



Regional Utilities Committee Generation Planning Update

Referral #110210

October 10, 2011

#110210 – Update:

At the July 7, 2011 City Commission meeting, Commissioners requested that the RUC hear an update on the changing factors affecting Gainesville Renewable Energy Center (GREC) costs and projected costs.

Balancing Policy And Business Objectives

What brings us to today

- **Policy & business objectives**
- Previously provided pricing analyses
- Change in market and regulatory environments
- Resulting cost considerations
- Strategies to manage cost of adding generation
- Benefits from this new generation

City Commission Policy

- Reduce carbon emissions (June 2005 Commission passes resolution to enter Climate Protection Agreement)
- Adopted aggressive TRC test which expanded energy efficiency programs (April 12, 2006)
- Increase use of renewable fuels (June 2007)

County Commission Policy

- Alachua County Commission March 2007 Resolution
 - Energy efficiency
 - Reduce energy consumption
 - Renewable energy
- Environmental Protection Advisory Committee (EPAC) Report adopted by the County Commission
 - Suggested GRU build a 100 megawatt biomass generation facility
 - Report found biomass could contribute over 20 to 30 million dollars to the local economy in the interval 2011 to 2023

GRU Business Strategy

- Improve generation reliability
 - Deerhaven Unit 2, which provides most of the community's around-the-clock base load power, is nearly 30 years old
- Increase fuel diversity
 - Bond rating agency recommended
- Provide price stability and obtain long term cost savings for customers
- Hedge against further environmental regulation

Improve Generation Reliability

<u>Unit Name</u>	<u>Unit Type</u>	<u>Primary Fuel</u>	<u>Age in Years</u>	<u>Summer Net Capacity (MW)</u>
JR Kelly Unit 7	Steam Turbine	Natural Gas	50.1	23.20
JR Kelly GT1	Gas Turbine	Natural Gas	43.6	14.00
JR Kelly GT2	Gas Turbine	Natural Gas	43.0	14.00
JR Kelly GT3	Gas Turbine	Natural Gas	42.3	14.00
Deerhaven Unit 1	Steam Turbine	Natural Gas	39.1	78.00
Deerhaven GT1	Gas Turbine	Natural Gas	35.2	17.50
Deerhaven GT2	Gas Turbine	Natural Gas	35.1	17.50
Crystal River Unit 3	Steam Turbine	Nuclear	34.5	11.85
Deerhaven Unit 2	Steam Turbine	Coal	29.9	222.10
Deerhaven GT3	Gas Turbine	Natural Gas	15.7	75.00
JR Kelly CC1	Combined Cycle	Natural Gas	10.3	112.00
South Energy Center GT1	Gas Turbine	Natural Gas	2.3	4.10

Megawatt Weighted

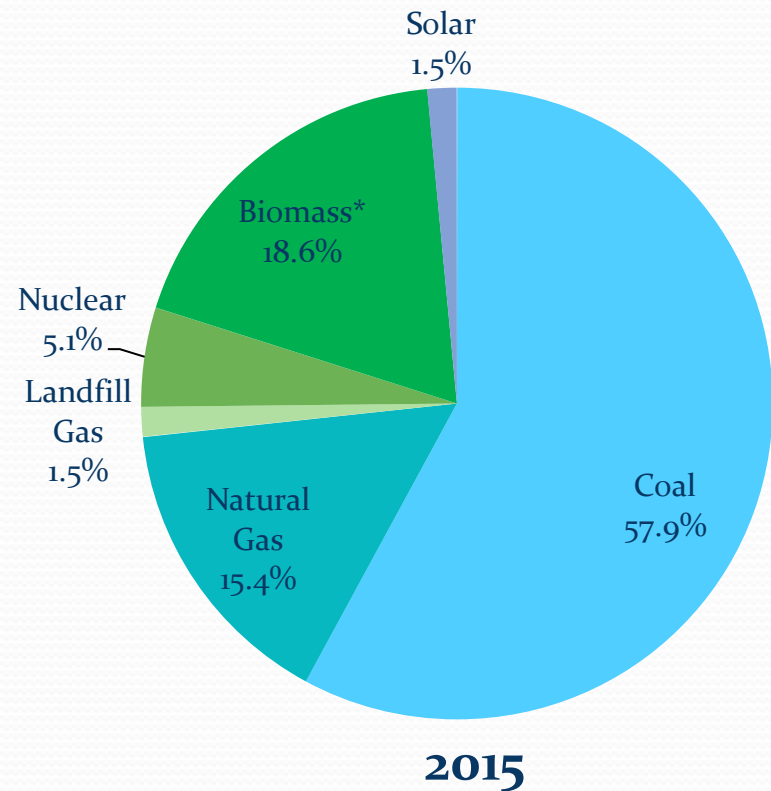
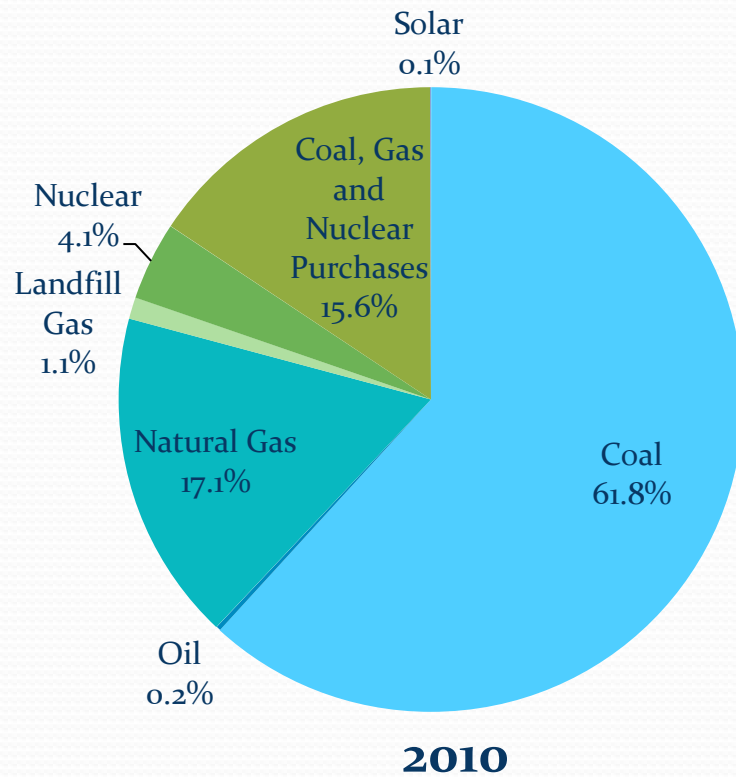
Average Age:

