The Future of Nuclear Energy

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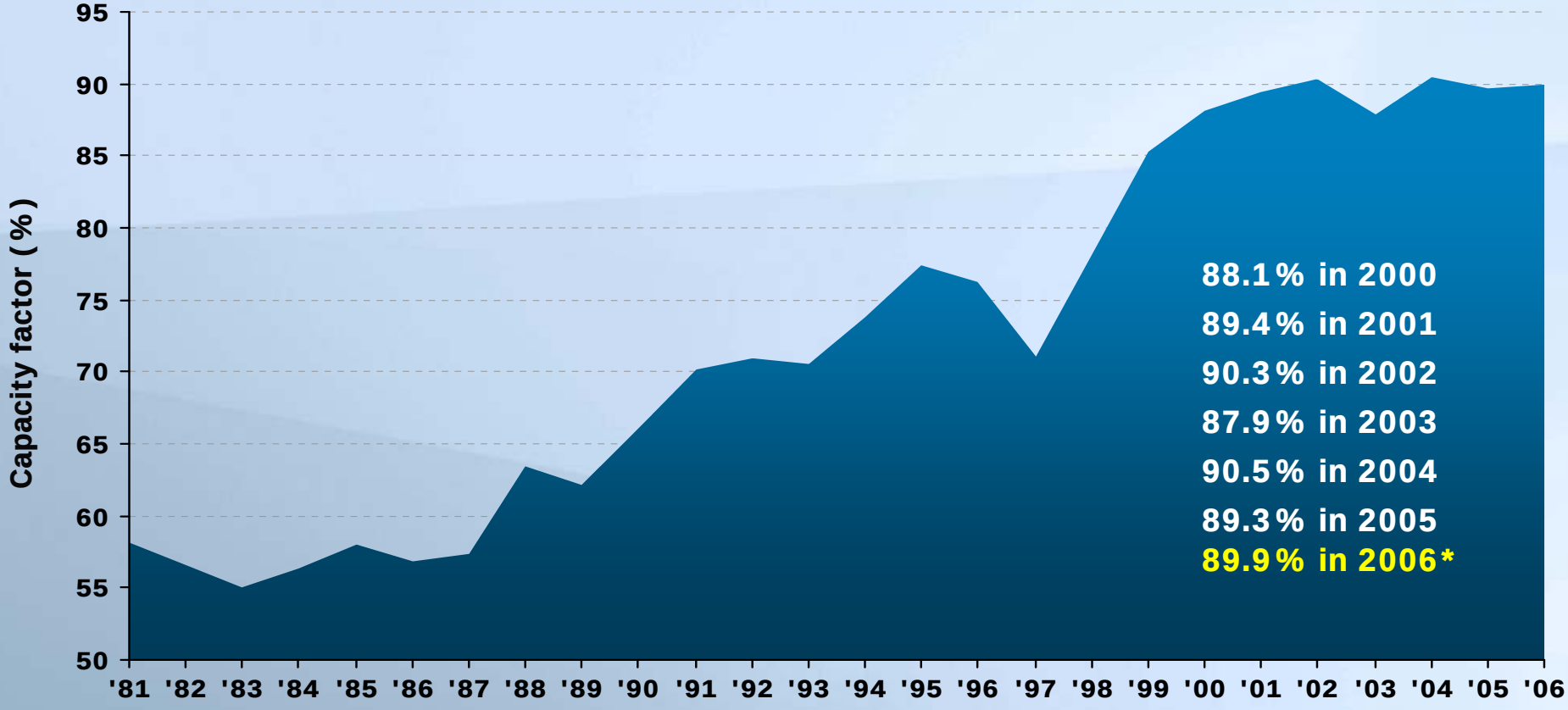
NEI
NUCLEAR ENERGY INSTITUTE

Overview

- Economics
- Safety
- Environmental benefits
- Public support of nuclear energy
- Used fuel
- New plants
  - 17 expected license applications
  - Energy Policy Act of 2005 support for new nuclear
  - State policies that support new plant construction
- Browns Ferry 1 restart complete May 2007
- California's Electricity Demand Growth

