

## Chapter II. State Policies Promoting Use of Renewable Energy, Alternate Energy and Energy Efficiency in the ARC Region

There are a variety of policy measure adopted by the ARC states to promote the use of renewable energy, alternate energy, energy efficiency and conservation. This section provides an overview of these policies with highlights of developments in particular ARC states. In addition the activities of the Tennessee Valley Authority (TVA) are also covered as its programs cover all of Tennessee and impact significant portions of other states in the ARC region.

Recent years have seen the passage or proposal of comprehensive energy plans in many ARC states. Many of the specific provisions in those plans are detailed later in this chapter.

- In 2002 **New York** enacted *2002 State Energy Plan and Final Environmental Impact Statement (Energy Plan)* which provides for increased energy diversity through use of energy efficient technologies and alternative and renewable energy.
- **Georgia** has issued a draft *State Energy Strategy for Georgia* which is due for final release in September 2006. The draft plan stresses the production of ethanol and biodiesel and programs to increase the production of renewable energy.
- **Kentucky**'s Governor has presented *Kentucky's Energy Opportunities for Our Future: A Comprehensive Energy Strategy (2006)* for consideration by the legislature. One of the plans objectives is to maintain the low cost of energy in the state. It also emphasizes biofuels production and a promotion, but not mandate, the use of renewable resources in the sates electricity generation portfolio.
- The *North Carolina State Energy Plan (2005 revised)* sees biomass (including animal waste) resources as having the greatest potential among renewable fuels in **North Carolina**. It also calls for consideration of a Renewable Portfolio Standard to encourage alternate energy development.
- The 2006 **Virginia** legislature passed *The Commonwealth Energy Policy*. The policy places heavy emphasis on research. Clean coal, wind and solar are specifically mentioned for further development as is the increased use and production of biofuels.
- **West Virginia** passed the *West Virginia Energy Policy and Development Act* in the 2006 session establishing a Division of Energy within the Department of Commerce and continuing the Public Energy Authority. The division was charged with energy policy and economic development in coalfield communities. The Authority is to prepare an annual plan for energy diversification and efficiency.

## **1. Net Metering**

State policies and individual utilities offer a dual-metering option to certain customers. Under these programs residences and business which are generating electricity using renewables such as solar, small scale hydro, wind or geothermal are able to either sell back to the grid the energy they generate or receive credit for it on their electric bills.

In most instances this is accomplished by dual-metering. The energy taken from the grid is metered as it is used while a second meter records the energy which is returned to the grid from the renewables. The customer is metered for all energy taken from the grid and either credited or paid for the energy supplied. Customers receive credit on next month's bill for energy supplied to the utility. Some states use only a single meter which "runs both ways". The customer is only charged for the amount of electricity taken from the utility.

A major issue regarding net metering is the price to be paid for the electricity generated. When a single meter is used this is not an issue as the only bill received by the customer is what is supplied by the utility. When a dual meter system is employed the issue becomes will the generator receive credit or be paid at the retail tariff he is being charged or some other rate. In some states the price is set at the utility's "avoided cost" which is the lowest cost of power obtained from its own generation or purchased from another utility. Experience in some states with avoided cost has meant the return on installing small generation facilities can not be capitalized in a reasonable time period if at all.

There is an issue with safety and reliability. All net metering states require that the renewable installation meet certain standards such as those of Underwriters Laboratories, National Electrical Code or the Institute of Electrical and Electronics Engineers. While no state requires its utilities to pay for the renewable generator or its installation, there is variance as to who must pay for the cost of interconnection.

**TVA** and its related utilities have established net-metering for all residential and commercial customers through their Green Power Switch Program in **Tennessee, Georgia, Mississippi and North Carolina**. In addition TVA has a pilot Generation Partners Program. A two meter system is used with the TVA purchasing all the output at \$0.15 for residential customers. For larger customers with units up to 50 kW the rate is \$0.20. Larger units may be included with permission from TVA. For residential and small commercial both solar and wind systems are included, but larger commercial enterprises are limited to solar. For the ARC states there are only 22 of their distributors involved. With only 20 residential customers currently connected. Of the 158 distribution companies supplied by TVA, 98 offer the voluntary program.

In **Virginia** the program is limited to residential systems with less than 10 KW capacities while the limit on commercial systems is 500 kWh. Their program extends not only to renewables but to biomass, waste and sea motion. They use a single meter measuring flows in both directions.