28

603.25

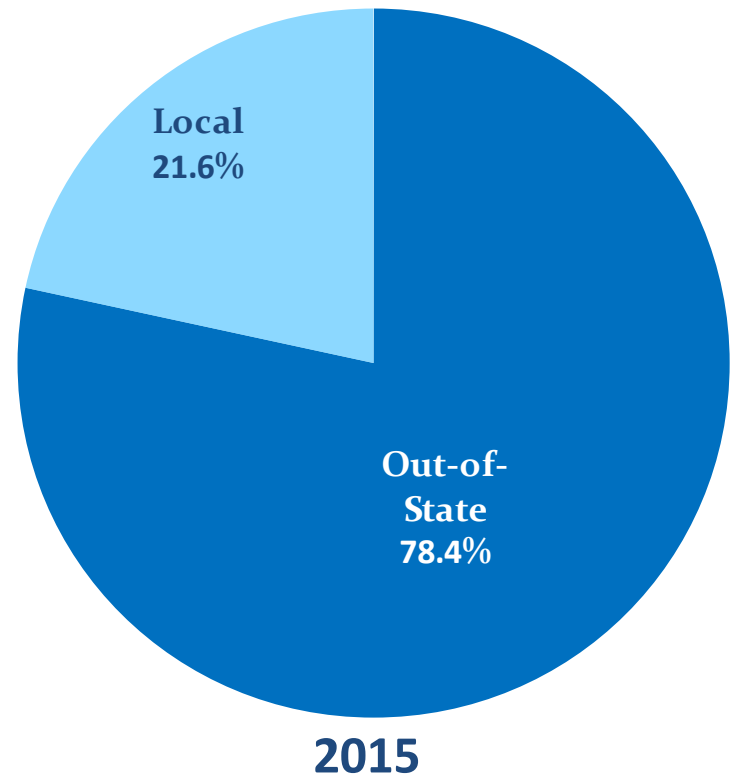
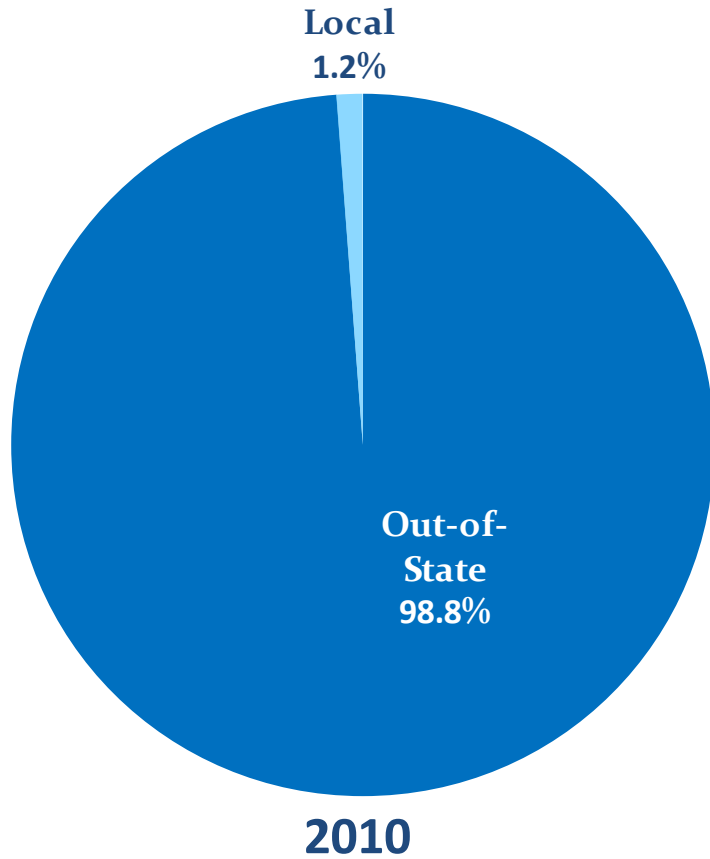
Current Year: 2011

