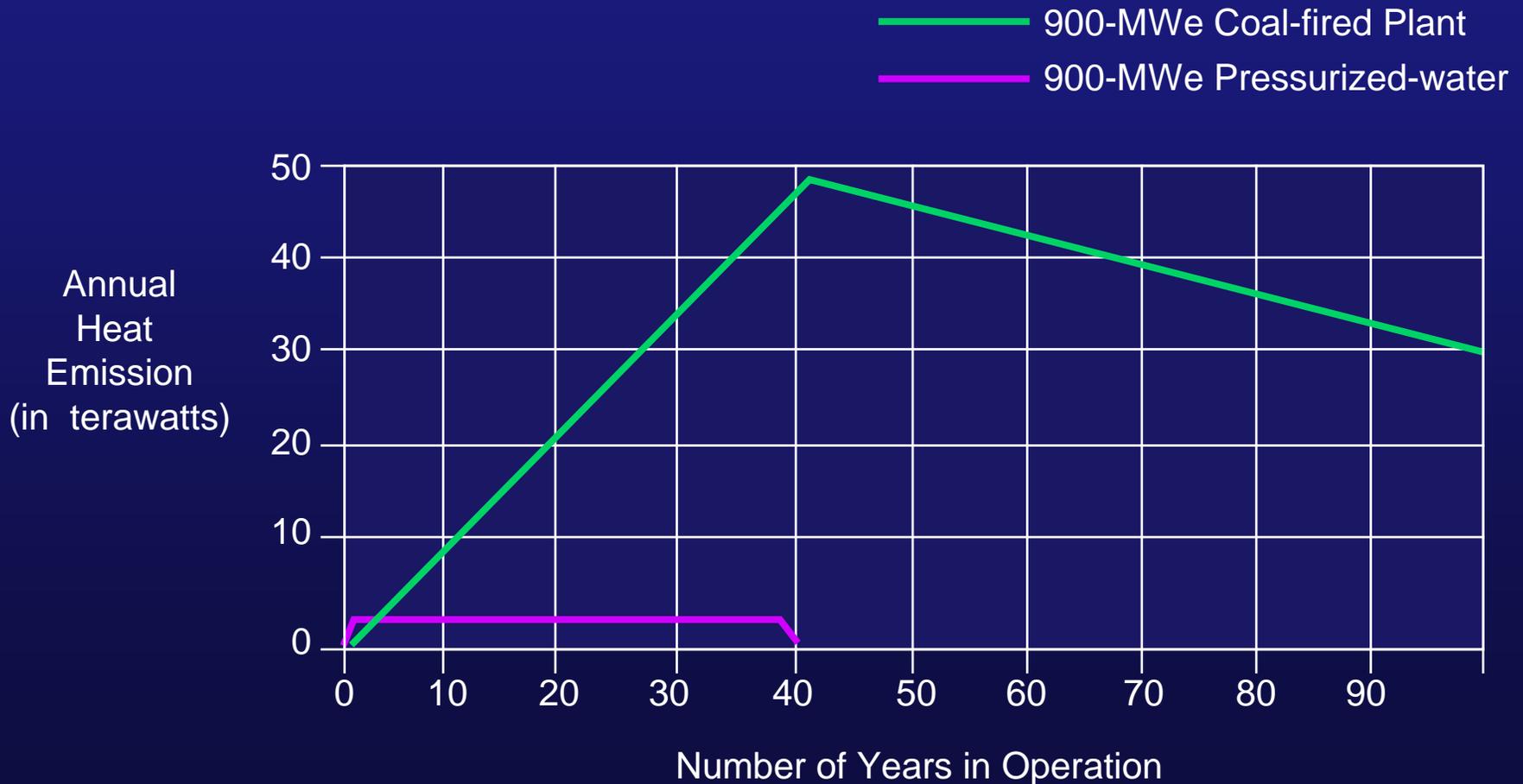
Total GHG Emission Factors for the Production of Electricity

