Gas – Combined Cycle with carbon capture sequestration

Base year – 2017$

Net Capacity factor:

Gas-CC-CCS-AvgCF = 51%,

Gas-CC-CCS-ConstantCF=87%

**Capex** ($/kW)= construction financing cost($/kW)+ overnight capital cost($/kW)

Capex ($/kW):

Gas-CC-CCS-AvgCF = 2,292$,

Gas-CC-CCS-ConstantCF=2,292$

Construction financing cost ($/kW):

Gas-CC-CCS-AvgCF = 50$,

Gas-CC-CCS-ConstantCF=50$

Overnight capital cost($/kW):

Gas-CC-CCS-AvgCF = 2,242$,

Gas-CC-CCS-ConstantCF=2,242$

Weighted Average Cost of Capital (WACC) (Nominal) (%)

Gas-CC-CCS-AvgCF = 5.3%,

Gas-CC-CCS-ConstantCF=5.3%

**Opex**

Fixed Operation and Maintenance Expenses ($/kW-yr):

Gas-CC-CCS-AvgCF = 34$

Gas-CC-CCS- ConstantCF = 34$

Variable Operation and Maintenance Expenses ($/MWh):

Gas-CC-CCS-AvgCF = 7$

Gas-CC-CCS- ConstantCF = 7$

Coal-Carbon capture sequestration-30%

Base year – 2017$

Net Capacity factor:

Coal-CCS 30%-AvgCF = 54%,

Coal-CCS 30%-ConstantCF=85%

**Capex** ($/kW)= construction financing cost($/kW)+ overnight capital cost($/kW)

Capex ($/kW):

Coal-CCS 30%-AvgCF = 5,633$,

Coal-CCS 30%-ConstantCF=5,633$

Construction financing cost ($/kW):

Coal-CCS 30%-AvgCF = 453$,

Coal-CCS 30%-ConstantCF=453$

Overnight capital cost($/kW):

Coal-CCS 30%-AvgCF = 5,180$,

Coal-CCS 30%-ConstantCF=5,180$

Weighted Average Cost of Capital (WACC) (Nominal) (%)

Coal-CCS 30%-AvgCF = 5.3%,

Coal-CCS 30%-ConstantCF=5.3%

**Opex**

Fixed Operation and Maintenance Expenses ($/kW-yr):

Coal-CCS 30%-AvgCF = 69$

Coal-CCS 30%-ConstantCF = 69$

Variable Operation and Maintenance Expenses ($/MWh):

Coal-CCS 30%-AvgCF = 7$

Coal-CCS 30%-ConstantCF = 7$

Coal-Carbon capture sequestration-90%

Base year – 2017$

Net Capacity factor:

Coal-CCS 90%-AvgCF = 54%,

Coal-CCS 90%-ConstantCF=85%

**Capex** ($/kW)= construction financing cost($/kW)+ overnight capital cost($/kW)

Capex ($/kW):

Coal-CCS 90%-AvgCF = 6,299$,

Coal-CCS 90%-ConstantCF=6,299$

Construction financing cost ($/kW):

Coal-CCS 90%-AvgCF = 501$,

Coal-CCS 90%-ConstantCF=501$

Overnight capital cost($/kW):

Coal-CCS 90%-AvgCF = 5,728$,

Coal-CCS 90%-ConstantCF=5,728$

Weighted Average Cost of Capital (WACC) (Nominal) (%)

Coal-CCS 90%-AvgCF = 5.3%,

Coal-CCS 90%-ConstantCF=5.3%

**Opex**

Fixed Operation and Maintenance Expenses ($/kW-yr):

Coal-CCS 90%-AvgCF = 80$

Coal-CCS 90%-ConstantCF = 80$

Variable Operation and Maintenance Expenses ($/MWh):

Coal-CCS 90%-AvgCF = 10$

Coal-CCS 90%-ConstantCF = 10$

The CAPEX is the total capital expenditure required to achieve commercial operation of a plant.

The construction financing cost is the portion of the CAPEX associated with construction period financing.

The overnight capital cost is the capital expenditure required to achieve commercial operation of a plant, excluding the construction period financing cost and the interconnection cost.

The capacity factor represents the proportion of time during the year that the plant operates at rated capacity; gross CF represents theoretical value at a given site; net CF assumes losses relative to gross CF associated with the same site.

**Maps of regional capital cost multipliers for the various technology types**





