Gainesville, Florida's Feed-in-Tariff Experience

Applied Solutions Annual Conference November, 2010 Boulder, Colorado

Pegeen Hanrahan, P.E.

Introduction to Gainesville

Located Southeast of Jacksonville and Northwest of Orlando, near the geographic center of the state

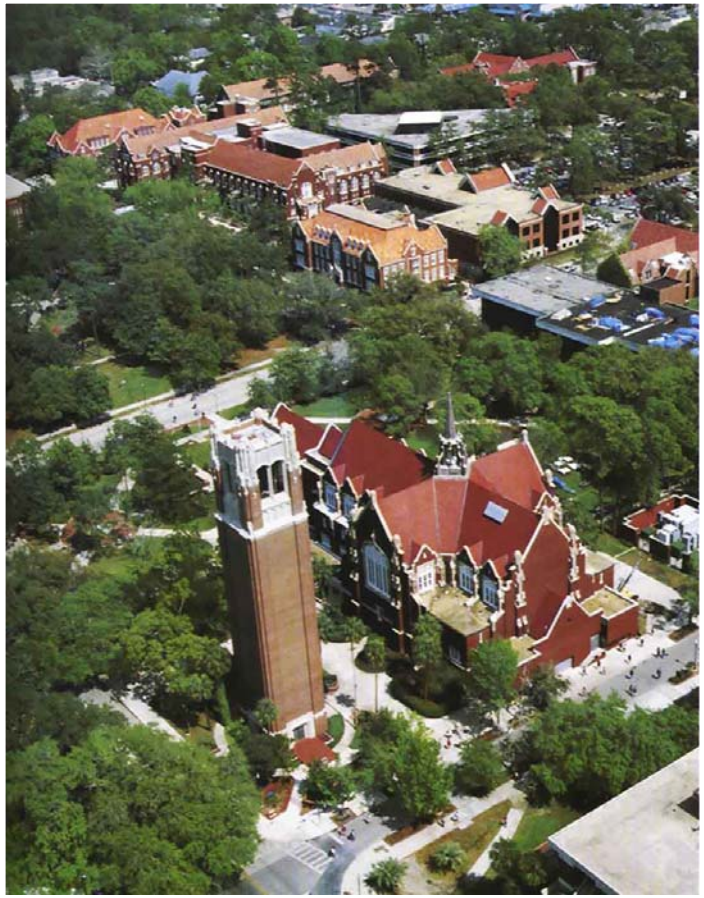
Magnolia Plantation B & B

Gainesville

- City population of 130,000
- More than 60 square miles
- 14th largest city in Florida
- County population of almost 250,000 and 930 square miles

Gainesville

- Home to the University of Florida (Gators)
- Fifth largest university in the United States, 50,000+
- Also home to Santa Fe College, 17,000+
- Low tax base - rely heavily on municipal utility GRU
- Transfer $35 million per year from GRU to General Government

