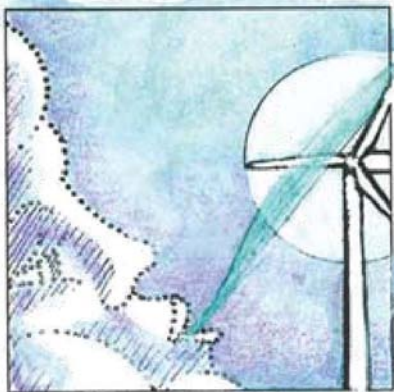
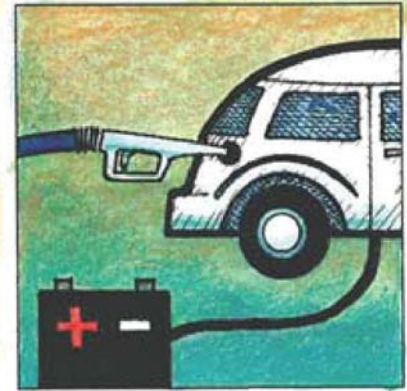
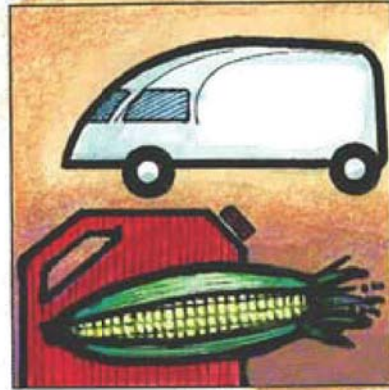




