

**BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION**

In re: Establishment Of Rule On     )  
Renewable Portfolio Standard     )  
\_\_\_\_\_)

Docket No. 080503 – EI

Filed: December 8, 2008

**Post Workshop Comments  
Of  
The Florida Industrial Cogeneration Association,  
The City of Tampa,  
The Solid Waste Authority of Palm Beach County**

These comments are filed by the Florida Industrial Cogeneration Association, the City of Tampa and the Solid Waste Authority of Palm Beach County (collectively referred to herein as the Florida Renewable Energy Alliance or FREA) pursuant to Commission directions offered at the close of the renewable portfolio standards workshop held on December 3, 2008. For clarity, the comments are identified “general” comments, or as responsive to the Navigant final draft report.

Promoting the development and use of renewable energy resources should never be divorced from electric system reliability or the cost impact of such programs on Florida’s electric consumers. While effectively balancing all three considerations is always important, today’s deteriorating economic circumstances make it absolutely vital. In short, in order to establish a sustainable and affordable renewable energy program in the State, the Commission’s RPS rule must be bottom-line oriented - i.e., seek the lowest cost, lowest emitting and most reliability supportive resources. The rule should, therefore, promote maximum energy production from the most cost-effective renewable energy resources available, whatever they may be, and should strongly support renewable energy production during peak demand periods.

As discussed below, there are certain fundamental flaws in Navigant Consulting’s November 2008 report to the Commission on Florida’s renewable energy potential. Even so, it is readily apparent the waste heat, waste-to-energy and landfill-gas electricity production technologies employed by FREA members are far more cost-effective than more exotic or unproven low-carbon resources. Also, with generally high availability during peak periods, electric energy produced by FREA’s energy resources serve two long-standing Florida energy goals by enhancing system reliability and reducing reliance on peaking resource that are predominantly natural gas-fired. The Commission’s final rule should attach a high priority to maximizing production from these proven renewable resources.

*Due to the short time period given to review the Navigant report, and the fact that even less time was available to evaluate the presentations by Staff and Commissioner Skop, these comments are only preliminary in nature and are not exhaustive. FREA reserves the right to raise additional issues or expand upon issues raised herein.*

### **General Comments On Workshop Presentations and Discussions**

**--Preferential treatment for solar/wind** – It is a given that solar and wind can only be expected to operate at capacity factors in the range of 20% and are not likely to contribute significantly to peak demand or to reductions in natural gas consumption. In contrast, most other renewable technologies – specifically waste heat, waste-to-energy, biomass and landfill gas operate at capacity factors in the range of 80%+ and contribute to peak demand reduction.

**Simply treating solar and wind as equals to other technologies, the Commission is already giving significant preferential treatment – a four to one multiplier – on a kWh/ kW basis.**

**--Solar and wind as clean energy resources** – As noted above, solar and wind resources cannot provide reliable capacity during system peaks - especially winter peak periods occurring in early morning and late evening. (Refer to chart on page 8 of Tom Ballinger's presentation.)

**Accordingly, the impacts of the fossil-fueled generation that are used to supplement solar/wind must be included in the environmental profile. Moreover because the fossil-fueled generators used to supplement the peak hours are likely to be natural gas-fired, the Legislative policy of reducing natural gas usage will not be met.**

**--Unbundling of renewable energy and RECs** – The Legislature made it clear that each mWh of electricity produced by renewable energy produces a REC - *regardless of whether it is consumed by the producer, sold to a utility or otherwise used*. Several staff and Commissioner comments suggested that RECs be bundled with energy and sold pursuant to a standard offer contract.

