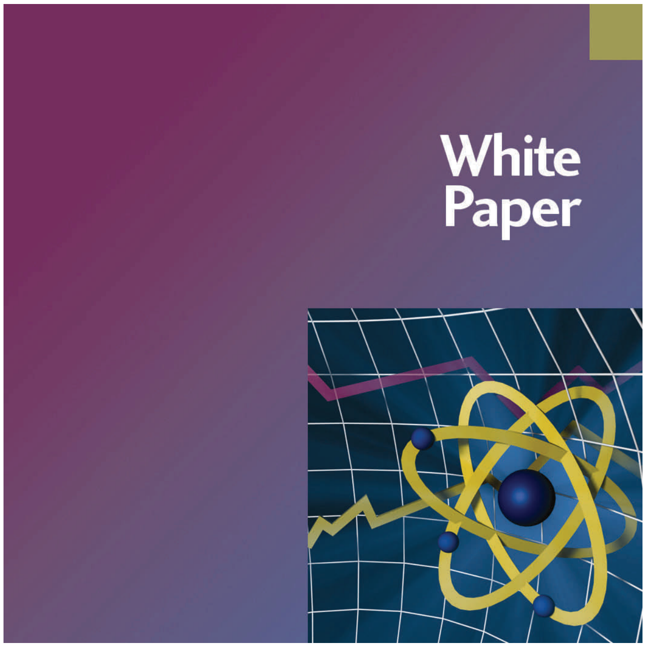

February 2010

The Cost of New Generating Capacity in Perspective

Executive Summary

Like all new generating capacity, there is uncertainty about the capital cost of new nuclear power plants. Estimates range from $4 billion in today's dollars for the engineering, procurement, and construction (EPC) cost of a single plant to $18 billion in 2018 for an entire two-unit project, including transmission lines and other services. This wide variation in costs can be attributed to several factors:

- uncertainty about escalation of commodity prices and wages,
- use of different financial assumptions, including the year in which the costs are projected, and
- estimates frequently include different scope, which can make a dramatic difference in cost estimates (see "Understanding the Cost Components of New Generating Capacity," page 4).

Although new nuclear power plants are capital-intensive, it is important to recognize that capital costs are only the starting point for any analysis of new generating capacity. The only accurate measure of economic competitiveness, and the one that is more important to regulators and consumers, is the cost of electricity produced by a particular project compared to alternative sources of electricity and to the market price of electricity when the power plant starts commercial operation. This generation cost takes into account not only capital and financing costs, but also the operating costs and performance of a project.

Analysis by generating companies, the academic community, government agencies, and others shows that even at capital costs in the $4,000/kWe to $6,000/kWe range, the electricity generated from nuclear power can be competitive with other new sources of baseload power. These results do not include the cost impact of restrictions on carbon dioxide emissions. With regional or national programs that put a significant price on carbon emissions, nuclear power becomes even more competitive.

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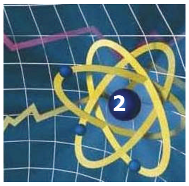

Recent Cost Estimates for New Nuclear Power Plants

Although there is uncertainty about the capital cost of new nuclear generating capacity, filings with state public utility commissions, and negotiations on engineering, procurement and construction (EPC) contracts are beginning to narrow the range. A more accurate picture of these costs is developing.

Florida Power and Light Company (FP&L). In October 2007, FP&L filed a Petition for Determination of Need with the Florida Public Service Commission (PSC) for two new nuclear units at its Turkey Point site. The petition was approved in April 2008. FP&L provided a non-binding estimate for overnight capital costs of between $3,108/kWe and $4,540/kWe (2007 dollars), depending on the cost of materials escalation, owner's scope and cost, and transmission integration required. FP&L based its estimate on an earlier study done by the Tennessee Valley Authority (TVA) for its Bellefonte site, adjusted for site-specific factors and elements not included in the TVA study.

"For eight of the nine scenarios evaluated, the addition of new nuclear capacity is economically superior ..."

