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August 26, 2010

## By Hand Delivery

Ms. Ann Cole, Director  
Commission Clerk and Administrative Services  
Florida Public Service Commission  
2540 Shumard Oak Boulevard  
Tallahassee, Florida 32399-0850

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COMMISSION  
CLERK

Re: Docket 100385 - EU  
Petition for Determination of Need for Expansion of an Existing Renewable Energy  
Electrical Power Plant in Palm Beach County by Solid Waste Authority of Palm Beach  
County

Dear Ms. Cole:

Enclosed for filing in on behalf of the Solid Waste Authority of Palm Beach County  
please find an original and 15 copies of the following:

1. Direct Testimony of Marc C. Bruner - 07140-10
2. Direct Testimony of Daniel J. Pellowitz and Exhibit DJP-1 - 07141-10
3. Direct Testimony of Frank Seidman and Exhibit FS-1 - 07142-10

Please acknowledge receipt of the enclosed documents by stamping the extra copy of this  
letter "filed" and returning the copy to me.

Thank you for your assistance with this filing and please do not hesitate to contact me if  
you have any questions.

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Enclosures

Sincerely



Marsha E. Rule

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**BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION**

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**DIRECT TESTIMONY**

**OF**

**FRANK SEIDMAN**

**FOR**

**THE SOLID WASTE AUTHORITY OF PALM BEACH COUNTY**

**IN RE:**

**MODIFICATION TO DETERMINATION OF NEED**

**Q. Please state your name, profession and address.**

A. My name is Frank Seidman. I am President of Management and Regulatory Consultants, Inc., consultants in the utility regulatory field. My address is 18444 Lost Lake Way, Jupiter, FL 33458.

**Q. State briefly your educational background and experience.**

A. I hold the degree of Bachelor of Science in Electrical Engineering from the University of Miami. I have also completed several graduate level courses in economics at Florida State University, including public utility economics. I am a Professional Engineer, registered to practice in the state of Florida. I have over 40 years experience in utility regulation, management and consulting. This experience includes nine years as a staff member of the Florida Public Service Commission, two years as a planning engineer for a Florida telephone

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1 company, four years as Manager of Rates and Research for a water  
2 and sewer holding company with operations in six states, and three  
3 years as Director of Technical Affairs for a national association of  
4 industrial users of electricity. I have been providing rate and regulatory  
5 consulting services in Florida for 30 years. Specifically, with regard to  
6 expertise in issues being considered in this docket, I participated, on  
7 behalf of the Commission, in the initial development of the format for  
8 this Commission's portion of Ten Year Site Plans. I was also  
9 responsible, on behalf of the Commission, for the analysis of the  
10 determination of need for the four applications considered between  
11 1974 and 1977. I also participated in and testified in most of the  
12 dockets setting and implementing the Commission's rules regarding  
13 cogeneration and small power production and renewable energy,  
14 including Docket Nos. 820406-EU, 820460-EU, 830377-EU, 840399-  
15 EU, 860004-EU, 870184-EU, 880004-EU, 881005-EG, 890973-EI,  
16 890974-EI, 891049-EU, 891324-EU, 910004-EU, 910603-EQ,  
17 001574-EQ and 060555-EI.

18  
19 **Q. On whose behalf are you appearing?**

20 **A.** I am appearing on behalf of the Solid Waste Authority of Palm Beach  
21 County, Florida ("the Authority").  
22  
23

1       **Q.    What is the purpose of your testimony?**

2       A.    Under the Florida Electric Power Plant Siting Act, this Commission's  
3           input is relied upon in connection with the determination of need for an  
4           electric power plant. The purpose of my testimony, in concert with that  
5           of Mr. Bruner and Mr. Pellowitz, is to present evidence demonstrating  
6           and supporting the need for the plant proposed by the Authority and to  
7           address those factors the Commission is directed by Florida statutes  
8           to consider.