Sustained Reliability and Productivity

U.S. Nuclear Capacity Factor

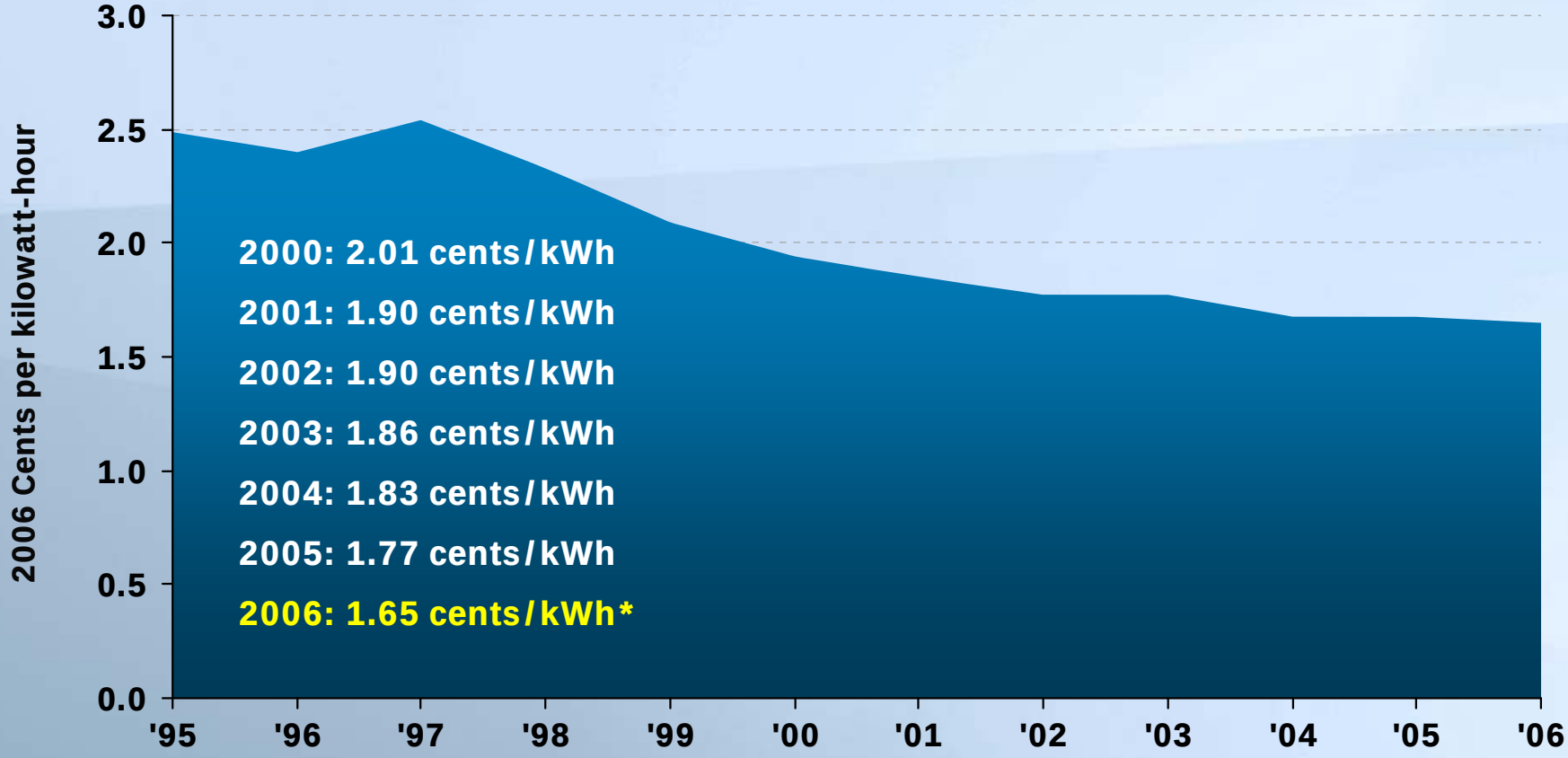


Source:Global Energy Decisions / Energy Information Administration

** NEI estimate for 2006*

Solid Economic Performance Continues

