

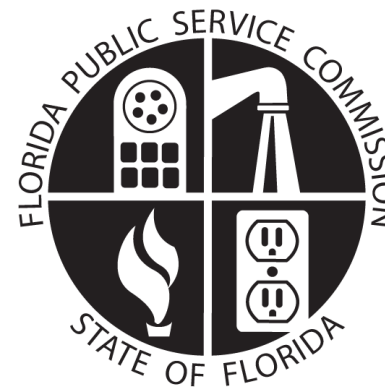
Basics of Power Purchase Agreements (PPAs)

A Florida Prospective

Eduardo Balbis, P.E.

Commissioner

Florida Public Service Commission



Mexico National Forum on Renewable Energy Regulation: An Approach to Auctions

March 6-7, 2012

Florida Public Service Commission

Gubernatorial Appointees Confirmed by Senate



COMMISSIONER

Eduardo E.
Balbis



COMMISSIONER

Lisa Polak
Edgar



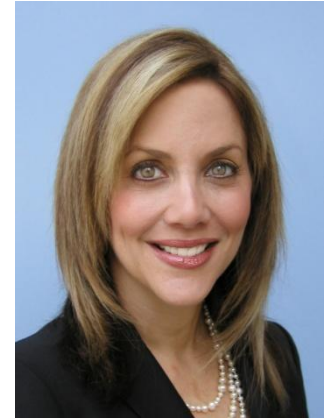
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The PSC was established in 1887 and regulates:



Electric



Natural Gas



Water & Wastewater



Telecommunications



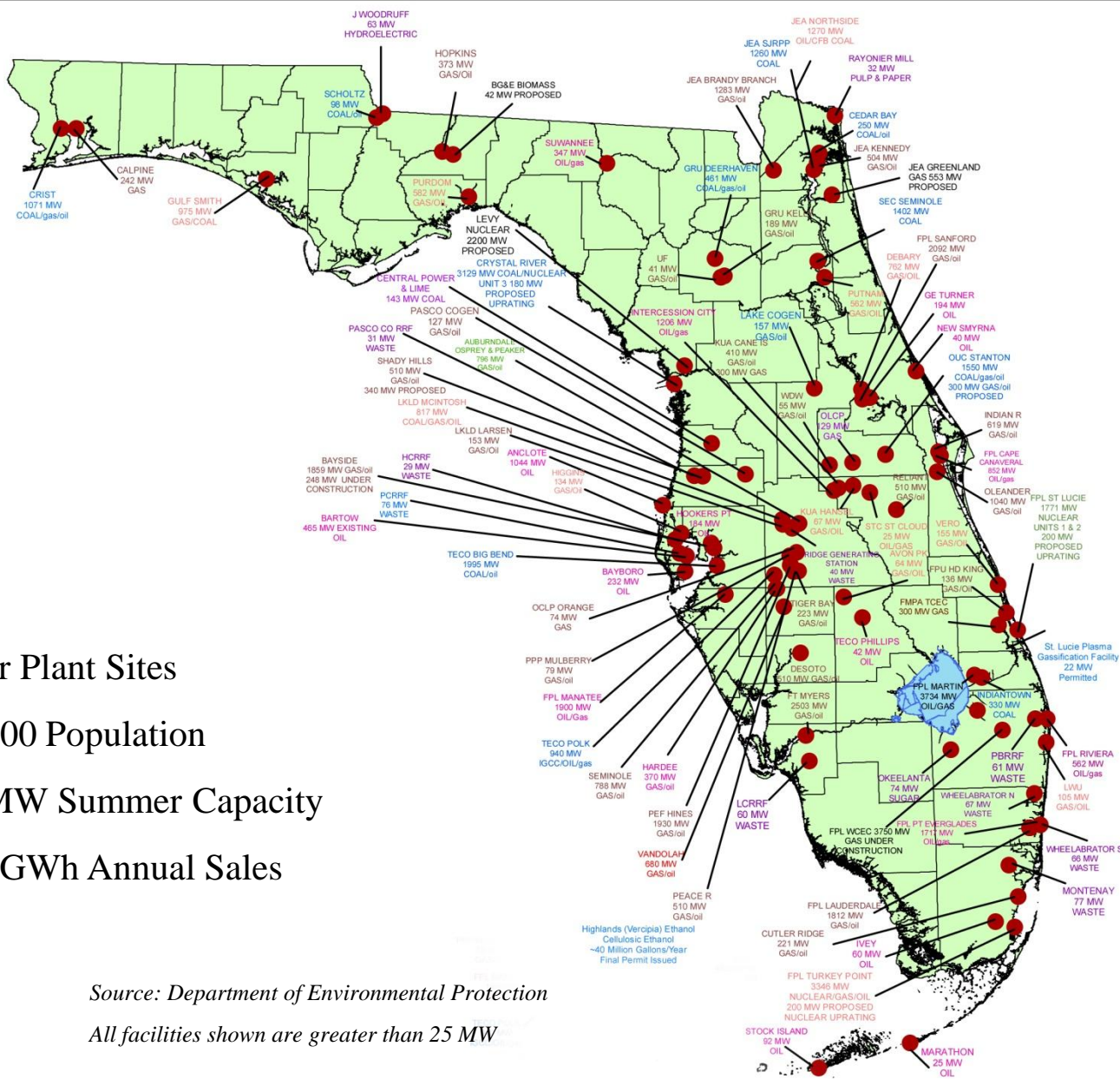
ve territories, vertical integration
tion, transmission, distribution)