9

10       **Q.    Would you please describe the Authority's generating plant,  
11           present and proposed?**

12       A.    Yes. The Authority currently operates a nominal 62 mW renewable  
13           energy electric generating facility ("Existing Facility") consisting of  
14           municipal solid waste (MSW) fired steam boilers and a steam turbine-  
15           generator set. It produces in the range of 400,000 net mWh annually  
16           that is committed for sale to Florida Power & Light (FPL). The  
17           Authority plans to add additional renewable energy electric generating  
18           capacity ("Expanded Facility") which is projected to produce – at a  
19           minimum – an additional 575,000 net mWh annually for delivery to the  
20           peninsular Florida grid. In addition to the MSW fueled capacity,  
21           capacity fueled by landfill gas is expected to be developed, although  
22           the timing of the operation of that capacity is unknown at present.

1 The Authority's site is currently certified for 75 mW gross generating  
2 capacity, The Authority is requesting that the certification be increased  
3 to a maximum of 185 mW to accommodate the Expanded Facility  
4 which is composed of an additional 100 mW gross generating capacity  
5 WTE facility fueled by MSW and up to 23 mW gross generating  
6 capacity fueled by landfill gas. The additional 100 mW gross capacity  
7 of the WTE portion of the Expanded Facility will allow the Authority to  
8 efficiently process and incinerate MSW within the significant range of  
9 variation in BTU content anticipated over the life of the plant.

10  
11 **Q. How does the Authority dispose of the energy generated by its**  
12 **Existing Facility?**

13 A. The Existing Facility is directly connected to the FPL transmission  
14 system. The Authority has sold the net electricity produced by the  
15 Existing Facility to FPL since 1989, and is under contract (approved  
16 by this Commission) to continue providing net electricity produced by  
17 the Existing Facility to FPL through the year 2032.

18  
19 **Q. How does the Authority intend to dispose of energy generated by**  
20 **its Expanded Facility?**

21 A. Energy produced by the Expanded Facility will be delivered to the  
22 peninsular Florida electric system through a direct electrical  
23 interconnection with FPL. The Authority will then either sell pursuant to

1 a standard offer contract for firm or as-available energy, negotiate one  
2 or more contracts to sell such energy to one or more Florida utilities,  
3 or otherwise dispose of the energy in a manner consistent with law as  
4 applicable to the Authority, or a combination of these options. Such  
5 arrangements have not yet been made.

6

7 **Q. Is there a need for additional generating capacity in the State of**  
8 **Florida?**

9 A. Yes, there is. I base this conclusion on my review of the Florida  
10 Reliability Coordinating Council ("FRCC") 2010 Regional Load &  
11 Resource Plan dated July, 2010 ("Regional Plan"), which was  
12 presented to this Commission on August 5, 2010. The FRCC is the  
13 regional entity of the North American Electric Reliability Corporation  
14 (NERC) that is responsible for the proposal and enforcement of  
15 reliability standards within peninsular Florida, east of the Apalachicola  
16 River.

17

18 **Q. Have you prepared any exhibits to accompany your testimony?**

19 A. Yes. Attached to my testimony is Exhibit (FS-1) \_\_\_\_\_, which consists  
20 of a set of three tables summarizing certain data from the Regional  
21 Plan that is relevant to evaluating the need for capacity and energy in  
22 peninsular Florida over the next ten years. I will be referring to some  
23 of the data contained in my Exhibit in my testimony. The specific

1 schedule or schedules relied on are referenced in each table of Exhibit  
2 (FS-1) \_\_\_\_\_.

3

4 **Q. What does the FRCC Regional Plan indicate?**

5 A. The Regional Plan shows, that in the aggregate, the Regional Net  
6 Firm Summer Peak Demand is forecast to grow from 46,263 mW in  
7 2009 to 47,988 mW in 2019. (see Table 1 of Exhibit (FS-1) \_\_\_\_\_. That is  
8 an increase of 1,725 mW or 3.73% over the ten year period. The  
9 forecast reflects a decrease of over 3,400 mW from 2009 to 2010 and  
10 then the aggregate increase from 2010 to 2019 of over 5,000 mW.  
11 This forecast of a sharp decrease followed by a relatively low year-to-  
12 year increase going forward reflects the current economic downturn as  
13 well as this Commission's requirement for a substantial increase in  
14 goals for Demand Side Management resources. This forecast does  
15 not reflect the increase in demand in 2010 resulting from what may  
16 turn out to be one of the hottest summers in Florida in several  
17 decades.