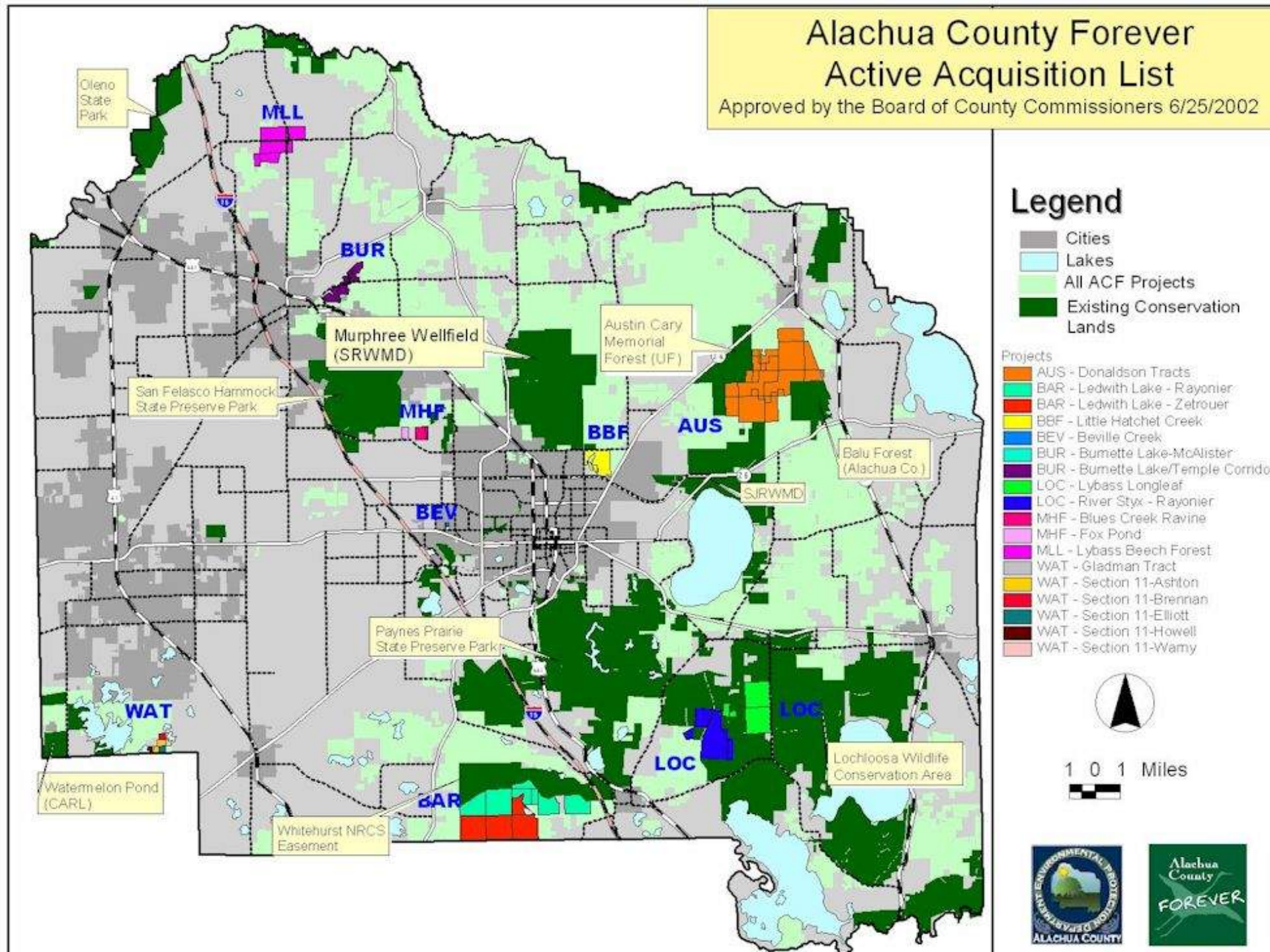


Local Government Actions

- Cities make decisions on:
  - Transportation
  - Infrastructure
  - Land use and zoning
  - Building codes
  - Landscaping
  - Waste management
  - Land conservation
  - Power generation

Alachua County Forever
Active Acquisition List

Approved by the Board of County Commissioners 6/25/2002



CITY OF GAINESVILLE
every path starts with passion
FLORIDA

The Nature of Public Utilities

Gainesville Regional Utilities

- Municipally-owned Utility (electric, gas, water/wastewater, telecom)
- Fuel Mix 2009:
  - 59.1% Coal
  - 19.3% Natural Gas
  - 4.9% Nuclear
  - 0.3% Oil
  - 1% Renewable Energy
  - 15.5% Purchased Power

Difficult Energy Supply Debate

- From 2003-2006, debated need and technology for new base load supply
- Ultimately adopted policies to increase energy efficiency (TRC vs. RIM test)

- Focus on biomass and solar
- 2007 Florida Coal Moratorium

New Approach Emphasizing Conservation and Renewables

- Aggressive conservation programs and customer communications
- Adoption of more advantageous (retail) net metering for solar
- Adoption of first in the United States solar feed-in-tariff
- Currently in the permitting process for a 100 MW biomass power plant using waste materials from forestry and urban tree trimming

Energy Efficiency Incentives

Cumulative results for FY 07 - FY 09

- 49,343 megawatt hours of electricity saved
  - Enough to power over 4900 homes, $6.6 million in energy costs
- 8,972 kW of demand reductions
- 10% of all customers have participated

Gainesville was described by *Money Magazine* as "the efficiency leader of all Florida utilities," and the city is always striving to maintain that standard.

