

Louisiana TAP Request – Part II - A

A Brief Review of Utility Programs to Support Energy Efficiency, Renewable Energy and Greenhouse Gas Reductions

**Prepared by Jason Coughlin and Karlynn Cory
National Renewable Energy Laboratory (NREL)
Golden, Colorado**

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Through the U.S. Department of Energy's Technical Assistance Program (TAP), the Louisiana Department of Natural Resources (DNR) asked NREL to provide an overview of four main topics, including: (1) green school programs, including financing options and opportunities; (2) utility support for energy efficiency and renewable energy, and greenhouse gas reductions; (3) renewable energy certificate trading programs and state-level renewable portfolio standards; and (4) applications of energy efficiency and renewable energy for Louisiana.

The following report summarizes NREL's research and findings on U.S. utility programs that support energy efficiency (EE), renewable energy (RE) and greenhouse gas (GHG) reductions.

1.0 Introduction

Programs sponsored and funded by local utilities can be a tremendous source of both technical and financial assistance for energy efficiency (EE) and renewable energy (RE) activities at a state level. Utility programs can be as simple as discounted compact-fluorescent light bulbs and free energy audits, to more comprehensive arrangements such as direct financial assistance with EE and RE investments.

Utilities are no different than most industries in that they make more money if they sell more of their product - energy in this case. As such, in economic terms, it does not make sense that a utility - or any other industry for that matter - would intentionally implement policies to reduce sales. This is the dilemma when it comes to encouraging (or enforcing) utilities to promote energy efficiency or on-site renewable generation throughout their service territories. Therefore, to encourage investor-owned utilities to invest in programs and technologies which reduce their customers' energy consumption, the proper financial incentives must be put into place. In other words, *how do you align Clean Energy goals with the profit motives of utilities?*

2.0 Mechanisms to Encourage Clean Energy by Utilities

There are a number of mechanisms in place throughout the country that attempt to answer this question. They include the following.

- Lost Revenue Adjustments
- Decouple Sales from Revenues
- Cost Recovery
- Financial Incentives
- System Benefit Charges

2.1 Lost Revenue Adjustments

This is a method of statistically calculating sales "lost" as a result of energy efficiency investments. Rates are then adjusted accordingly to cover the revenue that was never earned. If the revenue adjustment has a higher rate of return for "lost" energy sales, the utility has an incentive to consider efficiency; either through their own investment in energy conservation, or by encouraging they might try to encourage energy service companies or their customers to do so. This is typically used for energy efficiency and conservation, but could theoretically be applied to customer-sited (and either customer-owned or utility-owned) renewable generation as well.

2.2 Decouple Sales from Revenues

This method attempts to break the established link between energy sold and revenues. Under the decoupling method, the *expected* revenues for a given time period are projected. These expected revenues are then compared to *actual* revenues. If actual revenues are below expected revenues (with adjustments, including weather), the assumption is that the difference was the result of greater energy conservation and energy efficiency. The utility has the right to "true-up" or recover the difference. Again, this can be structured as a utility incentive if the rate of return is higher than their typical return.

On July 20, 2007, Maryland's Public Service Commission announced that it had approved a decoupling mechanism to promote energy conservation.

"Decoupling of utility revenues was approved by the Commission today as well, which removed the financial disincentives companies face if aggressive conservation efforts are successful and sales of electricity are reduced."

Link to the Maryland PSC press release

http://www.psc.state.md.us/psc/AboutUs/Press/Pepco_DelmarvaRateStablizationPlan07202007.pdf

2.3 Simple Cost Recovery

Under a simple cost recovery system, a utility can recover its direct investment in energy efficiency and energy conservation programs. The simple recovery method is viewed as removing a disincentive to carry out EE investments, but does not create an incentive per se. As such, there are variations to this model. These variations include permitting the utility to earn its regulated rate of return on the EE investments, or earn a bonus rate of return on EE investments as a way to create the necessary incentives.