Increase Fuel Diversity – Portfolio Strategies Reduce Risk

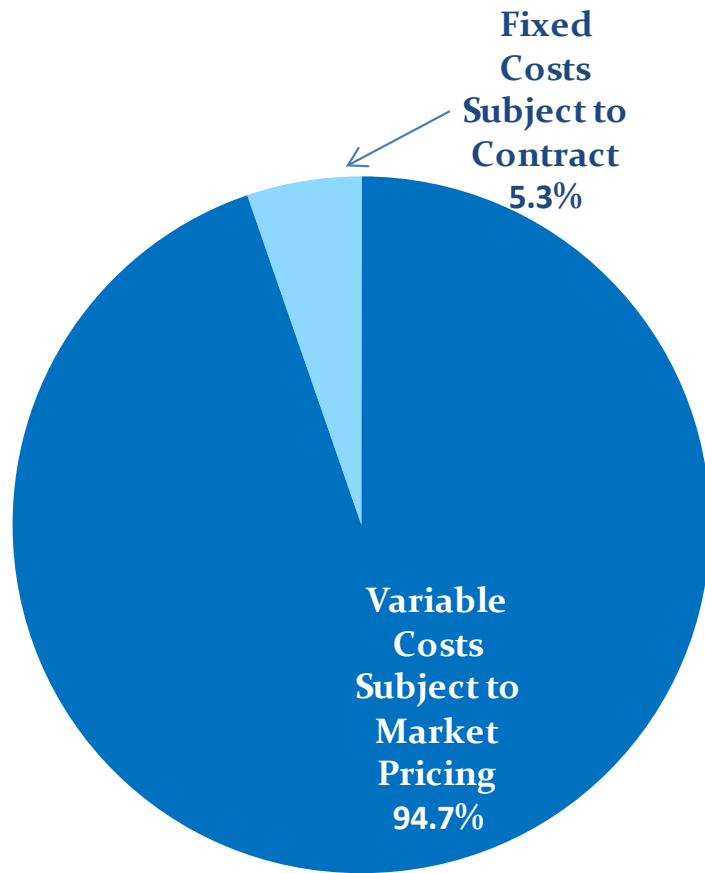


* Assumes GRU retains 50 MW of GREC

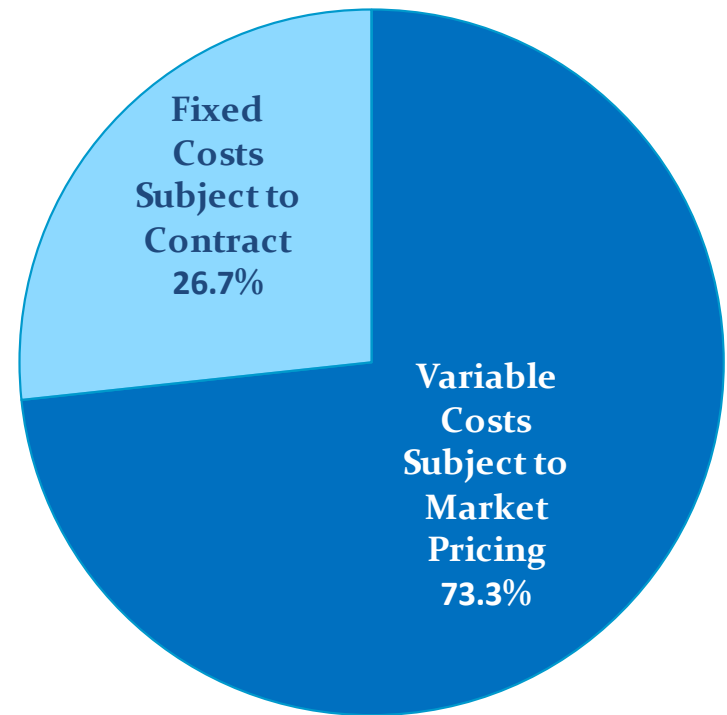
Energy Independence - Local Fuel



Price Stability – Less Market Exposure

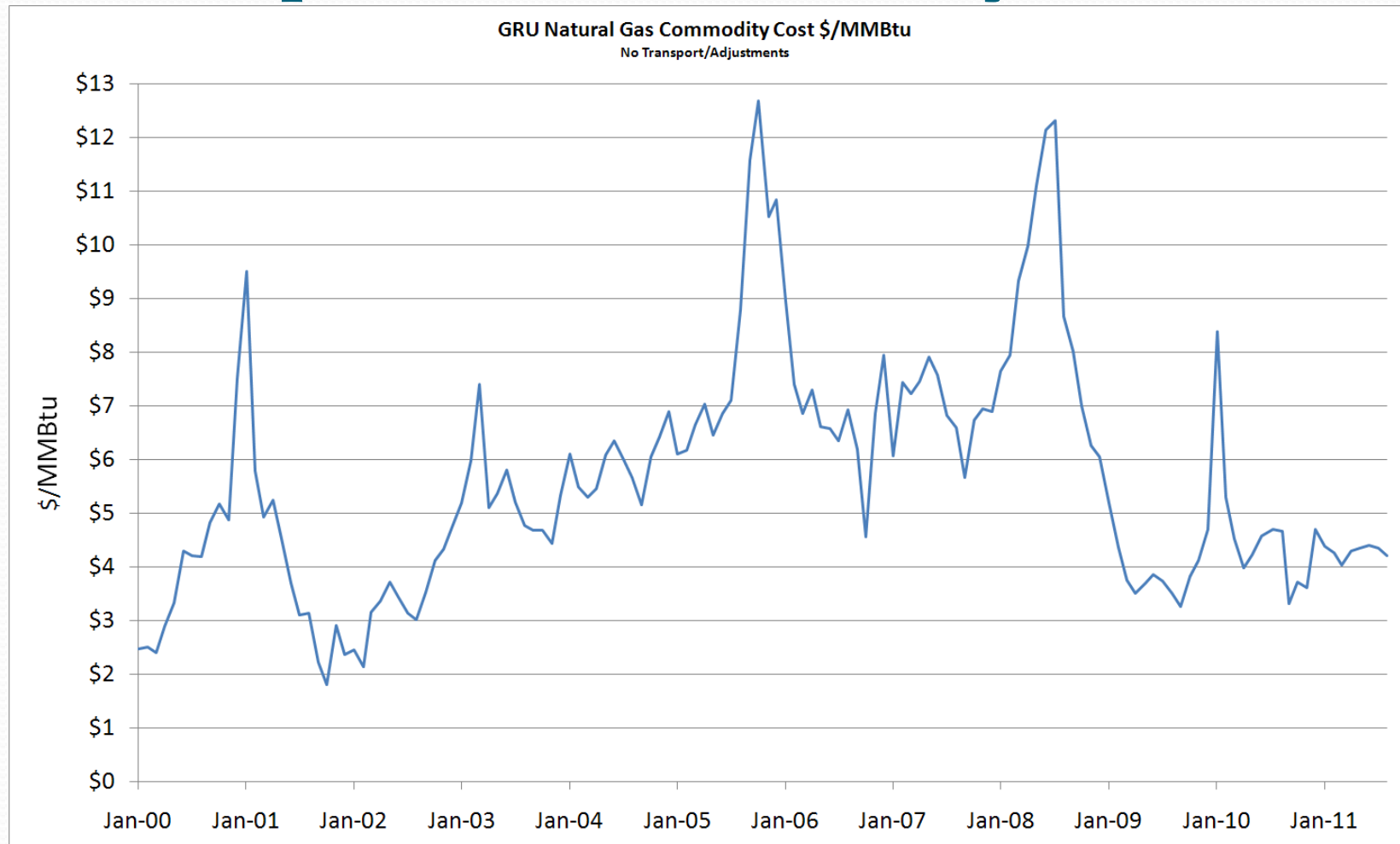


2010

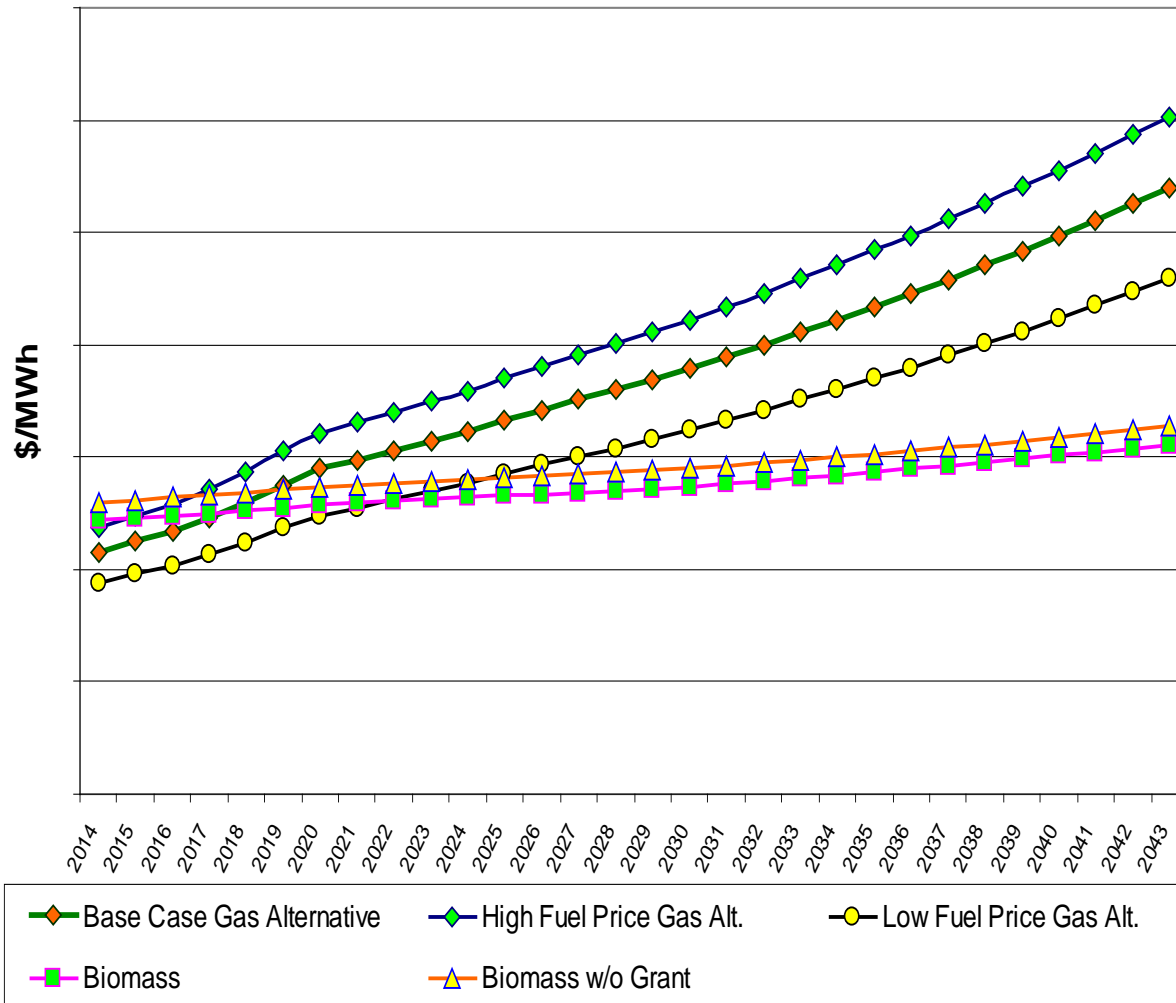


2015

Less Exposure To Gas Fired Generation Will Improve Price Stability

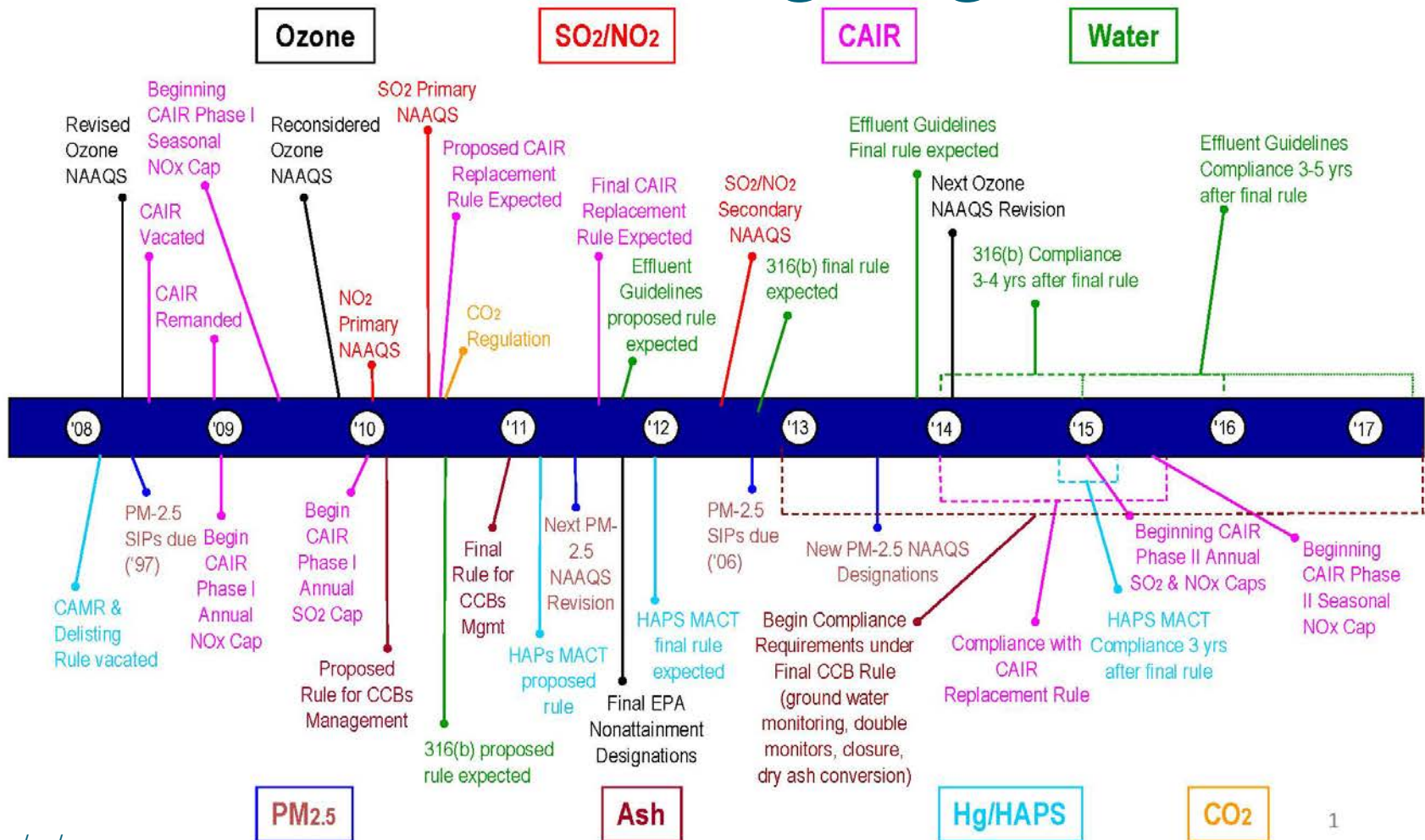


Long Term Cost Savings: Biomass Compared To Gas Alternative



Source: May 7, 2009
City Commission
presentation

New Generation Costs Will Escalate Under EPA's Pending Regulations



Balancing Policy And Business Objectives

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What's Changed Since May 7, 2009*

- What we said
- Projected price effects
 - Sensitivity to natural gas forecasts
 - Potential mitigating factors
- What factors have changed
- Update on projected price effects