18

19 **Q. Is there a need to improve electric system reliability and integrity**  
20 **in the State of Florida?**

21 A. Yes. Rule 25-6.035, Florida Administrative Code, requires that as a  
22 minimum, peninsular Florida utilities maintain a 15% reserve margin.  
23 Many utilities have indicated a need to or have agreed to plan to

1 maintain the margin at 20%. The Regional Plan shows that the  
2 aggregate capacity available to serve Net Firm Summer Peak  
3 Demand in 2010 is 53,814 mW. As shown in Table 1 of Exhibit (FS-1)  
4 \_\_\_\_\_, unless capacity is added, the state reserve margin will fall below  
5 the desired 20% by 2015, and will continue to decrease thereafter  
6 falling below 15% in 2018. For the purpose of maintaining a desired  
7 reserve margin of 20%, peninsular Florida will need an additional 204  
8 mW by 2015, 995 mW by 2016, over 2,800 mW by 2018 and over  
9 3,700 mW by 2019. Taking into consideration this one factor, as  
10 reflected in the Regional Plan, the utilities of peninsular Florida have  
11 made a prima facie case for a need for additional capacity no later  
12 than 2015. While the Authority's actual numbers are not yet finalized,  
13 approximately 100 mW of the Authority's 123 mW capacity additions  
14 are planned for commercial operation in 2015 – of which a net of  
15 approximately 90 mW will serve to meet the coming needs for  
16 additional capacity.

17  
18 **Q. Will the Authority's Expanded Facility contribute to improving**  
19 **system reliability and integrity?**

20 A. Yes. The Expanded Facility will, conservatively, have an availability  
21 factor of 90%. Its capacity will be a dependable addition to the system.  
22 The addition of the Expanded Facility improves system reliability and  
23 integrity, not only because it makes additional capacity available, but



1 also because its fuel source is secure and increases the diversity of  
2 the fuels used to generate energy in the State. Further it contributes  
3 to the integrity of the system by virtue of the interconnection of the  
4 Expanded Facility being designed in accordance with good  
5 engineering practice and in compliance with the applicable  
6 requirements.

7  
8 It should be noted that the Existing Facility is included on the  
9 "compliance registry" of the North American Electric Reliability Council  
10 (NERC) and the Florida Reliability and Coordinating Council (FRCC)  
11 as a facility that impacts grid reliability within the FRCC region, which  
12 is the peninsular Florida grid. More specifically, in a decision issued  
13 on August 22, 2007 NERC cites an FRCC conclusion relating to the  
14 Existing Facility, that ". . .this generator *and others like it* in the FRCC,  
15 in aggregate, are important to maintain the reliability of the FRCC BPS  
16 [bulk power system]." I would interpret "others like it" to include the  
17 Expanded Facility thereby substantiating the impact on reliability.

18  
19 **Q. Mr. Seidman, you indicated earlier that the Authority has not yet**  
20 **signed a contract to sell electricity from the Expanded Facility.**  
21 **Will this affect its ability to contribute to the State's reserve**  
22 **margin requirements?**

1       A.    No. The Expanded Facility, as Mr. Bruner and Mr. Pellowitz have  
2            testified, is necessary for the Authority to timely and economically  
3            meet its obligations to properly manage, process, recycle and dispose  
4            of the county's MSW. The Expanded Facility's primary function is as  
5            an MSW disposal/volume reduction vehicle and it will produce energy  
6            as a byproduct, of which a relatively small portion will be used  
7            internally. It can be safely assumed that some of the remaining energy  
8            would be disposed of by delivery to the peninsular Florida grid. The  
9            facility needs to operate as nearly as possible on a 24 hours a day, 7  
10           days a week basis to meet the MSW disposal/volume reduction needs  
11           of the Authority. Electric generation and capacity – which is a  
12           byproduct of the disposal/volume reduction process - will be available  
13           to the peninsular Florida grid on that basis. This is true regardless of  
14           whether the Authority sells energy on a firm basis or on an as-  
15           available basis so long as it is interconnected with the peninsular  
16           Florida grid.