**Bundling RECs with energy would be contrary to clear Legislative policy and intent.**

**--Use of standard offer contracts for RECs** – Using standard offer contracts as the sole means for a Florida renewable energy producer to sell renewable “attributes” presents two major issues. **First**, from a practical standpoint, there is obviously a significant flaw in the standard offer contracts as they currently exist or have existed over the past 10 to 20 years. To FREA's knowledge, only one fruitful standard offer has been executed since the early 1990s - and that was for a small amount of capacity in the range of 10 mW. **Second**, from a legal standpoint, the Commission may not be able to require a utility to pay a price for renewable energy that exceeds the utility avoided cost. Clearly, however, the Commission can “encourage” a desired behavior designed to result in the utility voluntarily paying more than avoided cost for non-energy attributes, by use of clearly defined goals and significant penalties for failure to meet those goals.

**For these reasons, as well as others, the bundling of RECs with the sale of electric energy in a standard offer or otherwise is not consistent with either Florida or Federal law.**

**--Alternative compliance payments/penalties** – It has been suggested and apparently assumed by the Commission that such payments/penalties are not appropriate because the Commission has no “mechanism” to hold and distribute such payments/penalties for investment in renewables.

**A simple solution would be to return payments/penalties to the ratepayers as a per kWh credit accounted for “below the line” to assure payments/penalties are borne by utility stockholders and not the customers. There is no requirement that they be “invested”.**

**--Impacts on Integrated Resource Planning (IRP)** – It was suggested that an RPS may have an adverse impact on utility IRP processes. Although FREA is unaware of any statutory or regulatory requirement that specifically subject utilities to IRP, the combination of energy conservation under FEECA, the “need” process under the PPSA, and Commission rate setting and regulatory oversight may equate to an IRP requirement when taken as a whole. To that extent, the utilities have alleged that they have implemented all cost-effective conservation under FEECA since 1980 and have alleged in each need determination proceeding that the plant proposed and ultimately built was/is the most cost-effective alternative available. Although somewhat vague, staff comments seemed to indicate that more “conservation” should be done and/or that conservation should be included as part of the RPS.

**Because the existing IRP process (albeit a de facto one) has not encouraged significant development of renewable energy resources, that failure cannot justify continuing to suppress the addition of renewable energy resources by non-utility third-parties.**

**--Utility self-build vs. purchases of RECs from others** – Again, although comments by staff and Commissioners on this issue were somewhat vague, it seems there is support for the flawed notion that while non-utilities can only sell renewable energy at “avoided cost”, a utility could self-build so long as the cost is reasonable. Logically and in the sense of fairness, any utility self-build option should be either tied to the same avoided cost pricing, terms and conditions available to non-utility producers, or any utility self-build proposal should be subject to competitive bidding by non-utilities in an open and transparent process.

**Utility self-build options should be capped/limited to the same avoided cost pricing, terms and conditions available to non-utility producers via the standard offer contracts then in effect for such utility. If no “capacity” payments (COG-2) are available in such contract then the utility would likewise not be entitled to capacity payments or any capital recovery, but should be allowed only to recover an as-available energy payment per COG-1.**

**--Nuclear power as clean energy or renewable energy** -- Clearly, the Florida statutory provisions directing the Commission to implement an RPS for renewable energy defines what is to be considered “renewable”. The Legislature’s definition does not include nuclear energy nor does it refer to “clean” energy. While FREA does not object to nuclear energy where it is the most cost-effective alternative available, the notion that nuclear energy is “clean” energy, or is on a level equal to renewable energy, is debatable. If nuclear power is to be treated as the functional equivalent of renewable energy, then the avoided cost pricing paid for renewable should likewise be equal to the avoided cost of nuclear – both fixed and variable costs.

**If nuclear energy is the most cost-effective alternative available then the utility - by virtue of its “regulatory compact” with the citizens of Florida the State - is obligated and required to build such nuclear power plants. There is simply no need for additional incentives such as a REC or CEC (clean energy credit). However, if nuclear power is treated as the functional equivalent of renewable energy, then the avoided cost prices paid for renewables should likewise be equal to the avoided cost of nuclear – including fixed and variable costs.**

**--Assumed cost of solar PV vs. biomass** – Staff presented slides indicating relative costs incurred by a predominantly solar, predominantly biomass and mix of solar/biomass RPS over various periods of time. The slides assumed a LCOE of \$120 for biomass vs. \$196 for solar. FREA

would point out that the price used for solar in the staff's presentation is only 40% of the price forecast by FPL for the solar projects it has presented to the Commission. This large disparity indicates an overly optimistic price scenario for solar – a scenario not likely to materialize vs. an already demonstrated realistic price for biomass.