These estimates for overnight capital cost result in a range of total project costs for two units between $12.1 billion and $18 billion in "year spent dollars",[1] for two 1,100 MWe reactors. The total project cost includes escalation of 2.5 percent and allowance for funds used during construction (AFUDC) calculated at a rate of 11.04 percent.[2]

In its filing, FP&L also evaluated the comparative economics of two other competing technologies: natural gas combined cycle and coal integrated gasification combined cycle (IGCC). FP&L looked at nine economic scenarios incorporating a range of potential fossil fuel prices and environmental compliance costs. The conclusion:

> "FPL's analysis shows that for all of the scenarios evaluated (eight of nine), the addition of new nuclear capacity is economically superior versus the corresponding addition of new CC [combined cycle] units required to provide the same power output, yielding large direct economic benefits to customers . . . In fact, in the only scenario in which nuclear is not clearly superior, the natural gas prices are significantly lower than they are today and there are zero future economic compliance costs for CO_2 emissions. Of all the scenarios evaluated, FPL believes these two to be the most unlikely. Moreover, even in these two unlikely scenarios, the results of the analysis show nuclear to be competitive or only slightly disadvantaged economically, while retaining the non-quantified advantages of fuel diversity, fuel supply reliability, and energy independence."

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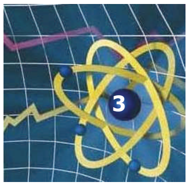
[1] Year spent dollars are escalated to the year in which spending occurs.

[2] AFUDC is the accumulated cost of the borrowed funds used during construction. The AFUDC rate is generally equal to the weighted cost of capital for the project.



Progress Energy Florida filed a Petition for Determination of Need with the Florida PSC in March 2008 for its proposed Levy nuclear power plant. The petition was approved in July 2008. Progress' non-binding overnight cost estimate for its two-unit greenfield site is $4,260/kWe (2007 dollars).[3] This results in a total project cost of $14.1 billion (year spent dollars) for two units, including project escalation of 2.25 percent and projected AFUDC of $3.2 billion.

This initial estimate does not include the cost of transmission system upgrades, which will be necessary to accommodate the new units. Progress currently estimates that these upgrades will cost approximately $2.4 billion, excluding AFUDC.

"When one analyzes the nuclear project over sixty years, and takes into account air emission compliance cost, fuel diversity, and fossil fuel dependence concerns ... nuclear is generally more cost-effective."

Progress compared the proposed nuclear units with other viable generation alternatives. Nuclear, pulverized coal and atmospheric fluidized bed combustion (AFBC) and coal IGCC were evaluated against an all natural gas generation reference case[4]:

> "Nuclear generation technology fared better than AFBC, pulverized coal and coal gasification against the all natural gas reference case in preliminary evaluations. Further, nuclear generation appeared to be the most viable generation alternative to natural gas generation because (1) significant, potential environmental costs were associated with AFBC, pulverized coal and coal gasification resulting from GHG and possible carbon capture or carbon abatement costs, and (2) there were recent regulatory and utility decisions to forego AFBC, pulverized coal and coal gasification generation options in Florida."

Progress also found that, when evaluated over their expected 60-year operating lives, Levy 1 & 2 were more economic than an all-natural gas scenario:

> "When one analyzes the nuclear project over sixty years, and takes into account the air emission compliance cost, fuel diversity, and fossil fuel dependence concerns that the Florida Legislature requires the utility to consider, nuclear is generally more cost-effective than an all natural gas resource plan…"

South Carolina Electric & Gas (SCE&G). In February 2009, the South Carolina PSC approved a Certificate of Environmental Compatibility and Public Convenience and Necessity and for a Base Load Review Order to construct two additional units at the V.C. Summer Nuclear Station. SCE&G and Santee Cooper, a state-owned electric and water utility in South Carolina, are joint owners of the existing V.C. Summer plant, and will share costs and generating output of the two new units. In addition, SCE&G and Santee Cooper have signed an EPC contract with Westinghouse Electric Company and Stone & Webster for the design and construction of the two units.