17

18       **Q.    Will the energy generated by the Expanded Facility be of benefit**  
19            **to the public?**

20       A.    Yes. By virtue of being electrically interconnected in parallel, it will  
21            provide a part of the total energy supply of the entire peninsular  
22            Florida grid, as does the Existing Facility. Being an MSW generation  
23            facility, it will provide special benefits that have already been

1 recognized, encouraged and promoted by the Florida Legislature.  
2 These specific benefits will be addressed in the body of my testimony  
3 that follows.  
4

5 **Q. Is there a need for fuel diversity in Florida?**

6 A. Yes. The Florida Legislature, in 366.91 and 366.92, F.S., recognized  
7 the need to diversify fuel types in view of, and especially to address,  
8 Florida's growing dependency on natural gas for electric production.  
9 As of 2009, over 49 % of peninsular Florida's aggregate energy needs  
10 were being met by natural gas. By 2019, that dependency on natural  
11 gas is projected to increase to almost 53 %. Renewable energy is  
12 needed to reduce this growing dependency and increase fuel  
13 diversity. And, as of 2009, 86 % of the energy generated in peninsular  
14 Florida is fueled by a combination of natural gas, oil and coal ("fossils  
15 fuels"). (see Table 2 of Exhibit (FS-1) \_\_\_\_\_. By 2019 that percentage  
16 is forecast to have dropped to just under 83%. During that same 2009  
17 – 2019 time frame, energy generated by renewable resources is  
18 projected to remain below 2%.

19

20 **Q. Will the energy generated by the Expanded Facility help to**  
21 **diversify the fuel mix used to generate electricity in peninsular**  
22 **Florida?**

1       A.    Yes. There is no doubt that the energy generated by the Expanded  
2       Facility will help to diversify the types of fuel used to generate  
3       electricity in peninsular Florida. The Expanded Facility will be fueled  
4       by the combustion of MSW and landfill gas. Every kWh of energy  
5       produced by the Expanded Facility that flows into the peninsular  
6       Florida grid will displace energy that would have been produced by  
7       fossil fuels, including natural gas and oil, by peninsular Florida's  
8       utilities. The energy output from the Expanded Facility will displace the  
9       equivalent of approximately 249,000 tons of coal or 886,000 barrels of  
10      oil or 4,000,000 mcf of natural gas. (see Table 3 of Exhibit (FS-1)  
11      \_\_\_\_\_).

12

13      **Q.    Will the energy generated by the Expanded Facility lessen**  
14      **dependence and reliance on natural gas, oil and other fossil**  
15      **fuels?**

16      A.    Yes, by the displacement of those fuels as noted previously. The  
17      addition of more renewable resources to the peninsular Florida grid by  
18      the Expanded Facility will help to lessen the dependence on these  
19      fossil fuels. This complies with the stated intent of the statutes to  
20      promote the development of renewable energy sources as a means of  
21      diversifying fuel the types of fuel.

22

23

1       **Q.    What is the status of fuel diversification in peninsular Florida?**

2           There is no real progress being made toward fuel diversification in  
3           peninsular Florida. And there is no progress being made with regard  
4           to the encouragement of the development of renewable resources. As  
5           I previously pointed out, energy generated by fossil fuels remains in  
6           80% range through the next ten years and energy generated by  
7           renewable resources remain below 2%.