Renewable Solar Energy

- Solar water heater rebate
- Residential solar photovoltaic rebates
- Net metering at Retail Rate
- Feed-in Tariff (FIT)

Why Solar?

- Customer survey of 400 residential customers

  Would you support or oppose GRU's efforts to encourage solar energy investments in your community if it would add one dollar or less per month to all customers' utility bills?

  Support: 75 percent

- Strong community environmental ethic
- Largest single source of energy on planet
- Great faith in continued advances in cost-effectiveness

Solar Benefits
Not Just Environmental

- Job creation
- Energy independence
- Fuel diversity, reliability and security
- Democratizing the grid
- Civic pride and publicity
- Contributing toward a green industry economic development cluster
- Building our innovation reputation

GRU provides 20 year fixed price contracts to solar investors

Solar investors finance, fund and build projects, feed energy into grid

GRU pays solar investors fixed rate for energy produced for 20 years

GRU adds solar costs to all retail customers' fuel adjustments

How does our FIT work?

- Cap of 4 MW a year to manage rate impact , hit first year's capacity limit two days prior to implementation date of March 1
- Capacity queue filled through 2016 for 32 MW
- Backed by excellent credit of our public utility: "AA" rated by Moody's , S&P and Fitch

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Commission "Signing Day"

Implementing Solar Feed-In-Tariff

- Since March, 2009 32 MW worth of projects have submitted applications
- Have seen over six fold increase in installed solar power
- Program is bringing steady work

Net Metering Installations

More solar installations were completed in 2009 through net metering than through the FIT

- Total systems installed: 113
- Total capacity: 1,060.6 kW
- Breakout of sources
  - Residential
    - 80 systems
    - 360.5 kW
  - Business
    - 33 systems
    - 700.1 kW

Net Metering Value Varies Among Rate Classes

$/kWh

Parameter	Rate Class			
	Res	GSN	GSD	LP
Net Metering Tariff For Excess PV Production	.125	.140	.095	.094
Taxes Avoided – Inside City				
City Utility Tax	.0062	.0077	.0032	.0031
Other Non-Local	.0031	.0134	.0093	.0092
Taxes Avoided – Outside City				
City Electric Surcharge	.0062	.0077	.0032	.0031
County Utility	.0068	.0085	.0035	.0038
Other Non-Local	.0035	.0137	.0094	.0093

Largest Roofs
Least Incentive

Traditional GRU Solar PV Incentive Program

- Upfront rebate payment
  - $1.50 per Watt
  - Residential Customers
  - Limited to 5 kW (Residential) installations

+

- Net metering at retail rate
  - 9.4 to 14.0 cents per kWh, based on rate category and subject to change with fuel adjustment
  - Limited to excess energy generated

Comparison of FIT Rates

	Program Cap; System Cap	Tariff formula	Solar Tariff (USD/kWh) (Commercial-Residential)
German EEG	No, current realized capacity 2 GW	Cost + plus	$0.48-0.64
Spain 2008	500 MW annual; 10 MW	Cost + plus	$0.44-0.51
Ontario REFiT	1 GW goal	Cost + plus	$0.44-0.76
Gainesville GRU	32 MW; 4 MW annual	Cost + plus	$0.26-0.32
Vermont SPEED	14.5 MW (solar); 2.2 MW	Cost + plus	$0.30

From J.R. DeShazo, Ph.D. and Ryan Matulka, UCLA Luskin Center for Innovation
Commissioned by the Los Angeles Business Council's Solar Working Group

Tariff Setting Process

Old Incentive

Rebate ($1.50/Watt)
+
Net Metering @ GSN Retail Rate for 20 yrs
+
Federal Tax Incentives

Recommend FIT

No Rebate
Flat-Rate Feed-in Tariff
$0.26 for 20 yrs
+
Federal Tax Incentives

Yields about 5% return on investment before taxes

Solar Community Response

- Some factors were not considered into the total costs of the system, such as hurricane insurance and property acquisition
- Although the tax advantages (such as the investment tax credit and depreciation) were included as benefits, tax liabilities were not factored into the rate
- System scale was not considered – PV systems under 10kW are more costly per Watt to install than larger systems

