



BALANCED SOLUTION

Energy Efficiency and Alternatives: Part of the Balanced Solution

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Customer Growth

- 1.62 million to 1.85 million customers by 2014
- Almost 600 NEW homes and business every week
- 30,000—40,000 new expected every year
- Homes size has increased by 40%
- More electrical appliances
 - ◆ TVs in every room
 - ◆ Multiple PCs with internet
 - ◆ Security systems, etc...
- Entertainment appliances require more energy
 - ◆ Large Plasma TV - 3X more energy than smaller TV's



2000's



NEW GENERATION





A Balanced Solution

- **Energy efficiency**
- **Renewable/alternative energy resources**
- Modernize existing resources
- New, cleaner and more efficient generation

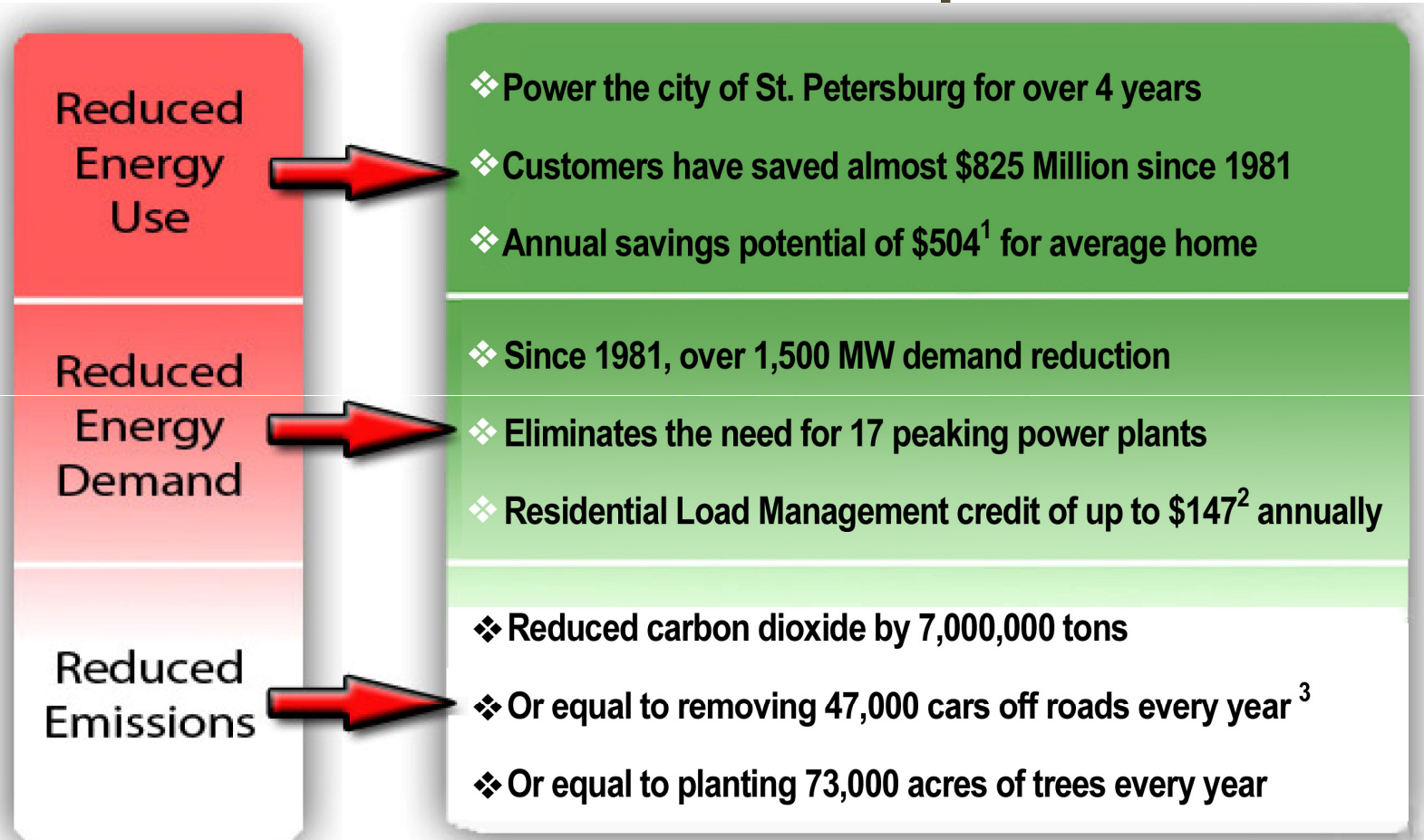
Balanced Solution

Diverse, secure and environmentally responsible strategy





Proven Performance of DSM Implementation



1 Savings include new DSM offerings available 4/2007.

2 Res. L.M. savings based on Year Round program starting 6/2007.

3 Each car driven 12,000 miles annually.



PEF Program Highlights

- ✓ PEF's residential Energy Efficiency programs:
 - Saved over 4% of the company's annual peak demand in 2005
 - Among utilities with over 3,000 MW of peak demand, this ranks as the second highest among IOU's

- ✓ PEF's residential Energy Efficiency and residential LM programs:
 - Saved 11.9% of the company's annual peak demand in 2005
 - Among utilities with over 3,000 MW of peak demand, this ranks top in the nation among all utilities

- ✓ PEF's full complement of Residential, Commercial, and Industrial Energy Efficiency and LM programs:
 - Saved approximately 16% of the company's annual peak demand in 2005
 - Among utilities with over 3,000 MW of peak demand, this ranks as the fourth highest in the nation among all utilities





Energy Efficiency & Demand Response Programs

Residential

- Home Energy Checks
 - ◆ Onsite or Online
 - ◆ by Phone or by Mail
- Home Retrofit
- New Construction
- Low Income Weatherization
- Load Management
- Renewable Energy

Commercial

- Business Energy Checks
- Business Retrofit
- New Construction
- Innovation Incentive
- Standby Generation
- Curtailable
- Interruptible

