



Financial Incentives for Economic Upgrades

- Discount cashflow financial analysis tools were expanded to model novel financial mechanisms to incentivize upgrades for existing fleet light water reactors.
 - Incentives may be required to achieve energy dominance goals introduced by nuclear-related Executive Orders in May 2025.
- New and existing incentives were considered to compare the economic outlook of upgrades for pressurized (PWR) and boiling water reactors (BWR) in regulated and deregulated energy markets.
 - Financial metrics included levelized cost of electricity (LCOE), net present value (NPV), and internal rate of return (IRR)
 - Production tax credit (PTC), investment tax credit (ITC), as well as novel incentives: milestone payments, interest holiday, and power replacement
 - Comparison was made to natural gas economic projections



Inputs and Assumptions

Table 2. Uprate Cost and Capacity Parameters

Case	Uprate Overnight CAPEX (\$000s)	Net Electrical Capacity Added (MWe)
PWR SPU/EPU	\$635,000	80
BWR EPU	\$660,000	220
MUR	\$24,000	17
PWR EPU+	\$1,480,000	190
BWR EPU+	\$880,000	330

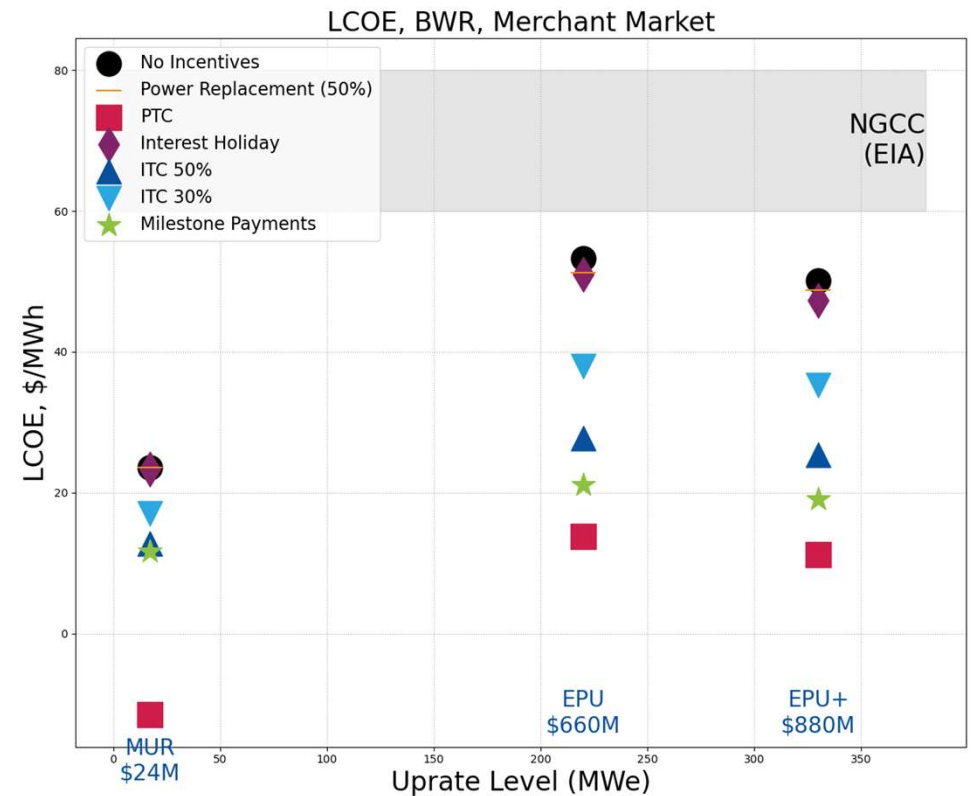
Table 3. Financing Case Parameters

Parameter	Merchant	Regulated
Percent Equity Finance	50%	10%
Return on Debt	5%	10%

- 5 types of uprate considered
- 2 types of markets (debt to equity ratios)
- Cost, Capacity sourced from industry collaboration

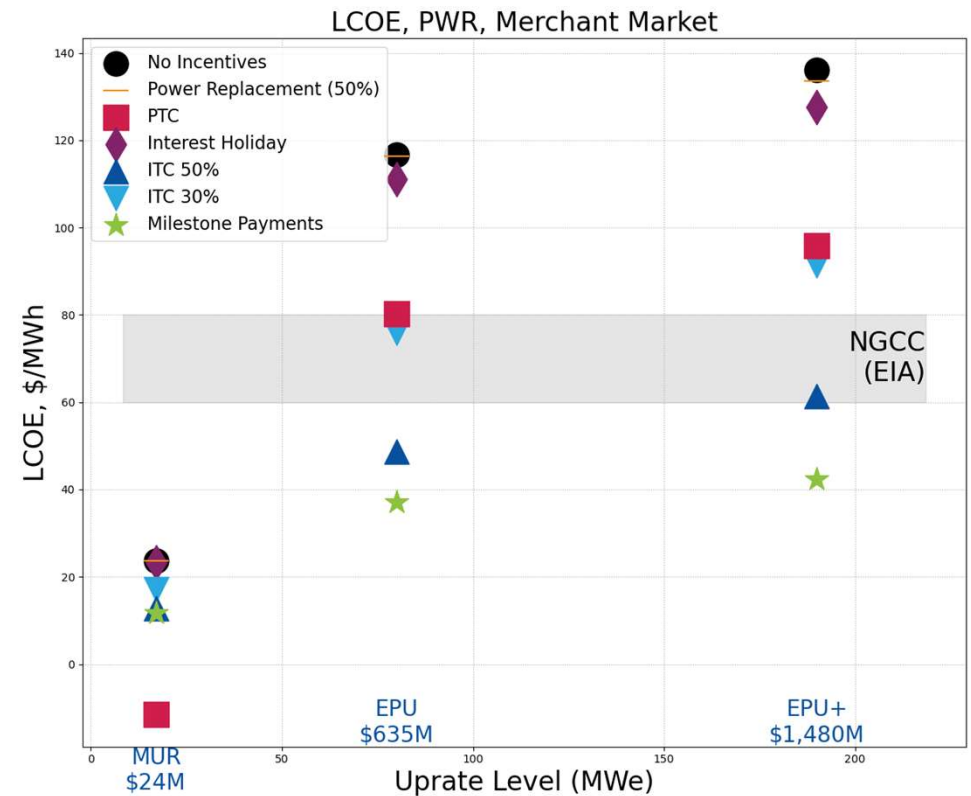
Results: BWR Uprate LCOE in a Merchant Market

- ***BWR uprates are inherently competitive with natural gas (NGCC) without incentives***
 - Much of the U.S. BWR fleet has already undergone uprates
 - Past uprates for BWRs and PWRs have evidenced less cost for the same level of power capacity increase



Results: PWR Uprate LCOE in a Merchant Market

- **PWR uprates require incentives to be competitive**
 - More significant changes are needed on average for PWRs than BWRs for the same increase in power output
- Significant incentives such as milestone payments (a form of progressive ITC) or ITC are required to make PWR economic outlook competitive with natural gas.
- Some off-takers such as datacenters may be willing to spend a premium to secure nuclear energy due to its desirable properties such as baseload long-term reliable performance.



BWR, PWR Uprate LCOE in Regulated Markets

