

The Changing Climate for Nuclear Energy

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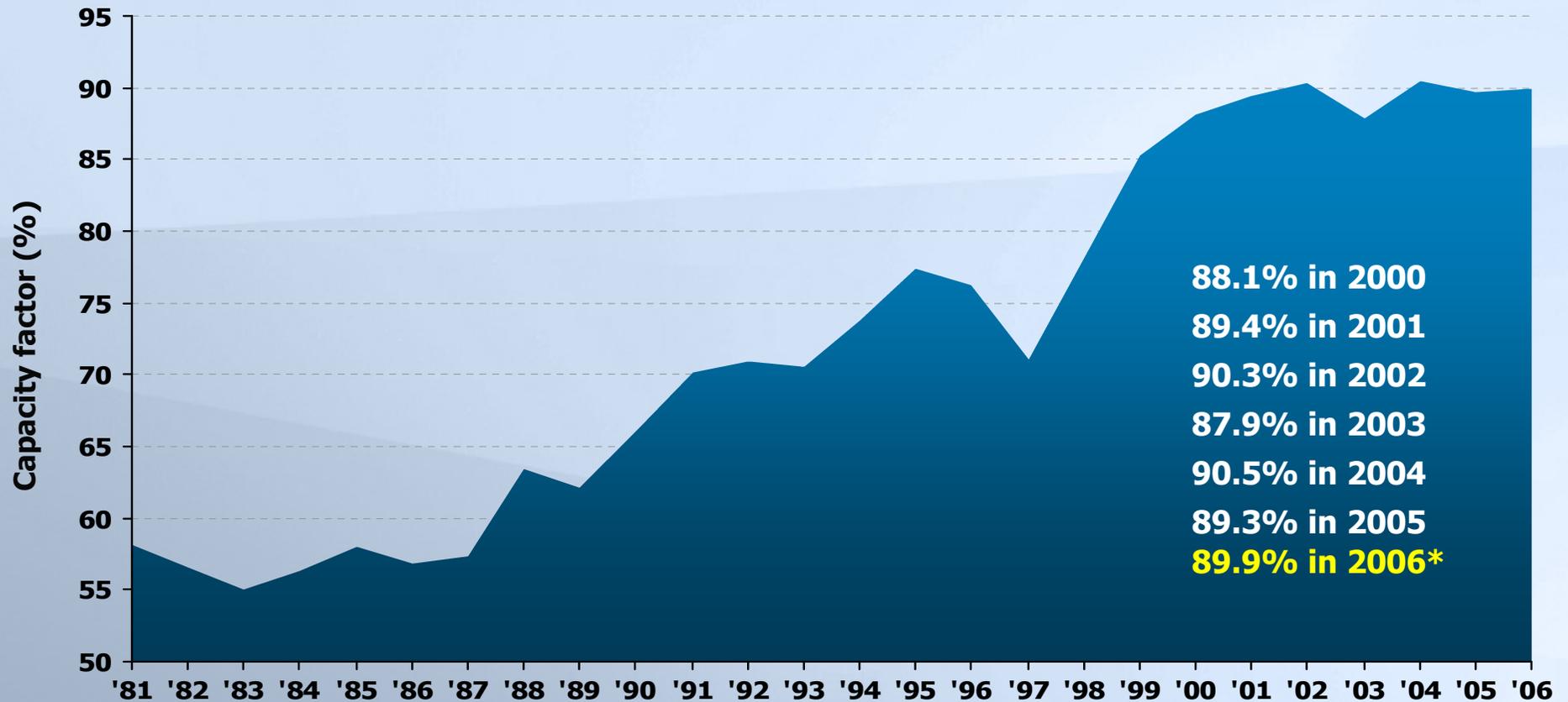
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Today's Discussion

- **2006 operating performance**
- **Opportunities for growth**
- **Regulatory processes**
- **Challenges ahead**