8

9       **Q.    In addition to improving fuel diversity, will the Expanded Facility  
10        help to minimize the volatility of fuel costs?**

11       **A.**    Yes. Any type of generation that is not dependent on extracting a  
12        natural resource from the earth will aid in minimizing volatility. The  
13        prices of oil, coal, natural gas and even uranium fluctuate with the  
14        market. A utility's costs vary with those fluctuations and it adjusts its  
15        electric rates to recognize those fluctuations. While the cost of  
16        collecting MSW may be subject to some variation, it will have no  
17        impact on the sale price of electricity produced and sold to a utility  
18        because under applicable statutes and rules, the price paid to the  
19        Authority will be based, not on the Authority's cost, but on the costs  
20        the utility would have paid to produce the energy itself. As the  
21        quantity of energy produced by renewable resources increases, the  
22        quantity of energy produced by oil, gas and coal decreases, reducing  
23        the utility's reliance on these fuels that are subject to volatile pricing.

1           The fallout benefits of increased generation by MSW and other  
2           renewable resources is greater stability in the cost of electricity to the  
3           utilities and their customers.

4

5           **Q.    Is MSW a reliable source of energy supply?**

6           A.    Yes. MSW, is simply a term for something we are all familiar with –  
7           garbage.  Importantly, however, the special act that created the  
8           Authority includes a broader definition including garbage, sewage,  
9           sludge, septage, rubbish, refuse, and other discarded solid or liquid  
10          materials resulting from domestic, industrial, commercial, agricultural,  
11          and governmental operations.  In spite of significant efforts to recycle,  
12          conserve and raise public awareness, we – meaning society in  
13          general - have not had a great deal of success in reducing the amount  
14          of garbage produced per capita.  I am advised that the rate of MSW  
15          generation is pretty much directly related to population and to some  
16          extent, younger aged segments of the population.  It is my  
17          understanding that it is simply not foreseeable and the Authority  
18          cannot anticipate - barring a natural disaster or other severe  
19          unforeseen events - that we are likely to experience a long-term  
20          decrease in the MSW stream, and certainly not likely during the useful  
21          life of the Expanded Facility.  It has proven over the long term to be a  
22          steadily increasing renewable energy resource.

23

1       **Q. Will the energy generated by the Expanded Facility help meet the**  
2       **need for adequate electricity at a reasonable cost?**

3       A. Yes. Applicable State and Federal statutes and rules, including the  
4       rules of this Commission, require that energy produced by the  
5       Expanded Facility be purchased by utilities at no more than the  
6       purchasing utility's avoided cost. The utilities and their customers are  
7       therefore assured that electricity purchased from the Expanded  
8       Facility will be at a reasonable cost.

9  
10      **Q. Will the energy generated by the Expanded Facility affect the**  
11      **costs of power supply to electric utilities and their customers?**

12      A. Yes. It will lessen the state's dependence on fossil fuels in the  
13      generation of electricity and displace or reduce the need for  
14      generating capacity construction by electric utilities. These effects will  
15      reduce fuel price volatility, reduce fuel supply risks, and defer the need  
16      for utility investment in new capacity, thereby contributing to the  
17      lowering - or at the very least stabilizing – the cost of power.

18  
19      **Q. Will the energy generated by the Expanded Facility increase fuel**  
20      **diversity and supply reliability?**

21      A. Yes. It will increase the diversity of the fuel supply and, as previously  
22      discussed, will improve system reliability.

23

1       **Q. Will the energy generated by the Expanded Facility affect the**  
2       **state's consumption of imported and non-renewable fossil fuels?**

3       A. Yes. The addition of generation fueled by renewable resources will  
4       lessen the need for and reliance upon by imported and non-renewable  
5       fossil fuels in the generation of electricity by displacing an equivalent  
6       amount of those fuels in the generation of electricity.

7  
8       **Q. Is the Expanded Facility a cost-effective conservation measure?**

9       A. Yes. In 377.709(1), Florida Statutes, the Legislature declared that the  
10       combustion of refuse by a solid waste facility to supplement the  
11       electric supply represents an effective conservation measure.

12  
13       **Q. Will energy generated by the Expanded Facility affect**  
14       **environmental conditions?**

15       A. Yes. In 377.709(1), Florida Statutes, the Legislature also declared that  
16       the combustion of refuse by a solid waste facility to supplement the  
17       electric supply represents an environmentally preferred alternative to  
18       conventional solid waste disposal in Florida. Moreover, the Expanded  
19       Facility will be designed, constructed and operated to meet or exceed  
20       all applicable emission and other environmental requirements.