* As presented at the May 7, 2009 City Commission meeting

Base Gas Forecast - \$10.56/1,000 kWh

Measured as Equivalent Effect on
1000 KWH Residential Bill
\$/Month

Scenario: Base Load and Energy Price Forecast

Parameter	2014		2019	
	Item	Cumulative Effect on Bill	Item	Cumulative Effect on Bill
Direct Utility Bill Cash Flows				
Net Effect After Fuel Savings	\$10.56	\$10.56	\$5.12	\$5.12
Effect of Prepayment Restructure	-\$2.25	\$8.31	-\$2.27	\$2.85
CO ₂ Regulation savings @ \$12/MWH	-\$2.22	\$6.10	-\$2.10	\$0.75
Indirect Utility Bill Benefits				
Avoided capacity in 2023	-\$4.73	\$1.37	-\$4.49	-\$3.75
Other Community Benefits From Off-System Sales				
Prop Tax Revenue for County, Schools, Library	-\$1.35	\$0.02	-\$1.28	-\$5.03
Other Regulatory Risk From Delay				
Missing ITC Grant Deadline 1/1/2014	\$1.48	\$1.50	\$1.40	-\$3.62
PTC Not Extended	\$3.14	\$4.63	\$3.29	-\$0.34

Source: May 7, 2009 City Commission Presentation. Assumes 50 MW of GREC sold through 2023.