Sustained Reliability and Productivity

U.S. Nuclear Capacity Factor

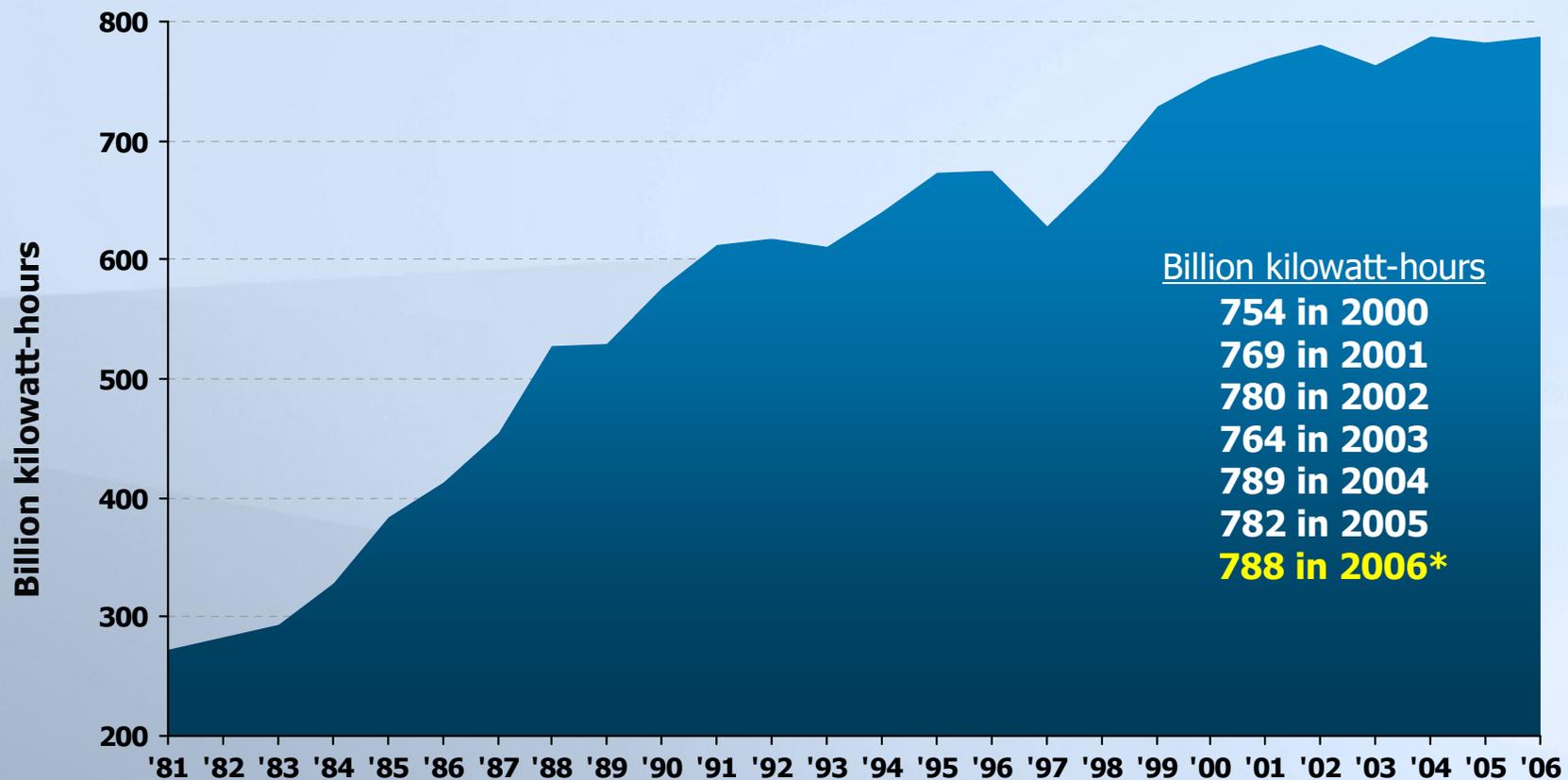


Source: Global Energy Decisions / Energy Information Administration

* NEI estimate for 2006

Output Remains Near Record Levels

U.S. Nuclear Generation



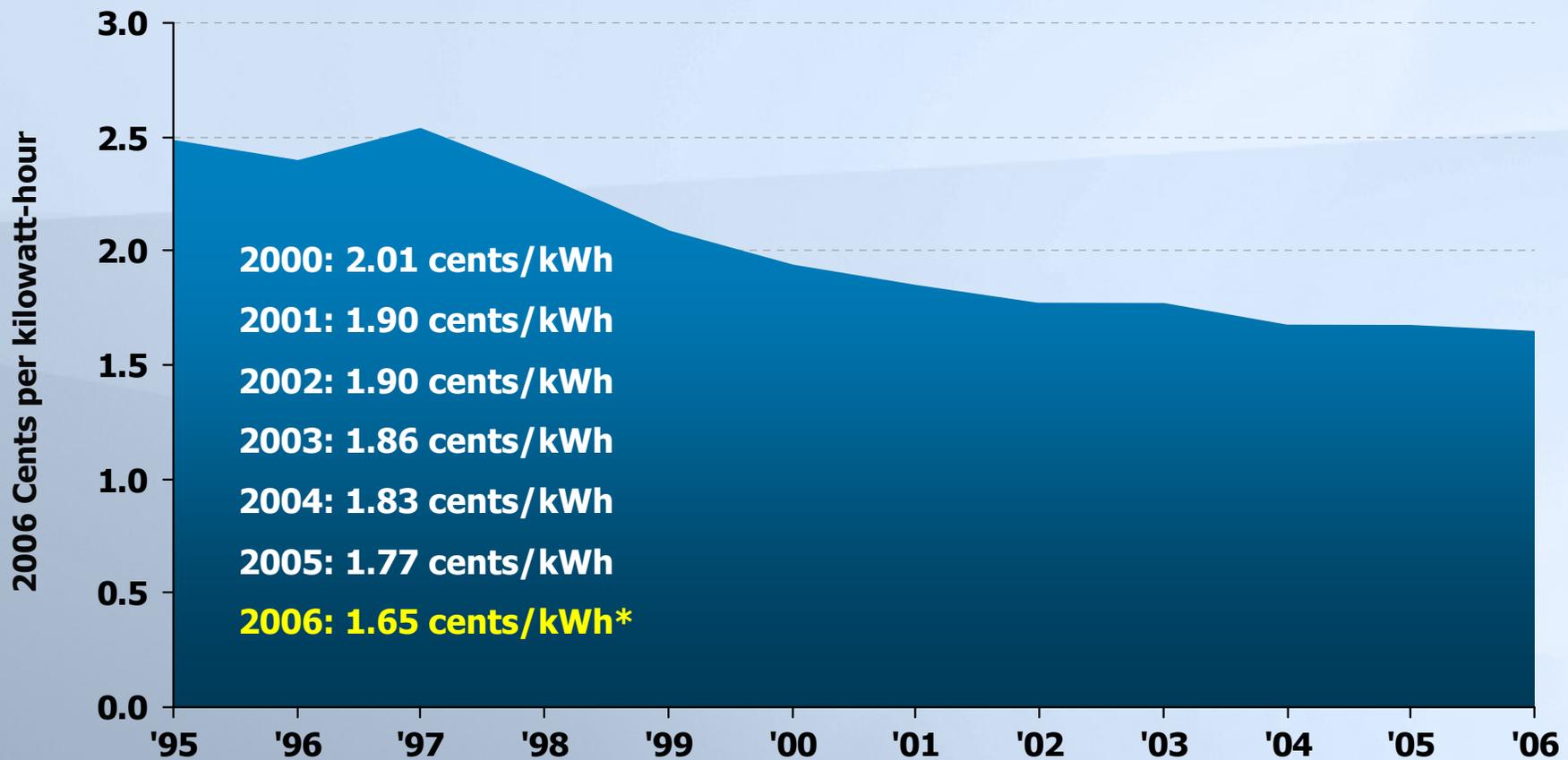
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Solid Economic Performance Continues