U.S. Nuclear Production Cost

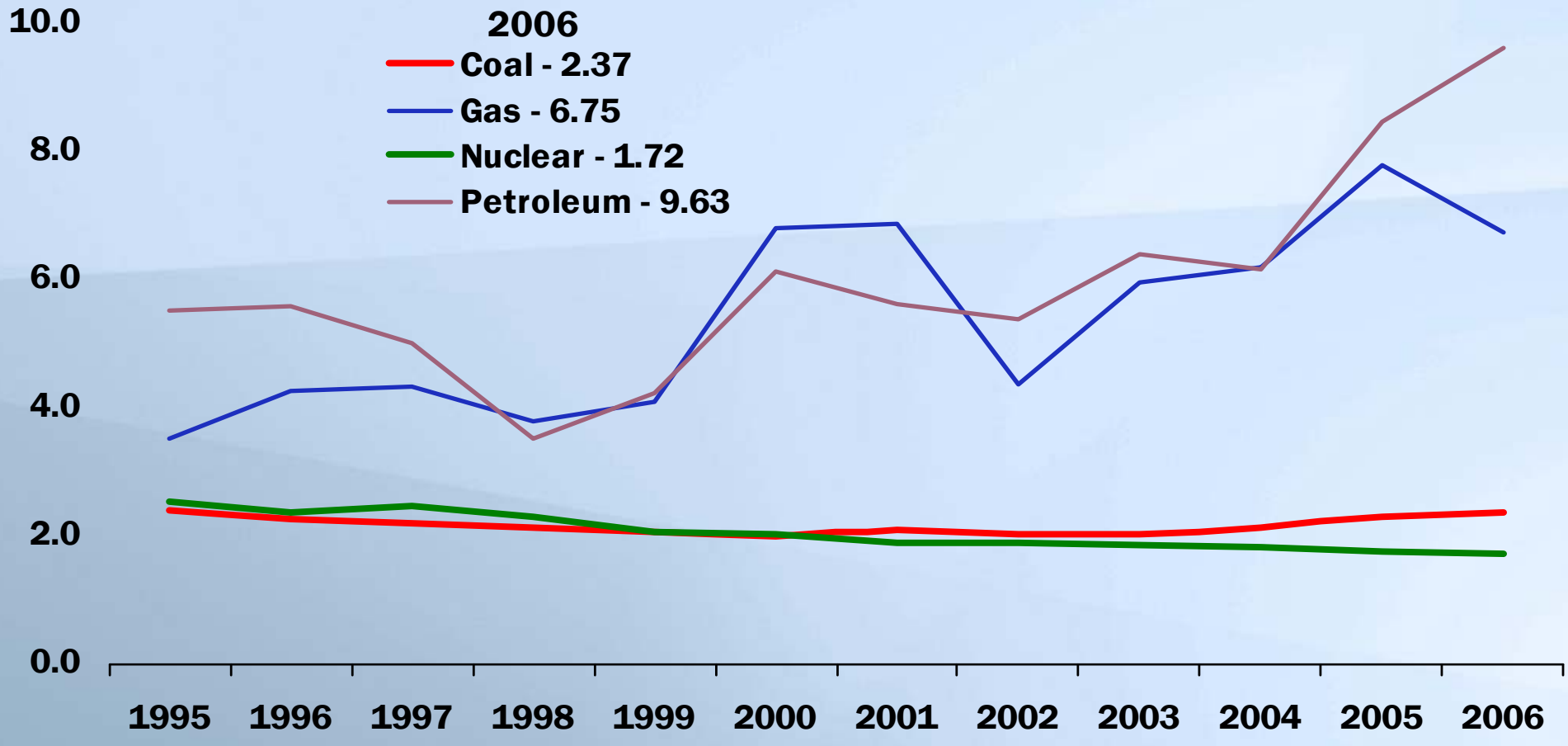


Source: Global Energy Decisions

** NEI estimate for 2006*

U.S. Electricity Production Costs

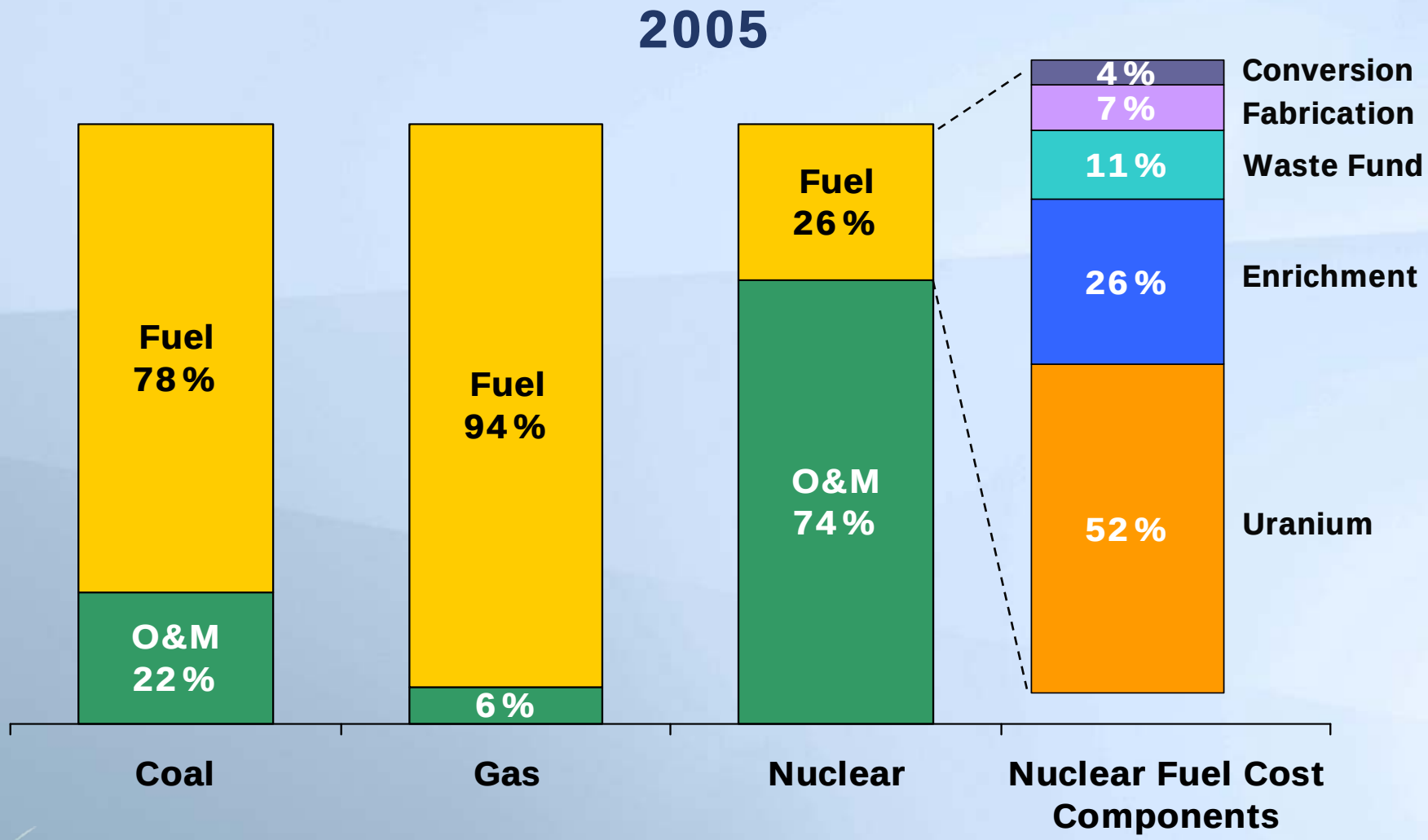
1995-2006, *In 2006 cents per kilowatt-hour*