**Maryland's** legislation allows net metering for systems with capacities up to 200 kWh without Public Service Commission approval and up to 500 kWh with approval. Solar wind and biomass systems are covered. A single bi-directional meter is used. The Maryland program is under revision to develop a credit system (other than based on kWh) which allows dollar for dollar offsets for electricity generated. There is a limit on allowable capacity equal to 0.2 percent of the state's peak load forecast.

The **Ohio** situation is similar to that in southern ARC states. All fuels including micro turbines and fuel cells are included. For power furnished to the grid the utility must pay their unbundled generate rate. New rules are under consideration by the Public Utilities Commission of Ohio (PUCO)

Net metering is provided in **Kentucky** for both private and co-op utilities only for solar units of 15 kW or less. But the states two largest utilities Kentucky Power and Louisville Gas and Electric extend the program to wind and hydro customers. A single bi-directional meter is used. There is a limit of 0.1 percent of a utilities single-hour peak load that can be net-metered.

Net Metering rules in **New York** allow customers to sell the net excess generation from photovoltaic systems with a capacity of up to 10 kW, from farm-based biogas systems up to 400 kW, from residential wind turbine systems up to 25 kW and from farm-based wind turbine systems up to 125 kW. The net-metering program accept customers on a first-come, first-serve basis until the total net-metered solar-electric capacity equals to 0.1% of a utility's 1996 electric demand, the biogas system capacity equals to 0.4% of 1996 demand, and the wind system capacity equals to 0.2% of 2003 demand. Electricity from these systems will be purchased at the utility's avoided-cost rate except for the wind systems with a capacity higher than 10kW, which is credited at the state's avoided-cost rate.

**Net Metering Rules in Georgia** allow customers to sell all or part of the green power generated by their renewable-energy systems, include photovoltaic, fuel cells, and wind systems, up to 10kW for residential customers and 100kW for commercial customers. Utilities will purchase only up to the maximum capacity of 0.2% of the utility's annual peak demand during the previous year.

### **Evaluation**

As a general statement net-metering has not become widespread even when it is available. Those contacted provided several reasons:

- In those state with low energy costs, net-metering does not represent a significant cost savings which would warrant the up-front capital and maintenance costs of installing renewable technologies.
- The uncertainty created in those states where there is no guaranteed purchase price, means few potential generators are willing to take the risk.
- Problems with interconnection are present in many states. These include who bears the costs or the interconnection and the requirements for interconnection.

- Some states have required through their Distributed Generation Acts or other legislation that utilities provide interconnection at no cost to the customer.
- Voluntary programs are of limited success if a utility already has a sufficient generating capacity or purchase agreements with other generators to meet its current or anticipated needs.
  - Caps on the amount of electricity that utilities are required to buy back under net metering when set at low levels may limit the usefulness of net metering.

## **2. Renewable Energy Portfolio Standards (REPS)**

Renewable Portfolio Standards (RPS) require that a certain percentage of the power either consumed or generated in the state must come from renewable sources. In its most basic form an RPS requires a utility to either generate, build or buy renewable energy as part of the mix of fuels it uses. Only 19 states in the United States have currently adopted RPSs. In the ARC region Maryland, Pennsylvania and New York have adopted RPSs. But these standards are being actively considered in some of the other ARC states.

The amount of renewable electricity to be included varies widely across the nation from 1 percent to 25 percent. New York, which already makes extensive use of hydropower, has the nation's highest percentage at 25. Maryland will ultimately reach 7.5 percent and Pennsylvania 18 percent.

RPSs are viewed as a means of introducing new technologies and additional competition into electric markets. Since most utilities have little experience with renewables, the RPS provides a means by which they can adopt these technologies. Since most renewable fuels have little environmental drawbacks, their use contributes to reduction of problems associated with air pollution. Reduction of dependence on imported fuels will have significant economic and national security benefits as well.

RPS can be met in several different ways. The utility can build its own renewable facility. It can purchase renewable power from other generators. A more recent development is the use of Renewable Energy Credits (REC). Under this system a utility which uses renewables can meter the amount of energy it creates. It can then sell RECs which designates that the generator produced one megawatt hour of electricity from renewable sources. Utilities which neither produce nor buy renewable energy can use RECs to meet their RPS requirement. Maryland explicitly allows the use of RECs.