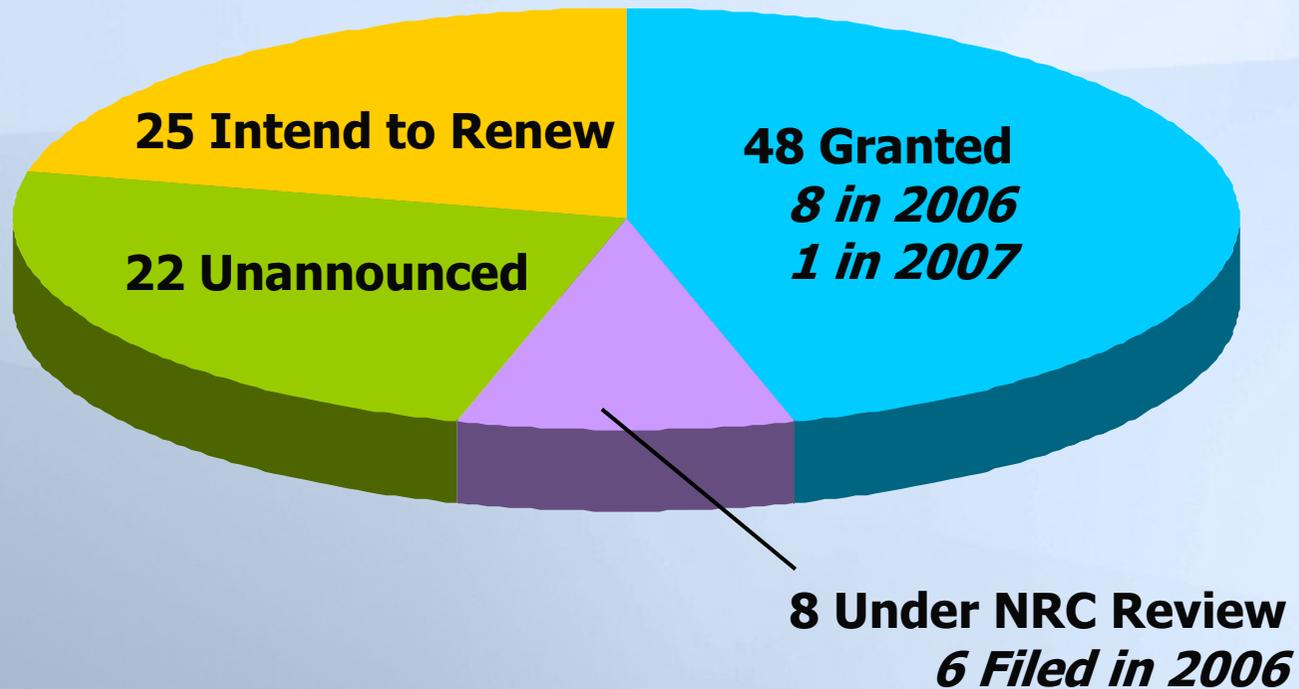
U.S. Nuclear Production Cost



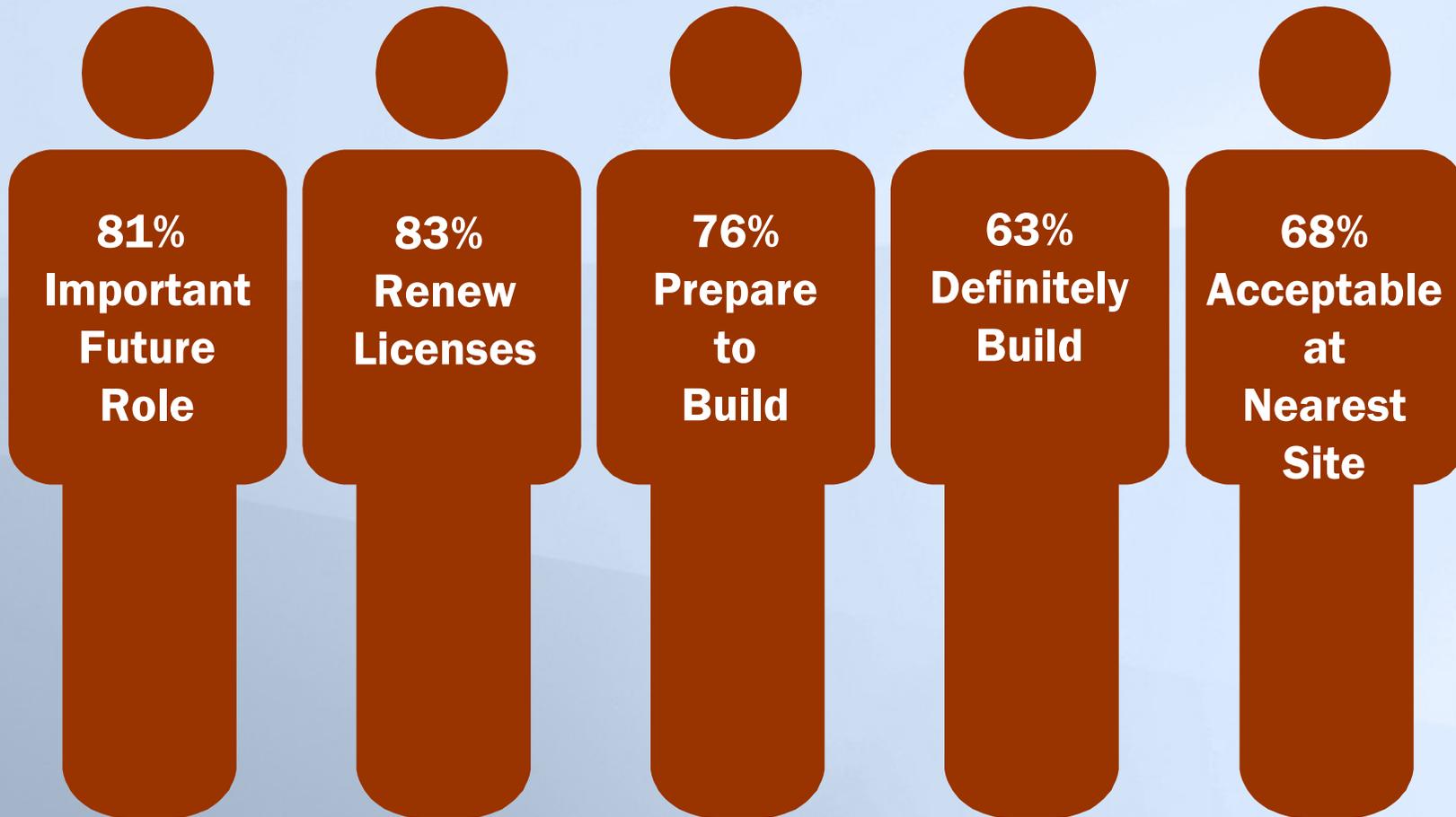
Source: Global Energy Decisions

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Renewal of Operating Licenses Continues