Production Costs = Operations and Maintenance Costs + Fuel Costs

Source: Global Energy Decisions
Updated: 6/07

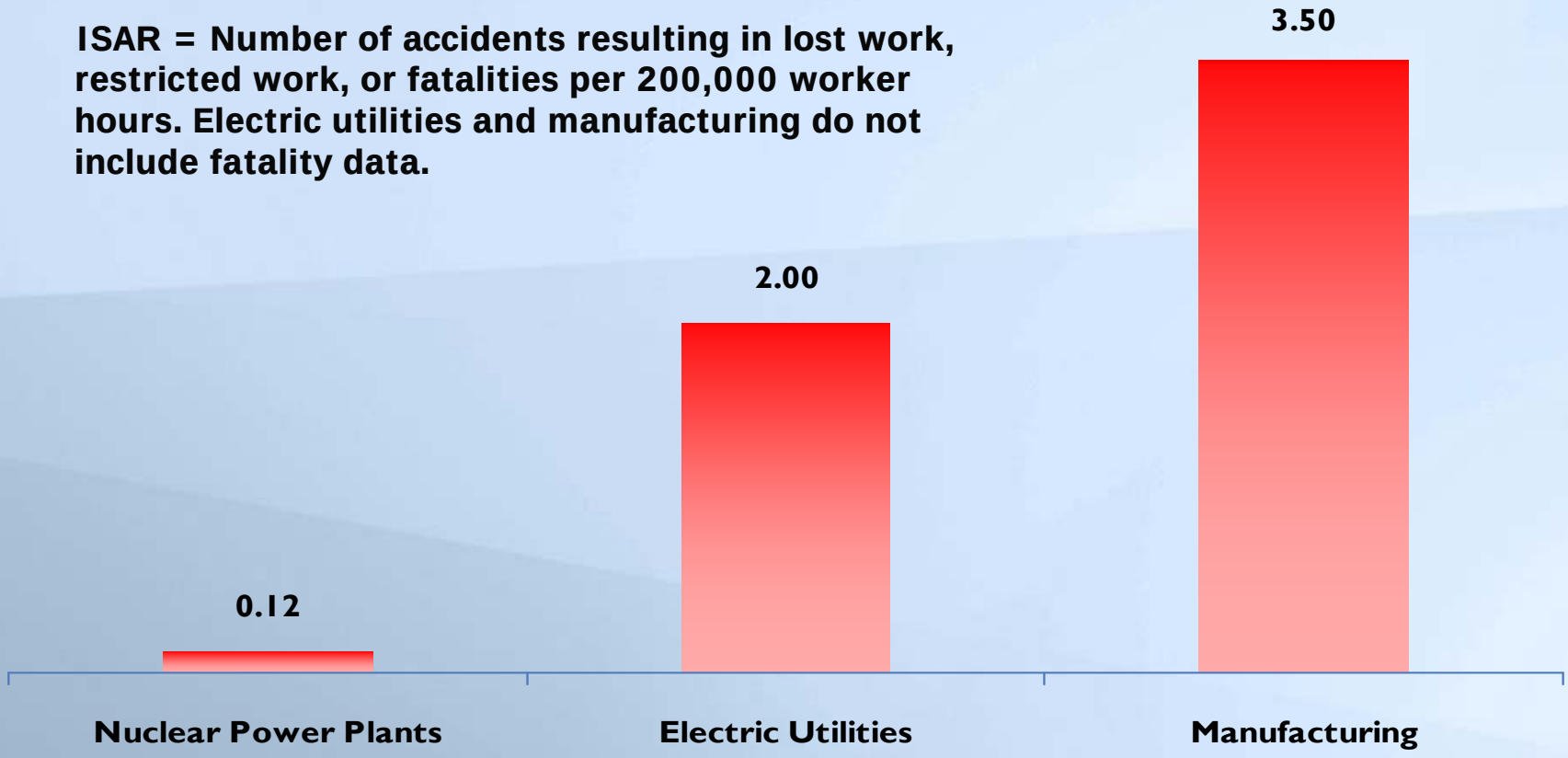
Fuel as a Percentage of Electric Power Production Costs



Source: Global Energy Decisions

U.S. Industrial Safety Accident Rate
2006

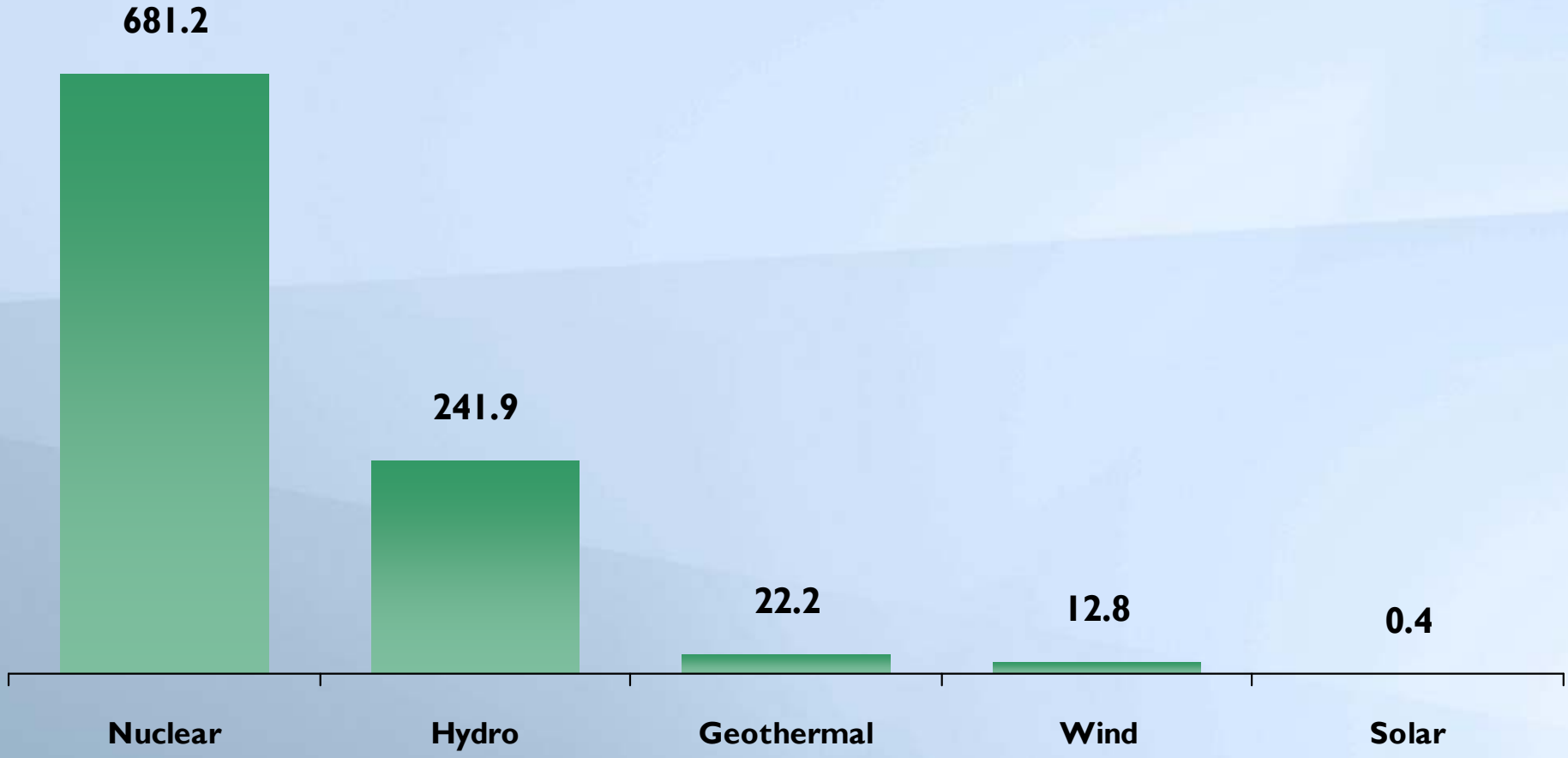
ISAR = Number of accidents resulting in lost work, restricted work, or fatalities per 200,000 worker hours. Electric utilities and manufacturing do not include fatality data.