Approximate Company Service Areas

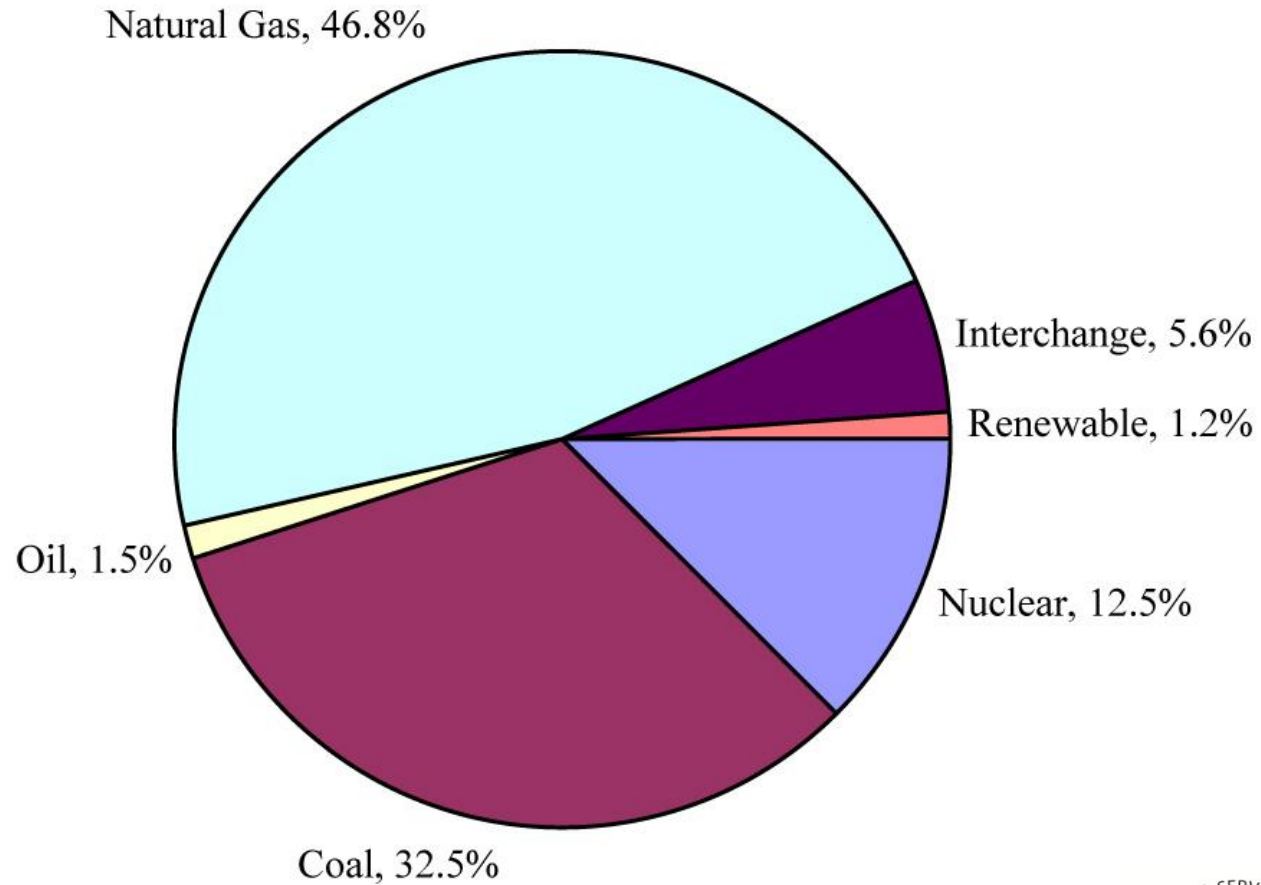
Exclusive territories, vertical integration
(generation, transmission, distribution)