Strong Public Support Continues



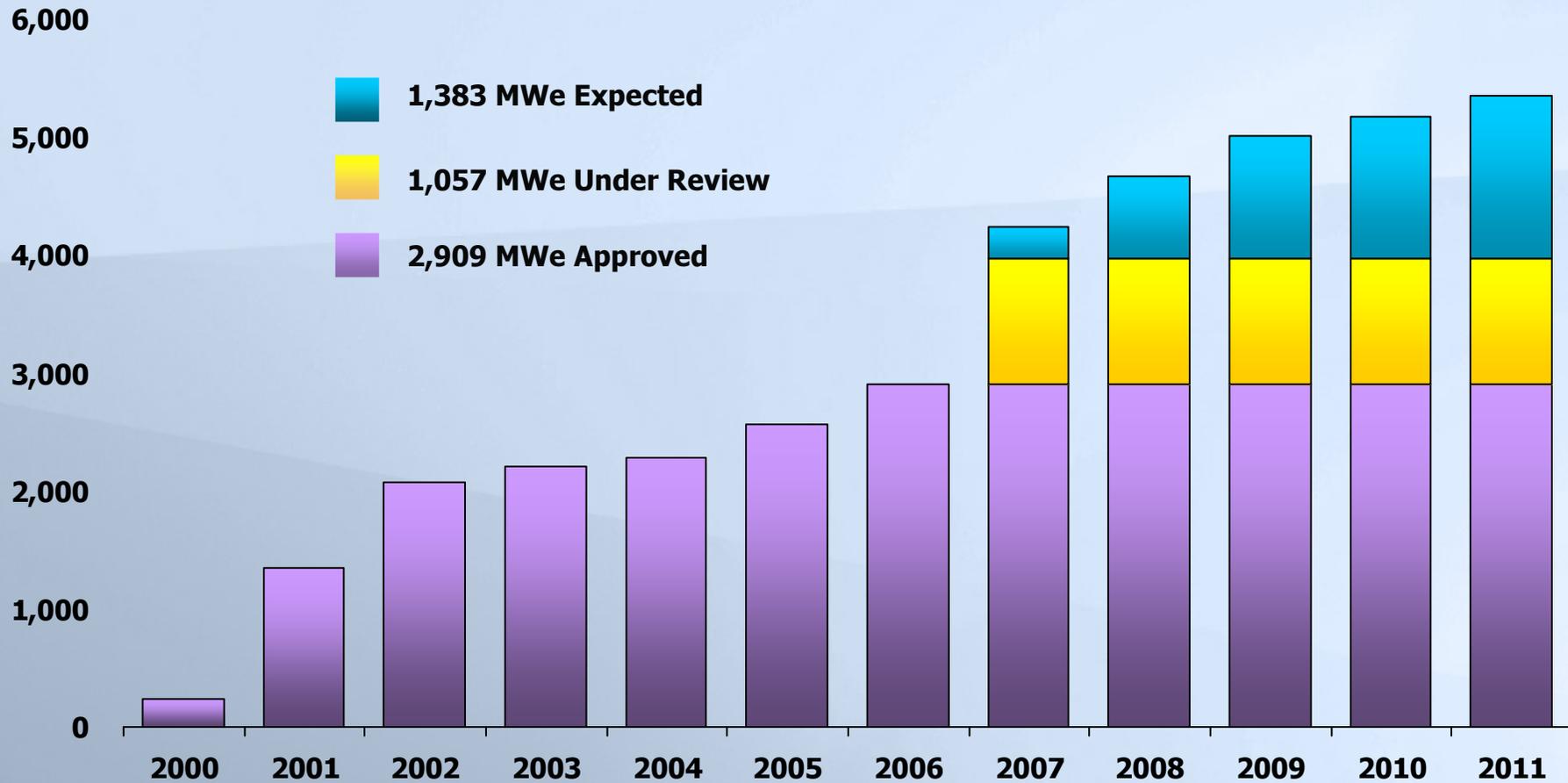
Opportunities for Growth



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U.S. Nuclear Plant Uprates

Cumulative Capacity Additions at Existing Plants 2000-2011



Restart of Browns Ferry Unit 1: Ready to Run

- **May 2007 restarted expected**
- **\$2 billion project**
- **Adds 1,280 MW of capacity**
- **Will bring U.S. nuclear fleet to 104 reactors**



What is Driving Interest in New Nuclear Plants

- **Need for power – baseload generation**
 - Margins are becoming critical
- **Increasing environmental constraints**
- **Volatility in natural gas prices**
- **Increasing recognition & support from public & policymakers**

Energy Policy Act of 2005

- **Production tax credit of \$18/MWh**
- **Federal standby support insurance coverage**
- **Federal loan guarantees of up to 80% of project cost**
- **Helps stimulate investment in new nuclear by providing risk mitigation for individual companies**

Preparing for New Nuclear Plant Construction

- **Major investments in:**
 - **Design and engineering**
 - **Long-lead procurement**
 - **Expansion of worldwide manufacturing capability**
- **Licensing**