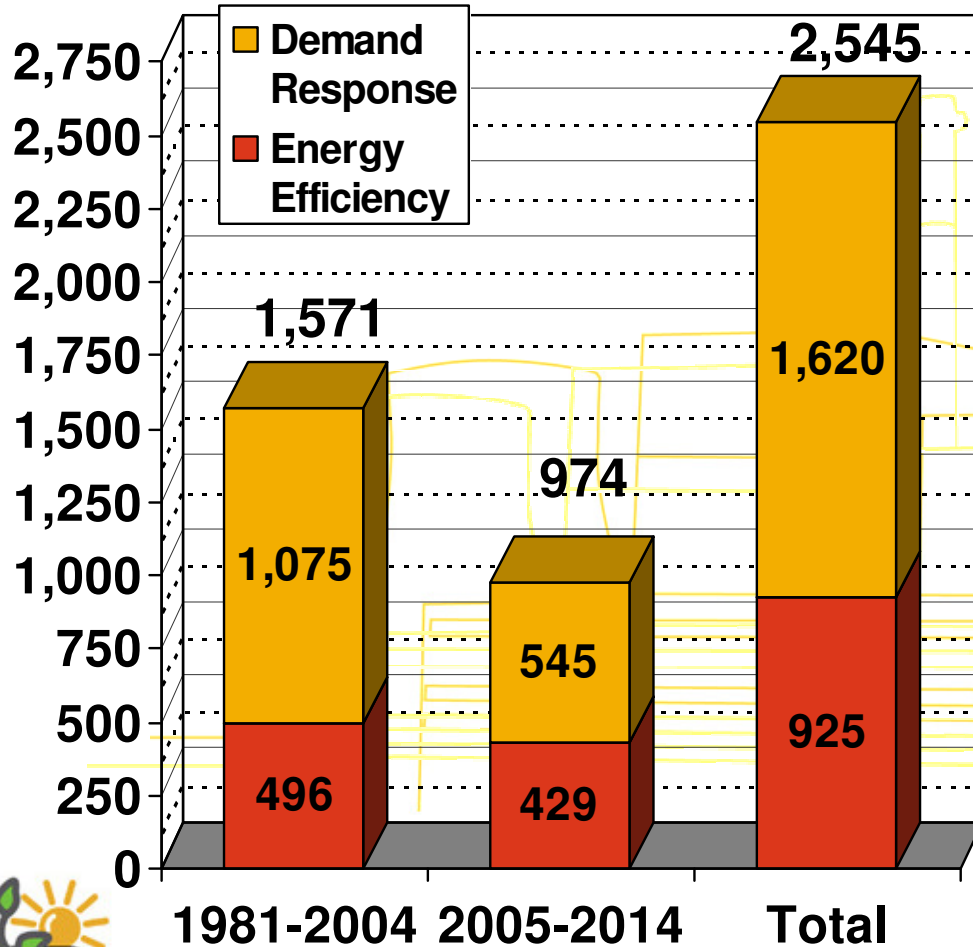
➔ **14 Programs and over 100 Measures**





DSM Impact: Past, Present, Future

Winter MW at Generator



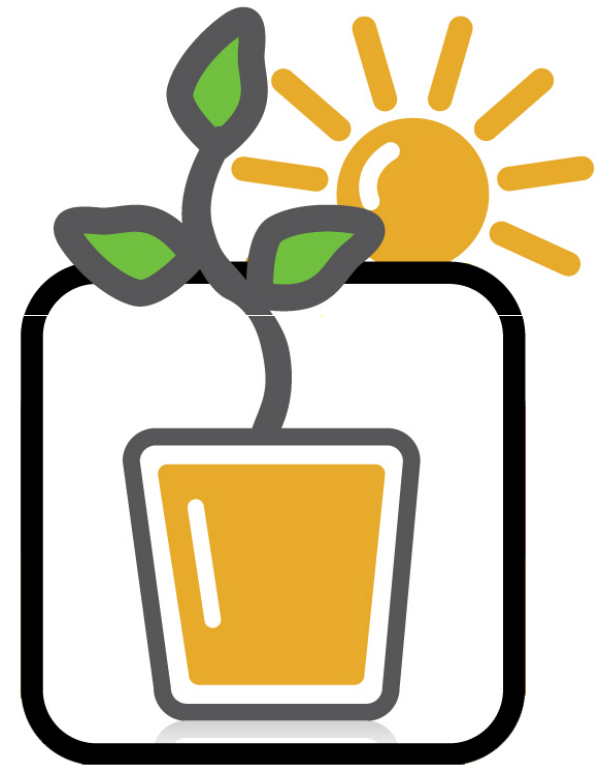
- Over 2,500 MW demand reduction
- DSM Plan is 38% of new Peak growth
- DR plan will provide 14% of 2014 WMW needs