(Continued on page 5)

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3 Average for two units, based on a summer capacity rating of 2,184 MWe for two Westinghouse AP1000 units.

4 Natural gas generation, based on relative capital costs, experience with the technology and environmental factors, was considered the default supply-side generation alternative to the other viable generation resources.

Understanding the Cost Components
of New Generating Capacity

An accurate analysis of the cost of new generating capacity requires an understanding of precisely what is included in any given set of numbers, particularly when making comparisons between generating technologies. The cost of a new power plant is made up of three major elements:

- capital costs (the cost of the equipment, materials and labor required to build the plant)
- financing costs, and
- operating costs.

The capital and financing costs make up the total project cost. The cost of electricity from a new power plant includes these costs, as well as the cost of operating the facility.

New power plant costs are often referred to as **overnight** costs. Overnight cost literally represents the cost to complete a construction project overnight. It usually includes **engineering-procurement-construction (EPC) costs**[1] and **owner's costs**[2], but is net of financing costs and does not account for inflation or escalation.

Capital cost estimates can be misleading unless it is clear what assumptions stand behind them. They may or may not include contingencies to account for factors such as project complexity, design status, market conditions or first-of-a-kind technologies. They can also represent the cost for more than one unit. These assumptions can account for differences of hundreds of millions of dollars.

The total cost of a power project should include all capital costs, contingencies and financing costs. Financing costs will depend on the rate obtained on the debt, project leverage, and whether the plant is built as part of a regulated entity's rate base or as a merchant plant. Some projects may obtain more favorable financing terms through federal loan guarantees or state policies to recover carrying costs through rates during construction. Total project cost may also include escalation to inflate costs to the value of the year in which the dollars will be spent[3].

The total cost of a power project is also reflected in the cost of electricity produced by the plant or the "busbar" cost. It includes the capital and financing costs for the project as well as the cost of operation, maintenance and fuel once the plant is producing power. It also includes the return on equity investment in the project.

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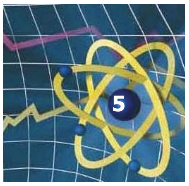
[1] EPC costs include the cost of engineering, materials and labor for the construction of the power plant.
[2] Owner's costs include other infrastructure – transmission upgrades, cooling towers, water intake and treatment systems, administrative buildings, warehouses, roads, switchyards, as well as project management and development costs, permitting, taxes, legal, staffing and training.
[3] Costs expressed in 2015 dollars will be greater than the same costs expressed in 2007 dollars because of the time value of money.



Nuclear Cost Estimates from Recent Public Utility Commission Filings			
Company	**Plant Capacity (MWe)**	**Overnight Capital Cost ($/kWe)**	**Total Project Cost (Billion $)**
FP&L	2,200 – 3,040	3,108 – 4,540	12.1 – 24.3
Progress	2,200	4,260	14.0
SCE&G/Santee Cooper	2,200	4,122	11.5*

** Estimate based on SCE&G's 55 percent share of total project cost*

In a September 2009 update, SCE&G estimates its portion of the total project cost (55 percent) for the two units at $6.3 billion. This includes project escalation[5] and AFUDC of $280 million, calculated at a rate of 8.08 percent. Assuming Santee Cooper's portion of total project cost is roughly proportional, the total for the two units is estimated at $11.5 billion (year spent dollars).

Since SCE&G has executed an EPC contract, its application offers some insight into a company's options for hedging against the risk of escalation in materials costs:

> "More than fifty percent (50%) of the total EPC contract cost is subject to Firm/Fixed pricing. An additional percentage of the contract cost projection may be converted to Fixed/Firm in future months upon acceptance by SCE&G of Fixed/Firm quotes from Westinghouse/Stone & Webster."

EPC scope is divided into one of three categories: fixed, firm and "actual costs." Under SCE&G's contract, cost elements subject to fixed pricing have no associated escalation rates, while firm elements are subject to definite established escalation rates. For example, one class of costs, called "Firm with Indexed Escalation," will be priced subject to the Handy-Whitman All Steam Generation Plant Index, South Atlantic Region.[6] This type of pricing offers some certainty as to what the actual cost for those elements will be. As a result, SCE&G applies a relatively low risk contingency[7] of 5 percent to these cost elements.