2.4 Financial Incentives

Another mechanism is allowing the utilities to share in the energy savings produced by efficiency and conservation activities. A calculation is made as to the amount of energy saved over a given time period; the utility gets paid for a percentage of these savings. Some states establish energy conservation targets for utilities. If the targets are met, the utility gets a bonus payout (expressed as a percentage of its EE investments).

2.5 System Benefit Charges

A system benefit charge (SBC) is a per kWh fee added to utility bills as a mechanism to raise funds for energy efficiency or renewable energy programs. These funds can either be managed by the utility itself or, more commonly, they are managed by a state agency or special purpose entity. Examples include the Energy Trust of Oregon, the Massachusetts Technology Collaborative and the New York State Energy Research and Development Authority. These entities then develop and manage a suite of programs that support energy efficiency, energy conservation, and renewable energy programs. Sometimes programs are as basic as providing grants or cheap loans, but some states have more creative programs that support the purchase of renewable energy certificates (which are then sold into the market to replenish the initial investment) or actual equity ownership in projects (and related returns).

More can be learned about SBC programs (including cross-program comparisons and lessons learned) from the Clean Energy States Alliance (CESA). CESA is a non-profit organization that has members from 16 U.S. clean energy funds and two state agencies. CESA provides

information and technical services to build and expand clean energy markets in the U.S. by coordinating cross-SBC fund efforts and facilitating lessons learned. See their website for more information: <http://www.cleanenergystates.org/>. They have case studies that describe the experience of SBC funds in designing and administering EE and RE programs (<http://www.cleanenergystates.org/case.html>).

SBC Follow-up questions

- Since the SBC funds are typically done on a per kWh basis, the total amount of funds can be calculated based on current load in Louisiana (or just for Entergy – New Orleans' if the state is not interested).
- The total dollars could be then compared to the other SBC funds, to see what types of programs might be appropriate for Louisiana (or New Orleans).

3.0 Case Studies

There is a vast array of programs that have been put in place by utilities across the country. The services that utilities offer range from free energy audits to significant cash rebates for energy efficient investments. An excellent resource that describes state energy efficiency and renewable energy programs is the Database of State Incentives for Renewables & Efficiency (DSIRE). Based in North Carolina, and funded by the Department of Energy, the DSIRE database lists federal, state, local, and utility programs for renewable energy and energy efficiency for all 50 states. See <http://www.dsireusa.org/>.

The following case studies describe highly regarded energy efficiency and renewable energy programs managed by Austin Energy, Florida Power & Light (FPL), and Puget Sound Energy. Additionally, a summary of Potomac Electric Power Company's (PEPCO) proposal to establish a demand side management program in DC is included. Similar to Entergy-New Orleans, PEPCO is regulated by the District (i.e. is not a municipal utility) and therefore the proposal highlights a potential financial mechanism for a similar program in New Orleans.

3.1 Austin Energy - Texas **www.austinenergy.com/index.htm**

Austin Energy is the nation's 10th largest community-owned electric utility. It serves 360,000 customers and a population of more than 800,000. As a publicly owned power company and a city department, Austin Energy returns profits to the community on an annual basis.

Austin Energy is well known for its wide range of energy efficiency and renewable energy programs. Loans, technical assistance, rebates, and green power options are part of the menu of available programs. Beneficiaries of these programs must be rate paying customers of Austin Energy.

Contact
Fred Yebra
512-482-5305

3.1.1 Loan Programs

Energy Efficiency Loans

Austin Energy offers unsecured, low-interest loans which can be used to cover the following energy efficient investments. The maximum loan amount is \$11,000 (with some exceptions). The maximum term is 10 years and interest rates range from 0-5% per annum.

