

SOURCE				
SOURCE	Company Name:		Florida Industrial Cogeneration Association	Florida Industrial Cogeneration Association
	Applicable Utility Service Area	(if any)	Florida Power & Light, Progress Energy, Tampa Electric	Florida Power & Light, Progress Energy, Tampa Electric
	Energy Resource:	(Individual Type)	Waste heat from sulfuric acid manufacturing process	Waste heat from sulfuric acid manufacturing process
	Energy Resource Type:	(Category)	Waste Heat	Waste Heat
	Resource Scale	(Unit or Aggregate)	UNIT –Existing units from 8MW to 58MW (about 30 MW average)	AGGREGATE – Approximately 370 MW total existing
	Unit Status	(Existing or Planning)	Potential	Potential
COMMERCIAL AVAILABILITY				
COMMERCIAL AVAILABILITY	Typical Unit Annual Capacity Rating	(MW)	Existing units range from 8 MW to 58 MW (about 30 MW average)	370 MW aggregate existing generating capacity
	Earliest Commercial In-Service Date	(Year)	Existing	Existing
	Typical Construction & Permitting Time	(Years)	Existing	Existing
	Useful Life of Unit	(Years)	30 years	30 years
	Fuel Type		No fuel used except minimal natural gas or oil for startup	No fuel used except minimal natural gas or oil for startup
PERFORMANCE CHARACTERISTICS				
PERFORMANCE CHARACTERISTICS	Contribution to Summer Peak Demand	(MW)	Existing units range from 8 MW to 58 MW (about 30 MW average)	370 MW aggregate potential new generating capacity
	Contribution to Winter Peak Demand	(MW)	Existing units range from 8 MW to 58 MW (about 30 MW average)	370 MW aggregate potential new generating capacity
	Average Annual Heat Rate	(BTU/kWh)	Not applicable/available(3)	Not applicable/available(3)
	Equivalent Availability Factor	(%)	95%	95%
	Average Annual Generation	(MWH)	Estimated at 210,000 MWH for average 30 MW unit size	Estimated at 2,600,000 MWH for aggregated capacity
	Resulting Capacity Factor	(%)	Approximately 80%(2)	Approximately 80%(2)

ENVIRONMENTAL CHARACTERISTICS						
ENVIRONMENTAL CHARACTERISTICS	Emission Rates	Carbon Dioxide (CO ₂)	(lb/kWh)	ZERO lb/kWh	ZERO lb/kWh	
		Sulfur Dioxide (SO ₂)	(lb/kWh)	ZERO lb/kWh	ZERO lb/kWh	
		Nitrogen Oxide (NO _x)	(lb/kWh)	ZERO lb/kWh	ZERO lb/kWh	
		Mercury (Hg)	(lb/kWh)	ZERO lb/kWh	ZERO lb/kWh	
		Water Usage	(gal/kwh)	ZERO lb/kWh	ZERO lb/kWh	
ESTIMATED COST DATA						
		First Year of Commercial Operation	(Year)	2008 (Existing)	2008 (Existing)	
ESTIMATED COST DATA	Installed Capital	Cost ⁽¹⁾	(\$/kw)	Not Applicable/Not Available at this time	Not Applicable/Not Available at this time	
		Escalation Rate	(%)	Greater of 5% or CPI(4)	Greater of 5% or CPI(4)	
	O & M - Fixed	Cost ⁽¹⁾	(\$/kw-year)	\$40/kW-year (estimated and subject to change)	\$40/kW-year (estimated and subject to change)	
		Escalation Rate	(%)	Greater of 5% or CPI(4)	Greater of 5% or CPI(4)	
	O & M - Variable	Cost ⁽¹⁾	(\$/kwh)	Not available at this time	Not available at this time	
		Escalation Rate	(%)	Not available at this time	Not available at this time	
	Fuel	Cost ⁽¹⁾	(\$/kwh)	Not Applicable - nominal natural gas or oil for start up	Not Applicable - nominal natural gas or oil for start up	
		Escalation Rate	(%)	Not Applicable and/or not available at this time	Not Applicable and/or not available at this time	
			Discount Rate	(%)	Not Applicable	Not Applicable
			Levelized Cost ⁽²⁾ - Life of Unit	(cents/kwh)	10 cents/kWh (2008 dollars) plus annual CPI excluding energy (4)	10 cents/kWh (2008 dollars) plus annual CPI excluding energy(4)

FOOTNOTES: See Next Sheet

FOOTNOTES / ADDITIONAL NOTES

(1) The latest technology for additional waste heat recovery is typically available in increments of approximately 8 megawatt as a retrofit to existing sulfuric acid plants or as original equipment on new plants. Depending on site specifics incremental generating capacity could be as small as 8 megawatt or multiples of 8 megawatts

(2) The data forms request information sufficient to calculate and compare “effective” capacity contributions each technology. FICA strongly encourages the Commission to do so. For Example:

An 800 mW coal plant, with an installed cost of \$4 Billion would equate to a nominal installed cost \$5,000 per kW. Assuming an 80% capacity factor, the effective capacity would be 640 mW and the effective cost would be \$6250 per kW. **(This cost does not include the cost of fuel or environmental costs which are substantial)**

An 80 mW solar facility with an installed cost of \$500 Million would equate to a nominal installed cost of \$ \$6,250 per kW. Assuming a 22% capacity factor, the effective capacity would be 17.6 mW and the effective cost would be in excess of **\$28,000 per kW. (This cost does not include environmental costs associated with some solar technologies.)**

At \$4,000 per kW), the effective installed cost of waste heat capacity would be \$5,000 per kW - over 80% less than the effective cost of solar. Waste heat has all the positive attributes of solar photo-voltaic but at a much lower nominal and effective capacity cost per kW. Like solar photo-voltaic, **waste heat has zero environmental costs or impacts.**

(3) Waste heat produces both process steam for manufacturing and byproduct electricity. As such, heat rate in the sense of a dedicated “fuel consuming” generating plant is not monitored or applicable in this instance.

(4) This number is a representative estimate that can vary by specific application and various facility specific factors.

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RESPECTFULLY submitted the 11th day of August, 2008.

/s/ *Richard A. Zambo*

Richard A. Zambo
Florida Bar No. 312525
Richard A. Zambo, P.A.
2336 S.E. Ocean Boulevard, #309
Stuart, Florida 34996
Phone: (772) 221-0263, FAX: (772) 232-0205
Email: richzambo@aol.com

Attorney for: Florida Industrial Cogeneration Association