Cost elements such as craft wages, non-labor costs, time and materials, owners' costs and transmission costs will be paid at "actual costs" – meaning SCE&G will be exposed to real escalation associated with those costs. For planning purposes, SCE&G uses the Handy-Whitman index to estimate these costs, but there is significantly less certainty that estimates will reflect actual costs. Thus for craft wages, SCE&G assumes a "high risk" and assigns a 20 percent cost contingency. Non-labor costs, time and materials, owners' costs and transmission are all "moderate-high risk" and are assigned a 15 percent contingency.

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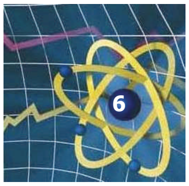
5 SCE&G's project cost escalation rate is confidential.

6 A common escalation index for power plant materials and labor.

7 Project contingency accounts for unexpected cost increases and is usually expressed as a percentage of the cost. Elements such as project complexity, design status, and market conditions all factor into the contingency.



Although it had the highest capital cost, the new nuclear capacity produced the lowest-cost electricity, except for gas-fired combined cycle capacity without carbon capture and storage.

Like FP&L and Progress, SCE&G analyzed a number of strategies for meeting South Carolina's electricity needs. The analysis compared a nuclear, natural gas, and coal strategy,[8] and examined various environmental compliance and fuel prices. In all cases, SCE&G found nuclear to be the most competitive option over the long run:

> "… It can be seen that the gas strategy would cost SCE&G's customers $15.1 million per year more than the nuclear strategy if CO_2 costs $15 per ton in 2012 and escalates at 7% per year. With CO_2 at $30 per ton, the cost advantage of nuclear would be $125.2 million per year. A higher natural gas price with CO_2 at $15 per ton shows a nuclear cost advantage of $68.5 million per year."

Even in scenarios with assumptions that are unfavorable to nuclear energy, nuclear is considered the optimal strategy:

> "…if uranium fuel prices follow a high track, the nuclear strategy still has a positive advantage over the gas strategy by $13.2 million per year but if natural gas prices follow a low track, then the gas strategy has the advantage over nuclear by $44.9 million per year. Additionally, if there is no legislation imposing additional costs on CO_2 emissions, the gas strategy has an $86.5 million advantage over nuclear. However while higher uranium prices are possible, they are not expected. In addition, it does not seem reasonable at this point to expect low gas prices or no CO_2 legislation."

Independent Analyses of Cost of New Generating Capacity

Several academic institutions, research organizations and government agencies have conducted analyses of the cost of electricity from various generating options. Although the findings, expressed in dollars per megawatt-hour, may differ from analysis to analysis (a product of differing assumptions), all these analyses point in the same direction: new nuclear plants will be competitive with other options when they are placed in service and are likely to be comfortably competitive in a carbon-constrained world.

Connecticut Integrated Resource Plan (IRP). In January 2008, the Brattle Group, under contract to Connecticut Light and Power and United Illuminating, published an IRP for the state of Connecticut. The IRP assumed an overnight capital cost for new nuclear of $4,038/kWe (2008 dollars). The resource plan also assumed $2,214/kW for supercritical coal, $4,037/kW for supercritical coal with carbon capture and storage (CCS), $2,567/kW for IGCC, $3,387/kW for IGCC with CCS, $869/kW for combined cycle gas, and $1,558/kW for combined cycle gas with CCS.

In the base case, new nuclear capacity produced a levelized cost of $83.40/megawatt-hour. Supercritical coal was at $86.50/MWh; supercritical coal with CCS at $141.90/MWh; IGCC at $92.20/MWh; IGCC with CCS at $124.50.MWh; gas combined-cycle (CC) at $76.00/MWh; and gas CC with CCS at 103.10/MWh. Although it had the highest capital cost, the new nuclear capacity produced the

[8] Both the nuclear and the coal strategies include gas capacity in the form of combustion turbine peaking units.