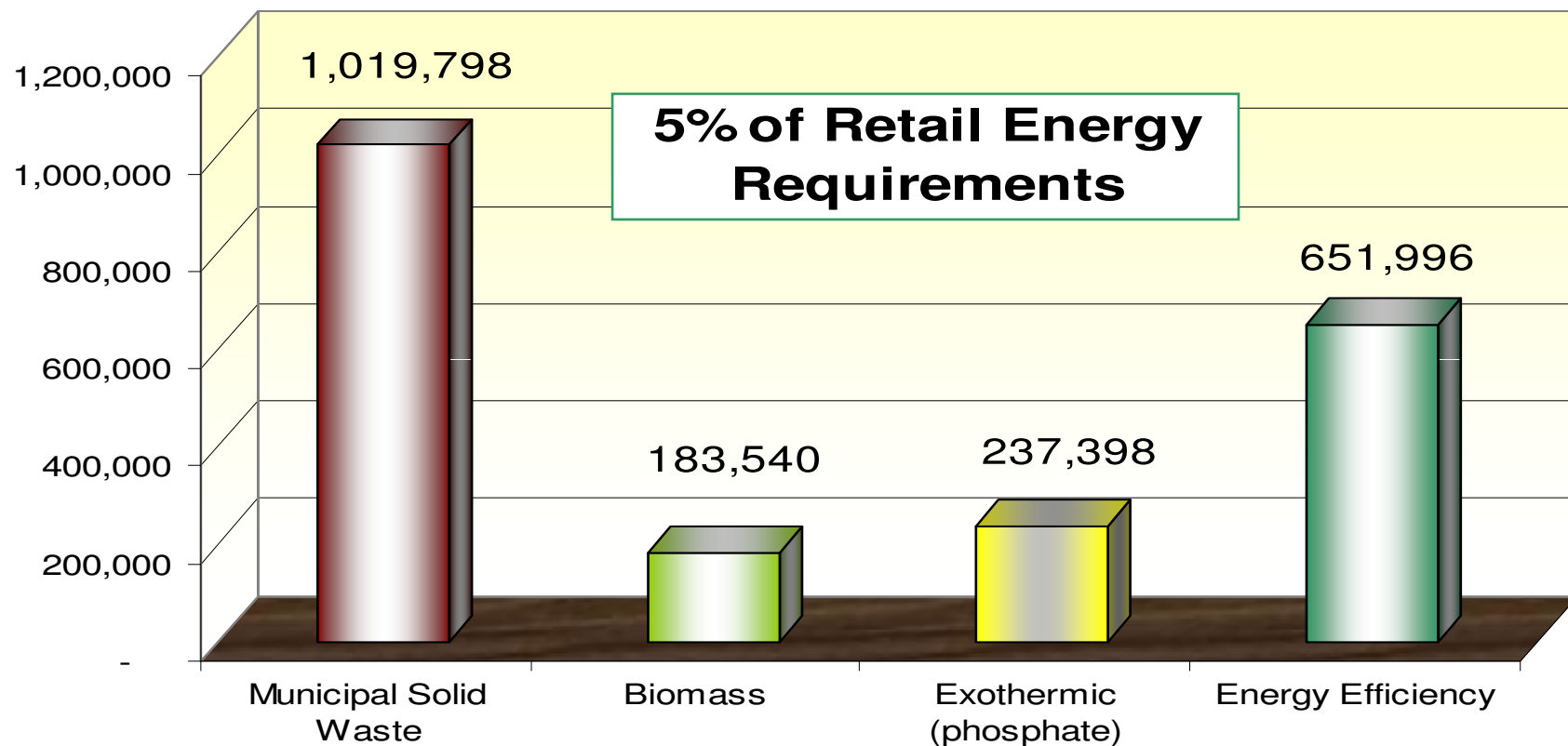
Renewable / Alternative Energy Portfolio

- Production & Programs
- Education & Research Projects
- Pilot & Program Development





Alternative Energy Production



- Plus new 130 MW Biomass closed-loop carbon neutral plant opening in December 2009





Waste to Energy: Ridge Generating Station

- Fuel Sources
 - ◆ Wood waste 66% or 30MW
 - ◆ 250,000 tons a year
 - ◆ Scrap tires 30% or 14MW
 - ◆ 35,000 tons a year
 - ◆ Landfill gas 4% or 2MW
- Plant operation details
 - ◆ Traveling grate stoker boiler
 - ◆ Net Heat rate: 16,000 Btu/kWh
 - ◆ Thermal efficiency: 21% HHV
 - ◆ Net generation: 200,000 MWH/yr



This plant processed wood debris from our 2004-2005 hurricanes from two counties.





Waste to Energy

- Purchase 133.5 MW from 4 WTE facilities
 - ◆ Metro-Dade County (43 MW)
 - ◆ Lake County (12.75 MW)
 - ◆ Pasco County (23 MW)
 - ◆ Pinellas County (54.75 MW)

These are long-term contracts with terms of 20 to 30 years.





E-grass™ Biomass Power Plant

- 130 MW Bio-Energy System
- Uses E-grass™ for fuel that is grown in a closed loop on site
- Will power approximately 83,000 homes
- Will save 20 million tons of carbon emissions