Revised Recommendation

Original Recommendation

Flat-Rate Feed-in Tariff
$0.26 for 20 yrs

No system differentiation

5% before tax return

Revised FIT

Two Differentiated Rates

$0.32/kWh for rooftops
$0.26 for ground-mount

4.15% after tax return

Revised recommendation accounts for additional system costs, difference in costs based on system size and complexity, and tax liabilities

Current Gainesville FIT Pricing

Roof-Top Systems & Ground (<25kW)

$0.32/kWh

- Based on Average **$7.50** Installed Cost per Watt[1]

Ground-Mount Systems(>25kW)

$0.26/kWh

- Based on Average **$6.10** Installed Cost per Watt[1]

[1] **Installed Cost/Watt Data include all materials, labor and direct costs associated with construction**

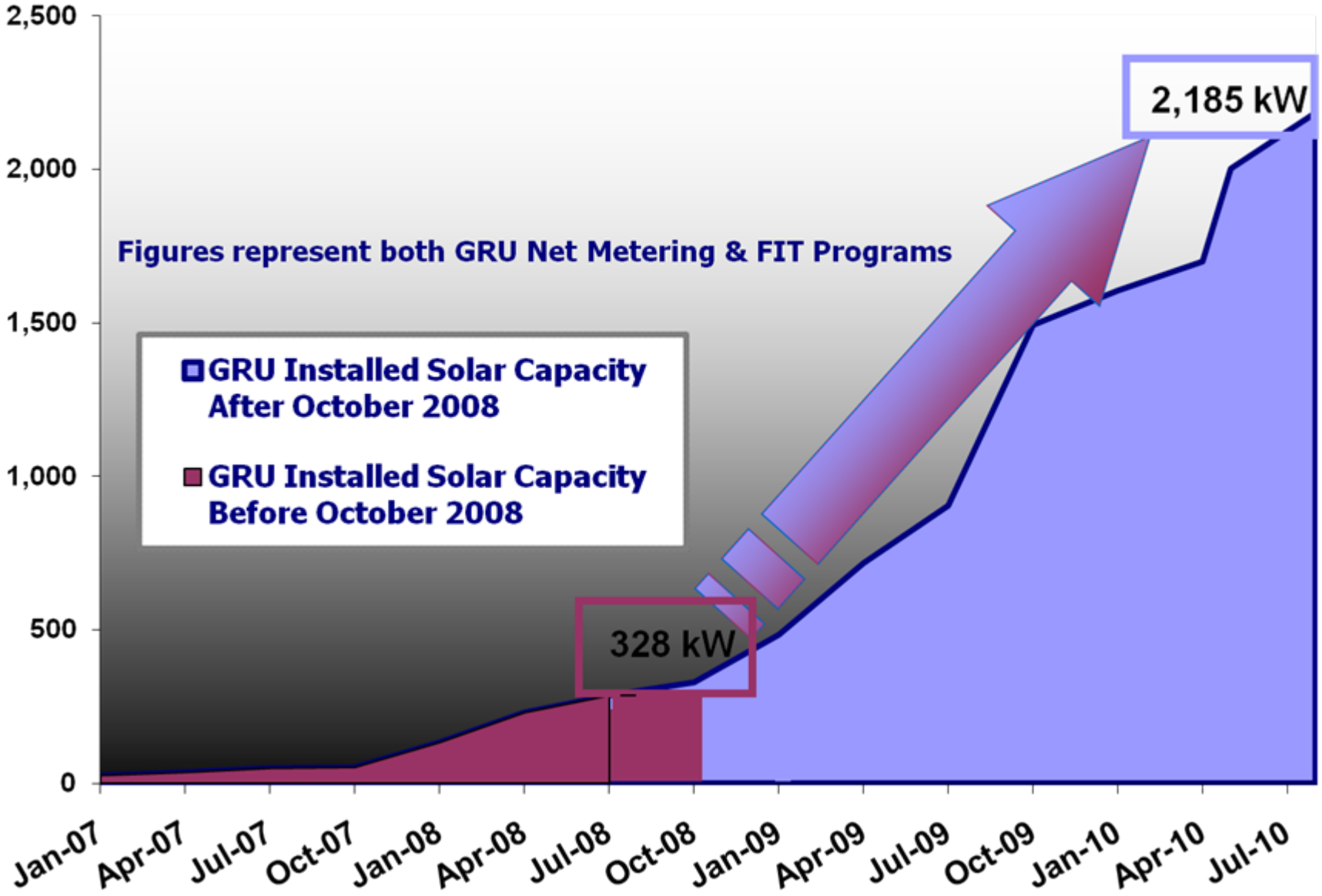
FIT Numbers - Dollars

- $5 million spent by FIT customers to date – actual installation costs
- At $6/watt, estimate $24 million annually for installations moving forward
- 800 MWh purchased to date for about $240,000 to 25 owners
- ARRA Estimates one job-year for $92,000 capital expenditure, $24 mil = 261 jobs

The Numbers - Capacity

- Total amount of solar PV installed in Gainesville from 1980-2008: 302kW
- PV installed in first 16 months of FIT: 1,074kW
- 3.8 MW currently under construction
  - Two large projects (3.2 MW)
    - Butler Plaza rooftop (2.2 MW)
    - Entrust ground-mount (1 MW)
  - Several commercial-size rooftop (600 kW)

Growth in GRU Solar Capacity



FIT Projects Update as of Nov 8, 2010

- FIT Projects Completed:

1,078 kw - 44 projects

- Net Meter Projects Completed:

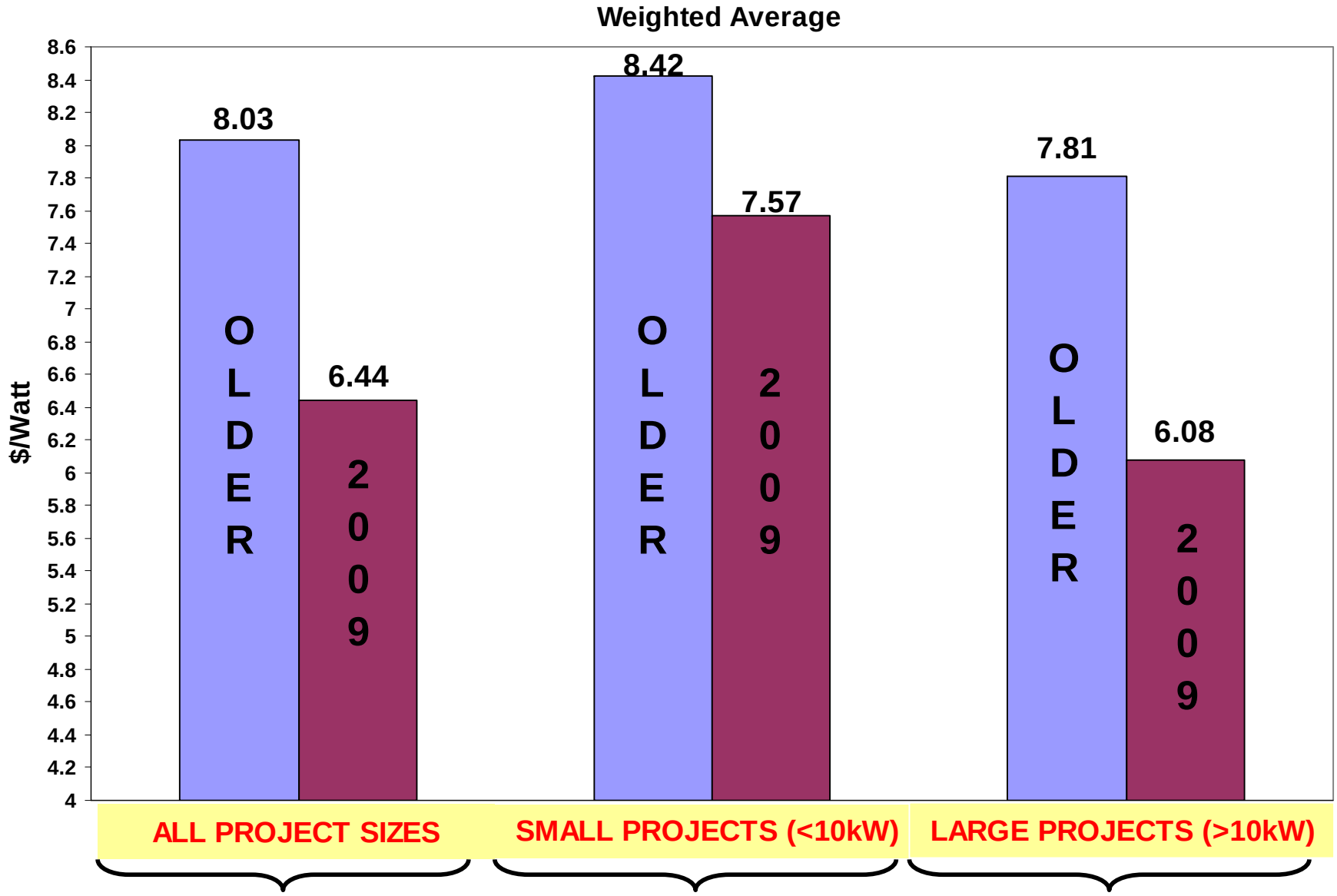
1,117 kw - 114 projects FIT Projects

- Under Construction

3,534 kw - 27 projects

- Over 5.7 MW altogether since October, 2008

GRU SOLAR INSTALLED COST DATA



Indirect Benefits

- New solar companies and business models came to Gainesville
- Capital infusion into community
- New solar-friendly zoning rules
- Solar print and radio advertising
- Dramatic improvement in $/watt
  - 2008 ~$8.00/watt
  - 2010 ~$6.50/watt
- New market in leasing rooftops

Indirect Benefits

- Invited by the White House Office of Intergovernmental Relations to be on a Panel at the U.S. Center in the Bella Center in Copenhagen
- Named a Green Global Capital Challenge City by Carbon War Room
- Gainesville Chamber of Commerce has embraced green tech

Some Lessons Learned

- Be prepared with a well-defined plan for handling the deluge of early applicants
- Ground-mount systems are far more bureaucratically complex than rooftop – expect significant delays and additional cost
- Securing financing will be the primary obstacle for large scale projects
- Determine how to handle requests for special consideration from all types of special-interest groups
- Be aware of the many tax implications on participants and take them into consideration when designing the program
  - Income tax liability
  - Ad valorem tax liability
  - Tax credits and their timelines

Proposed 2011 FIT Pricing

ROOF MOUNTS AND GROUND MOUNTS < 25 kW

- Break Out Based on System Size
- Less Than 10kW
  - No Change
- Greater Than 10kW
  - Tempered degression at half of observed local cost drop

GROUND MOUNTS >25kW

- National data indicate price trend similar to roof mount systems