Innovative Energy Options



Atlantic County, NJ



Committed to environmental quality



Monmouth County Freeholders

Green Fair

Thursday,
September 18, 2008

Atlantic County Utilities Authority

Richard S. Dovey

President

609.272.6950

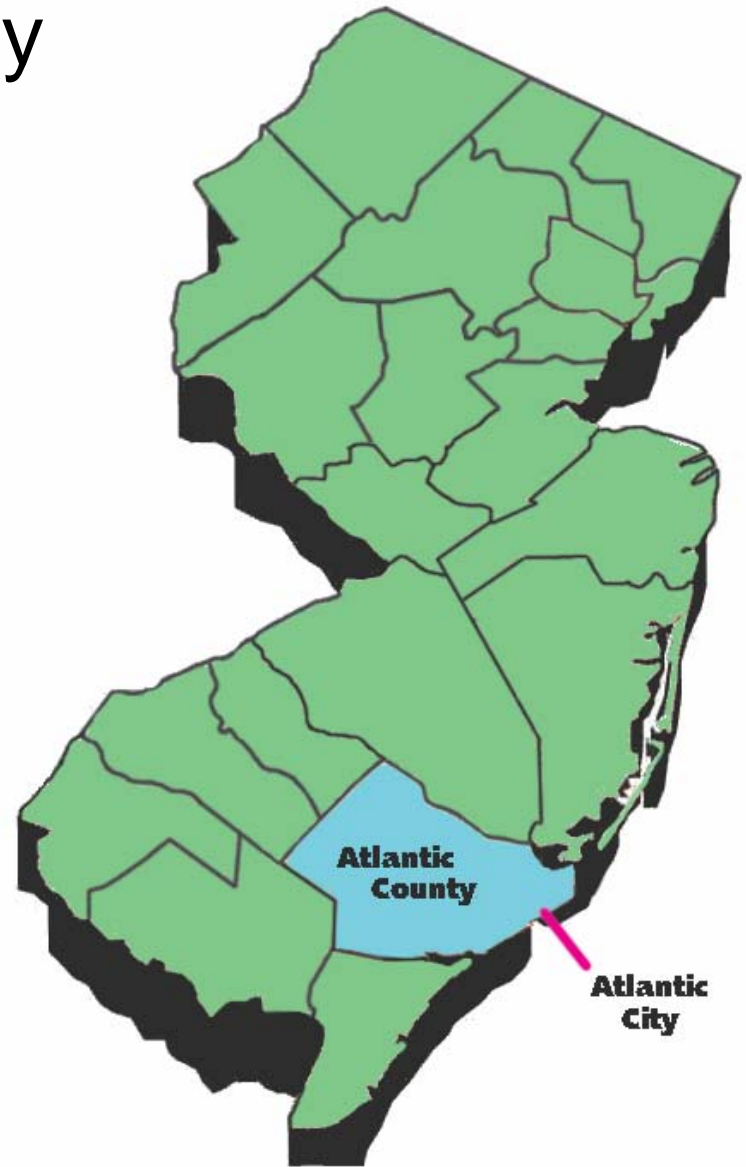
rdovey@acua.com



Committed to environmental quality

The Atlantic County Utilities Authority

- **The Atlantic County Utilities Authority is a public agency that provides environmental and waste management services to the people of Atlantic County and southern New Jersey.**
- **The ACUA operates both Wastewater and Solid Waste Management Systems.**





About the



- \$70 million in annual revenue
- 250 employees
- Full service regional wastewater treatment facility, trash & recycling collection, landfill, composting, recycling center, and transfer station.

The ACUA Mission Statement. . .

The Atlantic County Utilities Authority is responsible for enhancing the quality of life through the protection of waters and lands from pollution by providing responsible waste management services. The Authority is an environmental leader and will continue to use new technologies, innovations and employee ideas to provide the highest quality and most cost effective environmental services.

. . .makes the Authority a natural facilitator for renewable energy projects





ACUA Goes Green With:

- 7.5 megawatt wind farm
- 500 kilowatt solar generation facility
- 5.4 megawatt landfill gas to electric facility
- Biodiesel- B5 blend powers the ACUA diesel fleet
- Hybrid vehicles
- Geothermal heating and cooling
- Energy conservation
- Energy curtailment
- By joining the Chicago Climate Exchange



Jersey – Atlantic Wind Farm



Atlantic City, NJ



Committed to environmental quality



Jersey – Atlantic Wind Farm

- The first coastal wind farm built in the Northeast and the first wind farm in New Jersey
- \$12.5 million project
- Project fully funded by the NJBPU & a third party
- Five General Electric 1.5 mW turbines
- 7.5 mW of electricity during peak operations
- Enough to power 2,500 homes
- Provides almost 60% of the yearly electrical energy needs for the plant.

