



California Energy Commission

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Overview of Efficiency and Performance Standards

Program or Standard	Efficiency or Performance Standard
PURPA QF	42.5% minimum total system efficiency (LHV) $Eff = \frac{E_{Out} + \frac{1}{2}Q_{Out}}{F_{In}}$
AB 1613	Topping: 62% minimum total system efficiency (HHV) Bottoming: 60% $Eff = \frac{E_{Out} + Q_{Out}}{F_{In}}$
SGIP	Performance Based Incentive - GHG performance Benchmark <ul style="list-style-type: none"> Avoided Boiler Efficiency – 80% Avoided Grid Emissions – 0.379 tonnes CO₂e/MWh
QF/CHP Settlement	Double Benchmark <ul style="list-style-type: none"> Avoided Boiler Efficiency – 80% Reference natural gas-fired unit heat rate – 8,300 Btu/kWh (HHV)
Emissions Performance Standard (EPS)	Prohibits load-serving entities in California from entering into a long-term financial commitments with units that cannot meet a GHG emissions performance standard of 1,110 lbs CO ₂ /MWh.

Eff Total system efficiency

F_{In} Fuel energy input

E_{Out} Electrical energy output

Q_{Out} Useful thermal energy output

HHV – Higher Heating Value of the Fuel

LHV – Lower Heating Value of the Fuel. Typically for natural gas HHV = 1.11* LHV