

Environmental Sustainability Symposium
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JEA's Renewable Program

Jay Worley - Director, Environmental Programs



Live Smart. Live Green. Live Well.

Company Overview

- 8th largest electric public utility in the nation
- 2nd largest water/wastewater utility in Florida
- JEA serves Duval and portions of Clay, Nassau, and St Johns Counties in Northeast Florida
- *Electric System*
 - >400,000 electric customers
- *Water and Sewer Systems*
 - >300,000 water customers
 - >200,000 sewer customers



JEA RENEWABLE PROGRAM



SOLAR



WIND



BIOMASS



BIOGAS



LANDFILL GAS

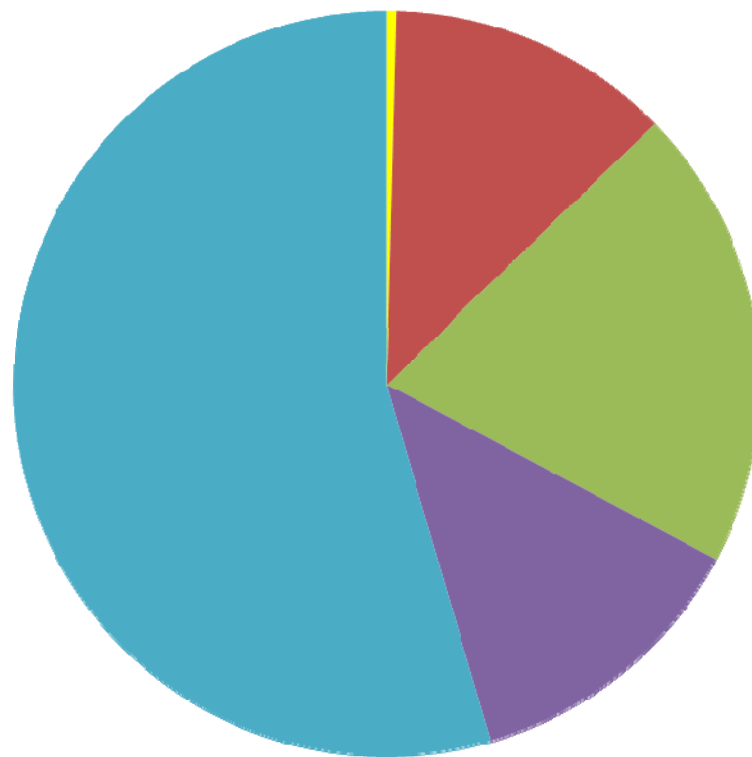
◆ **JEA's Clean Power Program**

◆ **State / Federal Legislation**

JEA CLEAN POWER PROGRAM

7.5 percent clean power capacity by 2015

KWp Capacity



- Solar PV
- Solar Thermal
- Biogas
- Wind
- Efficiency

	KWp Capacity
Solar PV	321
Solar Thermal	9,760
Biogas	15,800
Wind	10,000
Efficiency	43,000

Note: Solar PV: JEA has installed 35 solar PV systems on Duval public schools, local college and university, local public buildings and on JEA facilities
Solar Thermal: JEA encourages the use of solar energy by providing financial incentives to customers who install solar water heaters
Biogas: JEA utilization of landfill gas from City of Jacksonville's North and Girvin Rd. landfills and the Trail Ridge landfill gas to energy
Wind: JEA has a 10MW share of a wind farm in Nebraska
Efficiency: Represents JEA production facility improvements which results in additional power for the same fuel input.

◆ **Capacity vs. Energy**

◆ **Renewable Energy Credit**

JEA Clean Power Program

Current Status: Capacity

Clean Power Program	KW
Solar Power- PVs	321
Solar Thermal	9,760
Biogas	15,900
Wind	10,000
Biomass	Under evaluation
Efficiency Projects	43,000
Total Planned/Implemented	78,981 = 79 MW

Goal FY2015: (7.5%): 315 MW

American Clean Energy & Security Act of 2009

H.R. 2454

<u>YEAR</u>	<u>%</u>
◆ 2012	6.0
◆ 2013	6.0
◆ 2014	9.5
◆ 2015	9.5
◆ 2016	13.0
◆ 2017	13.0
◆ 2018	16.5
◆ 2019	16.5
◆ 2020	20.0
◆ 2021 through 2039	20.0

JEA RENEWABLE PROGRAM

Current Status: Energy (Est.)