ALTERNATIVE ENERGY

Progress Energy



E-grass™ Biomass Power Plant

- 1st Stage of preparing E-grass™ crop





E-grass™ Biomass Power Plant

- E-grass™ out of lab stage and into greenhouse



ALTERNATIVE ENERGY



E-grass™ Biomass Power Plant

- E-grass plant



ALTERNATIVE ENERGY

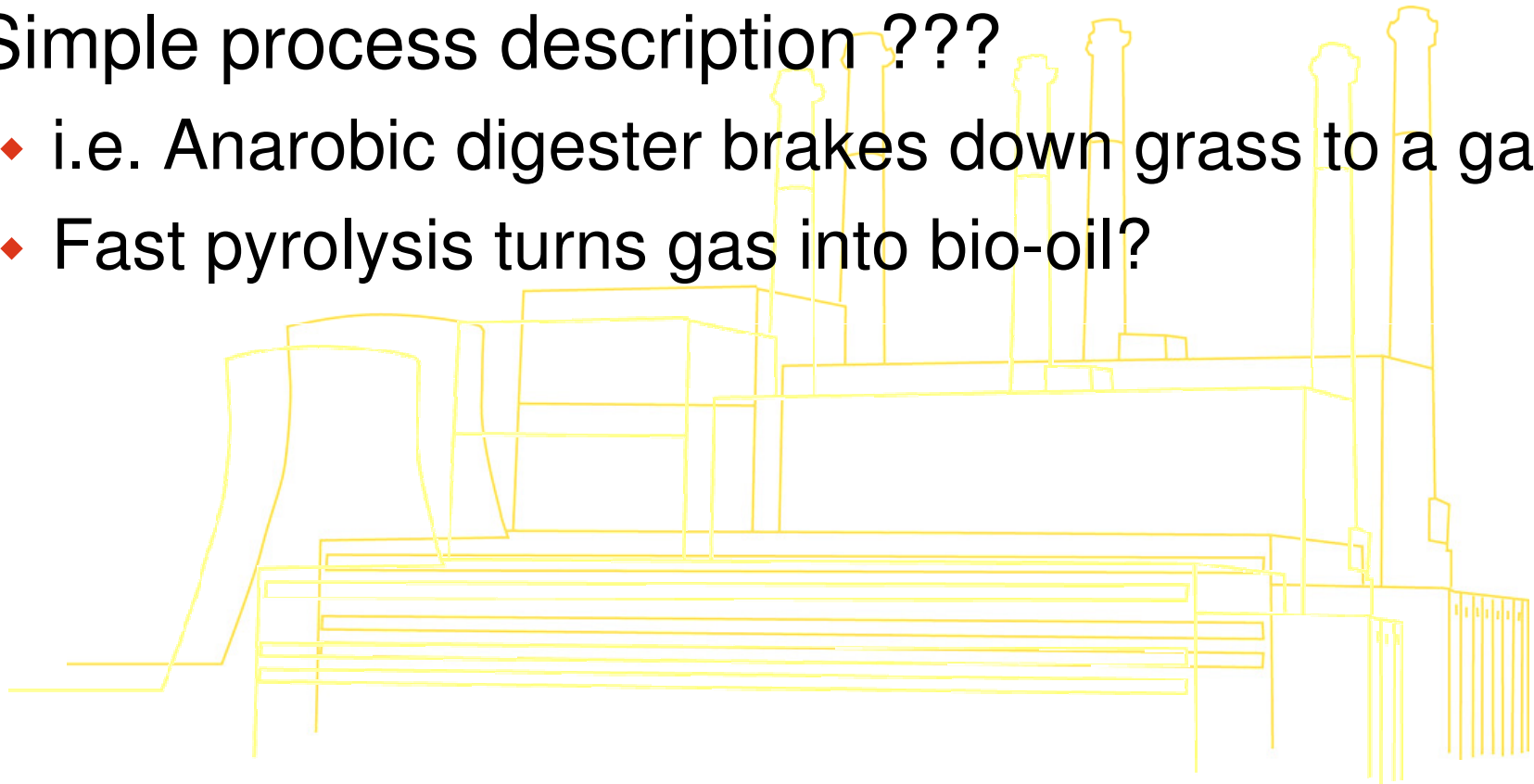


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E-grass™ Biomass Power Plant

- Simple process description ???
 - ◆ i.e. Anarobic digester brakes down grass to a gas
 - ◆ Fast pyrolysis turns gas into bio-oil?