- Installation of a new energy-efficient air conditioner or heat pump (14 SEER or greater)
- Additional attic insulation
- Repair of leaking AC ducts
- Caulking around plumbing under sinks
- Weather-stripping around doors
- Installation of solar shading or awnings
- Installation of attic radiant barrier reflective material

Solar Photovoltaics Loans - Low Interest Loans for Solar Energy

Austin Energy works with a local credit union to provide low interest loans for the installation of solar photovoltaic power systems for single family, residential homes. Loans of up to \$20,000 are available with terms as long as 10 years. Interest rates range from 0 - 5% per annum.

3.1.2 Commercial Rebate Programs

Commercial customers of Austin Energy can get rebates for the following technologies.

- Interior or exterior lighting
- Building envelope
- A/C
- Motors
- Variable frequency drivers
- others

The maximum rebate per customer is \$100,000 per fiscal year per site. Rebates will vary based on the equipment purchased.

3.1.2 Residential Rebate Programs

Residential customers of Austin Energy can receive up to \$1,575.00 in rebates on air conditioning, attic insulation, solar screens, caulking, and weather stripping with additional bonus rebates of up to \$650.00. In addition, there are rebates for solar PV and solar water heaters.

- **Solar PV rebates.** Austin Energy offers customers one of the highest solar photovoltaic rebates in the country at \$4.50 per watt. This rebate pays between 45% and 75% of the cost of installation of a solar photovoltaic system
- **Solar hot water heaters.** For residential consumers planning on installing a new water heater, the total rebate can be \$1,200 - 1,650 when the federal tax credit is included.
 - Rebates from \$450 to \$650
 - A 30% federal tax credit of \$750 to \$1,000

3.1.3 Assistance for Low Income Families

For low income families in their service area, Austin Energy will provide materials for and installation of the following:

- Insulation in attics
- Sealing and repairing ductwork
- Caulking around plumbing penetrations
- Weather stripping around doors
- Installation of solar screens

3.1.4 Power Saver™ Program

Power Saver Volunteers - Power Saver volunteers agree to reduce energy consumption up to 10 times in a summer between 4:00 - 8:00pm. Austin Energy will contact the Volunteers if they need for them to reduce their energy consumption. In return for being a Volunteer, Austin Energy will provide a Home Weatherization kit which includes weather stripping, outlet sealers, two CFLs, & energy saver nightlight.

Similar to the Power Saver Volunteer Program, Austin Energy will give away free programmable thermostats to families who agree to have their A/C cycled off in 10 minute increments during peak times.

3.1.5 Cash for refrigerator recycling

Austin Energy will pay up to \$50 for each working refrigerator or freezer, and dispose of it in an environmentally friendly manner. The goal is to encourage customers to replace their older, less efficient refrigerators and freezers with newer, more efficient ones.

3.1.6 \$50 Air Duct Diagnostic

According to Austin Energy, “ducts in the average 10-15 year old home leak 15% to 40% of the home’s heating and cooling right into the attic.” To improve the efficiency of home heating, Austin Energy will conduct an air duct diagnostic test on individual residences for a fee of \$50.

3.1.7 Austin Energy Green Building Program

Austin Energy's Green Building program offers consulting services, education resources such as green building guides, and training. Based on its experience working within its own service district, the Austin Energy offers resource management consulting to other utilities and governments under its Manage It Green (MIG) program.

Contacts

Theresa Dixon
512-482-5300
Richard Morgan
512-482-5309

3.1.8 GreenChoice® Renewable Energy

Customers of Austin Energy can choose to get their power from renewable energy sources and in return, they get to hedge themselves against volatile fossil fuel prices. The GreenChoice® Program is the largest in the country and in 2005 accounted for nearly 20% of all green power sales by the nation’s utilities. Instead of paying the regular fuel charge (which changes as fuel prices change), customers commit to pay a fixed green fuel charge for 10 years. The utility uses these customer commitments to sign 10-year, fixed-price wind energy supply contracts to help get new projects built (there is also some solar and landfill gas as well). The program has proven extremely popular with larger commercial customers who, in addition to buying renewable energy, are able to lock in a hedge against future fossil energy price volatility. GreenChoice® customers have also seen the utility’s base fuel charge rise above the fixed-

price premium, which means that these customers have actually paid less than Austin Energy's regular customers. The program has been so successful that it is currently closed until Austin can contract for additional renewable energy.