Renewable Program	MWh
Solar Power- PVs	170 (Est. juwi annual = 22,430)
Solar Thermal	Efficiency Component
Biogas: North, Girvin, & Trail Ridge Landfills, Buckman Wastewater	75,000
Wind: NPPD	30,000
Biomass	TBD (est. 400,000)
Efficiency Projects	TBD
Total Planned/Implemented	TBD

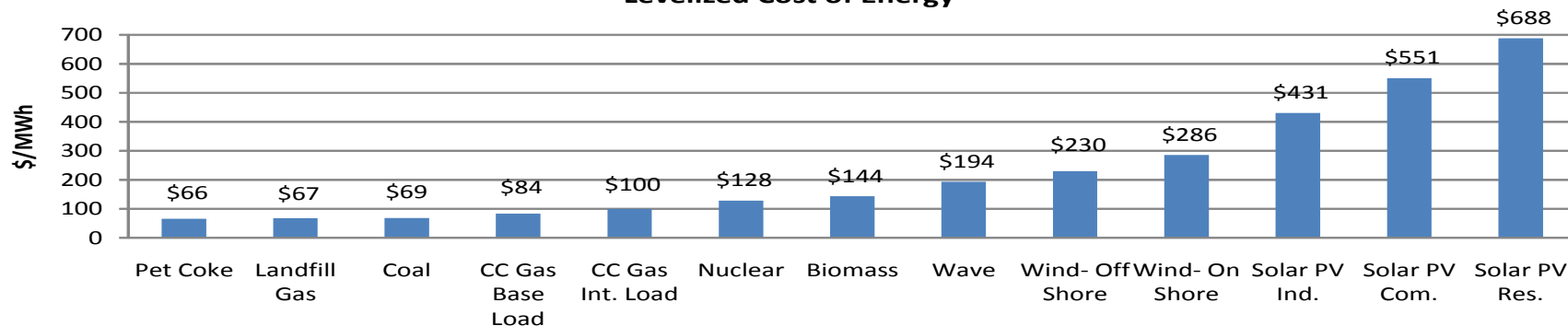
JEA - Est. Annual MWhs / Year = 12.8 MM MWh
6% = 768,000 MWh; 20% = 2.56 MM MWh
Est. w/biomass & juwi Solar = 550,000 MWh

Different Technologies, Different Costs

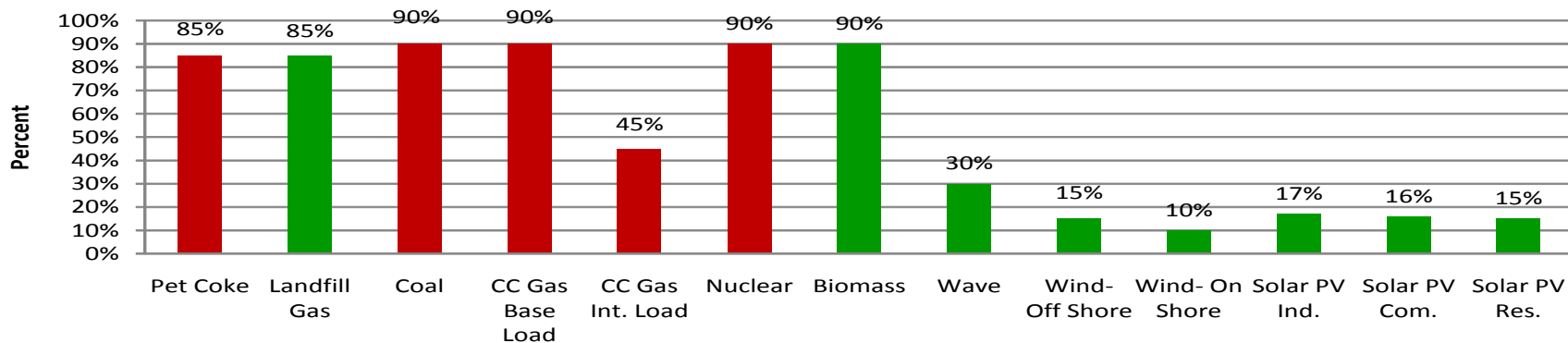
Current Technologies

Emerging and Future Technologies

Technology Cost Comparison
Levelized Cost of Energy



Technology Capacity Factor



Reflects scalable, reliable technology, with significant output potential.