- Tempered degression in proportion with systems >10kW
- Less Than National Trend

Based on actual installed costs from first year, required to be submitted as built

Proposed 2011 FIT Pricing

ROOF MOUNTS AND GOUND MOUNTS < 25 kW

Less Than 10kW
$0.32/kWh
- Based on $7.50 Avg per watt

Greater Than 10kW
$0.29/kWh
-Based on $6.75 Avg

GROUND MOUNTS (>25kW)

$0.24/kWh
-Based on $5.55 Avg Cost/Watt

Most Recent Changes

- Annual Capacity Reservation and Construction Cycle
  - Those with existing reserved capacity will be grandfathered or allowed to move up as space allows
- Streamline review process
  - Simplify for small systems
- Require a processing fee (non-refundable)
- Require a capacity reservation deposit for larger systems

Annual Capacity Reservation

- Capacity and Price Announcement
- Application Process
  - Begin taking applications January 15 of the following year
  - Fee and deposit due in order to reserve capacity
  - First-come, first-serve once application complete and fees received
- Construction Deadlines
  - Roof mount systems completed by October 31
  - Ground mount systems completed by December 31
  - Unused capacity transferred to next calendar year

A Real Example

Pure Energy Solar

www.PureEnergySolar.com
352 377 6527

SHARP

Hanrahan & Malone
4.2 KW
(Valid Through 8/30/10)

Equipment and Installation	23,000
Federal Tax Credit** (30%)	-6,900
Final Cost	**$16,100**

Pure Energy Solar proposes to provide a Turnkey Installation, coordinating all aspects of the solar installation. Including but not limited to pulling of permits, obtaining materials, equipment and contractors to perform installation.