Brattle Group Analysis of Generating Costs							
	Nuclear	**SCPC**	**SCPC w/CCS**	**IGCC**	**IGCC w/CCS**	**Gas CC**	**Gas CC w/CCS**
Capital Cost ($/kWe)	4,038	2,214	4,037	2,567	3,387	869	1,558
Levelized Cost ($/MWh)	83.40	86.50	141.90	92.20	124.50	76	103.10

SCPC = supercritical pulverized coal; CCS = carbon capture and storage; IGCC = integrated gasification combined cycle; CC = combined cycle

lowest-cost electricity, except for gas-fired CC capacity without CCS.[9] The Brattle Group ran four additional scenarios reflecting different fuel costs, CO_2 prices, and technology costs with similar results: new nuclear capacity produced the lowest-cost electricity except for combined-cycle gas without CCS.

Connecticut is a member of the Regional Greenhouse Gas Initiative (RGGI), so all four scenarios (including the base case) assumed controls on carbon. Given the state's high dependence on natural gas for power generation, the Brattle Group suggested that "state regulatory authorities should consider allowing contractual or ownership arrangements or other policy options to enable or encourage investment in such [nuclear] baseload capacity."

Congressional Budget Office (CBO). In May 2008 CBO published "Nuclear Power's Role in Generating Electricity," a report assessing the competitiveness of nuclear power compared with other sources of new capacity to generate electricity. The report focused primarily on the possible effects of constraints on carbon dioxide emissions and the impact of the incentives included in the Energy Policy Act of 2005 (EPAct).[10] In its reference scenario, CBO assumed overnight capital costs of $2,358/kWe for nuclear; $1,499/kWe for conventional coal; $685/kWe for conventional natural gas; $2,471/kWe for innovative coal (w/CCS); and $1,388/kWe for innovative natural gas (w/CCS).

CBO compared the technologies on a levelized cost basis and found that excluding carbon dioxide legislation and EPAct incentives, new nuclear capacity is cheaper than innovative coal and natural gas but is more expensive than conventional fossil capacity. However, it found that carbon dioxide constraints would have a significant impact on nuclear energy's competitiveness:

> "In the absence of both emissions charges and EPAct incentives, conventional fossil-fuel technology would dominate nuclear tech-

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[9] The average gas price in the base case scenario is $7.14/mmBtu (2008 dollars).

[10] EPAct incentives include Nuclear Power 2010, FutureGen, loan guarantees for innovative low-emitting technologies, nuclear delay insurance, the investment tax credit for innovative coal, the production tax credit for nuclear, renewal of the Price-Anderson liability program, and preferential tax treatment for nuclear decommissioning funds.

> nology. But, even without EPAct incentives, if lawmakers enacted legislation that resulted in a carbon dioxide charge of $45 per metric ton nuclear generation would most likely become a more attractive investment for new capacity than conventional fossil-fuel generation. If the cost of emitting carbon dioxide was between $20 and $45 per metric ton, nuclear generation as an option for new capacity would probably be preferred over coal but not natural gas."

CBO also found that new nuclear capacity could be competitive at even lower carbon dioxide charges if the price of natural gas rose above the price assumed in the reference scenario ($6.26/mmBtu) or if the construction cost reductions predicted by the reactor designers were accurate. CBO found that in a high gas price environment of $12/mmBtu, natural gas would no longer be competitive with new nuclear:

> "At the highest prices for natural gas considered in CBO's analysis of market and policy uncertainties, utilities would be extremely unlikely to prefer natural gas to either existing coal plants or new nuclear plants."

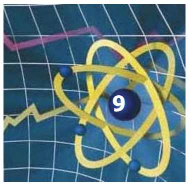
Massachusetts Institute of Technology (MIT). The MIT Center for Energy and Environmental Policy Research issued a report in 2003 ("The Future of Nuclear Power"), which explored the challenges to nuclear energy expansion and options to overcome them. The study was based on the premise that nuclear energy is an important technology for the U.S. and the world to meet future energy needs while addressing environmental concerns associated with carbon dioxide emissions.