Approximate Company Service Areas

Florida Power Plants

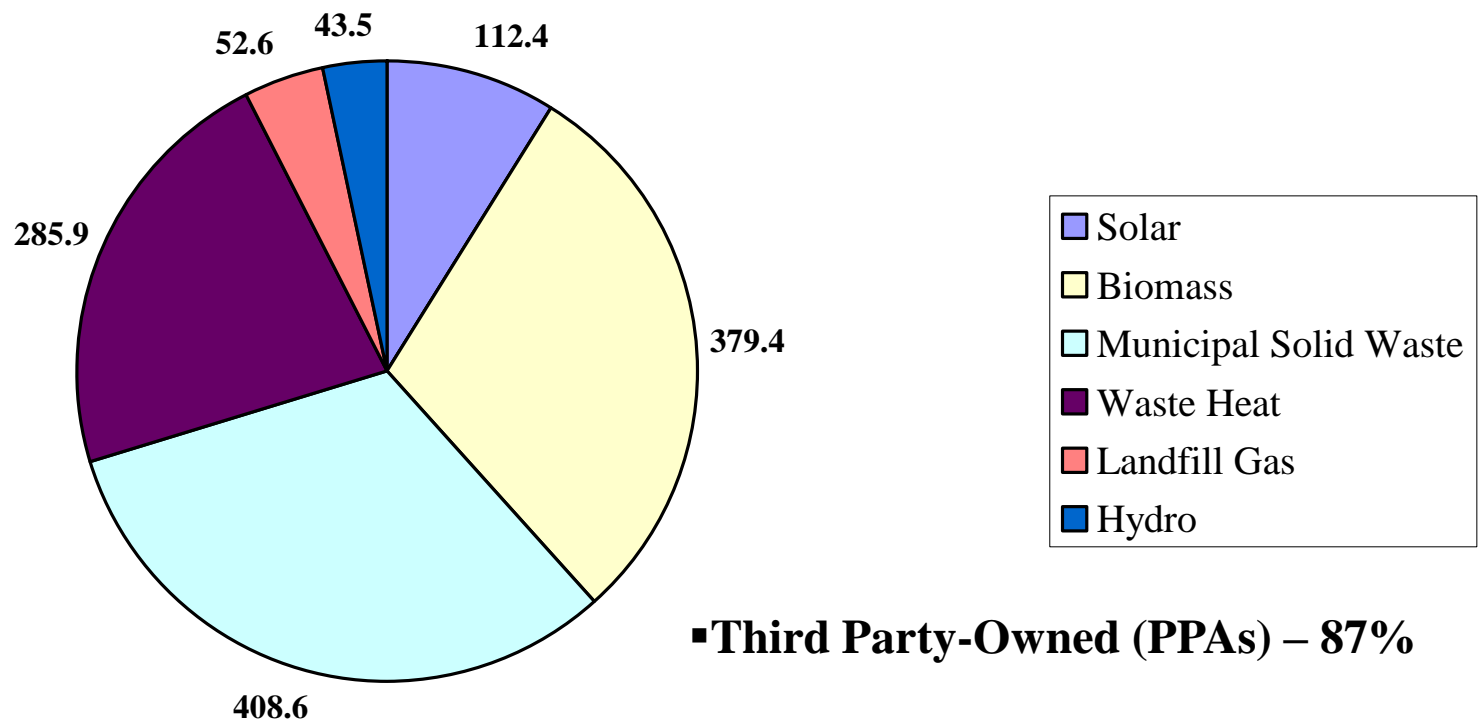


Statewide Generating Fuel Portfolio – 2011



Existing Renewable Resources in Florida

Existing Renewable Resources (MW) - 1,282.4 MW Total



Purchased Power Agreements

- ❑ Florida statutes **require** utilities to interconnect with and purchase electricity from renewable and alternative generators.
- ❑ Utilities purchase capacity and energy via two methods:
 - **Standard Offer Contract** with flexible pricing options, including levelized capacity payments and fixed energy payment options
 - **Negotiated Contracts** at rates that do not exceed the utility's cost to produce electricity (avoided cost)

Recent Examples of Negotiated Contracts

Purchasing Utility	Renewable Provider	MW
PEF	Trans World	40
PEF	BG&E	45
PEF	FB Energy	60
FPL	SWA	55
FPL	SWA	80
		280



What do the Parties Want?