21

22       **Q. Is there any downside for the electric customers of Florida if the**  
23       **Expanded Facility is not added at the size and time proposed?**



1       A.    Yes. There are, of course, consequences for Palm Beach County and  
2           its residents, but those will be addressed by Mr. Pellowitz. I will only  
3           address the consequence for electric customers. If the Expanded  
4           Facility is not added at the size and time proposed, the state will  
5           continue to consume increasingly scarce nonrenewable fossil fuels  
6           that could have been displaced. Dependence on fuels that were not  
7           displaced will continue, the volatility of their costs will not be mitigated,  
8           and the fuel diversity will not improve.

9

10       **Q.    What is your conclusion regarding the need for the Expanded**  
11       **Facility?**

12       A.    There is definitely a need for Expanded Facility and the net electric  
13           energy and capacity that it will produce. Not only is the Expanded  
14           facility needed to advance and comply with Florida's policy of  
15           promoting renewable energy, but it will also help reduce the reliance  
16           on fossil fuels in the generation of electricity, will aid in maintaining the  
17           integrity and reliability of Florida's electric system, will provide  
18           adequate electricity at a reasonable cost while taking into account the  
19           need for fuel diversity and supply reliability, and will provide an  
20           effective conservation and environmental measure. Moreover, as Mr.  
21           Bruner and Mr. Pellowitz testify, there is a need for the Expanded  
22           Facility by the Authority in order for it to timely and cost-effectively

1           comply with its obligations to properly manage, process, recycle and  
2           dispose of the county's MSW.

3

4           Accordingly, the Commission should issue an order making an  
5           affirmative determination of need for the Expanded Facility.

6

7           **Q.    Does that conclude your testimony?**

8           **A.    Yes, it does.**

Exhibit (FS-1) \_\_\_\_\_, Table 1

FLORIDA RELIABILITY COORDINATING COUNCIL (FRCC)  
 NET FIRM SUMMER PEAK DEMAND, MW  
 AGGREGATE RESERVE MARGIN  
 From FRCC 2010 Regional Load & Resource Plan

	Actual 2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	MW Capacity Avail. 2010
NET FIRM SUMMER PEAK DEMAND	46,263	42,820	42,831	43,409	43,899	44,451	45,015	45,674	46,351	47,199	47,988	53,814
Annual Increase in Firm Summer Peak Demand, MW		(3,443)	11	578	490	552	564	659	677	848	789	
Percent annual Increase		-7.44%	0.03%	1.35%	1.13%	1.26%	1.27%	1.46%	1.48%	1.83%	1.67%	
								10 Yr Increase, MW				1,725
								Percent Increase				3.73%
Aggregate Reserve Margin, MW		10,994	10,983	10,405	9,915	9,363	8,799	8,140	7,463	6,615	5,826	
Aggregate Reserve Margin, Pct.		25.67%	25.64%	23.97%	22.59%	21.06%	19.55%	17.82%	16.10%	14.02%	12.14%	
Capacity shortage, MW, needed to meet minimum 15% statewide reserve								1,289	510	(465)	(1,372)	
Capacity shortage, MW, needed to meet 20% statewide planning reserve					1,135	473	(204)	(995)	(1,807)	(2,825)	(3,772)	

Source: 2010 FRCC Plan page 1, col. (2) and page 28, Forms 10.0, cols. ((7) and (11).

NOTE: Net Firm Summer Peak Demand is Total Summer Peak Demand minus Interruption and Load Management Demand

Exhibit (FS-1)\_\_\_\_, Table 2

**FLORIDA RELIABILITY COORDINATING COUNCIL (FRCC)  
 ENERGY SOURCES BY FUEL TYPE - GWH  
 From FRCC 2010 Regional Load & Resource Plan**