In 2009, MIT updated that report and the economic analysis in the original study, including new information from utility cost estimates for actual projects that was not available in 2003. The update compares the levelized cost of electricity from new nuclear plants to the coal-fired and gas-fired plants used in baseload generation of electricity. The study (see table, page 8) shows that nuclear energy is cost-competitive at 6.6¢/kWh (vs. 6.2¢/kWh for coal and 6.5¢/kWh for gas) if the technology risk premium is removed from the financing assumptions (i.e., when the first few plants have been built and investors are confident that they can be built to cost and schedule). The study also shows that nuclear plants become increasingly competitive as the price of carbon increases. The example provided in the

Levelized Cost of Baseload Electricity

Technology	Nuclear with risk premium	Nuclear w/o risk premium	Coal	Gas
Capital Cost ($2007/kW)	4,000	4,000	2,300	850
Fuel ($2007/mmBtu)	0.67	0.67	2.60	7.00
Weighted average cost of capital (WAAC)	10%	7.8%	7.8%	7.8%
Levelized Cost (¢/kWe)	8.4	6.6	6.2	6.5
Levelized Cost (¢/kWe) with $25/t$CO_2$			8.3	7.5

Source: Massachusetts Institute of Technology, "Update on the Cost of Nuclear Power," May 2009



report showed that a $25/ton carbon tax would increase the price of coal-fired generation to 8.3¢/kWh and gas-fired generation to 7.5¢/kWh (nuclear remains at 6.6¢/kWh).

Energy Information Administration (EIA). The Energy Information Administration (the independent statistical arm of the U.S. Department of Energy) publishes an annual forecast called the Annual Energy Outlook (AEO), which includes estimates of the capital cost of all generating technologies and their likely market penetration out to 2030. AEO 2009 provides the expected average national levelized cost of electricity from various generating technologies in 2016 (see table below). This data comes from the reference case of AEO 2009, prepared using the National Energy Modeling System (NEMS).

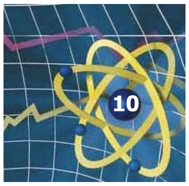
"The EIA results indicate that nuclear energy is the least-cost technology that does not emit greenhouse gases."

The values shown in the EIA analysis do not include financial incentives such as state or federal tax credits. A 3-percentage point increase in the cost of capital is included for technologies that are greenhouse gas intensive (coal-fired and coal-to-liquids plants without CCS). This adjustment is similar to a $15 per ton carbon tax. Additional system investments such as transmission are included, but the cost of back-up power for intermittent resources such as wind and solar is not included in this analysis. The EIA results indicate that nuclear energy is the least-cost technology that does not emit greenhouse gases.

U.S. Average Levelized Costs (2007 $/MWh) for Plants Entering Service in 2016

Plant Type	Total System Levelized Cost
Conventional Coal	94.6
Advanced Coal with CCS	122.6
Natural Gas-fired	
Conventional Combined Cycle	83.9
Advanced CC with CCS	115.7
Advanced Nuclear	107.3
Wind	141.5
Wind – Offshore	229.6
Solar PV	395.7
Solar Thermal	263.7
Geothermal	111.5
Biomass	107.4
Hydro	114.1

Source: Energy Information Administration, Annual Energy Outlook 2009, April 2009, SR-OIAF/2009-03