Low Gas Forecast - \$12.78/1,000 kWh

Measured as Equivalent Effect on
1000 KWH Residential Bill
\$/Month

Scenario: 20% Lower Energy Price Forecast

Parameter	2014		2019	
	Item	Cumulative Effect on Bill	Item	Cumulative Effect on Bill
Direct Utility Bill Cash Flows				
Net Effect After Fuel Savings	\$12.78	\$12.78	\$8.50	\$8.50
Effect of Prepayment Restructure	-\$2.25	\$10.53	-\$2.27	\$6.22
CO ₂ Regulation savings @ \$12/MWH	-\$2.22	\$8.32	-\$2.10	\$4.12
Indirect Utility Bill Benefits				
Avoided capacity in 2023	-\$4.73	\$3.59	-\$4.49	-\$0.37
Other Community Benefits From Off-System Sales				
Prop Tax Revenue for County, Schools, Library	-\$1.35	\$2.24	-\$1.28	-\$1.65
Other Regulatory Risk From Delay				
Missing ITC Grant Deadline 1/1/2014	\$1.48	\$3.72	\$1.40	-\$0.25
PTC Not Extended	\$3.14	\$6.85	\$3.29	\$3.04

Source: May 7, 2009 City Commission Presentation. Assumes 50 MW of GREC sold through 2023.