**Staff's cost comparisons should be revised to incorporate the projected costs for the FPL solar projects as submitted to the Commission. It seems intuitive that if the solar prices used by staff were increased by a factor of 2.5 (to match the FPL prices), the cost of the "all solar" as well as the "solar/biomass" mix would become cost prohibitive and unfeasible.**

### **Comments On Navigant Consulting's Final Draft Report**

**--Pre-determined outcome** -- It was the understanding of FREA that the purpose of the Navigant report was to provide guidance to Commission staff and the Commission in crafting an RPS rule that would comport with the Legislative mandates but be reflective of those technologies germane to Florida. Unfortunately, the Navigant report pre-supposes that staff's October 2 draft rule is in effect, thereby forcing compliance with a proposed rule and resulting in nothing more than a pre-determined outcome.

**Unless Navigant provides an unbiased report without the pre-supposition of the staff rule, the report is meaningless to Commission efforts to develop an RPS. Navigant should provide an additional report absent any "fixed" assignment of energy percentages or dollar expenditures to any technology and assuming free market forces will control.**

**--25%/75% and 75%/25% forced allocations** – As noted previously, solar/wind are provided essentially what is a **four to one** advantage over the technologies employed by FREA simply by being considered on an equal footing. The additional forced allocations raise the preferential treatment to an overall factor of more than **sixteen to one** (4 X 4 X?).

**Neither the 25% vs. 75% Class I vs. Class II forced allocation of RECs, nor the 75% vs. 25% Class I vs. Class II forced dollar allocations are economically or practically efficient. (See attached letter from Alfred E. Kahn regarding the economics of forced allocations.)**

**--Assumed "levelized cost of energy" (LCOE)** – It is noted that the LCOE provided for several of the FREA renewable energy technologies differ from or were developed independently of the information/data provided to the Commission and Navigant. Accordingly, the LCOE numbers are misleading and should not form the basis on which to determine costs or penetrations of the various technologies in the Florida market. This constitutes one of a number of inaccuracies reflected in the Navigant report, including among other things, the following: (i) assuming that renewable assets will be deployed when renewable LCOE equals traditional fossil LCOE. While such an assumption may be appropriate in competitive markets, it is not appropriate in regulated monopoly markets where utility revenues are based on return on capital investment; (ii) making overly optimistic projections regarding price declines in the installed costs of solar generation. Navigant assumes a price decline in the range of 50% of current cost with no justification.

***Navigant seems to assume that non-utility renewable energy producers are paid the utility's LCOE, when in fact they are paid the so-called avoided cost which is a fraction of the LCOE. The assumptions employed seriously devalue the report for purposes of RPS development.***

**--Categorizing technologies as Class I and Class II** – It is uneconomic and unsubstantiated to assume that Class I technologies are superior to Class II technologies and therefore should command the greatest dollar investment. As noted previously, simply placing solar and wind on the same level as FREA's technology mix provides a four-to-one advantage.

**If the Commission recommends a Class distinction, then waste heat, waste to energy and landfill gas should all be places in the same of "higher" class as solar/wind as they are either non-emitters or carbon neutral, and importantly, are not as likely to require supplemental power from fossil-fueled generators during peak periods. (See attached letter from Alfred E. Kahn regarding attributes of other technologies.)**

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/s/ *Richard A. Zambo*

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December 4, 2008

The Honorable Matthew M. Carter, II,  
Chairman  
Florida Public Service Commission  
2540 Shumard Oak Boulevard  
Tallahassee, Florida 32399-0850

Re: Establishment Of Rule On Renewable Portfolio Standard  
Docket No. 080503-EI

Dear Chairman Carter,

I am Alfred E. Kahn, Robert Julius Thorne Professor of Political Economy, Emeritus, at Cornell University; and Special Consultant to National Economic Research Associates, Inc. (NERA).