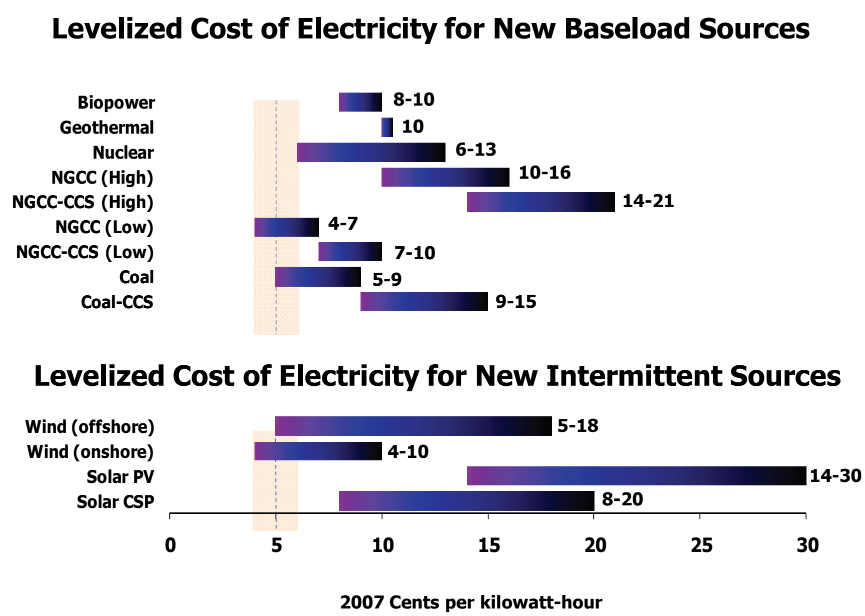


"A failure to demonstrate the viability of these technologies during the next decade would greatly restrict options to reduce . . . emissions."

National Research Council – America's Energy Future Project. The National Research Council (NRC), an arm of the National Academy of Sciences and the National Academy of Engineering, has a Committee on America's Energy Future, which published a draft report in 2009 titled, "America's Energy Future: Technology and Transformation." The project started in 2007 in anticipation of legislative interest in energy policy in the U.S. Congress given the pressing demands of energy security, global climate change, recent volatility in energy prices, and necessary future investment in the U.S. energy infrastructure. The National Research Council study evaluates contributions and estimated costs of existing and new energy technologies.

The report concludes that it is imperative to demonstrate the commercial viability of new nuclear power plants through the construction of a suite of about five plants by 2020, in addition to the demonstration of CCS technologies for coal and natural gas through construction of 15-20 retrofitted and new demonstration plants. According to the report, evaluating the viability of these technologies as soon as possible will help preserve the portfolio approach necessary to address greenhouse gas reductions:

> "A failure to demonstrate the viability of these technologies during the next decade would greatly restrict options to reduce the electricity sector's CO_2 emissions over succeeding decades. The urgency of getting started on these demonstrations cannot be overstated."



Source: National Research Council of the National Academies, *America's Energy Future: Technology and Transformation*

The report modeled levelized costs of electricity for several different technologies. The cost ranges shown in the chart (left) can be attributed to many factors, including different assumptions about financing, capital costs, capacity factor, fuel costs, and others. For nuclear energy the range is from 6¢/kWh to 13¢/kWh. The low end of the range corresponds to plants that secure low-cost financing through the DOE's loan guarantee program. As indicated in the report, natural gas could be the lowest- or the highest-cost option, depending on the price of the fuel, with a cost range from 4¢/kWh to 16¢/kWh (and up to 21¢/kWh if gas prices are high and CCS technology is added). When compared with other non-emitting technologies, the analysis shows that nuclear plants can be competitive:

> "These levelized costs are higher than the current average cost of whole-sale electricity [shown as a shaded bar in the chart on page 10], but they are likely to be comparable to future costs of electricity from other sources, particularly if fossil fuel plants are required to store CO_2 or pay a carbon fee."

Putting Nuclear Cost Estimates in Perspective

Although nuclear project costs are undeniably large, total project cost does not measure a project's economic viability. The relevant metric is the cost of the electricity produced by the nuclear project relative to alternative sources of electricity and relative to the market price of electricity at the time the nuclear plant comes into service. As illustrated by the detailed financial modeling cited above, new nuclear power plants can be competitive, even with total project costs exceeding $6,000/kWe, including EPC and owners' costs and financing costs.

Although nuclear project costs are undeniably large, total project cost does not measure a project's economic viability. The relevant metric is the cost of the electricity produced by the nuclear project relative to alternative sources of electricity and relative to the market price of electricity at the time the nuclear plant comes into service.