Sources: Nuclear (World Association of Nuclear Operators), Electric Utilities and Manufacturing (2005, U.S. Bureau of Labor Statistics).
Updated: 4/07

U.S. Electric Power Industry CO_2 Avoided

Million Metric Tons, 2006



Source: Emissions avoided are calculated using regional and national fossil fuel emissions rates from the Environmental Protection Agency and plant generation data from the Energy Information Administration.

Updated: 4/07

Life-Cycle Emissions: Nuclear Power Is Comparable to Renewables

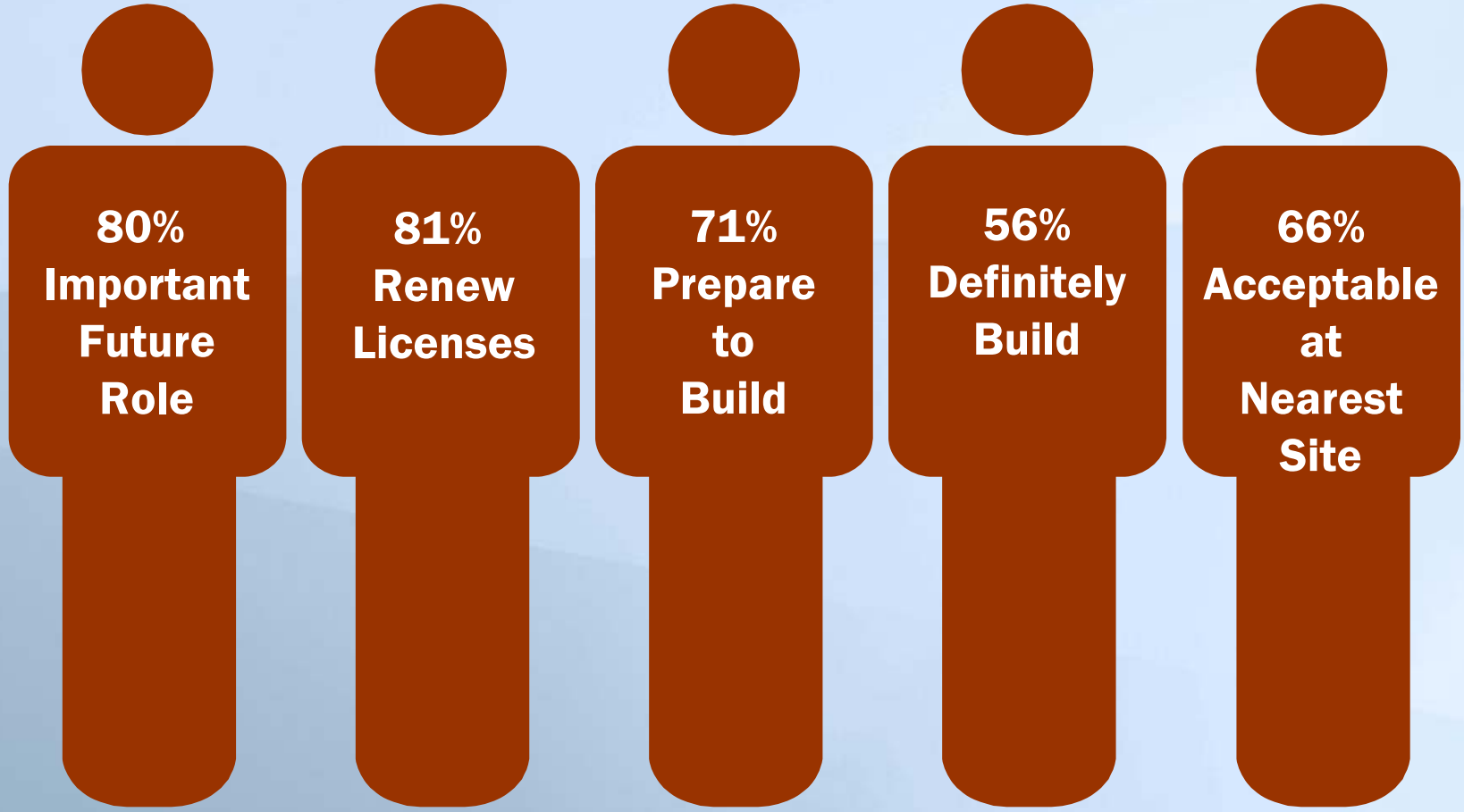
Electricity generation option	GHG emissions gram equiv CO_2/kWh	SO_2 emissions mg/kWh	NO_x emissions mg/kWh	NMVOC mg/kWh	PM mg/kWh
Hydropower	2-48	5-60	3-42	0	5
Nuclear	2-59	3-50	2-100	0	2
Wind	7-124	21-87	14-50	0	5-35
Solar photovoltaic	13-731	24-490	16-340	70	12-190
Biomass/ forestry waste	15-101	12-140	701-1950	0	217-320
Natural gas (combined cycle)	389-511	4-15000+*	13+-1500	72-164	1-10+
Coal (modern plant)	790-1182	700-32321+	700-5273+	18-29	30-663+

* The sulphur content of natural gas when it comes out of the ground can have a wide range of values. Normally, almost all of the sulphur is removed from the gas and sequestered as solid sulphur before the gas is used to generate electricity. Only in the exceptional case when the hydrogen sulphide is burned would the high values of SO_2 emissions occur.