It is important to define what is included as renewables eligible for credit under a RPS. What is included in "renewables" vary considerably among the three ARC states which have adopted them. All included solar and wind. Hydro is usually included along with landfill gas. In a few cases waste from wood or coal, while not strictly renewable, are included. States such as Maryland and Pennsylvania divide their renewable fuels into two tiers. The RPS is to be met by employing a given percentage from each renewable source in each tier.

The greatest issue concerning RPS is the initial high capital cost of installation. Once the facility is in place the fuel costs are essentially zero for wind, solar and small scale hydro. But the issue remains who is to bear these initial costs since they are often as much as three times those of the lowest cost natural gas fired power plant. This problem is particularly acute in states which have deregulated electric utilities and the company adopting renewable technologies may find itself at a competitive disadvantage. In states with traditional regulation, the question is will the regulators allow the higher capital costs to be part of the rate base. The National Council of State Legislators has estimated that the RPSs in the Pennsylvania and New York increase costs by only \$3-\$3.50 a year for the average residential customer.<sup>12</sup>

Other objections include utilities being forced to use technologies which are not fully technologically developed. Recent experience with renewable technology has demonstrated rapid decreases in costs and increases in efficiency. Forcing too early adoption under an RPS may be unwise until technologies are fully mature.

There is also concern that RPSs add complexity to an already heavily regulated industry. These standards, particularly when tiers are employed, require extensive monitoring and oversight. The more detailed an RPS is regarding types of fuel, size of generators, percentage tiers for use of specific fuels and interconnection standards reduce the ability of renewable markets to fully function as utilities are restricted from finding and using the least costly renewable alternatives.

**Maryland's** RPS requires utilities to generate a given percentage of their power from renewable sources. This is a two tier program. The state's electric companies must obtain 1 percent of their electricity from renewable sources: solar, wind, biomass, anaerobic decomposition methane, geothermal, ocean, fuel cells and small hydro (less than 30 mw). The second tier consists of hydro (large scale), waste to energy facilities and poultry litter. The electric suppliers must get 2.5 percent of their electricity from these sources. The Tier one standard increases in annual increments of 1 percent until reaching 7.5 percent in 2019 at which time the Tier 2 standard disappears. The program also includes renewable energy credits (REC) of 200 percent for solar 110 percent for wind and methane. A supplier not meeting the RPS standards must pay into the states Renewable Energy Fund 2 cents per kWh for Tier 1 and 1.5 cents for Tier 2 shortfalls.

**New York's** RPS stipulates an increase in the state's current 19 percent level of energy consumption from renewables to 25 percent. It is a two tier system with wholesale generators buying renewable credits from generators who use virtually any renewable or alternative fuel. Customers under the second tier are encouraged to install renewable generation capacity which can be sold into the grid for credit on their electric bills. The 25 percent target is divided into a mandatory 24 percent with 1 percent to be from voluntary generation under the state's Green Marketing Program.

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<sup>12</sup> *National Conference of State Legislatures*, (June 2005) *State Renewable Portfolio Standards: A Review and Analysis*. Washington, DC. P.6.

**Pennsylvania's Alternative Energy Portfolio** requires that 18 percent of the electricity supplied come from alternative energy or renewables. The State uses the broadest definition of what fuels are included of any of the ARC states. In addition to the usual solar, wind, low-impact hydro, geothermal, biomass, methane and fuel cells, which constitute the Tier I sources, waste coal, distributed generation systems demand side management, municipal solid waste wood byproducts are included in Tier II sources. Starting in 2007 1.5 percent of supply is to come from Tier I and 4.2 percent from Tier 2. These percentages increase to 8 percent and 10 percent by 2020. Interconnection rules are currently under development by the State's PUC.

### **Evaluation**

- RPSs have major benefits and deserve consideration in all ARC states. But the cost of requiring the use of renewable electricity in those ARC states with already below average electricity costs may pose difficulties particularly if the state uses its low energy costs as an inducement for economic development.
- States should not restrict the source of renewable power to generators within their boundaries. Political boundaries have little to do with the efficient allocation of electricity and will increase costs. Considering that all ARC states are interconnected to multi-state grids, such a requirement is not appropriate. None of the ARC states have such a limitation.
- Consideration should be given to using the broadest definition for renewable fuels. This will allow generators to seek the least costly source of renewable electricity. The advisability of tiers (and specific percentages within those tiers) and their impact on flexibility and costs should receive careful consideration.
- The regulatory environment as to how the initial costs are to be covered needs clear delineation. The policies in the ARC states now using RPS can serve as guidelines.