These findings are confirmed by results from the Nuclear Energy Institute (NEI) financial model[11] (see Table 1, page 13). NEI's modeling shows that a merchant nuclear plant with an 80 percent debt/20 percent equity capital structure, supported by a federal loan guarantee, will produce electricity in the range of $75/MWh to $81/MWh. (The range reflects EPC costs from $4,000/kWe to $4,500/kWe.) A low-cost ($4,000/kWe EPC cost) nuclear plant producing electricity at $75/MWh is competitive with a gas-fired combined-cycle plant burning $7/mmBtu gas or a supercritical pulverized coal (SCPC) plant.

The results above assume no restrictions on carbon dioxide emissions. If a carbon price of $30/ton is incorporated, nuclear power becomes even more competitive. Generation from natural gas increases by around $18/MWh, while the cost of electricity from IGCC and SCPC increases by roughly $25/MWh.

NEI's modeling shows that, in the absence of a significant price for carbon, loan guarantees are an important tool to reduce the cost of electricity produced by merchant nuclear plants; construction work in progress (CWIP)[12] has a similar benefit for regulated companies. With this support as a transition to a carbon-constrained world, the next nuclear plants should be competitive and economically viable.

■

[11] The NEI Financial Model is a detailed financial pro-forma model used to estimate total project, first year and levelized busbar costs for new generating capacity built in either utility-regulated rate base or private sector project finance environments. The model was constructed and tested by NEI staff in consultation with financial, utility, and other industry experts.

[12] CWIP is a ratemaking technique under which a company can recover financing costs during construction.

Table 1. Cost of Electricity from Various Generating Technologies[1]

Technology	Nuclear		Coal (SCPC)	Coal (IGCC)		Gas (Combined Cycle)		
Project Structure	Project Finance with Loan Guarantee 80% Debt 20% Equity	Rate Base with CWIP[2] 50% Debt 50% Equity	Rate Base with CWIP 50% Debt 50% Equity	Project Finance with Loan Guarantee 80% Debt 20% Equity	Rate Base with CWIP 50% Debt 50% Equity	Project Finance 50% Debt 50% Equity		
EPC Cost ($/kWe)	$4,000 - 4,500		$2,250	$3,700		$1,000		
Total Cost[3] ($/kWe)	$5,500-$6,100	$4,800-$5,400	$2,400	$4,700	$4,100	$1,200	$1,200	$1,200
Fuel Cost (nuclear - $/MWh) (coal/gas - $/mmBtu)	$7.50		$2.00	$2.00		$4.00	$7.00	$10.00
Capacity (MWe)	1,400		800	600		400		
First Year Busbar (2009 $/MWh)	**$75 - 81**	**$106 - $116**	**$74**	**$80**	**$116**	**$56**	**$76**	**$97**
Levelized Busbar (2009 $/MWh)	NA	**$80 - $86**	**$59**	NA	**$87**	NA	NA	NA
Impact of CO_2 Price at $30/Ton (2009 $/MWh)	NA	NA	**Add $25.00**	**Add $25.00**		**Add $18.00**		

Notes: The nuclear cases assume 48-month construction, 6-month start-up; owner's cost of $300/kWe and 10% contingency; 6.5% interest rate on commercial debt for unregulated entities, 6.0% interest rate on commercial debt for regulated entities, 4.5% interest rate on government-guaranteed debt, 15% return on equity for project finance and 12% allowed rate of return for rate base; 2% loan guarantee cost; 90% capacity factor; O&M cost of $9.50/MWh and fuel cost of $7.50/MWh. The capital cost estimates for supercritical pulverized coal (SCPC) and integrated gasification combined cycle (IGCC) are from recent regulatory filings for projects.

[1] Estimates calculated using the NEI Financial Model, Version 9.10j, October 2009.
[2] CWIP = Construction Work In Progress
[3] Estimated Total Cost values from the NEI Financial Model include EPC cost, owner's costs, decommissioning funding (nuclear units only), and financing. Values are rounded to nearest hundred.