 - **3 early site permits in 2007 (Exelon, Dominion, Entergy)**
 - **2 designs certified, 2 more expected**
 - **15 companies, consortia preparing license applications for as many as 33 reactors**

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 Feliciana 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 (Lee)	2
UniStar Nuclear	Calvert County, MD (Calvert Cliffs)	1-5
Florida Power and Light	TBD in FL	1
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

Nuclear Plant Construction: “Then and Now”

Then

Changing regulatory standards and requirements

Design as you build

No design standardization

Inefficient construction practices

Multiple opportunities to intervene, cause delay

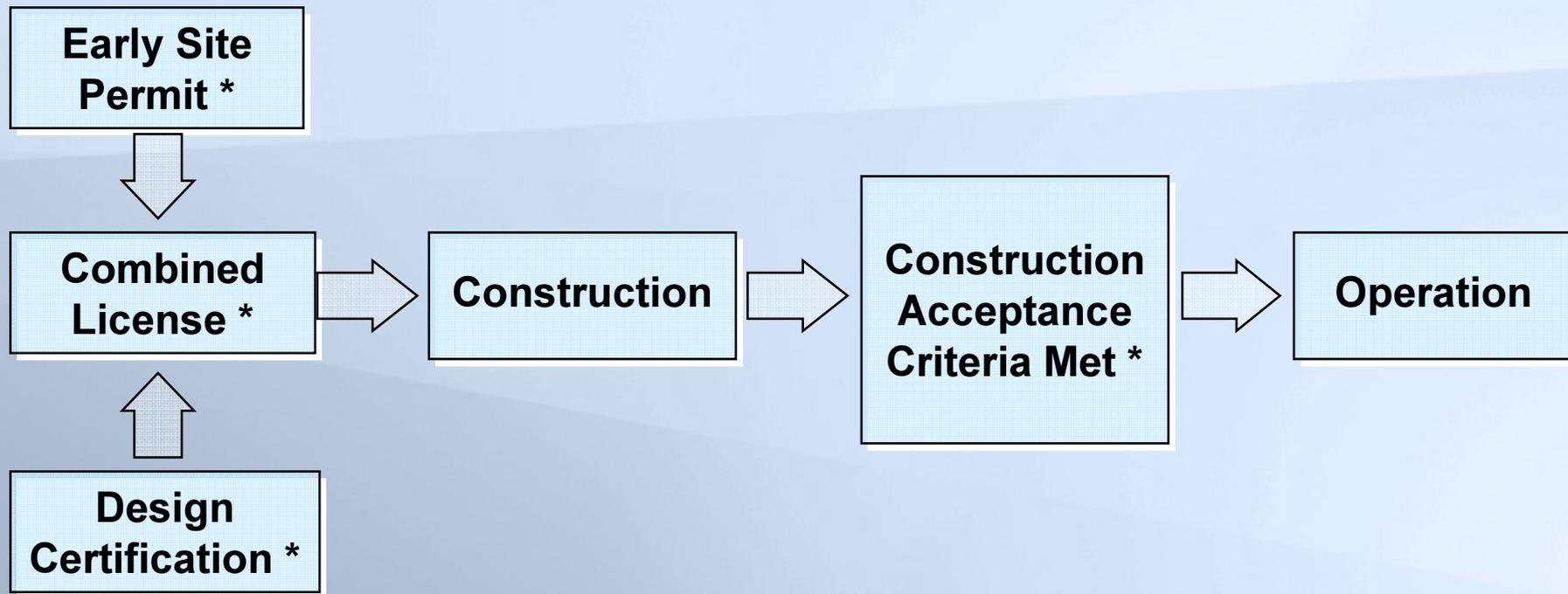
Nuclear Plant Construction: “Then and Now”

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 fully 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

Part 52 Process

- **Resolve safety issues before the start of construction**
- **Increase public involvement**
- **Make more information available to the public at the appropriate time in the process**
- **Add certainty & predictability**
- **Increase public & investor confidence**