Balancing Policy And Business Objectives

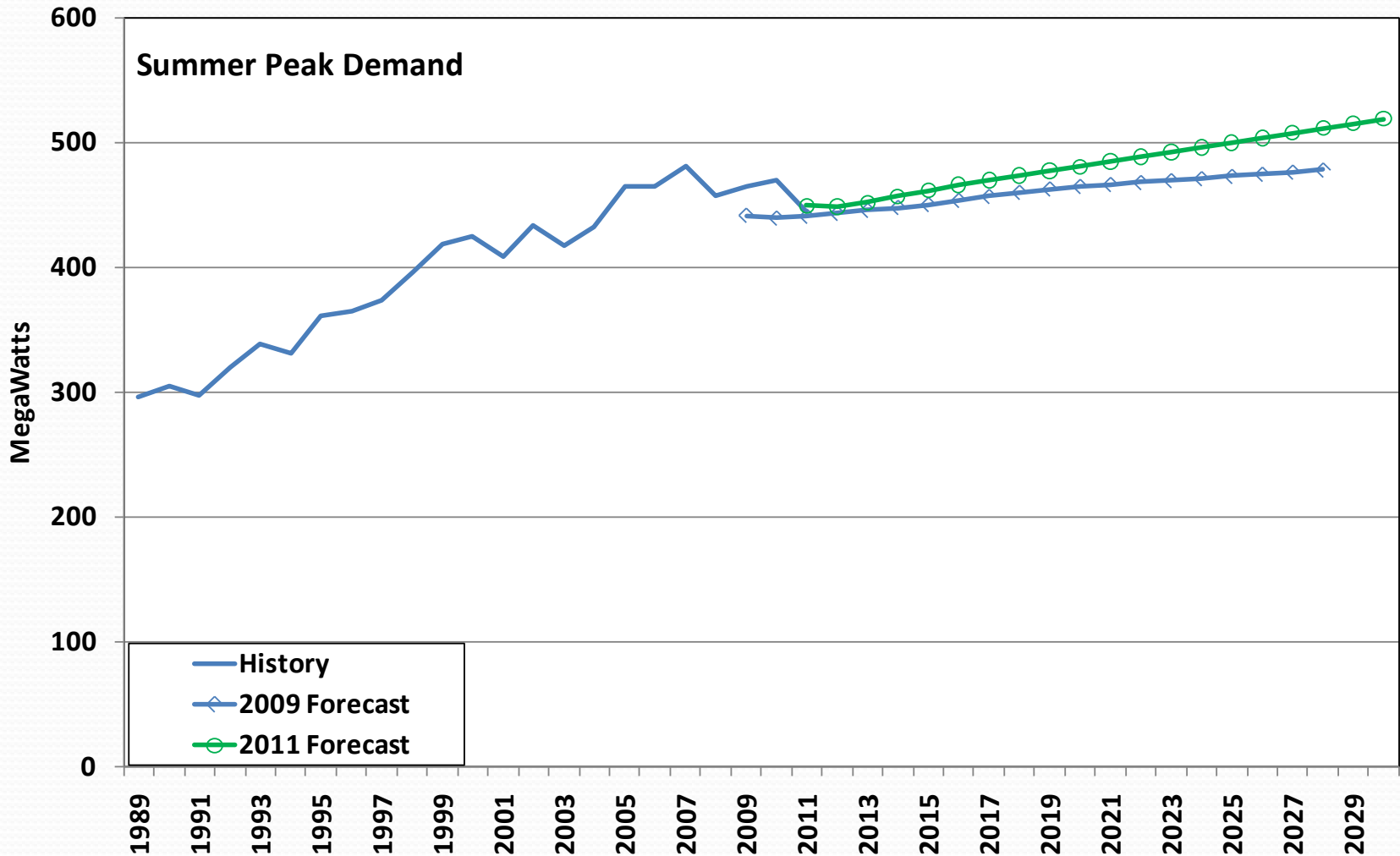
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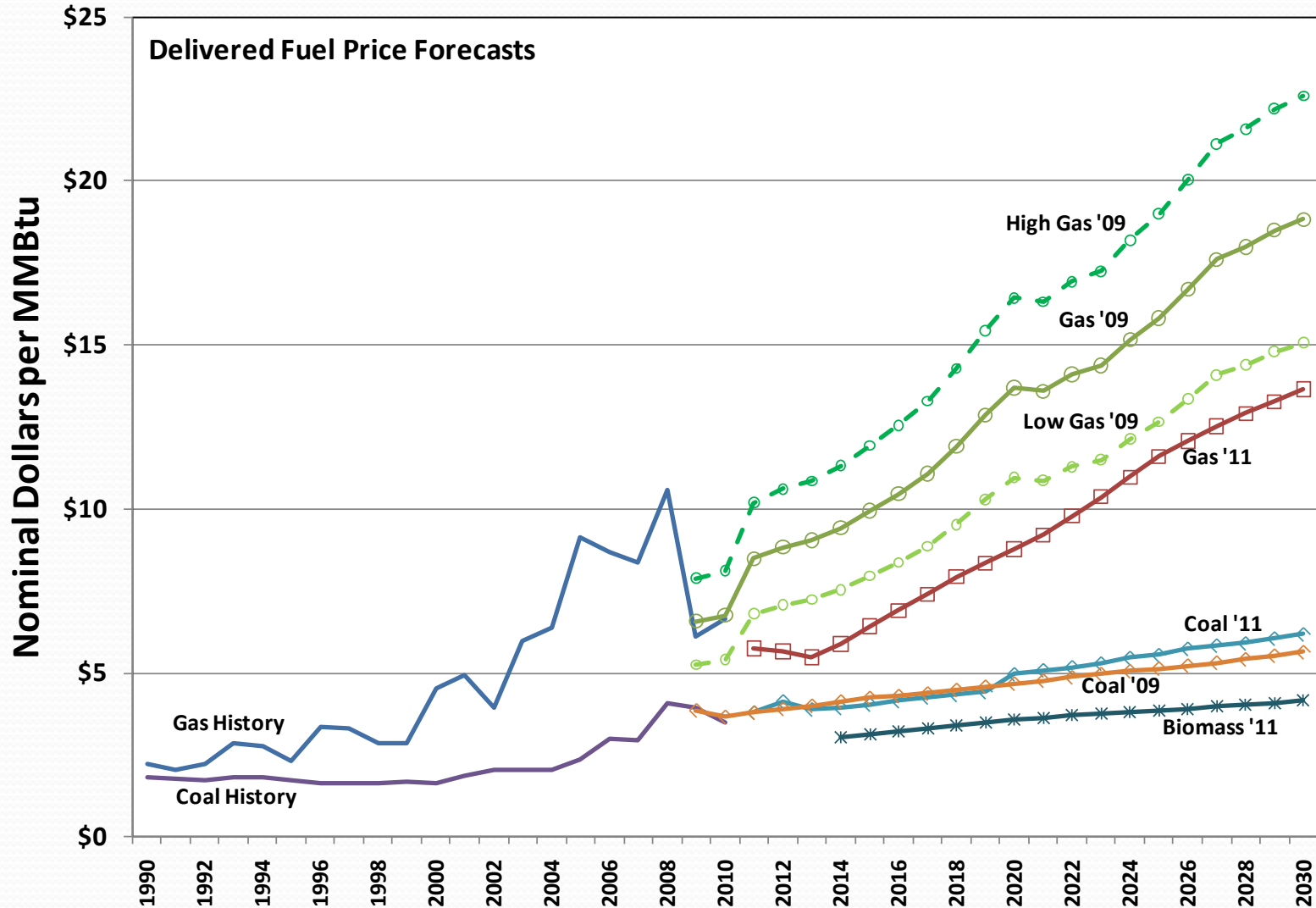
Conditions Have Changed – And They Will Again

- Demand for electricity
- Natural gas prices
- Environmental permitting requirements

Demand For Electricity Increased



Natural Gas Price Dropped



More Stringent Regulations Enacted

- EPA's endangerment findings
 - Carbon emissions detrimental to public welfare
 - Resulted in new automobile efficiency standards
 - Resulted in "Tailoring Rule" for carbon accounting
 - Carbon regulation under discussion
- Florida's Best Available Control Technology changed
- EPA enacted Industrial Boiler Maximum Achievable Control Technology standards (IBMACT)
- Suwannee River Water Management District imposed reclaimed water requirements

GREC's Design Had To Change

- Original GREC Design
 - Selective Non-Catalytic NO_x Reduction
 - Calcium dry sorbent injection
 - Baghouse for particulate reduction
- Revised GREC Design
 - Selective Catalytic reduction for NO_x
 - Sodium dry sorbent
 - Double baghouse size
 - Pipeline to City of Alachua WWTP