Cogenerators/Renewables

- Capacity payments based on high capital cost coal/nuclear generation
 - Corresponding high fixed capacity payments improve project viability with regards to financing
- Payment in-service date = in-service date of cogen/renewable plant
- Fixed energy payments
 - More certainty to lenders
- Long-term contracts
 - Greater likelihood to meet debt service and achieve profitability

Utilities

- No payments above avoided cost by the in-service date of the avoided unit
- Certainty of performance
 - Alternative generation must be there to serve existing and future load
 - Financial: won't go out of business
 - Operational: dispatchable or comparable to the operation of the avoided unit
- Ability to plan for and integrate alternative unit into economic dispatch



What did we do to encourage PPAs?

- ☐ Extend contract length up to life of Avoided Unit
- ☐ Allow renewable energy provider to select avoided unit from portfolio of planned fossil unit technologies
- ☐ Make Standard Offer Contracts available when next unit is outside the planning horizon
- ☐ No subscription limit on amount of capacity that can be contracted for
- ☐ Additional payment options (advanced capacity, advanced energy)
- ☐ Allows modification of payment due to environmental regulations that increase the cost of the avoided unit

Purchased Power Agreements

Standard Offer Contracts

- ☐ Approved by the Commission each year for every utility
- ☐ Used for Renewable Facilities (RF) of ANY size
- ☐ Used for Qualifying Facilities (QF – FERC) of <100kW
- ☐ Avoided Unit Concept – Utility lists all upcoming fossil technologies for 10yrs
- ☐ Provide basic information to a potential independent power producer (IPP)
- ☐ Can be executed by both parties immediately
- ☐ Normally used for basic information to start negotiating
- ☐ **CAPACITY PAYMENTS & ENERGY RATES**



Purchased Power Agreements

Standard Offer Contracts (Continued)



SECTION NO. IX
FOURTH REVISED SHEET NO. 6.41E
CANCELS THIRD SHEET NO. 9.41E

3. Term of Contract

Except as otherwise provided herein, this Contract shall become effective immediately upon its execution by the Parties and shall end at 12:01 a.m. on the Termination Date, (the "Term") unless terminated earlier in accordance with the provisions hereof. Notwithstanding the foregoing, if the Capacity Delivery Date of the Facility is not accomplished by the RF/QF before the either the Avoided Unit In-Service Date or an earlier date in Appendix E (or such later date as may be permitted by FEF pursuant to Section 7), this Contract shall be rendered null and void and PEF's shall have no obligations under this Contract.

4. Minimum Specifications and Milestones

As required by FPSC Rule 25-17.0832(4)(e), the minimum specifications pertaining to this Contract and milestone dates are as follows:

Avoided Unit	Undesignated CT
Avoided Unit Capacity	178 MW
Avoided Unit In-Service Date	June 1, 2020
Avoided Unit Heat Rate	10,700 Btu/kWh
Avoided Unit Variable O&M	0.945¢ per kWh in mid-2020 dollars escalating annually at 2.00%
Avoided Unit Life	25 years
Capacity Payments begin	Avoided Unit In-Service Date unless Option B, or D is selected or amended in Appendix E
Termination Date	May 31, 2030 (10 years) unless amended in Appendix E
Minimum Performance Standards - On Peak Availability Factor*	94%
Minimum Performance Standards - Off Peak Availability Factor	94%
Minimum Availability Factor Required to qualify for a Capacity payment	74%
Expiration Date	April 1, 2012
Completed Permits Date	June 1, 2019
Exemplary Early Capacity Payment Date	January 1, 2012

* RF/QF performance shall be as measured and/or described in Appendix A.

ISSUED BY: Lori J. Cross, Manager, Regulatory Planning Florida
EFFECTIVE: JUN 14 2011

Excerpts from the Progress Energy Florida 2011 Standard Offer Contract

- ☐ Provides Basic Information to IPP
- ☐ Avoided Unit Capacity
- ☐ Avoided Unit In Service Date
- ☐ Variable Operations/Maint. Cost
- ☐ Minimum Availability Factor

Also basis for RFP during Need Determination Process



Purchased Power Agreements

Standard Offer Contracts (Continued)

☐ Basic information needed to be provided by IPP of proposed renewable facility


☐ Technology

☐ Fuel

☐ Maximum Capability

☐ Power Factor

However, the most important information to the IPP is how much they will be paid (Capacity and Energy).