FUEL CHAIN

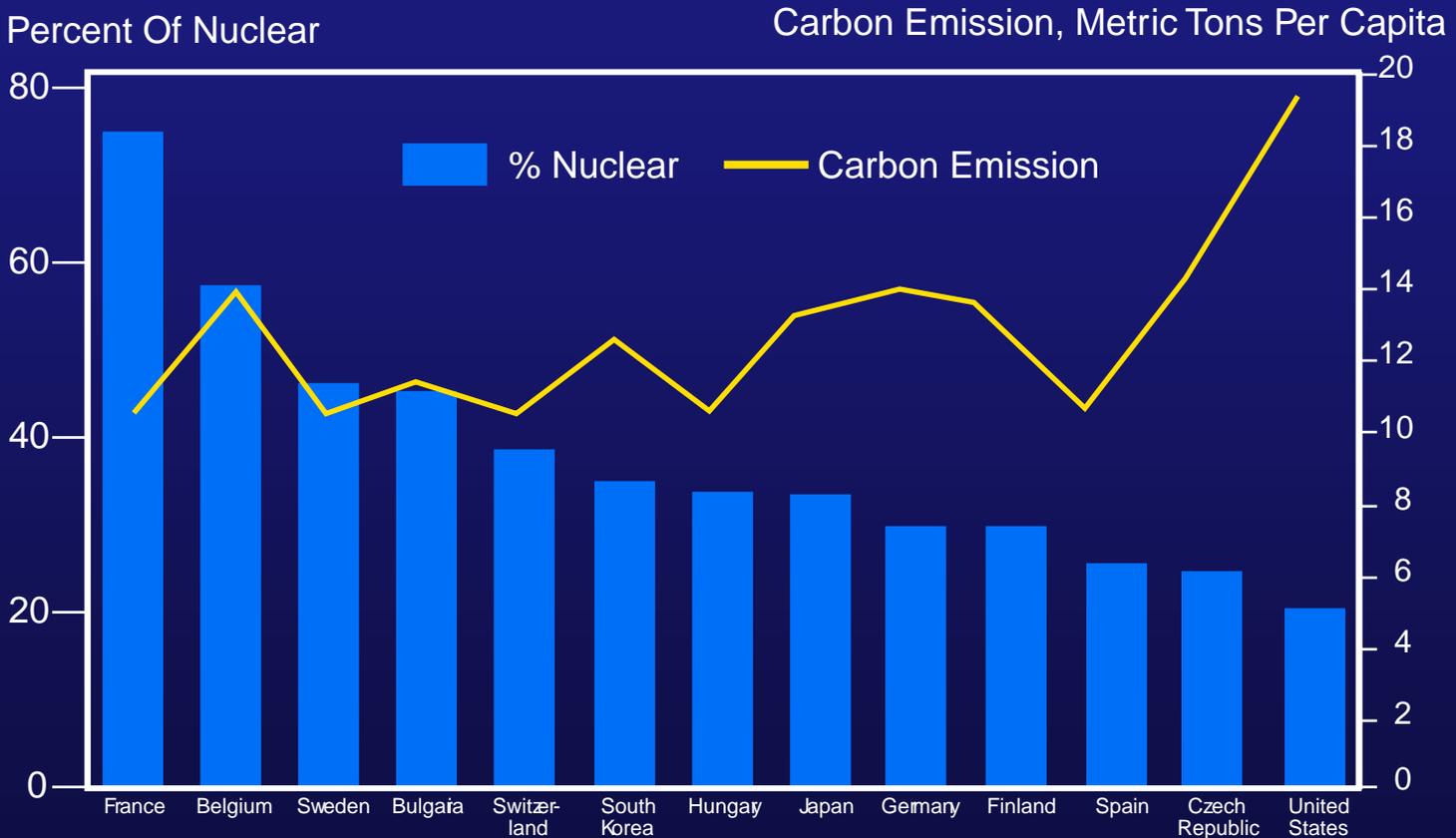


* Projections for 2005-2020 not available

Average Heat Released to the Atmosphere Per Year by a 900-MWe Coal-fired Plant & by a 900-MWe Pressurized-water Nuclear Reactor