New NRC 10 CFR Part 52 Licensing Process



Rulemakings & Regulatory Guidance

- **Uncertainty over regulations and guidance**
 - 4 rulemakings
 - 30 regulatory guidance documents (applicant guidance) being revised in last 6 months
 - 260+ Standard Review Plans (NRC guidance) being updated
- **First COL applications need to begin final quality reviews in August (this year)**

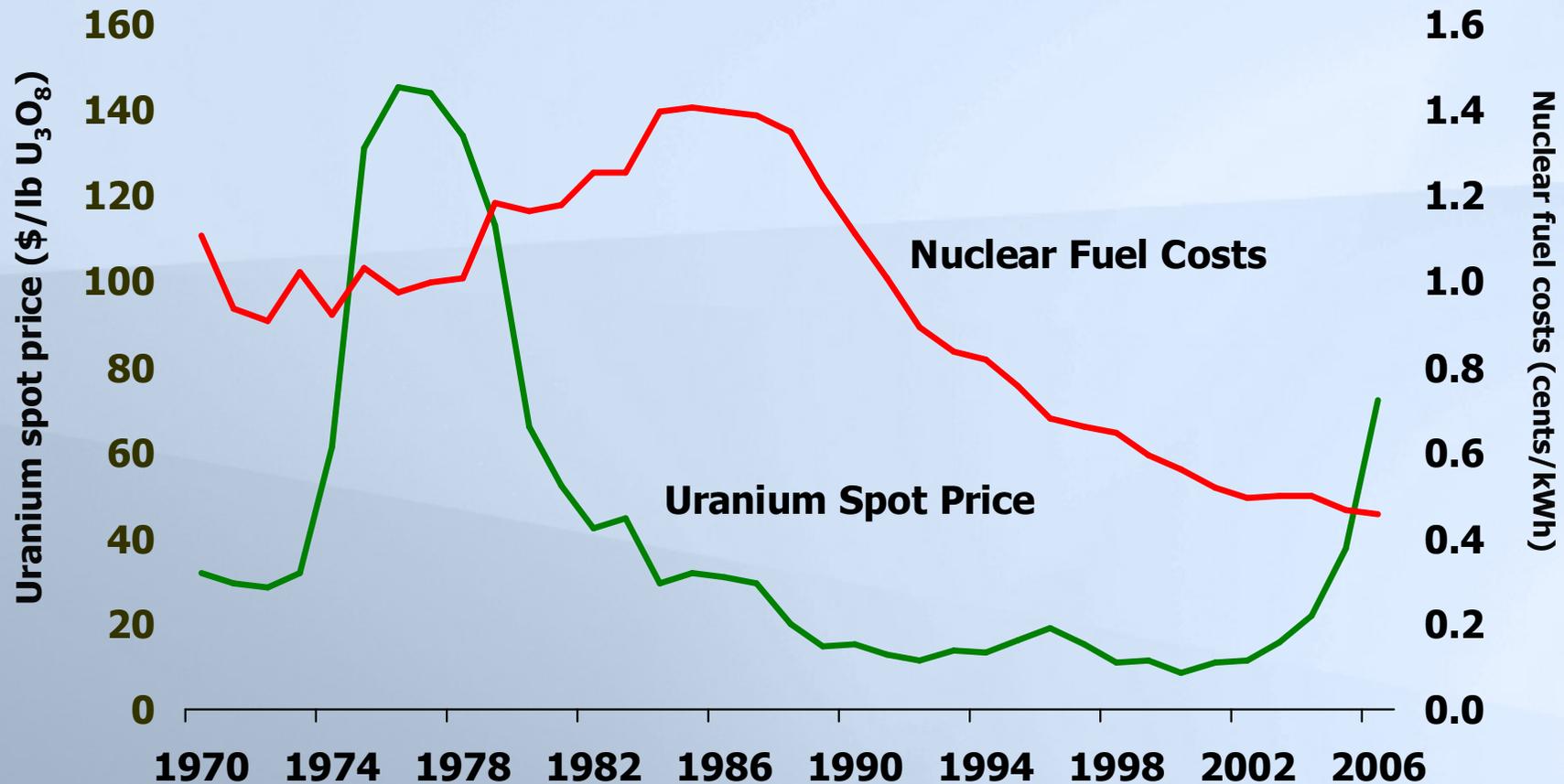
The Challenges Ahead



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Nuclear Fuel Cost Not Directly Related to Uranium Spot Price

