Talking Points

Economy

September 17, 2007

Nuclear Power Will Be Competitive With Other New Electricity Sources

- Nuclear power plants are the lowest-cost large-scale electricity source in the marketplace today.
    1. Average nuclear plant production costs have declined more than 30 percent in the past 10 years.
    2. The production cost for the average nuclear power plant is 1.7 cents per kilowatt-hour, which is slightly cheaper than coal and one-third the cost of electricity produced from natural gas.
    3. Sustained low production costs are due to stable long-term fuel costs and a historically high capacity factor (capacity factor measures the amount of electricity actually produced compared with the maximum output achievable).

- Electric companies are exploring more than 30 new nuclear plant projects. New nuclear plants are not subject to volatility in fossil fuel prices and are not vulnerable to the prospect of costly mandatory controls on carbon dioxide emissions.
    1. 17 companies or consortia have announced more than 30 new-plant projects.
    2. The first license applications for new reactors are expected to be filed this fall.

- Nuclear power plants are large, capital-intensive projects, but are expected to be cost-competitive with other forms of baseload electricity generation in a carbon-constrained world.
    1. Companies considering building new nuclear plants have performed economic studies that demonstrate they will be competitive in the electricity market.
    2. Independent analysts from financial and energy consulting firms assert that new nuclear plants will be competitive when the first of these plants are ready for commercial operation around 2015. The competitiveness of nuclear energy will be further enhanced with constraints on carbon in the electricity sector.
    3. Standardization in new nuclear plant designs and modular construction will result in lower capital costs, especially after the first reactors of each advanced design are built. Cost savings also will result from the experience gained by the companies building the plants.
    4. Capital cost is not the only measure of power plant economics. The long-term life-cycle operating costs are equally important, and here nuclear power is expected to enjoy a big advantage.
    5. Only a small part of nuclear production costs are fuel-related costs.
        - For nuclear plants, fuel costs are only 26 percent of production costs, and only about half of that nuclear fuel cost is the cost of uranium. Of the 1.7-cent-per-kilowatt-hour production cost in 2006, uranium represented only two-tenths of a cent.
        - Fuel accounts for 80 percent to 90 percent of the cost of electricity produced by fossil fuel-fired generation, making electricity from fossil plants highly susceptible to fluctuations in coal and gas prices.
    6. As the cost of carbon reduction is figured into the cost of electricity production, nuclear energy becomes even more attractive in terms of total costs.

NEI
NUCLEAR ENERGY INSTITUTE

SUITE 400
1776 I STREET, NW
WASHINGTON, DC
20006–3708
202.739.8000
www.nei.org