For more information on utility green power programs, see "Green Power Marketing in the United States: A Status Report (Ninth Edition)," an NREL Report from Lori Bird (2006). <http://www.nrel.gov/docs/fy07osti/40904.pdf>

3.1.9 GHG Emissions

As part of the City of Austin's Climate Protection Plan, Austin Energy has committed to reduce its GHG emissions by achieving the following targets:

- Achieve 700 MW in savings through energy efficiency and conservation by 2020.
- Meet 30% of all energy needs through renewable resources by 2020, including 100 MW of solar power.
- Achieve carbon neutrality on any new generation units through lowest-emission technologies, carbon sequestration and offsets.
- Establish a CO₂ cap and reduction plan for all utility emissions

3.2 Florida Power & Light (FPL)

<http://www.fplenergy.com/>

FPL serves nearly 8 million people, or about half the state of Florida. The utility has developed an extensive energy efficiency program for residential customers, business customers, and local governments. According to the company's website, over the past two decades, FPL has helped customers in Florida reduce their overall energy by the equivalent of 10 medium-sized power plants. FPL energy efficiency incentives have paid out \$71.2 million to residential customers and \$35 million to business customers.

3.2.1 Programs for Residential Customers

In addition to online educational materials, such as an Energy Savings Toolkit and a Home Energy Survey, FPL also coordinates with Energy Savings Contractors (ESCO) on behalf of its customers. FPL maintains a list of qualified ESCOs to help residential customers with the following projects.

- replace central heating and cooling system
- repair leaking A/C ducts
- upgrade ceiling insulation
- plan and build an energy-efficient new home

Any rebates that FPL offers for residential improvements will go to the ESCOs as partial payment for the work being carried out. Rebates are offered for HVAC systems, duct work, and insulation. Rebates are a function of the work done and the equipment installed.

3.2.2 Interconnection of residential solar PV systems

FPL will install net metering equipment and connect the PV system to the grid free of charge. Excess power generated by residential solar PV systems is fed back into the grid earning the customer a credit on his/her utility bills.

3.2.3 Programs for Small and Medium Business Customers

Energy Efficiency Programs & Services

FPL will offer rebates to business customers who invest in energy efficient systems such as A/C, water heaters, refrigeration units, window treatment, insulation, and lighting. The financial incentives depend on the both the project and the equipment. For example, rebates for water heating systems can be as high as \$33,000 whereas refrigeration rebates are capped at \$2,200.

Business Energy Evaluations

FPL will provide free energy audits for businesses and provide guidance on energy efficient investments. FPL also makes sure that businesses take advantage of all of its rebate programs.

Business On Call® program

Business customers that agree to be cycled off their A/C during peak periods will receive a credit on their bills.

Business Custom Innovation Incentives

If a business carries out an initiative that cuts its electricity demand by at least 25 kWh during peak summer hours (April - October, 3 pm to 6 pm), it may be eligible to receive an incentive payment.

Energy Savings Contractors (ESCO)

Similar to residential customers, business customers can benefit from FPL's relationship with qualified ESCOs.

3.2.4 Programs for Large Businesses and Government Entities

FPL offers all of the same programs to large businesses and government agencies that it offers to its small and medium size businesses. In addition, one program unique to large customers is a load management program called Commercial Demand Reduction (CDR). For entities that agree to shed at least 200kwh of electricity use during peak periods, FPL will install load management equipment on-site. Participants in the CDR program will receive monthly incentives regardless of whether or not FPL needs to shift them off the grid. If energy demand requires such action ("load control event"), FPL will shift power generation from the grid to on-site generation.