Solar Water Heating with EnergyWise

- Launched Feb 26, 2007
 - ◆ Over 165 participants
- Program Objectives
 - ◆ Promotes Renewable Energy
 - ◆ Lessen Impact of Control Event
 - ◆ ROI through Energy Savings and Incentives



**Capture
the power
of the sun**



ALTERNATIVE ENERGY





Solar Water Heating with EnergyWise

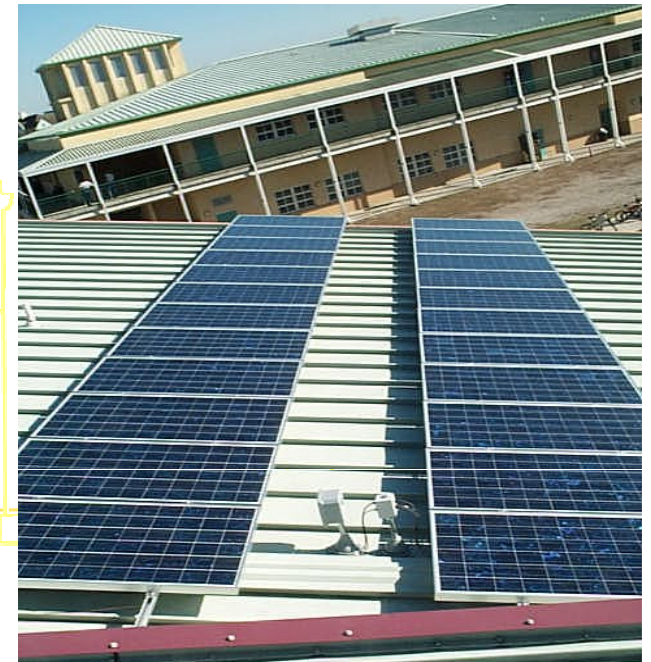
- Customer Benefits
 - ◆ \$450 Initial rebate
 - ◆ Up to \$60 annual credit
 - ◆ Saves up to 85% of hot water costs
 - ◆ Partners with State and Federal Rebate and Incentive programs





Solar PV with EnergyWise

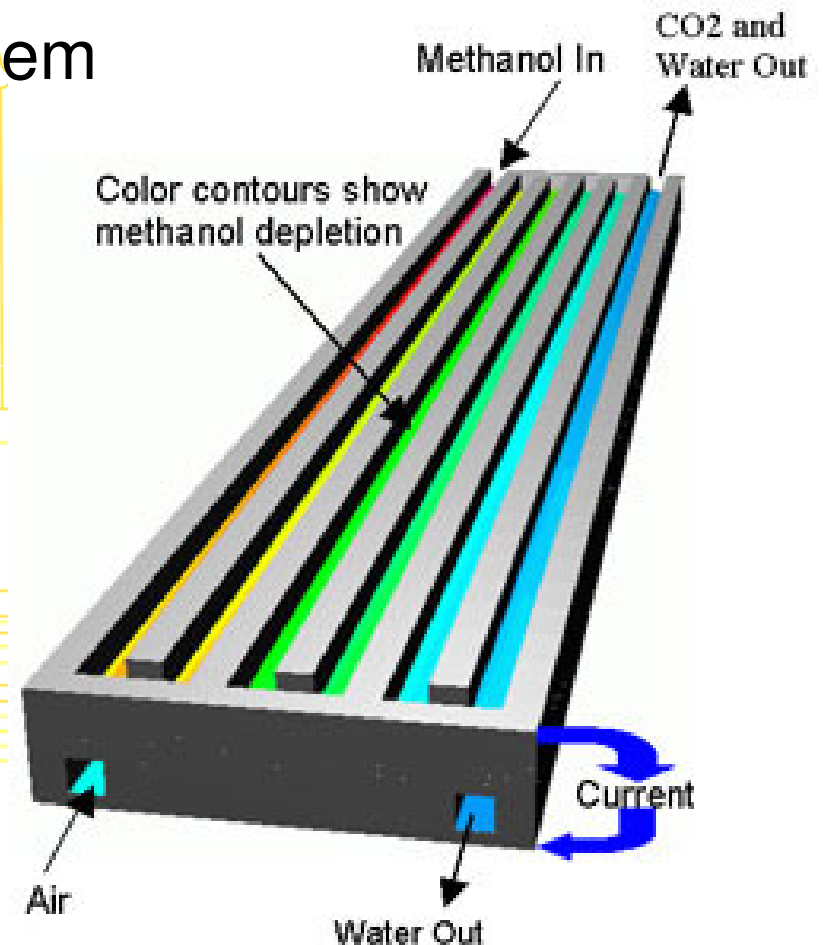
- Residential Customer donations
 - ◆ Monthly EnergyWise credits accumulate in escrow account
 - ◆ Funds will be used to install Photovoltaic Systems on schools throughout PEF service territory
 - ◆ Participants may donate up to \$150/year
- Environmental Stewardship
 - ◆ Promotes Renewable Energy
 - ◆ Differed generation through DLC
 - ◆ Goal to install PV systems at all schools within PEF service territory