Return on Investment Estimate**

4 KW x 5hr	=	20 KWh / Day*
20KWh x 365 days	=	7,300 KWh / Year
Net Meter 7,300 KWh x .12	=	$876 Saved / Year
GRU FIT 7,300KWh x .32	=	$2,336 Earned /Year
$2,336 x 20 Years	=	$46,720 Earned

All products above should be multiplied by the TSRF% on your Solar Access Report

*All calculations based on worst month of year world insolation data.
**Pure Energy Solar does not guarantee local, state or federal incentives.

Pure Energy Solar is Fully Licensed and Insured
Workmanship Guaranteed for Five (5) Years
State License Number CVC56695

Feed in Tariffs Deliver Results

Over 50% of Wind Worldwide

Over 75% of Solar PV Worldwide

Over 90% of Farm Biogas Worldwide

Paul Gipe, Windworks.org

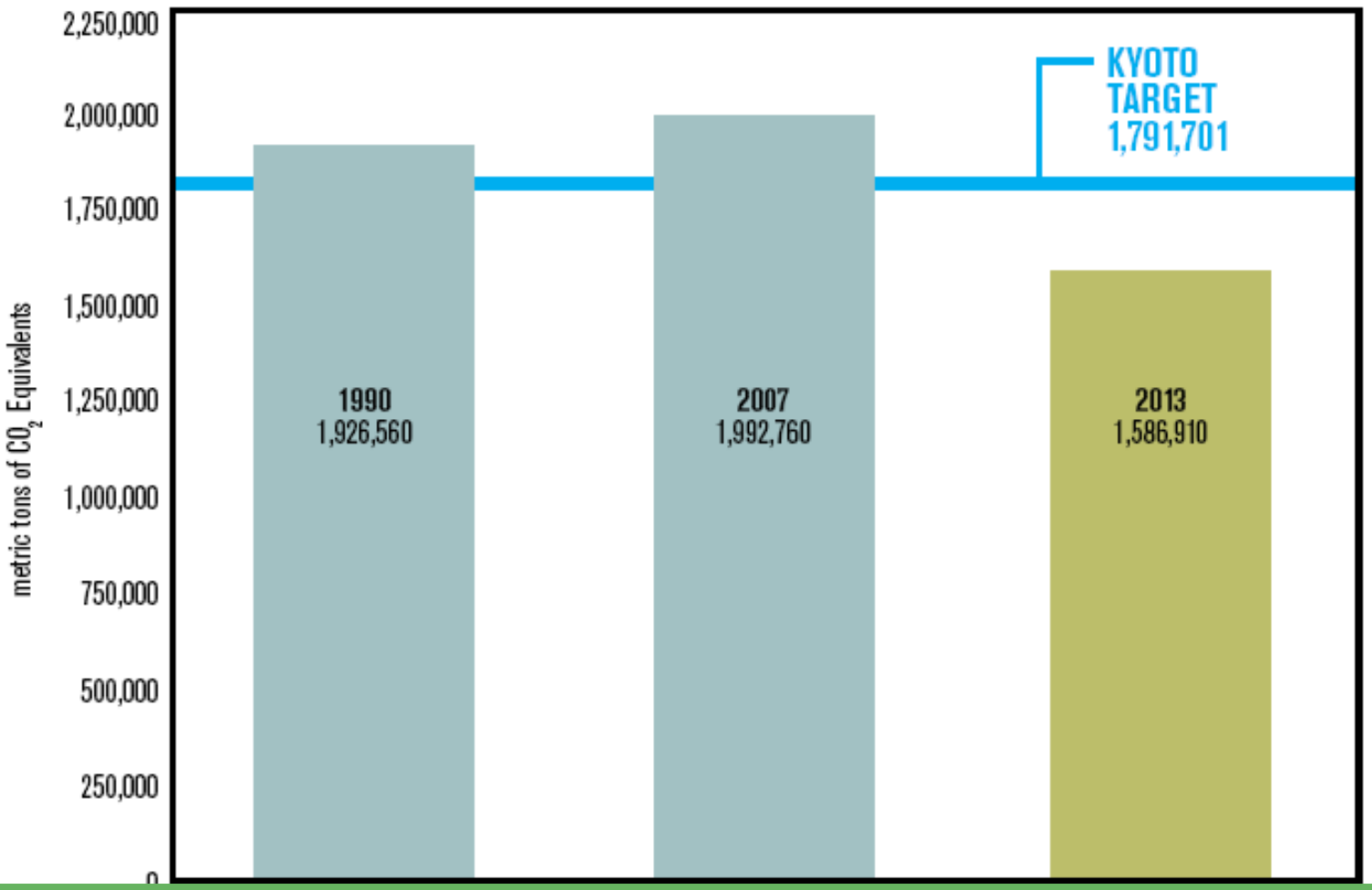
Carbon Reduction Efforts

- Gainesville joined ICLEI's Cities for Climate Protection Program in 1998
- In 2005, Gainesville joined to U.S. Mayors Climate Protection Agreement, signed in over 1,000 cities
- Goal is to reduce CO_2 levels to 7% below 1990 level by 2012; equal to Kyoto Protocol
- Utility Needed to Play a Key Role

Our Focus on Reducing Carbon

- Requires ambitious action, particularly given our population growth since 1990.
- Four key strategies:
  - Energy conservation
  - Energy supply
  - Transportation
  - Land use planning

Meeting Kyoto by 2013



Gainesville Regional Utilities

- We will meet Kyoto Standard by 2013
- Fuel Mix 2013 (Reduced Overall Demand):
  - 62.6% Coal (same production capacity)
  - 10.4% Natural Gas (cut in half)
  - 5.2% Nuclear (same)
  - 0% Oil (eliminated)
  - 22% Renewable Energy
  - 0% Purchased Power (eliminated)

Less Carbon Per Person