3.2.5 Sunshine Energy® program

http://www.fpl.com/residential/electric/sunshine_energy.shtml

FPL's green power program is called Sunshine Energy. Consumers agree to pay an additional \$9.75 per month to support the development of utility scale, solar energy projects in Florida, as well as other renewable energy projects in different states. The cost of participation covers a block of 1,000 kilowatt hours (kWh) of 100% Green-e® certified renewable energy.

3.3 Puget Sound Energy (PSE)

3.3.1 Resource Conservation Manager

Washington State's Puget Sound Energy (PSE) has a Resource Conservation Manager Program will provide cash incentives to set up an energy conservation program. This program is

for customers that manage multiple facilities. This incentive is usually 25% of the salary of a Resource Conservation Manager hired by the district. PSE will also guarantee that the energy savings will exceed the RCM's salary and if it doesn't, PSE will cover the difference. NREL will conduct a follow up study that will focus on the role of utilities in supporting energy efficiency and renewable energy for green schools and buildings programs.

PSE's Resource Conservation Manager Program

http://www.pse.com/solutions/businessPDFs/03_3642_RCMFinal.pdf

3.3.2 Business Customer Rebates

Rebates are offered for business customers for lighting, lighting controls, efficient heating, ventilation and air conditioning, for laundry and refrigeration equipment.

http://www.pse.com/solutions/ForBusiness_EfficiencyPrograms.aspx

3.3.3 Tools for Business Customers

A number of online tools are available to help business customers get a handle on energy use and help optimize energy consumption in their facilities. This includes:

- an online energy audit (“it takes 2 minutes”),
- an EnergySmart library, where the user can learn about high efficiency equipment, and get operating tips for heating, cooling, lighting, water heating, and many more commercial and industrial energy uses; and
- Energy Interval Service that allows customers to access usage data from PSE meters online

<http://www.pse.com/solutions/efficiencyTools.aspx>

3.3.4 Business-sited Renewable Energy

PSE has two main programs that help to support customer-sited renewable energy. The first is net metering. Customers that generate their own electricity, and are connected to the utility's distribution grid, not only offset electricity that would otherwise be purchased from the utility, but if excess is generated, a credit is issued to the customer's account for the extra power that can be used during the following month(s) until the annual true-up. In other words, the customer will only pay for the energy that PSE provides.

The second pays customers for renewable energy produced at the customer site through the Renewable Energy Advantage Program (REAP). REAP was created to encourage the growth of renewable electricity production in its service area. The legislature passed a law that allows Washington state utilities the option of participating in an incentive program for eligible customers who use solar PV, wind or anaerobic digesters to generate their own electricity. Unlike net metering, micro-hydro generators and fuel cells are not eligible, under terms of the program. The incentives are available to an individual, business, or local governmental entity that generates electricity on its own property. Eligible customers may be paid from 12¢ to 54¢ per economic development kilowatt-hour (kWh). 2006 – 2007 averages will be between 15¢ and 18¢ per kWh generated.

Net metering and REAP: <http://www.pse.com/solutions/busCustomerRenewGen.aspx>

3.3.5 Business Renewable Energy Purchases

PSE has a Green Power Program, where customers can purchase renewable power directly from the utility. PSE's program is one of the top 10 Green Power Programs in the country (source: National Renewable Energy Laboratory, 12/2006). PSE believes renewable energy resources should be an integral part of its overall supply portfolio to meet the increasing demand for energy from its customers, diversify its fuel sources, enhance fuel price stability, reduce incremental air emissions, and stimulate local economic development. As demand for electricity increases, PSE is focused on expanding the use of power generated from renewable, environmentally sound resources, such as solar, wind and biomass energy.

Business Green power program <http://www.pse.com/solutions/businessGreenPower.aspx>

3.3.6 Residential Rebates

PSE offers rebates for energy efficient clothes washers, CFL light bulbs, high efficiency air-source heat pumps, natural gas water heaters, ENERGY STAR qualified natural gas or electric heated manufactured homes, and insulation.

