

Ruth Nettles

From: Richzambo@aol.com
Sent: Friday, September 05, 2008 4:12 PM
To: Filings@psc.state.fl.us
Cc: Ruth Nettles; Kimberley Pena
Subject: Re: FW: Additional Responses/Clarification to FPSC Staff Data Requests Re: Wa...
Attachments: 090408~2.DOC

Dorothy,

My apologies for the oversight in not including an electronic signature in my filing.

To correct that error, I have attached a "revised" document that now includes my electronic signature on page 4. Please advise if there is anything further I need to do in this regard. I am hesitant to make a completely new filing with cover page as it may cause confusion, but I will await your instructions.

Again, my apologies for the inconvenience.

/s/ *Richard A. Zambo*

Richard A. Zambo, P.A.
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In a message dated 9/5/2008 3:11:00 P.M. Eastern Daylight Time, Filings@PSC.STATE.FL.US writes:

Mr. Zambo:

We are in receipt of your attached e-filing. Please note that, per the Commission's e-filing requirements, documents are to include an official signature. Your document will need to be revised and resubmitted to be considered an official filing.

Manner of Electronic Transmission:

- Documents shall be signed by typing "s/" followed by the signatory:

s/ First M. Last

- The acknowledgment indicates the document has been received, but does not confirm the document meets the requirements for electronic filing.

A link to the Commission's e-filing requirements is included for your convenience: <http://www.psc.state.fl.us/dockets/e-filings/>

Please call our office if you have any questions.

9/5/2008

DOCUMENT NUMBER-DATE
08265 SEP-5 8
FPSC-COMMISSION CLERK

Dorothy Menasco
FPSC
Office of Commission Clerk
850-413-6770

From: Richzambo@aol.com [mailto:Richzambo@aol.com]
Sent: Thursday, September 04, 2008 5:13 PM
To: Filings@psc.state.fl.us
Cc: Robert Graves; Tom Ballinger; Phillip Ellis; Kathy Lewis; Benjamin Crawford; b_may@cfifl.com; john.r.horne@mecsglobal.com; steve.davis@mosaicco.com; rmiller@pcsphosphate.com; jebakach@cfifl.com
Subject: Additional Responses/Clarification to FPSC Staff Data Requests Re: Waste Heat

1. Attorney responsible for this electronic filing:

Rich Zambo
Richard A. Zambo, P.A.
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Stuart, Florida 34996
Phone: 772 221 0263
Mobile: 954 224 5863
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2. Docket numbers and titles in which filing is submitted:

DOCKET NO. 080503-EI -- In re: Establishment Of Rule On Renewable Portfolio Standard

3. Party on whose behalf this filing is submitted:

The Florida Industrial Cogeneration Association

4. Total number of pages in filing:

4 (four) pages

5. Document attached:

Additional Responses/Clarification to FPSC Staff Data Requests Re: **Waste Heat** renewable energy generating capacity in Florida.

If you have any questions or require anything further in this regard, please do not hesitate to let us know immediately.

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Pssst...Have you heard the news? [There's a new fashion blog, plus the latest fall trends and hair styles at StyleList.com.](#)

SOURCE	Contributor	Rich Zambo	Rich Zambo	Rich Zambo	Rich Zambo
	Company	FICA	FICA	FICA	FICA
	Area (if any)	FP&L, PEF, TECO	FP&L, PEF, TECO	FP&L, PEF, TECO	FP&L, PEF, TECO
	Resource	Waste Heat	Waste Heat	Waste Heat	Waste Heat
	Type	Waste Heat	Waste Heat	Waste Heat	Waste Heat
	Scale	UNIT	UNIT	AGGREGATE	AGGREGATE
	Status	Existing	Potential	Existing	Potential
AVAILABILITY	Capacity (MW)	8 MW to 58 MW (30 MW average)	Increments of about 8 MW dependent on site specifics(1)	370 MW Existing	140 MW Potential(1)
	In-Service (Year)	Existing	2010	Existing	2010
	Construction (Years)	Existing	2 to 3	Existing	2 to 3
	Life of Unit (Years)	30	30	30	30
	Fuel Type	Waste Heat	Waste Heat	Waste Heat	Waste Heat
PERFORMANCE	Summer Peak (MW)	8 MW to 58 MW (30 MW average)	Available in 8 MW increments	370 MW	140 MW Potential
	Winter Peak (MW)	8 MW to 58 MW (30 MW average)	Available in 8 MW increments	370 MW	140 MW Potential
	Heat Rate (BTU/kWh)	N/A (3)	N/A (3)	N/A (3)	N/A (3)
	Availability (%)	95%	95%	95%	95%
	Generation (MWh)	170,000 MWH for 30 MW unit size (6)	55,000 MWH	2,100,000 MWH (6)	1,000,000 MWH
	Capacity (%)	65%(7)	80%(2)	65%(7)	80%(2)
ENVIRONMENTAL	(CO2) (lb/kWh)	0.00	0.00	0.00	0.00
	(SO2) (lb/kWh)	0.00	0.00	0.00	0.00
	(NOX) (lb/kWh)	0.00	0.00	0.00	0.00
	(Hg) (lb/kWh)	0.00	0.00	0.00	0.00
	Water Usage (gal/kWh)	0.00	0.00	0.00	0.00