Background and Qualifications:

The Florida Industrial Cogeneration Association (FICA) has asked me to comment on the Florida Public Service Commission's (FPSC) proposal to establish a renewable portfolio standard (RPS), and on its proposed allocation among various renewable technologies of both credits for satisfying that standard and acceptable levels of cost.

In particular, FICA has asked me to consider whether the staff's proposed RPS would provide an economically efficient balance between cogeneration—including pure waste heat generation—and solar and wind technologies. As I propose to explain, I believe that, by over-specifying the allocation rules, the staff's proposal threatens to produce economically inefficient outcomes, violative of true conservation principles

My background for making this evaluation is both general and specific. My two volume *Economics of Regulation*,<sup>1</sup> I believe it is fair to say, is the standard if not classic statement of the applicable regulatory principles. More concretely, I have served in various regulatory positions, including Chairmanship of the New York Public Service Commission and U.S. Civil Aeronautics Board. I have also been the Advisor to the President (Carter) on Inflation, and Chairman of the (U.S.) Council on Wage and Price Stability. I have served on a variety of other public and private boards and commissions, several of which dealt with environmental issues, including the National Academy of Sciences Advisory Review Committee on Sulfur Dioxide

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<sup>1</sup> Alfred E. Kahn, *The Economics of Regulation: Principles and Institutions*, Volume I: *Economic Principles*, published 1970; Volume II: *Economic Principles*, published 1971 by John Wiley & Sons, Inc., New York, NY; reprinted by MIT Press in 1988.



Emissions and the Environmental Advisory Committee of the Federal Energy Administration. I also served on the Executive Committee of the National Association of Regulatory Utility Commissioners, and as Chairman of its Committee on Electric Power. In these several roles, I testified before the Senate Committee on Finance, in successful support of H.R. 6860, "The Energy Conservation and Conversion Act of 1975," July 18, 1975, specifying in particular the obligation of electric distribution companies to purchase the power of qualified independent generating facilities, at avoided or incremental costs, in the interest of both environmental protection and energy conservation.

### The Economics of the proposed RPS

In 2006, the Florida State Legislature enacted an omnibus energy bill<sup>2</sup> "to promote the development of renewable energy, protect the economic viability of Florida's existing renewable energy facilities, diversify the types of fuel used to generate electricity, lessen Florida's dependence on natural gas and fuel oil, minimize the volatility of fuel costs, encourage investment in the state, improve environmental conditions, and minimize the costs of electricity for customers." This bill was amended in 2008 by HB 7135, which specified the parameters of the RPS program as well as control procedures, cost recovery for utilities and monitoring requirements. It also permitted (but did not require) the Commission to "give added weight to energy provided by wind and solar photovoltaic over other forms of renewable energy."

In pursuit of these objectives, the proposed RPS rule gives preferential weight to wind and solar technologies, in two ways. First, at least 25% of the resources used to meet the RPS must come from such energy systems (denominated Class I in the rule). Second, in order to "protect ratepayers", the state sets a cap on expenditures by the states' IOUs for meeting the RPS standard—2% of their retail revenues. These shares would in turn be subject to allocation between Class I resources and the other renewable technologies (Class II)—1.5% for wind and solar and 0.5% for everything else. To put these figures into perspective, the staff calculates, on the basis of 2007 data, that the amount permitted for meeting the RPS for all of Florida would total more than \$370 million—roughly \$277.5 million for wind and solar and \$92.5 million for all other renewable sources.

The discussion in the Memorandum<sup>3</sup> accompanying Staff's proposed rule provides its rationale for this preference for solar and wind over all other sources of renewable generation:

Staff added the compliance cost allocation methodology to the draft rule primarily in response to the comments of the solar industry at the Commission's workshops. Staff agrees that additional support through dedicated funds for solar and wind resources is needed to encourage the development of these resources in Florida. Section 366.92(3)(b)3, F.S., allows for the rule to provide added weight to these beneficial resources. Because the rule includes a carve out for solar and wind

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<sup>2</sup> (SB 888). Section 366.92, F.S.