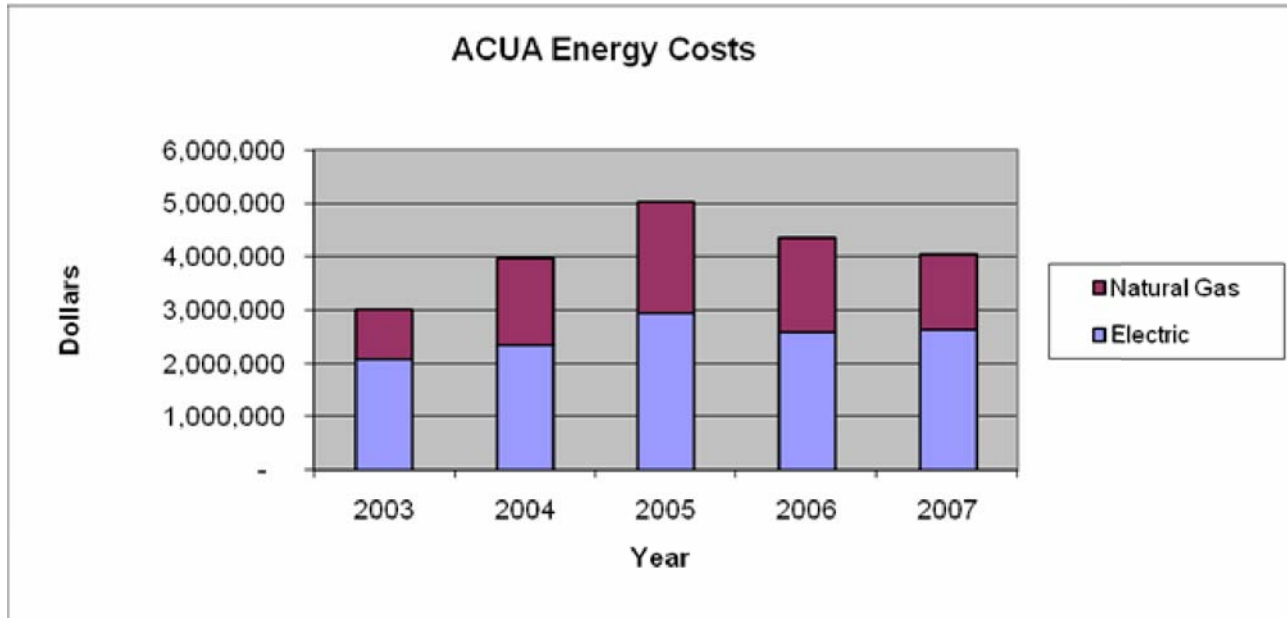
Jersey – Atlantic Wind Farm

ACUA's Cost Benefit

- Electric costs at the wastewater plant were reduced by \$515,000 in 2007 (includes rental income)
- Flat rate of 7.95 cents/kWh for the next 20 years
 - in 2005 wastewater paid 13.00 cents/kwh
 - in 2004 wastewater paid 9.42 cents/kwh)
- ACUA receives \$15,000 annually to rent the property
- NJBPU Clean Energy Incentive paid \$1.7 M (14% of \$12.5 million total cost)



Wastewater facility combined electric & natural gas prices



In 2005, energy costs were approximately 24% of the budget. Now they are approximately 18%. During this same period gas prices rose 34% and electric prices rose, on average, 15% per year.



Jersey-Atlantic Wind Farm

- fully operational in January 2006
- rate per kilowatt hour: \$0.0795
- in 2007 wind farm generated 20,338,000 kWh
- ACUA purchased 55% of electricity generated
- this provides approximately 59% of
Wastewater Treatment Facility's energy needs
- the remaining 45% went to the grid
- ACUA receives \$3,000 rent per turbine each year
- in 2007 ACUA netted over \$515,000 from savings and revenue



ACUA's Solar Portfolio



- 2,700 solar panels installed at Wastewater Treatment Facility in five arrays - two roof top, two ground mounts and one canopy array
- 500 kW system owned and maintained by ACUA
- Joint agreement with WorldWater & Power and Conti Construction
- \$3.25 million project
- \$1.9 million CORE rebate from NJBPU
- Low-interest loan NJ Environmental Infrastructure Trust Program
- Average estimated yearly savings: \$115,000-\$135,000



Financial Results

Solar System	
Financial Statement - Basic	
2007	
	Total
Energy Production	678,120
Avoided Electric Expense	76,906
REC Revenue	149,186
Revenue/Savings	226,092
Inverter Replacement (monthly equivalent)	36,000
Debt Service (monthly equivalent)	90,000
Expenses	126,000
Net Savings to ACUA	100,092
Savings/(Cost) per kilowatt	0.15
# RECs produced (energy produced/1,000)	678
NOTE ON RECS - Recs sold through May 2008 are \$220	



Landfill Gas to Electric

- ACUA project fully funded by a third party - AC Landfill Energy, LLC, a joint venture of DCO Energy and South Jersey Industries
- Methane gas powers 5.4 Mw Caterpillar® engine generator (combined 1.6 Mw generator and two 1.9 Mw generators)
- 1.6 Mw of energy produced powers all of ACUA's Environmental Park. Excess energy sold to PJM Grid
- Capable of producing enough energy to power 3,434 homes
- Excess Energy from the second 1.9 Mw generator sold to The Borgata Casino Spa & Hotel
- \$513,200 incentive from NJBPU; \$375,000 NJDEP Grant NJEDA Approved low interest loan for remaining \$ 2 million
- Estimated 2007 savings - \$556,000
- More than 44,000 greenhouse gas credits earned in 2006, worth approximately \$120,000 on the Chicago Climate Exchange



Reducing our carbon footprint: Chicago Climate Exchange



- The ACUA is the first organization in NJ to join the Chicago Climate Exchange (CCX). CCX is the world's first and North America's only legally binding, voluntary greenhouse gas (GHG) emission registry, reduction, and trading system.
- By joining CCX, ACUA has committed to cut its greenhouse gas emissions by 6 percent minimum by year 2010 in absolute terms.
- Membership with the CCX obligates the ACUA to report annual emissions data to the CCX. Emissions are verified by CCX and will result in a "net position" for the ACUA. A sell position will allow the ACUA to sell GHG credits to other members. A buy position will require the ACUA to purchase GHG credits from other members. This system is called a cap and trade system.