Balancing Policy And Business Objectives

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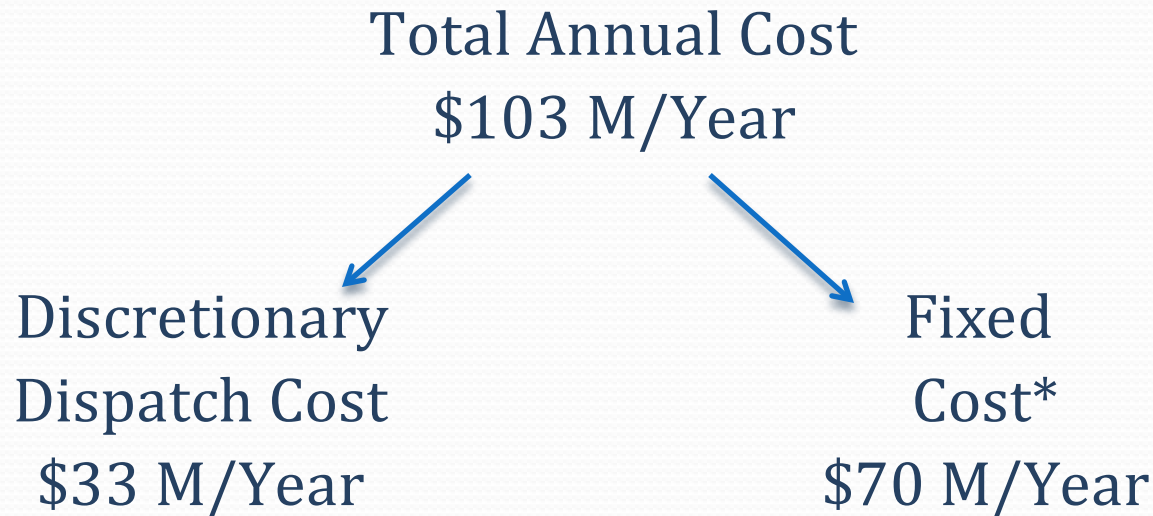
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GREC Contract Structure

Fixed Costs	\$/MWh
Non Fuel Energy Charge	\$56.15
Fixed O&M	\$23.74
Property Taxes	\$8.88
Subtotal	<u>\$88.76</u>
Discretionary Dispatch Costs*	
Variable O&M	\$3.56
Fuel Charge	\$37.80
Subtotal	<u>\$41.36</u>
Total	<u>\$130.13 /MWh</u>

*Only incurred if better alternatives are not available

Let's Translate \$/MWh to Annual Costs



Discretionary Dispatch Cost*	=	$\$41.36/\text{MWh} \times .90 \text{ CF} \times 100\text{MW} \times 8760 \text{ hours/Year}$	=	$\$32,608,224 \text{ /Year}$
Fixed Cost	=	$\$88.76/\text{MWh} \times .90 \text{ CF} \times 100\text{MW} \times 8760 \text{ hours/Year}$	=	$\$69,978,384 \text{ /Year}$
Total Extended Cost	=	$\$130.13/\text{MWh} \times .90 \text{ CF} \times 100\text{MW} \times 8760 \text{ hours/Year}$	=	$\$102,594,492 \text{ /Year}$

*If GREC is available and capable of 100 MW 90% of the time (.90 CF)

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GREC's Benefits And Strategies To Manage Fixed Costs

- Immediate cost savings
- Power marketing and prepay opportunities
- Savings from policy alternatives

Immediate Cost Savings

- Drop base load capacity contract costs from Progress Energy Florida (PEF)
- Reduce fuel costs for power production by avoiding running higher cost units
- Ability to sell Renewable Energy Credits (REC's)
 - Current market values
 - Solar: \$10/MWh
 - Landfill Gas, Wind, Biomass: \$1/MWh

Immediate Cost Savings

(x \$1,000,000 per year)

	Savings
Drop PEF Baseload Capacity Contract	\$12
Net Production Cost Savings	\$7
Renewable Energy Credit Sales	<u>\$1</u>
Total Immediate Cost Savings	\$ 20 M/Year

Power Market And Prepay Opportunities

- Long term contract assignment
- Non-recourse prepayment
- System power sale
- Federal agency contract

Long Term Contract Assignment

- Utilities want GREC's long term values
- Favorable market conditions
 - Coal retirements
 - Gas pipeline constraints
 - Florida reserve margins
- GREC's economics are competitive with nuclear
 - Cost per MWh
 - Long term stable price
 - Hedges carbon and fuel price risk
 - No nuclear waste disposal or construction cost risk
- Willing to offer 25 MW on a long term basis

Non-Recourse Prepayment

- Authorized by 2005 Energy Policy Act
- How It Works
 - Tax-Exempt Power project formed under FS Chapter 163 (The “Conduit”)
 - Tax-Exempt Bonds issued by Conduit to prepay
 - Producer provides discount (negotiated)
 - Not GRU debt: Conduit’s debt

System Power Sale

- GREC energy creates a very favorable incremental cost of generation for off-system sales
- Blended with other GRU assets, wholesale power is available
 - Pricing very competitive
 - Indexed to hedge fuel risk

Federal Agency Contract

Federal agencies have renewable energy goals

- Energy Policy Act of 2005
- Executive Order 13423
- 7.5% by 2013

Power Marketing And Pre-pay Strategy Benefits

X \$1,000,000 Per Year

	Potential Benefit
Long Term 25 MW PPA Assignment	\$16
Non- Recourse Pre-Pay*	\$15
System Wholesale Power Sale*	\$7
Federal Agency Contract	\$2
Total Marketing & Prepay Strategies	<u>\$40 M/Year</u>

*Reflects the effect of having only 75 MW of GREC available for retail power supply

Savings From Policy Alternatives

- Solar Feed In Tariff scale back
- General Fund Transfer (GFT) offset

Solar FIT Scale Back

- Solar FIT has upward rate pressure
- City Commission may terminate program for any project not holding an executed Solar Electric Power Agreement (SEPA) at any time.
- One option is to not issue additional capacity reservations after 2013.