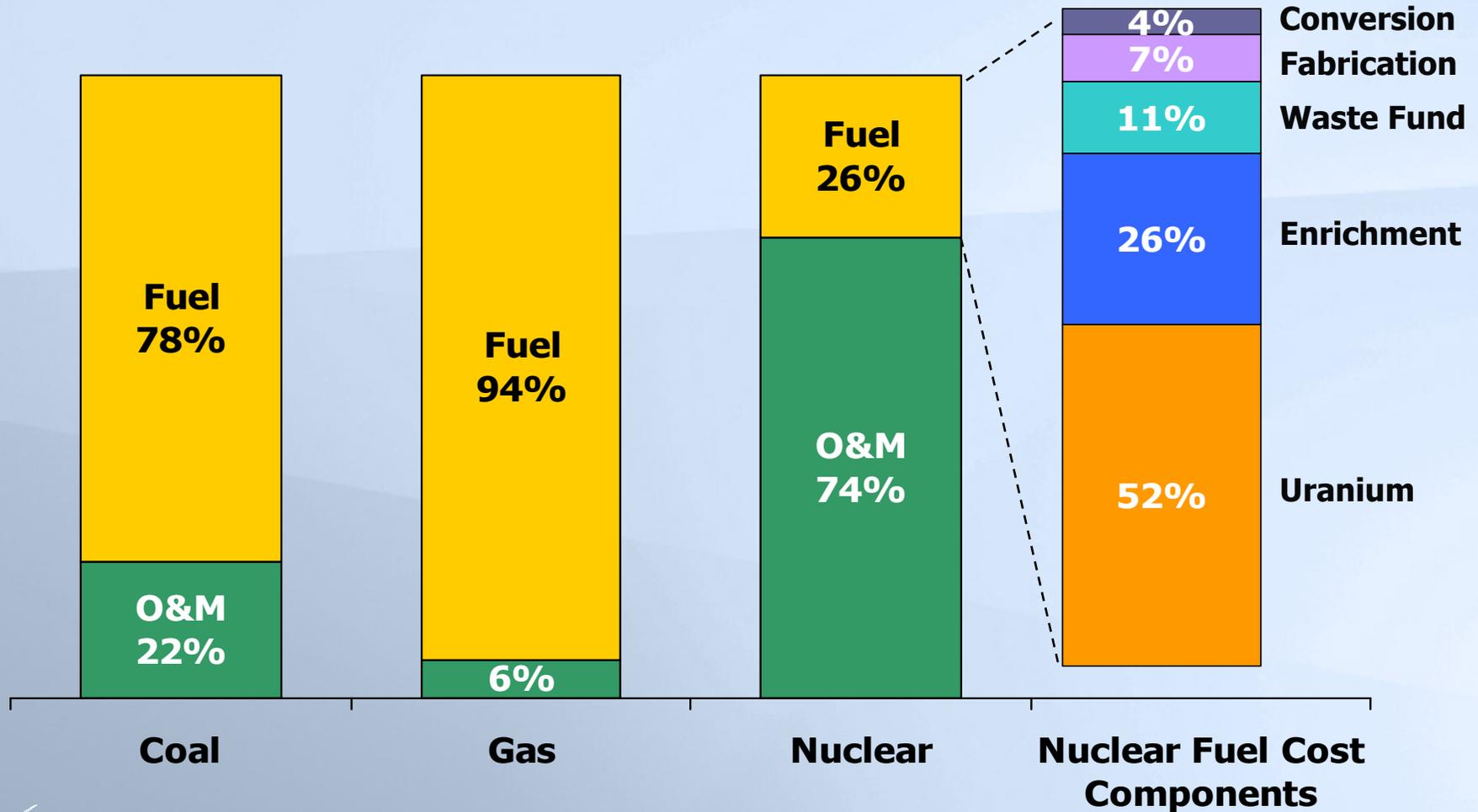
Real values expressed in 2006 dollars



Sources: TradeTech, Utility Data Institute, FERC / Electric Utility Cost Group, Global Energy Decisions