Source: Hydropower–Internalised Costs and Externalised Benefits; Frans H. Koch; International Energy Agency (IEA)–Implementing Agreement for Hydropower Technologies and Programmes; Ottawa, Canada, 2000.

Strong Public Support Continues

April 2007 Survey



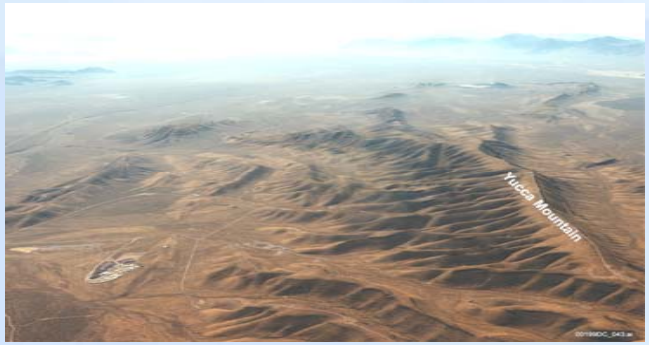
Source: Bisconti Research Inc.

April 2007 poll of 1,000 U.S. adults; margin of error is +/- 3%

The “Once Through” Fuel Cycle: The Old View of Used Fuel Management

Nuclear Plant

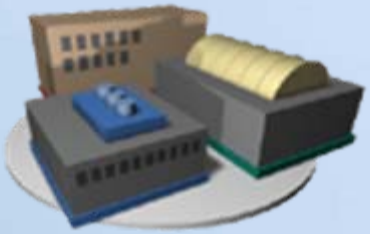
Used Fuel



Yucca Mountain

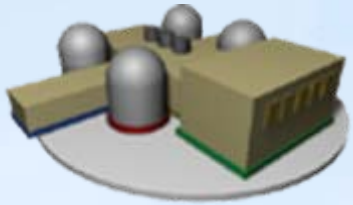
Used Fuel Management: New Strategic Direction

Used Fuel



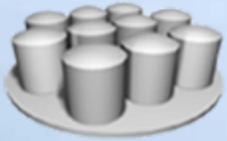
Used Fuel Recycling, Interim Storage

Recycled Nuclear Fuel



Advanced Recycling Reactors

Nuclear Waste



Yucca Mountain

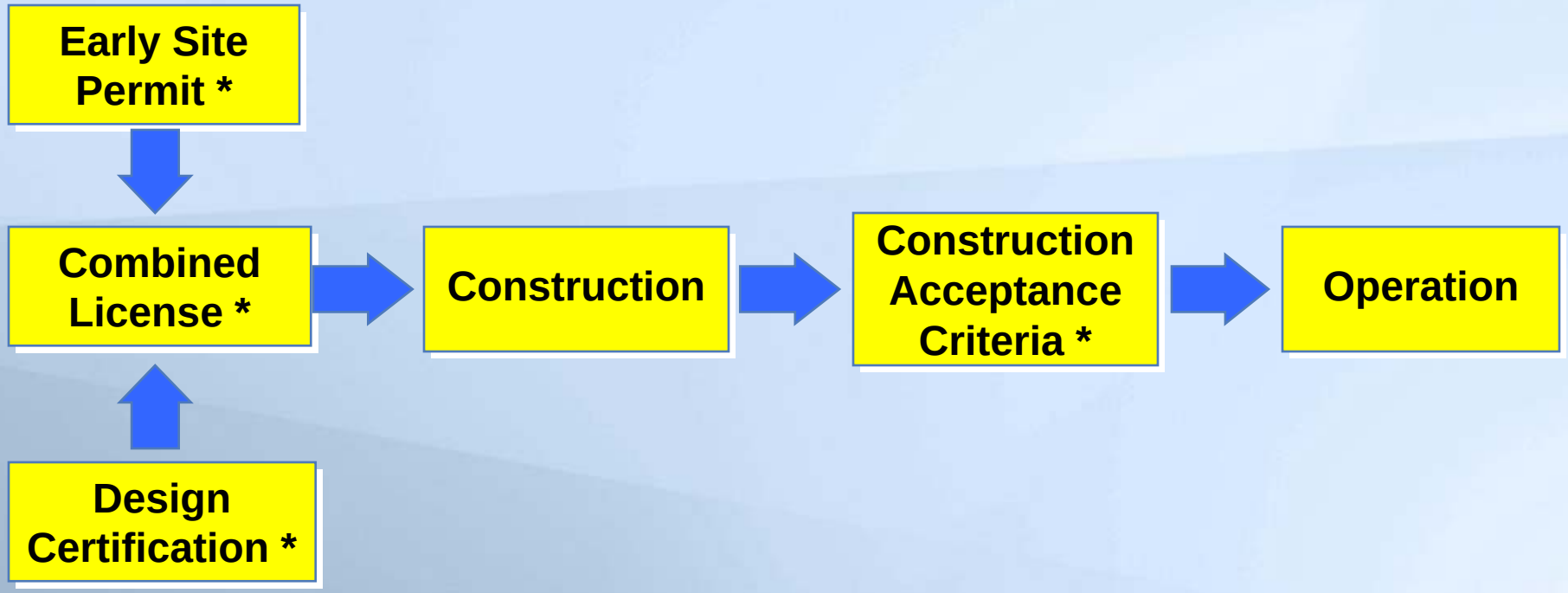
Used Fuel Management: An Integrated, Phased Program

- Developing advanced technologies to recycle nuclear fuel provides needed flexibility
- Sites for recycling logical candidates for interim storage
  - Allows DOE to meet statutory obligation to remove used fuel from operating plants
  - Sustains public, political, industry confidence in used fuel management program
  - DOE grants to 11 volunteer sites for siting studies
- Yucca Mountain still needed long term