 SECTION No. 1X
FIRST REVISED SHEET NO. 9.414
CANCELS ORIGINAL SHEET NO. 9.414

2. Facility: Renewable Facility or Qualifying Facility Status

The Facility's location and generation capabilities are as described in Table 1 below.

TABLE 1

TECHNOLOGY AND GENERATOR CAPABILITIES	
Location: Specific legal description (e.g., metes and bounds or other legal description with street address required)	City: County:
Generator Type (Induction or Synchronous)	
Technology	
Fuel Type and Source	
Generator Rating (KVA)	
Maximum Capability (kW)	
Net Output (kW)	
Power Factor (%)	
Operating Voltage (kV)	
Peak Internal Load kW	

The RF/QF's failure to complete Table 1 in its entirety shall render this Contract null and void and of no further effect.

The RF/QF shall use the same fuel or energy source and maintain the status as a Renewable Facility or a Qualifying Facility throughout the term of this Contract. RF/QF shall at all times keep PEF informed of any material changes in its business which affects its Renewable Facility or Qualifying Facility status. PEF and RF/QF shall have the right, upon reasonable notice of not less than seven (7) Business Days, to inspect the Facility and to examine any books, records, or other documents reasonably deemed necessary to verify compliance with this Contract. In the event of an emergency at or in proximity to the RF/QF site that impacts PEF's system, PEF shall make reasonable efforts to contact the Facility and make arrangements for an emergency inspection. On or before March 31 of each year during the term of this Contract, the RF/QF shall provide to PEF a certificate signed by an officer of the RF/QF certifying that the RF/QF continuously maintained its status as a Renewable Facility or a Qualifying Facility during the prior calendar year.

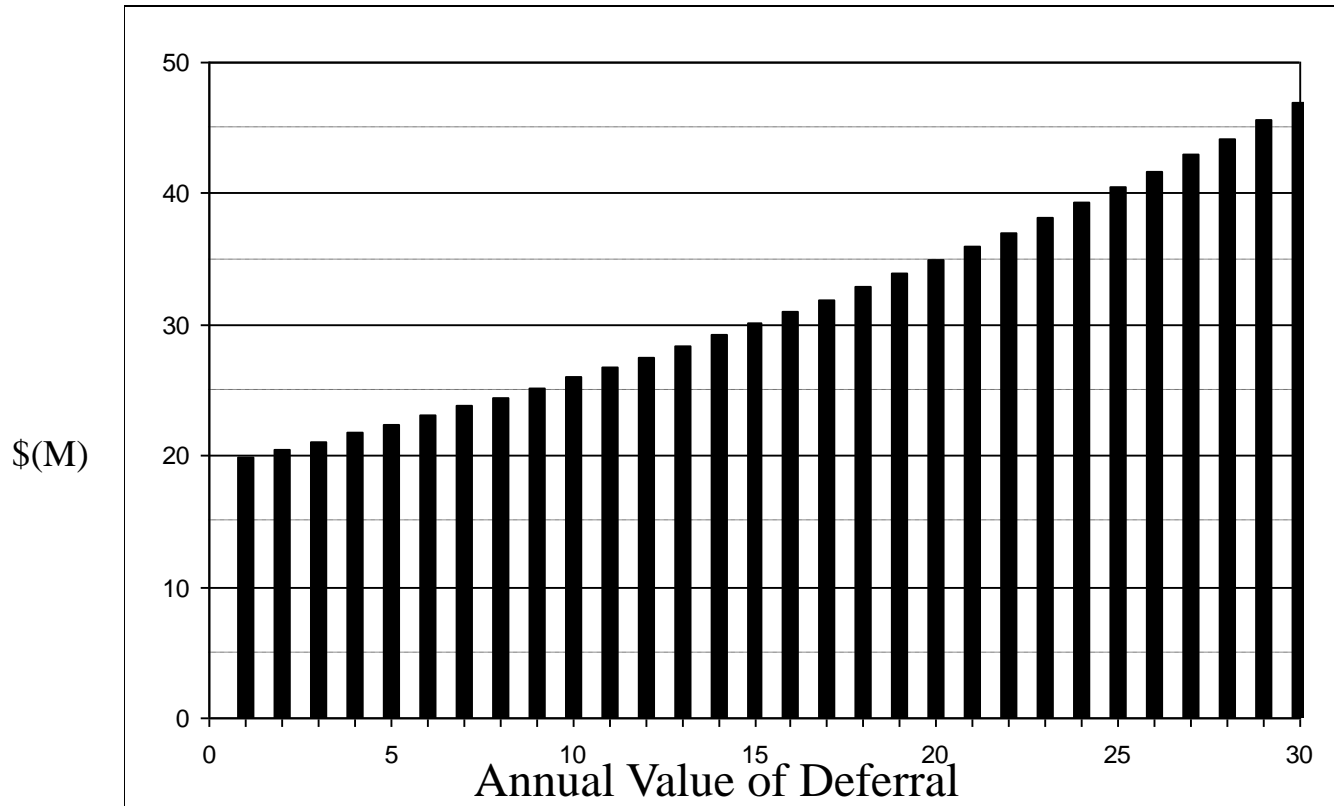
ISSUED BY: Lori J. Cross, Manager, Utility Regulatory Planning
EFFECTIVE: JUN 14 2011