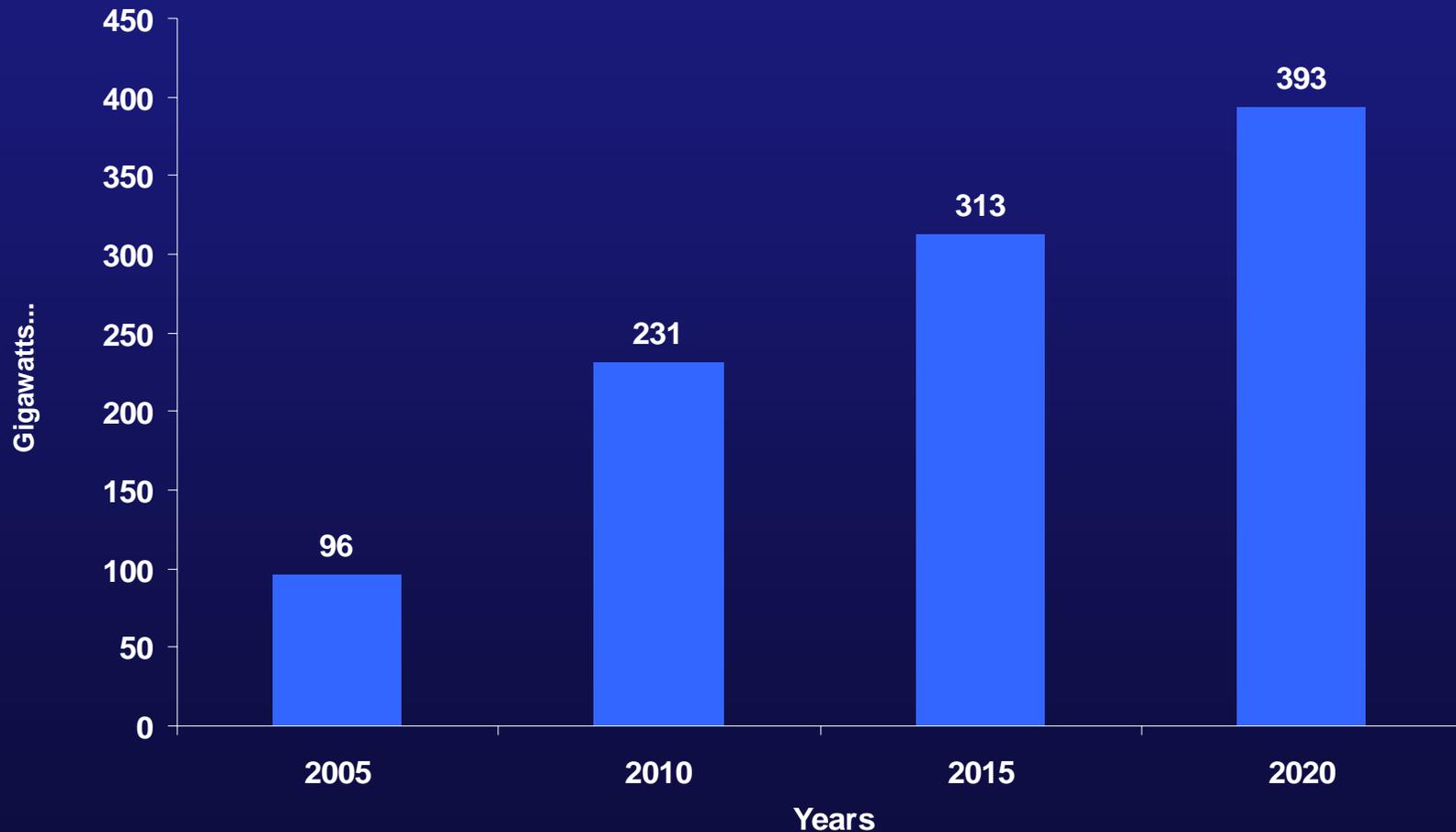
Nuclear Generation vs Carbon Emissions



Today's State of the Nuclear Industry

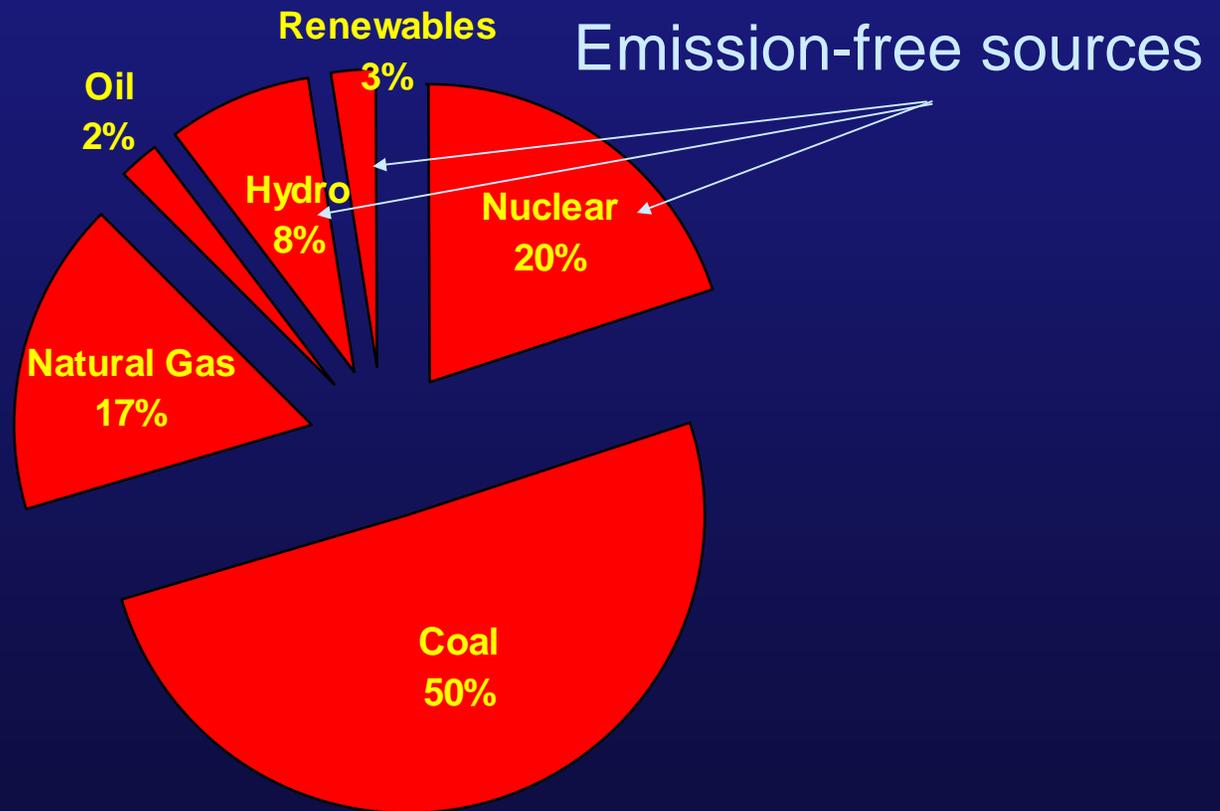
- 440 commercial reactors in 31 countries
- 103 commercial reactors in the U.S.
- Overall, 16% of the world's electricity
- 15 countries: Over 25%, some over 70%
- 31 new reactors under construction in other countries - but none in the U.S.
.....yet