New Nuclear Plants Under Consideration

Company	Location (Existing Plant)	Units
Dominion	Louisa County, VA (North Anna)	1
NuStart Energy (TVA)	Jackson County, AL (Bellefonte)	2
NuStart Energy (Entergy)	Claiborne County, MS (Grand Gulf)	1
Entergy	West Felciana Parish, LA (River Bend)	1
Southern Co.	Burke County, GA (Vogtle)	1-2
Progress Energy	Wake County, NC (Harris) & Levy County, FL	2-4
South Carolina Electric & Gas	Fairfield County, SC (V.C. Summer)	1-2
Duke Energy	Cherokee County, SC	2
UniStar Nuclear	Calvert County, MD (Calvert Cliffs)	1-5
Florida Power and Light	Dade County, FL (Turkey Point)	2
NRG/STPNOC	Matagorda County, TX (South Texas Project)	2
Amarillo Power	Carson County, TX	2
TXU	TBD in TX	2-5
Exelon	TBD in TX	2
Alternate Energy Holdings	Owyhee County, ID	TBD
DTE Energy	Monroe County, MI (Fermi)	1
PPL Corporation	Luzerne County, PA (Susquehanna)	1

New NRC Licensing Process
(1992 Energy Policy Act)



* Public Comment Opportunity

Nuclear Plant Construction: "Then and Now"

Then	Now
Changing regulatory standards and requirements	More stable process: NRC approves site and design, single license to build and operate, before construction begins and significant capital is placed at risk
Design as you build	Plant designed before construction begins
No design standardization	Standard NRC-certified designs
Inefficient construction practices	Lessons learned from nuclear construction projects overseas incorporated, and modular construction practices
Multiple opportunities to intervene, cause delay	Opportunities to intervene limited to well-defined points in process, must be based on objective evidence that ITAAC have not been, and will not be, met

Energy Policy Act of 2005: Production Tax Credit

- $18/MWh for first 6,000 MW of new nuclear capacity
- Distributed on a pro rata basis to all plants that:
  - Submit a COL application to the NRC by Dec. 31, 2008
  - Begin construction by Jan. 1, 2014
  - Start commercial operation by Jan. 1, 2021
- Production tax credit
  - Enhances financial attractiveness of project ***after*** it is built and in commercial operation
  - ***Does not*** address financing challenges before and during construction

Energy Policy Act of 2005: Standby Support

- Federal insurance coverage for delays caused by licensing or litigation
- Covers debt service only
- Limitations on coverage reduce value
  - First two $500-million policies: 100% of delay costs, no waiting period for claims
  - Second four $250-million policies: only 50% of delay costs after 6-month delay

Energy Policy Act of 2005: Loan Guarantee Program

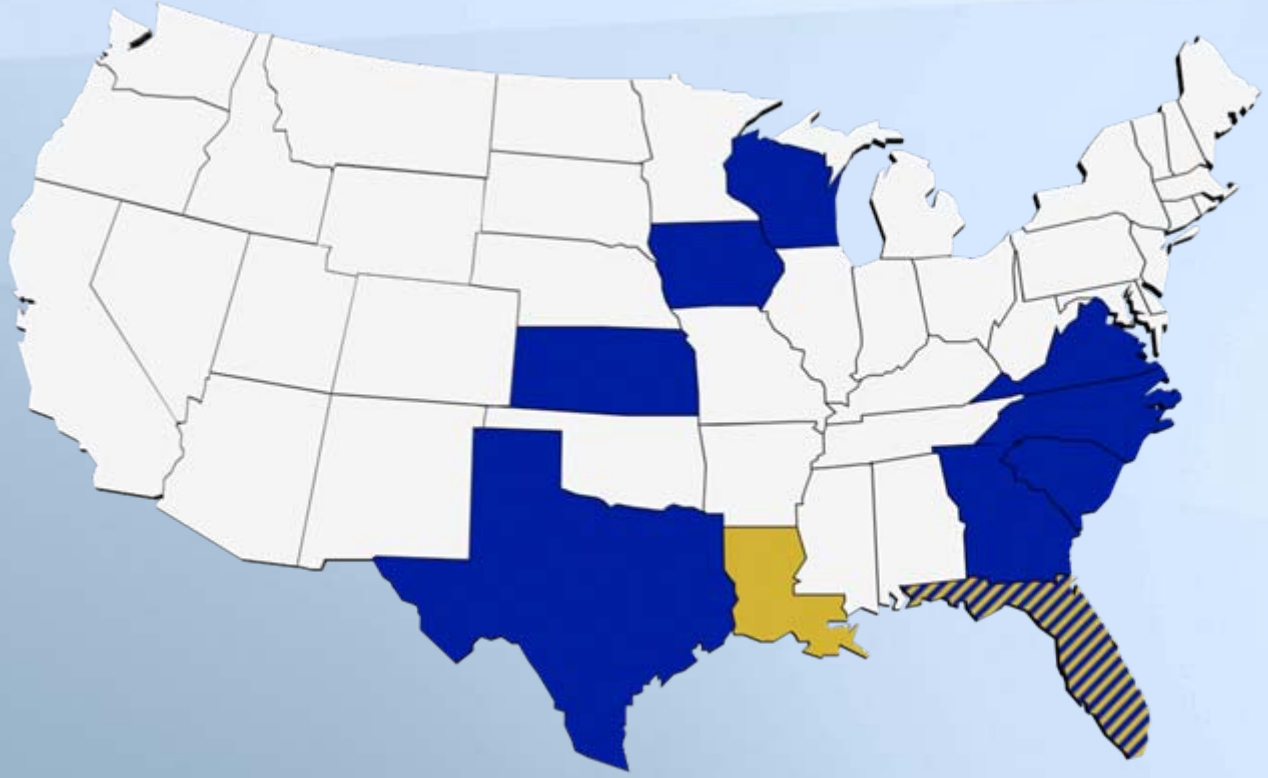
- 2005 Energy Policy Act authorizes loan guarantees up to 80 percent of project cost
- Allows nuclear plant developers to
  - Increase leverage
  - Reduce financing costs
  - Reduce cost of electricity from project
  - Non-recourse to project sponsor's balance sheet
- Loan guarantee program for all new or improved technologies that reduce, avoid or sequester GHG