Energy Curtailment

- Reducing electricity use in response to high prices or grid reliability problems
- ACUA will curtail use when called upon for up to 15 minutes
- Replaces the need for standby generation
- New revenue stream of approximately \$138,000 per year
- Payment received whether called on to curtail or not



Alternative Fuels

Biodiesel



- ACUA operates largest biodiesel fleet in New Jersey
- Entire ACUA diesel fleet, 106 vehicles, runs on a B5 blend of biodiesel
- In addition, 23 municipal vehicles and four county vehicles use biodiesel and fill-up at the ACUA

Alternative Fuel Vehicles: Hybrids and Propane Vehicles

- Propane vehicles used by ACUA for the past decade
- ACUA owns five Ford Escape Hybrids
- ACUA owns two Chevy Silverado Hybrid Pickup trucks
- Less than 1 lb. smog-forming pollution after 15,000 miles of driving
- NJBPU Rebate Program provided for the vehicles
- For the private sector: federal tax incentives up to \$3,000/vehicle for hybrid purchase



Geothermal Energy



Geothermal Office Building
Reduces Electric Cost by 20%

- Geothermal energy is the only renewable energy source created naturally by the earth itself.
- Well-designed geothermal systems are among the most environmentally benign sources of energy.
- A closed loop geothermal unit provides the heating and cooling for the Authority's administrative office or Geo Building.



Renewable Energy

- Can be installed at no cost to the entity
- May result in savings and provides an alternative from spiraling energy rates
- Reduces the environmental impact of traditional fuels
- Provides leadership
- In 2007, the ACUA saved more than \$1.1 million in energy costs and offset more than 25,000 barrels of crude oil due to its renewable energy program.





Value of energy efficiency:

- ACUA invested \$4 million to install new mixers and centrifuges at the wastewater treatment plant
- The project was completed in 2006
- New mixers saved 669,000 kWh of electricity – this equates to an 8% reduction in consumption and \$75,000 saved
- New centrifuges saved 57,000 dekatherms of natural gas – this equates to 28.6% reduction in consumption and \$631,000 saved for 2007
- Less than six year payback



Sustainability Program

Project/Initiative	Estimated Annual Barrels of Crude Oil Saved	Money Saved Annually
Recycling Program	61,147	
Renewable Energy	25,060	\$1.175 million
Conservation Program	10,195	\$706,000

Other sustainability programs: Water Reuse

- ACUA is making progress on two wastewater reuse projects. One project will provide treated water for irrigation at an adult community in Smithville, NJ and the second will provide makeup water for tower cooling in Atlantic City for Marina Energy, LLC.
- The combined projects will treat 65 million gallons of reclaimed water.
- This helps to minimize the demand on our aquifer and uses water that would otherwise be discharged into the ocean.



Other sustainability programs: Energy Efficiency

- ACUA is pursuing LEED Certification for its GeoBuilding
- GeoBuilding has waterless urinals, faucet sensors and aerators, and energy star certified appliances and office equipment.
- ACUA recently became a pledge driver in the “Energy Star Program - Change a Light, Change the World.” The program features compact fluorescent light bulbs which use 2/3 less energy than standard bulbs and last 10 times longer.



What Else Can Be Done?



- Alternative fuels are being considered:
 - Increased use of biodiesel
 - Compressed Natural Gas (CNG) and Liquefied Natural Gas (LNG) produced from landfill gas
 - Plug-in electric vehicles with vehicle to grid technology
 - Hydrogen and Fuel Cell Vehicles

What Else Can Be Done?



- Plasma gasification diverts material from the landfill and also uses the resulting byproduct to produce electricity
- Source separation of food and other organic wastes
- Expanded composting can produce methane to be converted into CNG or LNG fuels.
- Single Stream recycling can encourage greater participation and cooperation

What Else Can Be Done?

- Beyond this there are many other things individuals and companies can do to be more sustainable:
- Participation in LEED certification
- Use of Compact Florescent Light Bulbs (CFLs)
- Turning off electronic devices and lights when they are not in use
- Reducing water consumption
- Continued recycling at home and at work.





What's next?

- Offshore wind potential
- Plug in hybrids
- All electric vehicles
- Vehicle to grid concept
- Hydrogen Vehicles
- Compressed Natural Gas Vehicles
- Hydrogen transportation
- Solar communities
- Conservation credits
- Sustainable communities



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