General Fund Transfer (GFT) Offset

- Tangible Property Tax estimated at \$7 million per year
- About \$1.3 million accrues to the City of Gainesville
- This amount could be offset from GRU's GFT in future years
- General Government would remain whole

Savings From Policy Alternatives

x \$1,000,000 Per Year

	Potential Benefit
No Additional Solar FIT Commitments After 2013	
2014 Cost Reduction	\$ 0.3
Additional Reductions By 2016	\$ 0.6
Reduce GFT By GREC Ad Valorem Taxes	<u>\$ 1.3</u>
Total	\$ 2.2 M/Year

Price Mitigation Summary

x \$1,000,000 Per Year

	Potential Costs and Savings
GREC Fixed Cost	\$ (70)
Immediate Cost Savings	\$ 20
Power Marketing and Pre-Pay Strategies	\$ 40
Policy Alternative Options	<u>\$ 2</u>
Residual Amount To Recover Through FA	\$ (8) M/Year

() indicates a negative number (or cost to be recovered)

Lets Translate Millions of Dollars Per Year Into Customer Prices

- \$8 million per year of cost is equivalent to \$4.00/1000 kWh
- Given that savings may vary from estimates, a target of a \$10.00/1000 kWh is realistic which corresponds to recovering \$20 million per year

Note: As a purchased power cost recovered through fuel adjustment, GREC's costs are not subject to utility taxes or surcharges.

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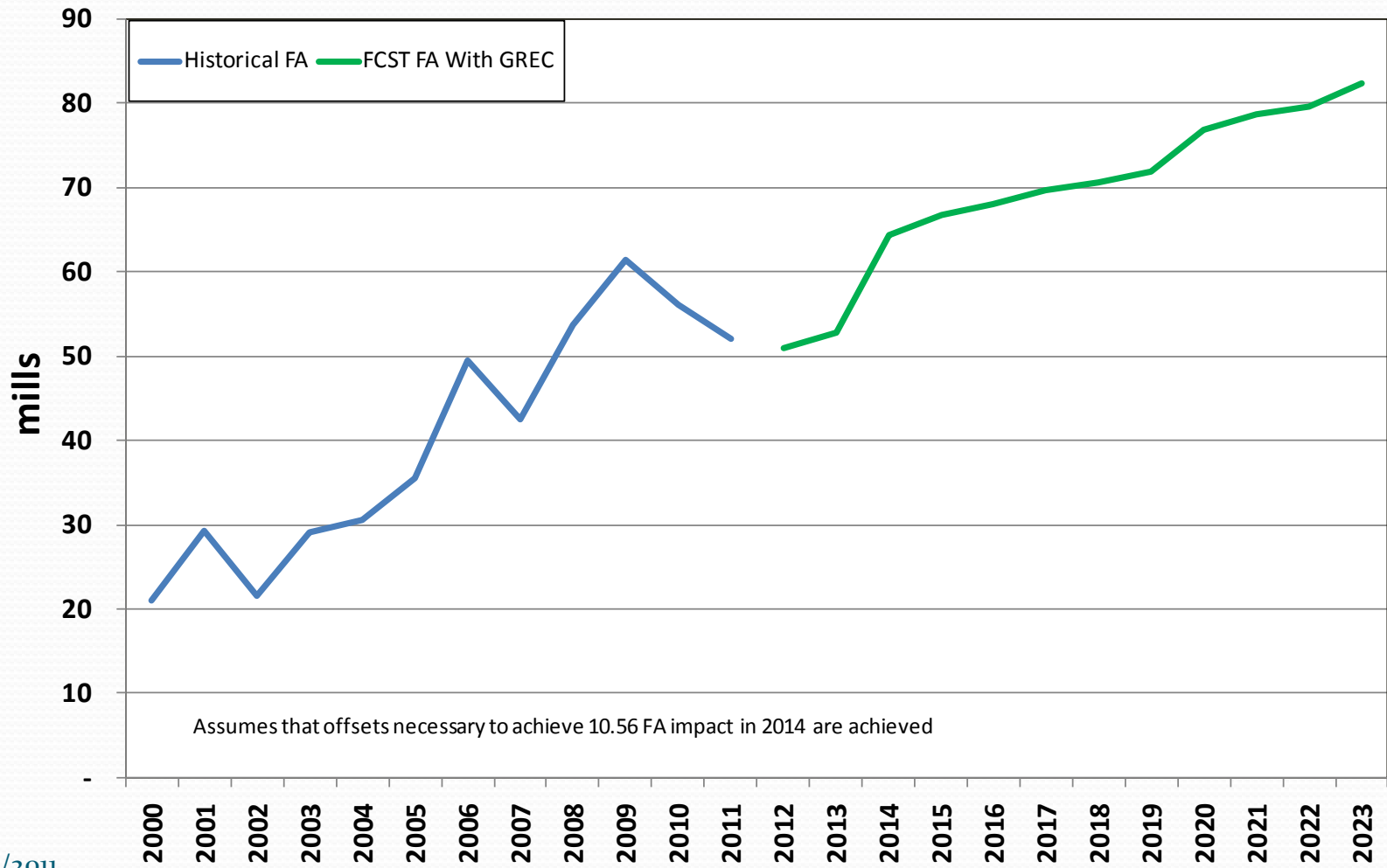
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- **Benefits from this new generation**

Benefits Not Quantified In This Analysis

- Present value of avoided capacity in 2023
- Hedge value against fossil fuel price volatility
- Regional economic benefits
 - \$5.7 million per year net increase to local tax base
 - Creates 700 jobs in the region*
 - \$31 million circulated in the regional economy instead of being shipped out of state*
- Hedge value against carbon or renewable portfolio standard regulation

* Dr. Julie Harrington, [Economic Impact Analysis of Gainesville Renewable Energy Center \(GREC\) Proposed Biomass Power Project in Alachua County and Surrounding Counties](#), March 2010

Projected FA – Current Fuel Price Forecasts



Summary

- The need and policy objectives for GREC have not changed.
- GREC continues to have long term value for our customers.
- The initial projections as presented on May 7, 2009 are still achievable.
- Staff continuously pursues cost mitigation strategies for all generation resources as market conditions change on a daily basis.

Recommendation

The Regional Utilities Committee hear periodic updates on ongoing changes and strategies that positively or negatively impact GRU generation.

More information on GREC available at:

www.gru.com