DOCUMENT NUMBER-DATE
 08265 SEP-5 08

ESTIMATED COST DATA	First Year	(Year)	2008 (Existing)	2010	2008 (Existing)	2010
	Installed Capital	(\$/kW)	N/A	\$3,500 to \$4,000 (4)	N/A	\$3,500 to \$4,000 (4)
	Escalation Rate	(%)	Greater of 5% or CPI(4)	Greater of 5% or CPI	Greater of 5% or CPI(4)	Greater of 5% or CPI
	Fixed O&M	(\$/kW-year)	\$40/kW-year	\$40/kW-year	\$40/kW-year	\$40/kW-year
	Escalation Rate	(%)	Greater of 5% or CPI(4)	Greater of 5% or CPI	Greater of 5% or CPI(4)	Greater of 5% or CPI
	Variable O&M	(\$/kWh)	0.5 to 1.0 cent/kWh(4)	½ to 1 cent/kWh(4)	½ to 1 cent/kWh(4)	½ to 1 cent/kWh(4)
	Escalation Rate	(%)	Greater of 5% or CPI(4)	Greater of 5% or CPI(4)	Greater of 5% or CPI(4)	Greater of 5% or CPI(4)
	Energy / Fuel	(\$/kWh)	No fuel consumed except minimal natural gas for start-up.	No fuel consumed except minimal natural gas for start-up.	No fuel consumed except minimal natural gas for start-up.	No fuel consumed except minimal natural gas for start-up.
	Escalation Rate	(%)	N/A (See above)	N/A (See above)	N/A (See above)	N/A (See above)
	Discount Rate	(%)	Not Applicable (See note 5)	Not Applicable (See note 5)	Not Applicable (See note 5)	Not Applicable (See note 5)
	Levelized Cost	(cents/kWh)	10¢-12¢/kWh plus CPI excluding non-electric energy components (5)	10¢-12¢/kWh plus CPI excluding non-electric energy components (5)	10¢-12¢/kWh plus CPI excluding non-electric energy components (5)	10¢-12¢/kWh plus CPI excluding non-electric energy components (5)

Footnotes:

This data response is a good faith effort to provide the best available data under the constraints imposed. "Ranges" are used when specific data is not available or applicable in the circumstances. All rights are reserved to update or modify the data presented.

(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

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

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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.

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

(5) This is based on quantitative and qualitative factors including, but not limited to, internal hurdle rate, expected return on investment, other investment opportunities, risk assessment, and opportunity costs. Because retail electric rates are a major factor in determining the number, it will increase as electric rates increase. Basically this would be a price at which selling firm capacity and energy would be considered.

(6) This number can vary significantly due to various factors such as, but not limited to, demand for fertilizer products and the associated production rates of sulfuric acid. Data provided is based on current operations which may not be representative of future operating rates

(7) This number represents average capability that may vary due to factors such as facility specific characteristics and market demand for fertilizer products. Higher numbers in the 80% range are typical when fertilizer manufacturing is at facility design rates. Note also that turbine generator capacity is often oversized for various reasons, including a potential for future expansions, frame-size price breaks, or other operational factors.

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Respectfully submitted via electronic filing by:

/s/ *Richard A. Zambo*

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Renewable Energy From Waste Heat -- Data Response of Florida Industrial Cogeneration Association
Re: Establishment of Rule on Renewable Portfolio Standard -- FPSC Docket No. 080503-EI

September 4, 2008
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