Projected U.S. Energy Growth

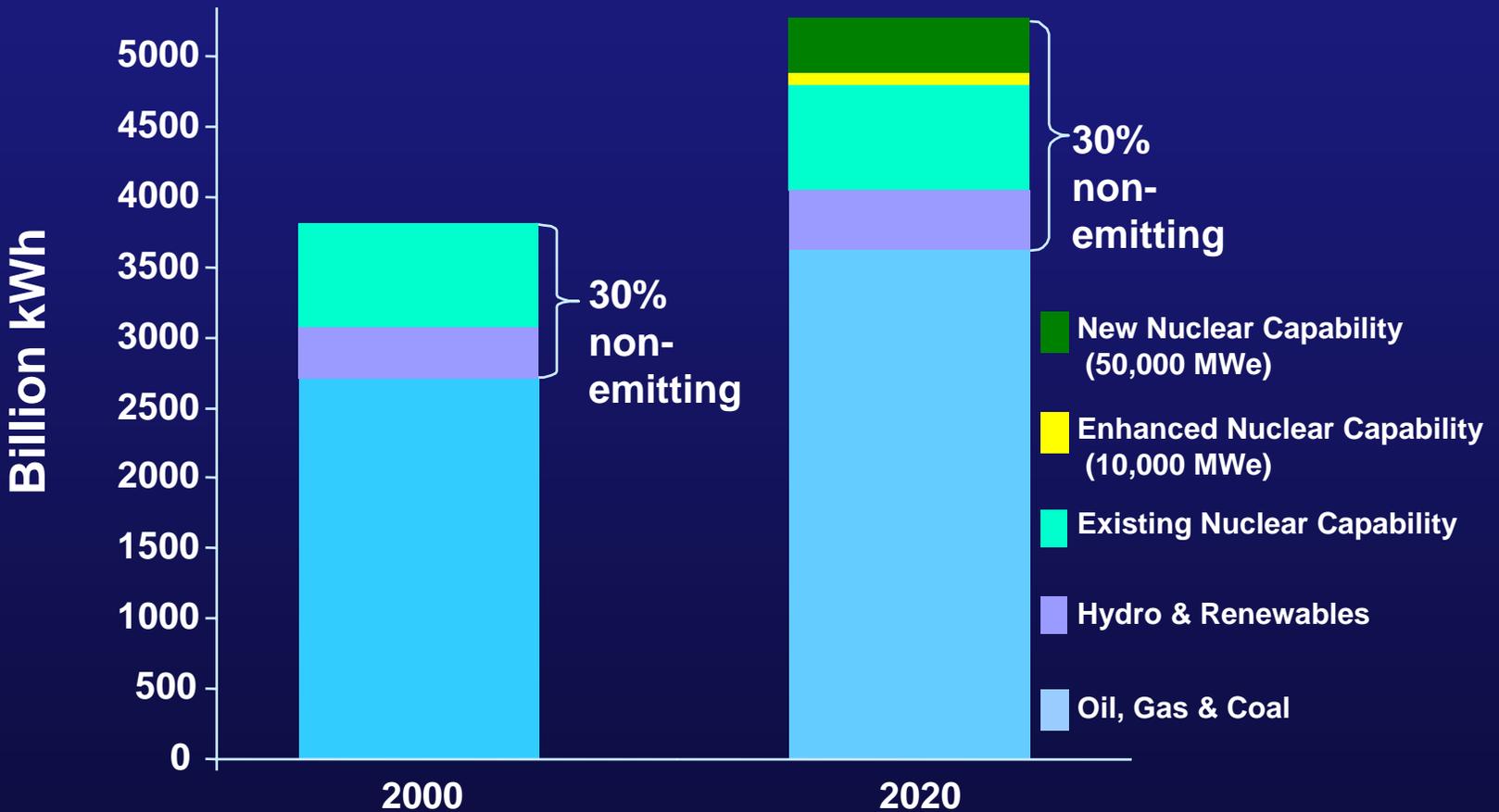


Source: EIA Annual Energy Outlook 2001

Current U.S. Electricity Generation Fuel Diversity (2002)



50,000 MWe of New Nuclear



What Has Changed... and Is It Enough?

- New licensing process
- New plant designs
- More reliable and efficient operation

