

**TECHNOLOGY CHARACTERIZATIONS  
DISTRIBUTED ELECTRICAL GENERATION TECHNOLOGIES**

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	Technology	Reciprocating Engine: Diesel	Reciprocating Engine: Natural Gas	Stirling Engine	Micro-turbine	Combustion Gas Turbine	PEM Fuel Cell	Phosphoric Acid Fuel Cell	Solid Oxide Fuel Cell	Molten Carbonate Fuel Cell
	<b>Description</b>									
	<b>Fuel(s)</b>	<b>Diesel, Biodiesel</b>	<b>Natural Gas, Landfill Gas, Digester Gas, Other Medium BTU Gas</b>	<b>Heat – from combustion of nearly any fuel</b>	<b>Natural Gas</b>	<b>Natural Gas, Landfill Gas</b>	<b>Natural Gas (with reformer), Hydrogen</b>			
	<b>Size</b>	30kW - 6+MW	30kW - 6+MW		30-400kW	0.5 - 30+MW	100-3000kW	100-3000kW	100-3000kW	100-3000kW
<b>CURRENT</b>	<b>Installed Cost (\$/kW)</b>	600-1,000	700-1,200		1,200-1,700	400-900	4,000-5,000	4,000-5,000	4,000-5,000	4,000-5,000
	<b>Electrical Efficiency (LHV)</b>	30-43%	30-42%		14-30%	21-40%	36-50%	36-50%	36-50%	36-50%
	<b>Net (Electrical + Thermal) Efficiency</b>	~80-85%	~80-85%		~80-85%	~80-90%	~80-85%	~80-85%	~80-85%	~80-85%
	<b>Availability</b>									
	<b>Total Maintenance Costs<sup>3</sup> (\$/kWh)</b>	0.005 - 0.015	0.007-0.020		0.008-0.015	0.004-0.010	0.0019-0.0153	0.0019-0.0153	0.0019-0.0153	0.0019-0.0153
	<b>Footprint (sq. ft./kW)</b>	0.22 - 0.31	0.28 - 0.37		0.15 - 0.35	0.02 - 0.61	0.9	0.9	0.9	0.9
	<b>Emissions (gm / bhp-hr unless otherwise noted)</b>	NO <sub>x</sub> : 7-9 CO: 0.3-0.7	NO <sub>x</sub> : 0.7-13 CO: 1-2		NO <sub>x</sub> : 9-50ppm CO: 9-50ppm	NO <sub>x</sub> : <9-50ppm CO:<15-50ppm	NO <sub>x</sub> : <0.02 CO: <0.01	NO <sub>x</sub> : <0.02 CO: <0.01	NO <sub>x</sub> : <0.02 CO: <0.01	NO <sub>x</sub> : <0.02 CO: <0.01
<b>PROJECTED – 2010</b>	<b>Installed Cost (\$/kW)</b>									
	<b>Electrical Efficiency (LHV)</b>	30-43%	30-42%		14-30%	21-40%	36-50%	36-50%	36-50%	36-50%
	<b>Net (Electrical + Thermal) Efficiency</b>	~80-85%	~80-85%		~80-85%	~80-90%	~80-85%	~80-85%	~80-85%	~80-85%
	<b>Availability</b>									
<b>PROJECTED – 2025</b>	<b>Installed Cost (\$/kW)</b>									
	<b>Electrical Efficiency (LHV)</b>	30-43%	30-42%		14-30%	21-40%	36-50%	36-50%	36-50%	36-50%
	<b>Net (Electrical + Thermal) Efficiency</b>	~80-85%	~80-85%		~80-85%	~80-90%	~80-85%	~80-85%	~80-85%	~80-85%

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	<b>Availability</b>									
	<b>Applications</b>									
	<b>Commercial Status / # Units in the Field</b>									
	<b>Leading Manufacturers</b>									
	<b>Comments</b>									