Reflects technology which is difficult to scale, with very limited output potential.



TRAIL RIDGE LANDFILL – 144 Acres

US Highway 301 S., Baldwin, FL

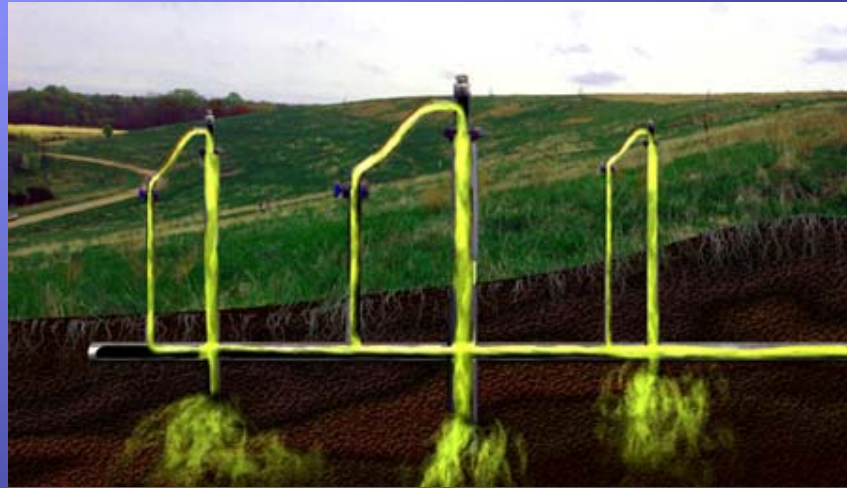


Placement of Waste Material

Cover of Waste Material



Landfill Gas Extraction



TRAIL RIDGE: Six Engines 9.6 MW



Trail Ridge Benefits

- ◆ Energy: 9.1 MW = 4,500 homes
- ◆ Reliable: 85% Capacity Factor
- ◆ Environment: Methane is a greenhouse gas and will be used as a renewable resource in lieu of flaring
- ◆ Environmental Attributes: JEA receives green tags, RECs, CO₂ credits, or other similar rights
- ◆ Economic: \$0.046/kWh
- ◆ Renewable Energy Tax Credit: Trail Ridge Energy, LLC receives tax credit.

JACKSONVILLE SOLAR PROJECT

- ◆ JEA / juwi: Purchase Power Agreement
- ◆ The 12.6 Megawatt (MW) AC facility will consist of approximately 200,000 photovoltaic panels on a 100 acre site and generate about 22,430 megawatt-hours (MWh) of electricity a year.
- ◆ Over the course of a year, this project will generate the same amount of power as about 1,450 households consume
- ◆ Will offset approximately 22,430 US tons of greenhouse gas emissions annually



Solar Power Project Waldpolenz



- 40 MW located in Saxony, Germany – on a former military airfield – online '08
- Size = .4 miles wide, 1.3 miles long = 200 soccer fields
- If Installed in Jacksonville with avg. Annual Capacity Factor = 15% = 6 MW

SOLAR PV PPA UPDATE

Provides up to 12.6 MW AC



- Proposed to be located on 100 acres of JEA property
- 200,000 modules (each module is 2' by 4')

BIOMASS PPA UPDATE

- Confidentiality agreement
- Nominal 50 MW electric power generation facility
- Features low emissions and very high combustion efficiencies
- Secured fuel source



JEA RENEWABLES NET METERING UPDATE

- Up to 100 kW system**
- Monthly credit roll-over**
- End of calendar year**

JEA: RENEWABLE ENERGY RISING ON THE HORIZON

QUESTIONS?