<sup>3</sup> FPSC Memorandum to the Commission, Docket No. 080503-E1 - Establishment of rule on renewable portfolio standard, Oct. 2, 2008, pg. 4.



resources, staff also believes that dedicated funds are needed to encourage the development of non-Class I resources.<sup>4</sup>

This is precisely the point that seems to me misguided.

Evidently I am not alone in this concern. The Memorandum reports that “[s]everal interested parties do not believe the rule should contain special treatment for specified resources, such as solar and wind. The Office of Public Counsel (OPC), for one, does not support carve outs or set asides, and believes that the market should determine the renewable resources that should be in each utility’s portfolio based on relative economics. OPC states that in an environment of rapid technological changes, the rule should not favor one technology over another.”<sup>5</sup>

Notwithstanding my conviction that regulation is needed where markets fail, I have long proclaimed the superior wisdom of competitive markets over administrative fiat where effective competition does or can prevail. For this reason, I share the concerns of OPC and others that in this case the staff is recommending that the Commission exercise its regulatory powers counter-efficiently, and therefore at the expense of consumers. By pre-specifying a strong preference for solar and wind technologies, the rule in effect acts to discourage the development and application of consistent new lower-cost technologies, some that may still be incubating in some creative brain, that may provide the desired societal outcomes more efficiently—that is, at lower cost to ratepayers. This seems to me to be violative of true conservation principles as well as inconsistent with the dictates of the Florida Legislature and also with good economics.

Let me be crystal clear: I am not suggesting that solar or wind are generally inferior to other renewable resources. I merely suggest that they are not inherently superior, neither economically nor aesthetically, to at least some other renewable technologies; and the clear preference for them in the proposed rules is both unwarranted and likely to impose a burden on ratepayers already burdened by soaring energy costs.

I of course respect the intentions behind these proposals. I firmly believe, however, that they are misguided. Substituting the staff’s or even the Commission’s judgment of which technologies best meet the needs of Florida ratepayers, as expressed in SB 388/HB 7135, rather than relying on the competitive market forces acting on the supply side seems both needlessly overreaching and likely to be uneconomic. The Legislature has explicitly described the kinds of results Florida seeks to achieve in pursuing generation from renewable resources, and has set out the technologies that it believes may be worthy of special encouragement. In my view, however, the proposed PRS rule would be much improved in terms of economic efficiency—which means in terms of the balance of costs and benefits to ultimate consumers—if it were to define desirable outcomes rather than prescribe the choice of inputs. Technologies that provide the same kinds of environmental, cost, security and other economic benefits should receive the same encouragement. The current proposal violates this elementary rule and in so doing will impose unnecessary costs on consumers.

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<sup>4</sup> Ibid, pg. 33.

<sup>5</sup> Ibid, pg. 22.



This defect, in my view, applies to at least some of the Class II resources. I have been an ardent supporter of cogeneration ever since I became Chairman of the New York State Public Service Commission, 34 years ago, because it involves the generation of electricity from heat that *would otherwise be wasted*. The under-appreciation of this particular technology under the proposed rule is simply unjustifiable. By limiting access to the preferred Class I treatment, the rule implicitly places a lower value on conservation of heat recovery, which provides precisely the economic and environmental benefits sought by the Florida RPS legislation.<sup>6</sup> The economic result of the technology preference in the proposed rule would be reduced cogeneration. Even if the staff assumes that such capability would be provided instead by the Class I resources, it is ignoring the benefits from profound differences in operating characteristics between intermittent and non-intermittent technologies, differences that translate into differences in cost to ratepayers.