Fuel as a Percentage of Electric Power Production Costs

2005



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



Nuclear Plant



Used Fuel

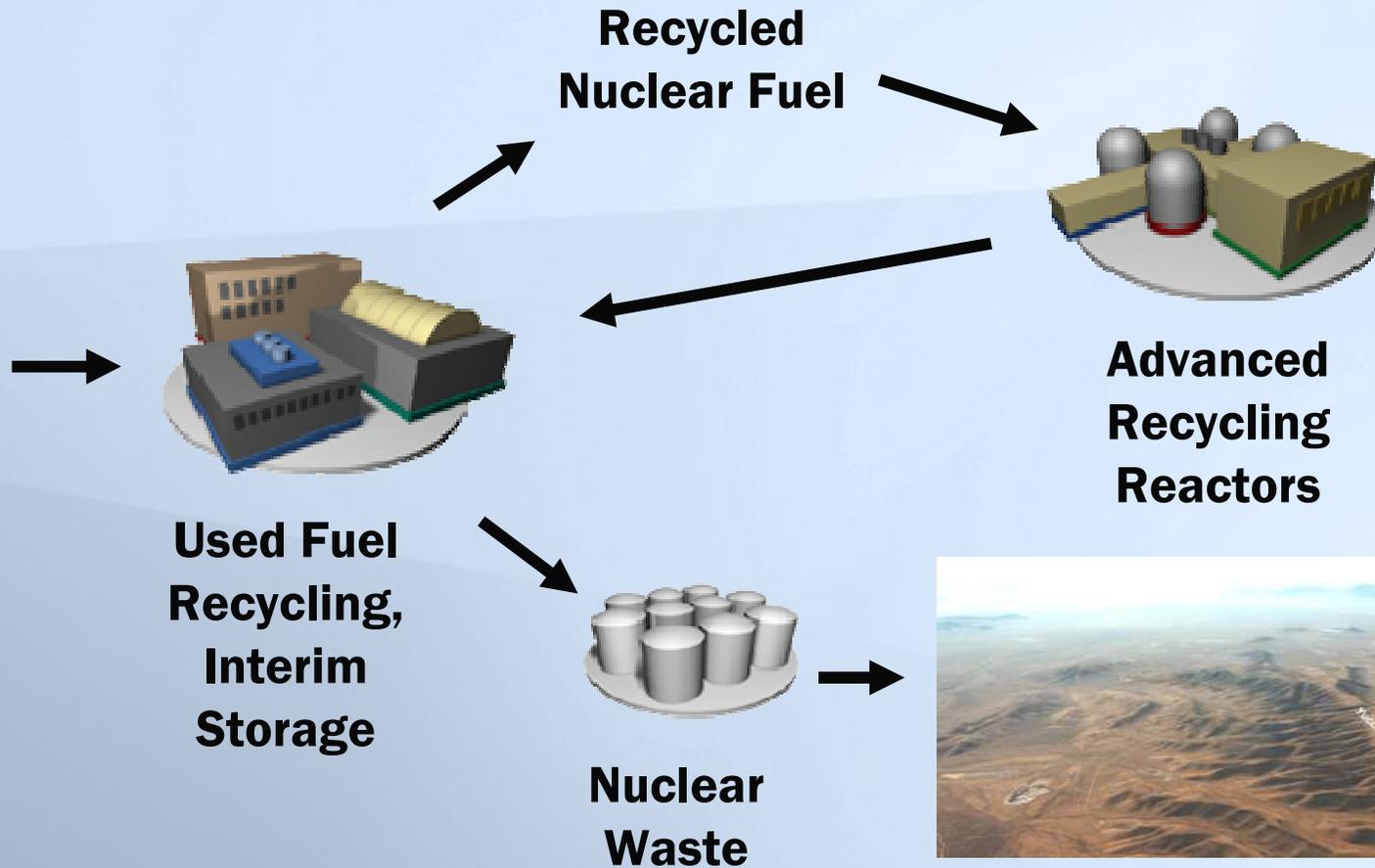


Yucca Mountain

Used Fuel Management: New Strategic Direction



Used Fuel

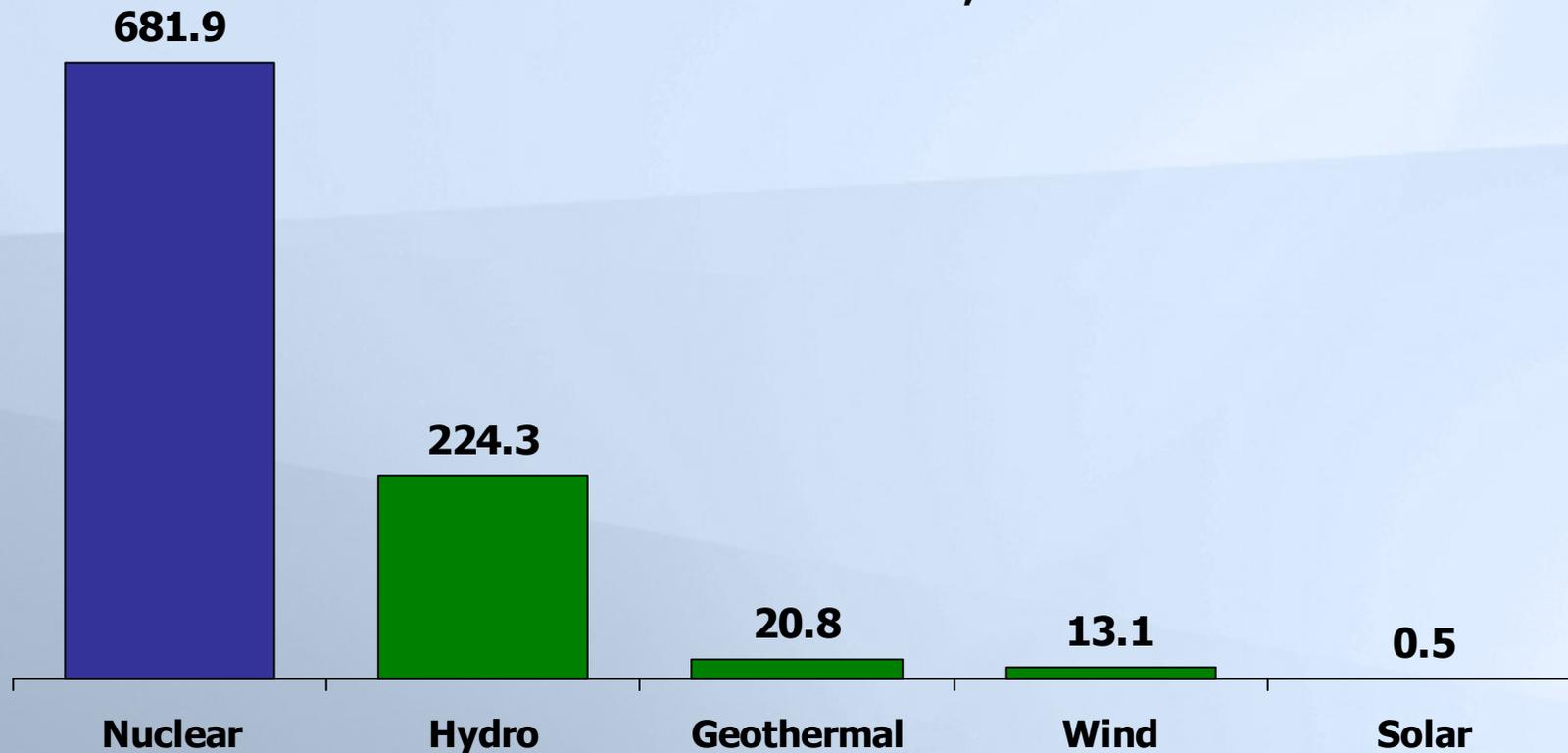


Used Fuel Management: An Integrated, Phased Program

- **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**

U.S. Nuclear Plants Prevent More CO₂ Emissions Than Other Emission-Free Sources Combined

Million Metric Tons, 2005



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.



The Fundamentals Have Not Changed

- **Growing need for baseload generation**
 - **Near-term need for new baseload capacity around the world**
- **Increasing environmental constraints and compliance costs, potential controls on carbon emissions**
- **Chronic volatility in natural gas prices due to unsustainable pressure on natural gas supply**