Purchased Power Agreements

Standard Offer Contracts (Continued)

☐ **Capacity Payments** - Based on the value of deferral of the avoided unit (\$/MW)



Purchased Power Agreements

Standard Offer Contracts (Continued)

- ☐ **Energy Payments** – Based on utility's cost both prior to and after the avoided unit in service date
 - ☐ Prior to the in service date of avoided unit – Based on utility's As-Available Energy Rate (hourly system fuel cost)
 - ☐ After the in-service date of the avoided unit – Based on the **lesser** of As-Available Energy Rate and the Avoided Unit Energy Cost (Fuel Cost x Heat Rate + Variable O&M)

Can also fix a portion of the energy payment to facilitate financing.



Purchased Power Agreements

Standard Offer Contracts (Continued)

☐ **Energy Payments (cont.)**

☐ Four different payment options (same total present value payment amount):

☐ Normal

☐ Early

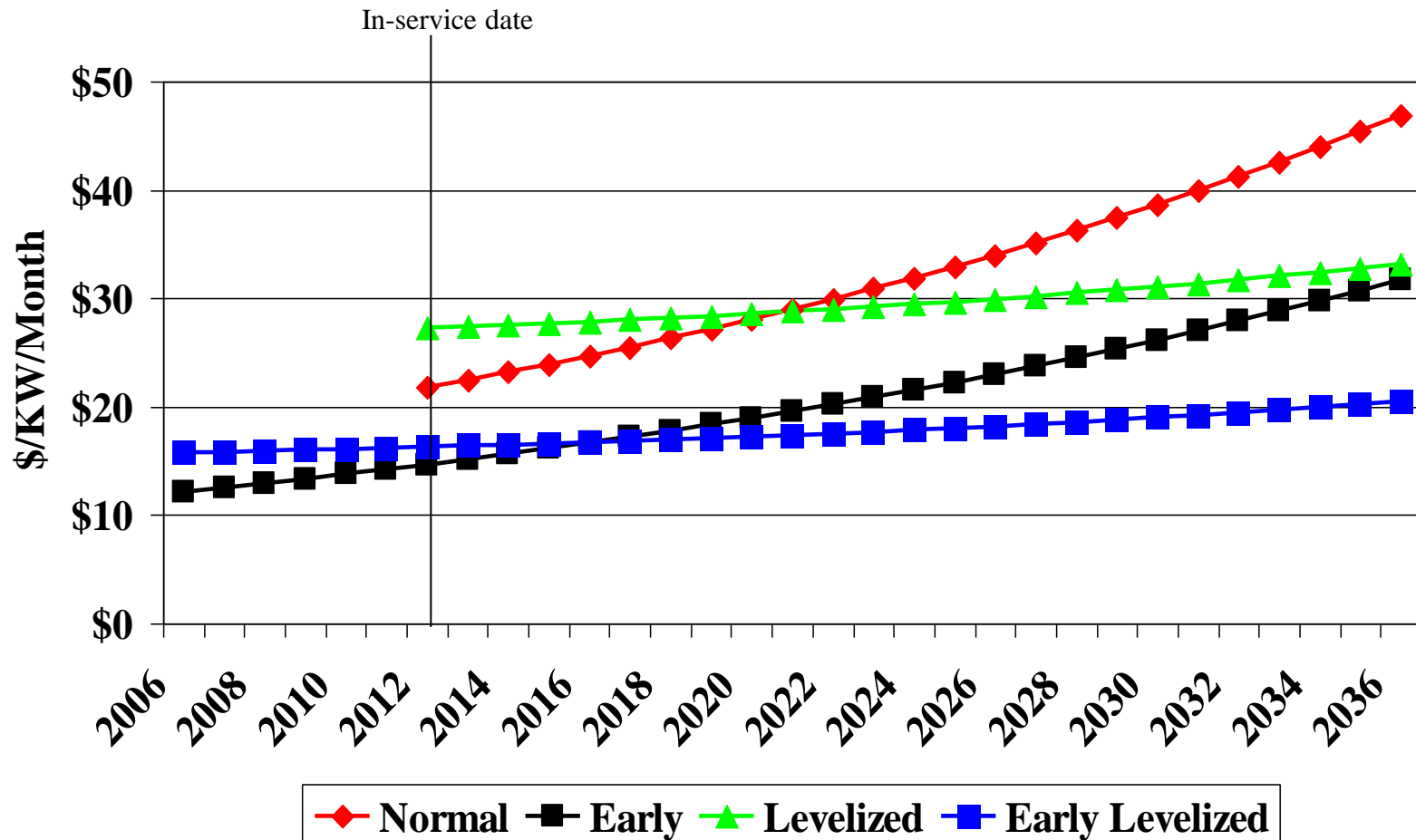