- Gainesville residents produce about 64% less carbon than US averages

1999	Equivalent CO_2 (tons/person/yr)	
Baseline	Gainesville	United States
Comm./Ind.	5.97	12.60
Transportation	5.69	6.94
Residential	3.91	5.23

Comparison of Annual Carbon Reduction Impacts by 2013

Biomass Power Plant	334, 219
Energy Conservation Programs	177,650
Traffic Light Synchronization	82,701
Acquiring Land and Development Rights	31,824
Repowering Natural Gas Plant	31,801
Combined Heat and Power Plant	22,557
Landfill Gas to Energy Plant	19,678
Solar Photovoltaic Electricity	7,682
LED Traffic Signals	2,967
Total	711,079

In Metric Tons CO_2

Conservation Costs Less

- Average cost of energy conservation measures:
- $19.62 per MWh
- Average cost of GRU generation mix:
- $61.00 per MWh

Information to Customers

Educating on CFLs at Home Depot

Chomp, Chomp Gators!

Kicked off a exciting contest in October 2007

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CFL Distribution

Tallahassee — 20,027 Bulbs

Gainesville — 13,808 Bulbs

City of Tallahassee
Your Own Utilities

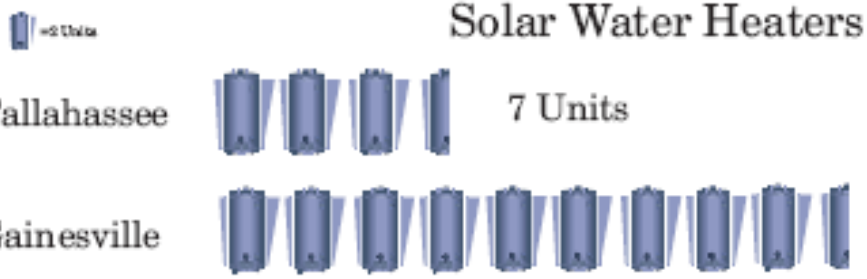
Solar Photovoltaic kW

Tallahassee — 54 kW

Gainesville — 175 kW

GRU
More than Energy

Solar Water Heaters Rebates



Tallahassee — 7 Units

Gainesville — 19 Units

GRU
More than Energy

Ceiling Insulation

Tallahassee — 503 Homes

Gainesville — 133 Homes

City of Tallahassee
Your Own Utilities

Addressing our problems is fraught with peril.But is ignoring them even more dangerous?!?!

None of this is easy…

You only make progress when you stick your neck out.

Let's DIVE IN!


Questions or Comments?

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