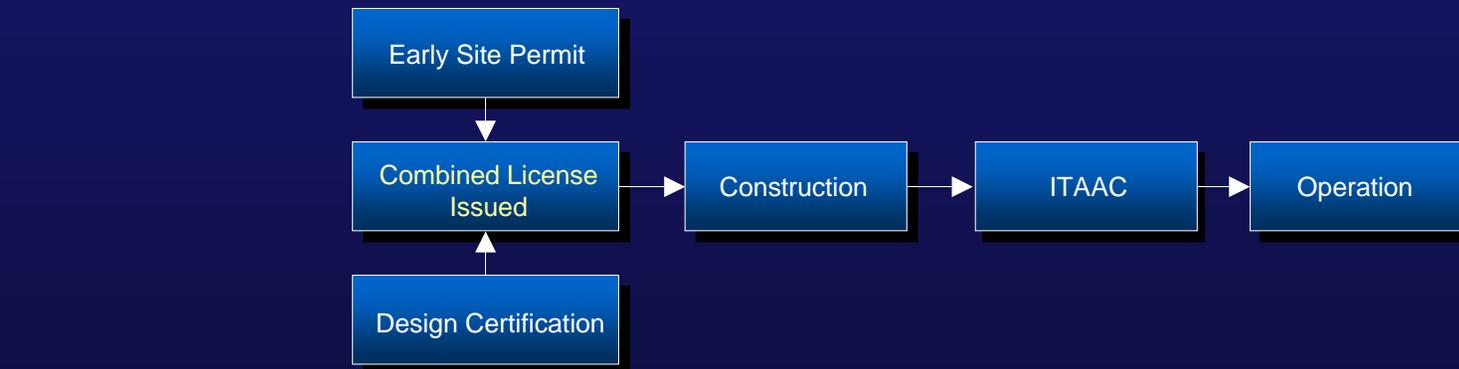
New NRC Licensing Process

- NRC revised its regulations--Part 52--for new nuclear plants over a decade ago
- Part 52 has three elements:
 - Design certification
 - Early site permitting
 - Combined license

NRC Licensing Process

OLD LICENSING PROCESS

License Issued **AFTER**
Large Capital Investment



NEW LICENSING PROCESS

License Issued **BEFORE**
Large Capital Investment

What this Process Changes

- Licensing decisions will be made BEFORE large capital investments are made.
 - Safety and environmental issues will be resolved before construction starts
 - NSSS and BOP design will be well developed before COL application is submitted
 - Plants will be almost fully designed before construction starts
- Result: High confidence in construction schedule and cost control

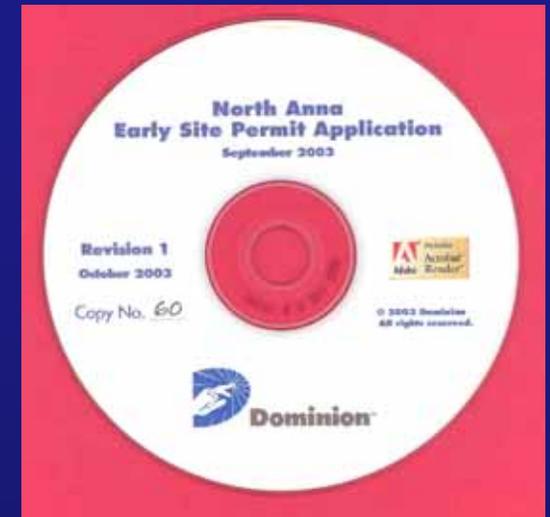
Design Certification

- Design Certification addresses design issues early in the process
- Plants are designed to be constructed in less than 48 months
- Each manufacturer's plants will be a standard certified design
- 3 Design Certificates have been issued, 1 active application in review

Early Site Permits (ESP)

- Obtaining an ESP allows a company like Dominion to “bank” a site for 20 years, with an option to renew
- If and when market conditions warrant, nuclear may then be considered among a variety of generation options
- Dominion has no plans to build another nuclear plant at this time

ESP Application Status



- Dominion's ESP Application was submitted on 9/25/03
- Exelon submitted on 9/25/03
- Entergy submitted on 10/21/03

Combined License

- Combines the Early Site Permit and the Design Certification into a site and technology specific document
- When approved, provides authorization to build and operate
- Resolves operational and construction issues before construction begins
- Process has yet to be tested

New Nuclear Technologies

- Innovative new reactor technologies are being developed for deployment
- Passive and active safety system designs
- Some based on existing light and heavy water designs; some on new gas-cooled technologies
- Bases in existing technology expected to yield reliable operation
- Designed for short construction periods and reduced construction costs
- All can be economically attractive

Barriers to the Decision to Build

- Licensing uncertainties with untested processes
- High initial unit costs
- Financing risks
- Earnings dilution during construction
- High level waste disposal
- Price-Anderson renewal

Social Security (Stability)

 Economic Security

 Energy Security

 Diversity Of Supply
Including Nuclear

“The best way to predict
the future is to create it.”

- Peter F. Drucker



Dominion[®]