☐ Levelized

☐ Early Levelized



Purchased Power Agreements

Standard Offer Contracts (Continued)



Note: Assumes avoided coal unit in-service date of mid-2012; For “Levelized” and “Early Levelized” capacity payment is fixed while O&M escalates



Purchased Power Agreements

Negotiated Contracts

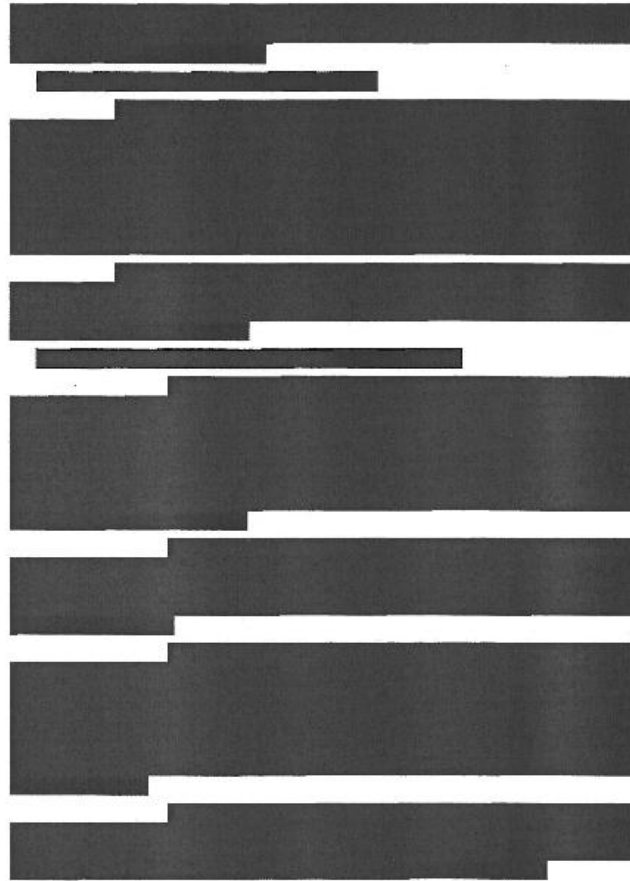
- ☐ Allows flexibility between Utility and IPP to revise terms and conditions more favorable for the specific technology and facility
- ☐ Must be approved by the Commission for cost recovery
- ☐ Must have an equal or lower net present value than the incremental construction and operation of the avoided unit
- ☐ Negotiated Contract Example – U.S. EcoGen Polk, LLC – Progress Energy Florida
 - ☐ 60 MW Biomass Facility – 500,000 MWH/year
 - ☐ 30 year(+/-) term
 - ☐ 178 MW Natural Gas Combustion Turbine with an In-Service Date of 2018
 - ☐ 90% (+/-) Fixed Energy Payment



