

Comparison of Fuels Used for Electric Generation in the U.S, 2016 Update – Study Details

Financial Assumptions

For all fuel sources, the following financial assumptions are used

Cost of Debt	8.5%
Cost of Equity	14.0%
Leverage (% debt)	50.0%
Simple Wt. Cost of Capital	11.0%
Tax Rate	38.3%

Natural Gas

Capacity Factor	65%
Debt - years	20
Capital Cost (\$'000/kw installed)	\$ 1,104
Project Life (years)	30

Coal – APC

Capacity Factor	80%
Debt - years	40
Capital Cost (\$'000/kw installed)	\$ 3,636
Project Life (years)	40

Coal – APC with CCS

Capacity Factor	80%
Debt - years	40
Capital Cost (\$'000/kw installed)	\$ 5,084
Project Life (years)	40

Advanced Nuclear

Capacity Factor	90%
Debt - years	50
Capital Cost (\$'000/kw installed)	\$ 5,945
Project Life (years)	60

Hydro

Capacity Factor	50%
Debt - years	50
Capital Cost (\$'000/kw installed)	\$ 2,936
Project Life (years)	50

Geothermal

Capacity Factor	85%
Debt - years	20
Capital Cost (\$'000/kw installed)	\$ 4,362
Project Life (years)	30

Biomass – MSW

Capacity Factor	80%
Debt - years	40
Capital Cost (\$'000/kw installed)	\$ 8,312
Project Life (years)	30

Biomass – BFB

Capacity Factor	75%
Debt - years	20
Capital Cost (\$'000/kw installed)	\$ 4,985
Project Life (years)	30

Solar – Photovoltaic

Capacity Factor	20%
Debt - years	20
Capital Cost (\$'000/kw installed)	\$ 2,671
Project Life (years)	25

Solar – Tracker Photovoltaic

Capacity Factor	30%
Debt - years	20
Capital Cost (\$'000/kw installed)	\$ 2,534
Project Life (years)	25

Wind – Onshore

Capacity Factor	40%
Debt - years	20
Capital Cost (\$'000/kw installed)	\$ 1,877
Project Life (years)	25

NOTES:

- * Costs above for Solar & Wind not calculated with any incentives, tax, policy, or otherwise
- * Nuclear may qualify for federal loan guarantees which could effectively lower interest rate on debt to 5%
- * Geothermal, Biomass (closed loop), and Wind may qualify for Production Tax Credit (\$2.3 cents per kWh or \$23/MWh) for first 10 years of operation
- * Solar may qualify for an investment tax credit (30%)

Legend

Coal APC - standard coal burning operations using advanced pollution control (APC) technology; currently in wide use

Coal CCS - coal plant using carbon capture & sequestration (CCS) technology; several demo projects underway, but not yet commercially viable

Biomass MSW (waste) - burns municipal solid waste

Biomass BFB (wood) - utilizes bubbling fluidized bed technology - typical biomass consists of wood chips, construction and demolition wood, bark, residual logging debris, saw dust, paper rejects, and paper and/or sewage sludge

Source:

Source:

Comparison of Fuels Used for Electric Generation in the U.S., 2016 Update

Leidos

Copyright 2016 – Natural Gas Supply Association – NGSA.org