Orange Peel Methanol Fuel Cell

- 10 kW Methanol Fuel Cell System interconnected at the Florida's Turnpike Turkey Lake Service Plaza
- Methanol derived from orange peel waste
- Controlled remotely to demonstrate Time of Use and DSM capability
- Will include an educational display





Hydrogen Fuel Stations



Partners- Florida Department of Environmental Protection (FDEP), Ford, and Chevron



Partners- Florida Department of Environmental Protection (FDEP), DOE, Ford, and BP





Horse Muck

- 12 – 16 MW
- Horse Muck – Horse Manure, Straw and Wood Chips
- Horse Muck is dried and then used to create steam
- Steam is converted to electricity in a small turbine





Biomass Inventory Study

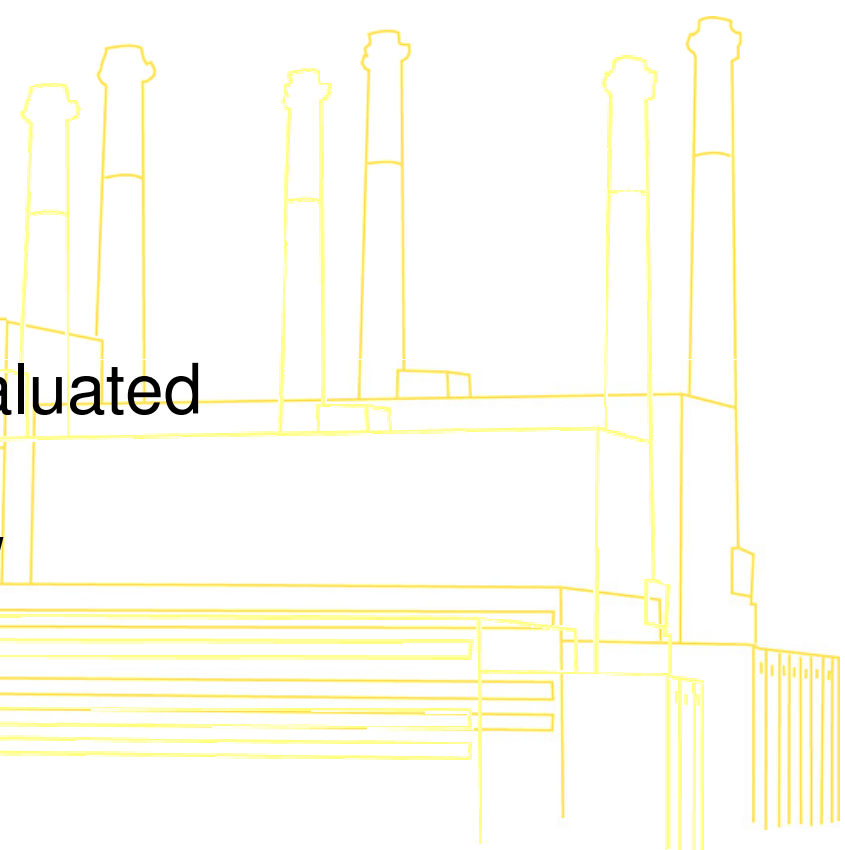
- Partnership with University of South Florida Clean Energy Research Center
 - ◆ Collecting biomass data on Florida
 - ◆ Aquatic Plants
 - ◆ Agricultural Waste
 - ◆ Chicken Litter
 - ◆ Food, grease waste
 - ◆ Horse Manure
 - ◆ Sewer Sludge
 - ◆ Woody Yard Waste
 - ◆ Final report due 3rd Qtr 2007





Renewable Energy Projects in Process

- Avoided Cost option
 - ◆ As-Available
 - ◆ Standard Offer
 - ◆ Negotiated Contract
- Current projects being evaluated
 - ◆ Waste wood; 70 -75 MW
 - ◆ Horse Muck; 14 – 16 MW
 - ◆ Landfill Gas; 1 – 3 MW
 - ◆ MSW; 75 – 80 MW
 - ◆ Photovoltaic; 5- 15 MW