Purchased Power Agreements

Negotiated Contracts – Sample Payment Terms

Sample Executed Contract – Financial Terms Usually Confidential



Purchased Power Agreements

Negotiated Contracts

Comparison of Payments to US EcoGen and 2012-13 Avoided Costs

Contract MW: 60
Capacity Factor: 94%
PPA Date: 6/30/2012
Discount Rate: 5.10%

REDACTED

REDACTED

\$000	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	End Months	Contract Energy MWh	Contract Capacity Payments	Contract Energy Payments	Contract Energy & Capacity Payments	Contract Cumulative Payments	Avoided Capacity Payments	Avoided Energy Payments	Avoided Energy & Capacity Payments	Avoided Cumulative Payments	(10) - (11) Difference from Contract	(12) - (13) Cumulative Difference from Contract	Discount Factor
Units			\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	
Year													
2011	0	-					\$ -	\$ -	\$ -	\$ -			1.000
2012	0	-					\$ -	\$ -	\$ -	\$ -			0.986
2013	0	-					\$ -	\$ -	\$ -	\$ -			0.969
2014	12	494,067					\$ -	\$ 29,593	\$ 29,593	\$ 29,593			0.702
2015	12	494,067					\$ -	\$ 34,400	\$ 34,400	\$ 63,993			0.732
2016	12	494,067					\$ -	\$ 38,571	\$ 38,571	\$ 98,067			0.677
2017	12	494,067					\$ -	\$ 37,148	\$ 37,148	\$ 135,210			0.627
2018	12	494,067					\$ 2,541	\$ 38,104	\$ 40,645	\$ 175,755			0.580
2019	12	494,067					\$ 4,880	\$ 36,294	\$ 41,174	\$ 217,534			0.535
2020	12	494,067					\$ 4,675	\$ 34,061	\$ 38,736	\$ 256,611			0.495
2021	12	494,067					\$ 4,752	\$ 34,151	\$ 38,903	\$ 295,514			0.459
2022	12	494,067					\$ 4,839	\$ 34,887	\$ 39,726	\$ 335,289			0.424
2023	12	494,067					\$ 5,033	\$ 35,580	\$ 40,613	\$ 375,902			0.393
2024	12	494,067					\$ 5,184	\$ 35,991	\$ 41,175	\$ 417,077			0.363
2025	12	494,067					\$ 5,335	\$ 36,400	\$ 41,735	\$ 457,512			0.334
2026	12	494,067					\$ 5,496	\$ 36,804	\$ 42,300	\$ 497,300			0.311
2027	12	494,067					\$ 5,657	\$ 37,208	\$ 42,865	\$ 536,400			0.286
2028	12	494,067					\$ 5,818	\$ 37,612	\$ 43,430	\$ 575,215			0.265
2029	12	494,067					\$ 5,980	\$ 38,016	\$ 43,995	\$ 613,813			0.245
2030	12	494,067					\$ 6,141	\$ 38,420	\$ 44,560	\$ 652,137			0.225
2031	12	494,067					\$ 6,303	\$ 38,824	\$ 45,125	\$ 690,262			0.211
2032	12	494,067					\$ 6,464	\$ 39,228	\$ 45,690	\$ 728,137			0.195
2033	12	494,067					\$ 6,626	\$ 39,632	\$ 46,255	\$ 765,732			0.180
2034	12	494,067					\$ 6,787	\$ 40,036	\$ 46,820	\$ 803,137			0.167
2035	12	494,067					\$ 6,949	\$ 40,440	\$ 47,385	\$ 840,322			0.154
2036	12	494,067					\$ 7,110	\$ 40,844	\$ 47,950	\$ 877,272			0.143
2037	12	494,067					\$ 7,272	\$ 41,248	\$ 48,515	\$ 914,007			0.132
2038	12	494,067					\$ 7,433	\$ 41,652	\$ 49,080	\$ 950,527			0.122
2039	12	494,067					\$ 7,595	\$ 42,056	\$ 49,645	\$ 986,872			0.113
2040	12	494,067					\$ 7,756	\$ 42,460	\$ 50,210	\$ 1,023,007			0.104
2041	12	494,067					\$ 7,918	\$ 42,864	\$ 50,775	\$ 1,058,932			0.097
2042	12	494,067					\$ 8,079	\$ 43,268	\$ 51,340	\$ 1,094,672			0.088
2043	5	204,396					\$ 3,747	\$ 18,949	\$ 22,696	\$ 1,517,367			0.083
Total	353	2,454,309					\$ 194,514	\$ 1,758,049	\$ 1,952,567				
NPV 2012			\$ 36,776	\$ 322,357	\$ 359,133		\$ 46,473	\$ 382,309	\$ 418,951		\$ 51,818		

Contract Energy & Capacity Payments = \$359,133,000

Avoided Energy & Capacity Payments = \$418,951,000

Contract \$ < Avoided \$=

No Additional Cost to Customers



Purchased Power Agreements

In conclusion, Florida's PPA process provides flexibility to renewable energy producers without raising customer rates. However, there still are challenges for some technologies due to low fuel and capital costs for the avoided unit.



Questions?