This is especially the case for output from the exothermal heat recovery generation—often referred to as “pure waste heat” generation systems.<sup>7</sup> As I understand them, these systems generate electricity from a chemical reaction inherent in an industrial process, such as in the manufacture of fertilizer. Moreover, they have other less obvious benefits:

- They have minimal effect on land use, because the generation facilities are located inside existing industrial complexes: in obvious contrast, new wind projects require the dedication of many acres of land, and as a result frequently provoke public protest. This is an advantage they share with other types of cogenerators as well. Typical sulfuric acid pure waste heat generators, for example, have capacities generally ranging between 8 and 50MW. A wind generation facility with the same capacity could require 2.5 to 16.5 acres<sup>8</sup> dedicated to the project; a similarly sized solar facility 35 to 200 acres, according to the experience of one of the most recent such installations in the nation, the Nevada Solar One project.<sup>9</sup>
- Pure waste heat generation in fertilizer applications needs no additional water.
- Since pure waste heat generation is related to an industrial process, it is typically located in areas that already have substantial transmission capacity inflow to the project site and surrounding industrial complexes. In contrast, one of the most pressing issues in incorporating renewables into the integrated grid is that areas with highest rated wind resources are not typically located near abundant transmission facilities. This is true also of

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<sup>6</sup> I am here not considering cogeneration systems that employ supplemental heating from combustion of fossil fuel. In those cases, there is a trade-off of environmental degradation for increased production efficiency.

<sup>7</sup> These projects are similar to two others being developed in China that have been validated to meet criteria set forth in Article 12 of the Kyoto Protocol and “thus result[s] in reductions of greenhouse gas emissions that are real, measurable and gives long-term benefits to the mitigation of climate change.” The validation reports can be found at <http://cdm.unfccc.int/UserManagement/FileStorage/BYAQHHJY6LACLOMFD5TURC6P4HMRT7> and <http://cdm.unfccc.int/UserManagement/FileStorage/DVOG4ULWGO8OSWXVNW9FMKZ3WV13LV>.

<sup>8</sup> This calculation is taken from the National Renewable Energy Laboratory (NREL) wind farm area calculator, assuming 1MW turbines each requiring 0.5 acres of land to site and ignoring the land between towers on the assumption that it could serve other uses as well. The calculation can be found at [http://www.nrel.gov/analysis/power\\_databook/calc\\_wind.php](http://www.nrel.gov/analysis/power_databook/calc_wind.php).

<sup>9</sup> Information about the plant can be found at <http://www.nevadasolarone.net/the-plant>.

large scale solar projects in Florida, where the sites available for solar generation are commonly located in sparsely populated areas, with limited transmission capacity.

- Pure waste heat generation is a proven mature, reliable technology that operates at high availability and capacity factors characteristic of utility base-load generating plant. In contrast with wind and solar, they are not intermittent, and their output can be varied between local internal consumption and export to the grid. As a result they can help offset transmission bottlenecks by adding a source of power where there is significant local demand. They can also provide voltage and frequency support during utility generation capacity shortfalls.
- Pure waste heat generation is typically available when and where the industrial complex is operating to make its core products, and replaces consumption from the grid. Therefore there is a strong relationship to offsetting fossil fuel-fired utility company generation and the associated emissions.
- Like solar and wind, pure waste heat generation resources help to diversify fuel supplies and lessen Florida's dependence on foreign oil or coal and natural gas imported from other states. All three can provide jobs for Floridians; pure waste heat has the added benefit of keeping viable existing Florida-based industry and the jobs it provides.

In sum, there is no source of power superior to cogeneration and pure waste heat recovery. Any discrimination against them is, quite simply, indefensible—economically, aesthetically, environmentally and in terms of national as well as state energy policy.

Sincerely yours,



Alfred E. Kahn  
Robert Julius Thorne Professor of Political Economy,  
Emeritus, Cornell University  
Special Consultant, NERA Economic Consulting

Cc: Honorable Nancy Argenziano, Commissioner  
Honorable Lisa P. Edgar, Commissioner  
Honorable Katrina J. McMurrian, Commissioner  
Honorable Nathan A. Skop, Commissioner  
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