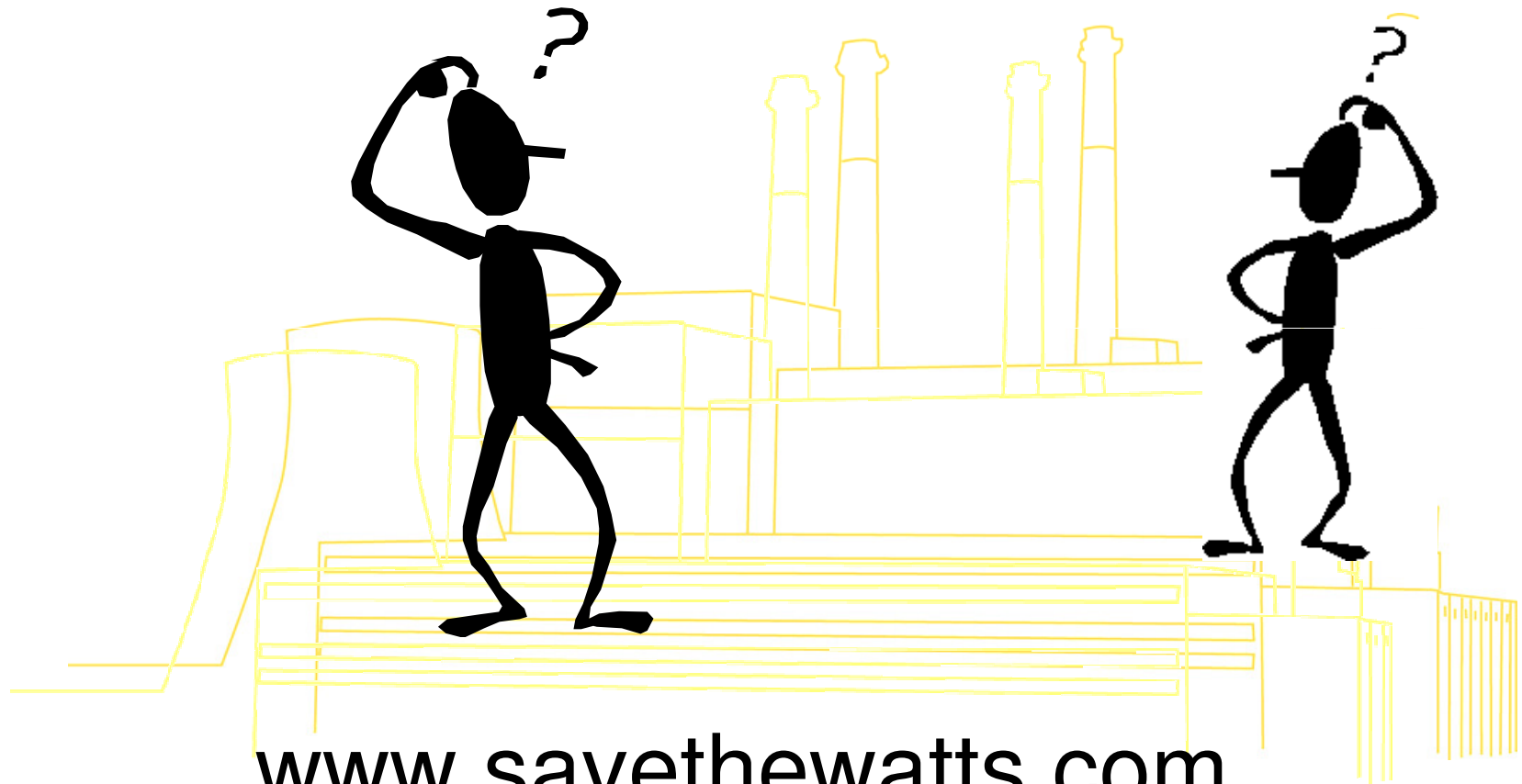
Request for Renewables

- Look for an announcement soon
- Website: www.progress-energy.com/renewables
- Email address for questions:
 - ◆ RenewableResponse@pgnmail.com





Questions



www.savethewatts.com



ALTERNATIVE ENERGY



Progress Energy

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