	Actual 2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Nuclear	29,202	29,477	30,089	33,502	36,742	37,867	36,511	37,315	36,762	37,126	41,550
Coal	48,345	55,003	56,561	56,506	56,415	55,470	57,912	57,948	59,061	58,574	58,643
Residual	5,630	2,763	1,738	1,500	876	820	965	1,456	1,677	1,726	1,748
Distillate	653	871	821	687	629	223	270	320	313	351	310
Natural Gas	111,508	107,576	112,838	114,066	115,946	121,289	122,542	128,477	130,910	135,335	136,044
NUG	2,920	2,604	2,597	2,601	2,388	1,470	1,469	1,474	1,463	1,461	1,464
Firm Interchange	15,174	11,667	8,132	7,693	7,418	7,164	7,307	2,124	1,905	1,812	1,715
Other	10,142	10,673	9,686	9,569	10,838	10,681	11,773	12,282	13,466	13,750	13,000
Renewable	2,392	2,540	3,035	3,269	3,415	3,811	3,814	3,752	3,323	3,199	3,118
Net Energy for Load	225,966	223,174	225,498	229,393	234,667	238,795	242,563	245,148	248,880	253,334	257,592

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Nuclear	12.92%	13.21%	13.34%	14.60%	15.66%	15.86%	15.05%	15.22%	14.77%	14.65%	16.13%
Coal	21.39%	24.65%	25.08%	24.63%	24.04%	23.23%	23.88%	23.64%	23.73%	23.12%	22.77%
Residual	2.49%	1.24%	0.77%	0.65%	0.37%	0.34%	0.40%	0.59%	0.67%	0.68%	0.68%
Distillate	0.29%	0.39%	0.36%	0.30%	0.27%	0.09%	0.11%	0.13%	0.13%	0.14%	0.12%
Natural Gas	49.35%	48.20%	50.04%	49.73%	49.41%	50.79%	50.52%	52.41%	52.60%	53.42%	52.81%
NUG	1.29%	1.17%	1.15%	1.13%	1.02%	0.62%	0.61%	0.60%	0.59%	0.58%	0.57%
Firm Interchange	6.72%	5.23%	3.61%	3.35%	3.16%	3.00%	3.01%	0.87%	0.77%	0.72%	0.67%
Other	4.49%	4.78%	4.30%	4.17%	4.62%	4.47%	4.85%	5.01%	5.41%	5.43%	5.05%
Renewable	1.06%	1.14%	1.35%	1.43%	1.46%	1.60%	1.57%	1.53%	1.34%	1.26%	1.21%
Net Energy for Load	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Nuclear	12.9%	13.2%	13.3%	14.6%	15.7%	15.9%	15.1%	15.2%	14.8%	14.7%	16.1%
Coal and Inter & Other	86.0%	85.7%	85.3%	81.6%	82.9%	82.5%	83.3%	85.2%	85.9%	84.1%	83.2%
Renewable	1.1%	1.1%	1.3%	1.4%	1.5%	1.6%	1.6%	1.5%	1.3%	1.3%	1.2%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: 2010 FRCC Plan page 9.1

Exhibit (FS-1)\_\_\_\_\_, Table 3

FLORIDA RELIABILITY COORDINATING COUNCIL (FRCC)

ENERGY CONVERSION  
 FOSSIL FUEL DISPLACEMENT

Parameters from 2010 FRCC Regional Plan  
 FRCC Forms 9.0 and 9.1

	2009	2019
<u>COAL</u>		
Tons	21,494,000	25,430,000
mHW	48,345,000	58,643,000
Tons/mWH	0.4446	0.4336
EQUIV. TONS for PBSWA 100MW Plant *	255,643	249,343
<u>RESIDUAL OIL</u>		
Bbl	9,421,000	2,693,000
mWH	5,630,000	1,748,000
Bbl/mWH	1.6734	1.5406
EQUIV. Bbls for PBSWA 100MW Plant *	962,180	885,855
<u>NATURAL GAS</u>		
mCF	813,112,000	958,642,000
mWH	114,425,000	137,508,000
mCF/mWH	7.1061	6.9715
EQUIV. mCF for PBSWA 100MW Plant *	4,085,990	4,008,633

\* Based on Operating Assumptions for  
 SWA Extended Facility - Annual mWh to the grid

575,000