State Policies Supporting New Nuclear Construction

- Utilities and policymakers realize need for fuel and technology diversity
- Policies being implemented that:
  - Value diverse generation portfolio
  - Limit retroactive reviews of prudence
  - Allow PUCs to approve new plant costs, set future rate increases before construction
  - Allow investment recovery during construction

Financing Support: State Policies

- Legislation in place that helps secure financing
- Legislation under consideration that helps secure financing
- Regulation in place that helps secure financing
- Legislation and regulation in place that help secure financing



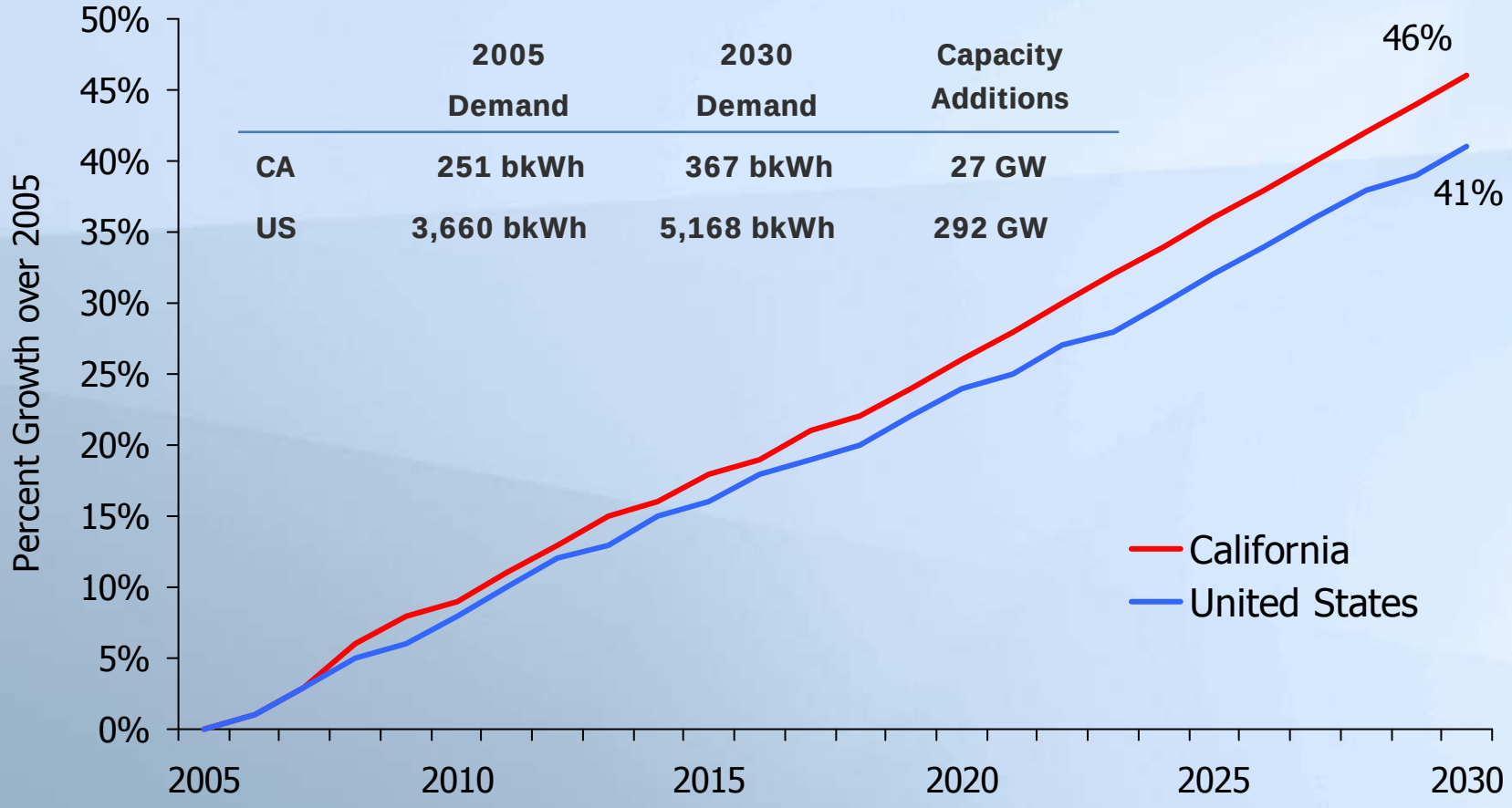
Restart of Browns Ferry Unit 1
May 2007

- Completed on schedule
- $1.8 billion project
- 1,280 MW of capacity
- Virtually every system, component, structure replaced, refurbished, upgraded
- 150 miles of cable, 6.5 miles of pipe
- Over 11.2 million work hours
- 1,200 tests and inspections

Growth in Electricity Demand

California vs. United States

	2005 Demand	2030 Demand	Capacity Additions
CA	251 bkWh	367 bkWh	27 GW
US	3,660 bkWh	5,168 bkWh	292 GW



Source: EIA Annual Energy Outlook 2007

"We Are Going to be Seeing New Plants"

"I am a pragmatist. The vast majority of the members on my committee support nuclear power, and so do the majority in the Senate … I don't think there is any question that we are going to be seeing new plants."

—Sen. Barbara Boxer (D-CA)
Chair, Environment and Public Works Committee
December 17, 2006

"A More Open Mind"

"In the early days of my life in Congress, I was an opponent of nuclear energy because of questions on how to dispose of the waste. Your question is good because the technology has changed, and I bring a more open mind to that subject now because I think we should look at this technology, and compare it to the alternatives. …It has to be on the table."

—House Speaker Nancy Pelosi (D-CA)

February 8, 2006