<http://www.pse.com/solutions/rebatesOnAllRebates.aspx>

3.3.6 Residential Renewable Energy

Similar to PSE programs for business customers, residential customers can choose to support renewable energy through two main efforts. The first is net metering. Customers that generate their own electricity, and are connected to the utility's distribution grid, not only offset electricity that would otherwise be purchased from the utility, but if excess is generated, a credit is issued to the customer's account for the extra power that can be used during the following month(s) until the annual true-up. In other words, the customer will only pay for the energy that PSE provides.

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<http://www.pse.com/solutions/customerRenewableGen.aspx>

3.3.7 Residential Renewable Energy Purchases

PSE's Green Power Program also allows residential customers to purchase renewable power directly from the utility. PSE's program is one of the top 10 Green Power Programs in the country (source: National Renewable Energy Laboratory, 12/2006). PSE believes renewable energy resources should be an integral part of its overall supply portfolio to meet the increasing demand for energy from its customers, diversify its fuel sources, enhance fuel price stability, reduce incremental air emissions, and stimulate local economic development. As demand for electricity increases, PSE is focused on expanding the use of power generated from renewable, environmentally sound resources, such as solar, wind and biomass energy.

http://www.pse.com/solutions/home_greenPower.aspx

3.4 Potomac Electric Power Company (PEPCO)

Pepco is a subsidiary of Pepco Holdings, Inc., which provides electricity to more than 725,000 residential and commercial customers in Washington, D.C., and Montgomery and Prince George's counties in Maryland. Similar to Entergy-New Orleans, PEPCO is regulated by the District itself (and is not a muni utility). Therefore, their proposal highlights a potential financial mechanism for a similar program in New Orleans. On April 4, 2007, Pepco submitted an application to the District of Columbia's PUC for authorization to establish programs (and surcharges) for energy efficiency and energy conservation.¹ According to the company's news release,

Pepco has proposed an ambitious program for its District of Columbia customers that will combine traditional energy efficiency programs with innovative technologies to help customers manage their energy use and reduce the total cost of energy.²

The application is a good source of information for a utility that is considering the implementation of energy efficiency programs and potential ways to cover the cost associated with such initiatives. Pepco is seeking assurance of cost recovery methods prior to embarking on a *comprehensive demand response, advanced metering, and energy efficiency plan*.

Pepco breaks down the energy efficiency proposal into two components, demand side management and advanced metering. In addition, the company would like to create two customer information management systems, meter inventory systems, and improve its communications network.

Cost Recovery

According to the application, Pepco would like to recover the costs associated with these DSM programs through an existing surcharge (Reliable Energy Trust Fund³) or a new distribution surcharge. Pepco would like to create a separate rate adjustment to cover the costs associated with installing new "smart meters" and "smart thermostats", as well as the unamortized costs associated with existing meters.

Advisory Groups

Pepco proposes the creation of two advisory groups, a DSM Collaborative and an AMI Advisory Group. The DSM Collaborative would be responsible for formalizing the DSM programs to be offered under the plan. The AMI Group would have a role in the rollout of the smart meter initiative.

Link to PEPCO's Application

http://www.pepco.com/_res/documents/DCBlueprintfiling040407.pdf

¹ On April 4, 2007, Pepco filed an *Application of Potomac Electric Power Company for Authorization to Establish a Demand Side Management Surcharge and an Advance Metering Infrastructure Surcharge and to Establish a DSM Collaborative and an AMU Advisory Group* with the Public Service Commission of the District of Columbia.

Link: http://www.pepco.com/_res/documents/DCBlueprintfiling040407.pdf

² Pepco press release on April 5, 2007

(<http://www.pepco.com/welcome/news/releases/archives/2007/article.aspx?cid=796>)

³ According to the application, the RETF is a current surcharge applied to all residential bills (with exceptions) to cover the cost of "universal service, energy efficiency, and renewable energy programs."