### **3. Public Benefits Funds**

Public Benefit Funds go by different names in ARC states which have them. These are additional small charges to customers attached to their electric bills. The monies raised from these funds are used either for expansion of renewable energy, relief for low income households or promotion of energy efficiency.

The purpose of **New York's Systems Benefit Charge** is to collect a surcharge on the customers of the private utilities to support energy research, encourage energy efficiency and provide energy assistance to low income households. The charge may also be used to determine how to reduce the negative impacts of energy production and to increase competition in energy markets. During the five year period 2005-2010 the fund is estimated to receive \$875 million. The program has demonstrated its effectiveness by reducing energy demand, saving utility consumers almost a quarter billion and generated almost \$1.5 billion in energy investments. The fund traces significant reductions in air pollution and the creation of nearly 5,000 jobs to its projects.

**Ohio's** Energy Loan Fund (ELF) is financed by a surcharge collected from the state's four public utilities to provide low interest loans and loan guarantees for energy efficient upgrades at residential, governmental educational small commercial/industrial and agriculture facilities.

The five major private utilities in **Pennsylvania** have created **Sustainable Energy Funds (SEF)** which operate in their service areas. The specific programs supported by these funds are mentioned elsewhere in this report. The overall objectives are to promote renewable energy, advance clean energy technologies, encourage energy efficiency and support the clean energy business. Funds are collected from the customers by the utilities to support the programs.

#### **4. Grant Programs**

Grants as a means of encouraging the adoption of alternate or renewable technologies exist in many of the ARC states. A summary of sample state programs follows.

- **Alabama** has a **Renewable Fuels Program** to assist business in the installing of biomass energy system, this program offers participants technical assistance and subsidies up to \$75,000 to cover the interest payment on loans to install approved biomass projects. But interest rate on the project should be no greater than 2% above the prime rate.
- **Kentucky** provides several grant programs focused on energy efficiency and alternate fuels. The **Energy Efficiency Education Grant** provided to the University of Kentucky gave \$95,176 to promote energy efficiency education throughout the commonwealth. The **Kentucky Energy Efficiency Program for Schools Program** provided a \$77,000 grant for the University of Louisville, which is aimed at managing the energy costs of schools in Kentucky. The program offers a complete package, including tools, curriculum, training, coaching and expertise to guide participating schools on how to reduce their energy costs and achieve energy efficiency. Further a \$100,000 energy grant was awarded to the National Energy Education Development (NEED) Project for the design and delivery of an energy education program for teachers and students in grades K-12. **R&D Grants for Renewable Energy and Energy Efficiency** totaling \$421,461 for research and development grant renewable energy and energy efficiency initiatives, which include improved biomass conversion, advanced aluminum melting systems, improved biodiesel product and enzymes for the conversion of corn-fiber to biofuels.
- **Kentucky** has also a \$70,000 grant awarded to Kentucky Clean Fuels Coalition to establish a network of Kentucky public school bus fleet interested in using biodiesel or biodiesel blends and to manage the **Kentucky's Clean Cities Program**. The grant provides \$42,000 for schools to compensate for the additional cost of adding biodiesel to school bus fleets.
- Under its **Assisted Home Performance Grants**, **New York** offers grants, up to \$5,000 for single-home owners and \$10,000 per building for 2-4 family units, to low-income residences for energy efficient improvement. **New York** further offers grant to support companies in the development, testing and commercialization of renewable-energy technologies that will be manufactured

- in New York. Funding varies by solicitation and is based in part on the likelihood that the technology will be competitive in the near future. Eligible technologies include solar thermal electric, photovoltaic, hydropower, alternative fuels, wind, landfill gas, and biomass.
- **Ohio** offers a **Fuel Cell Grant Program** which would use the \$100 million budget to support fuel cells related research, project demonstration and job creation. The State offers **Dispersed Energy and Renewably Energy Grants** to commercial, institutional and industrial projects with a maximum capacity of 25 MW for up to \$100,000 per grant. The program also provides grants to residential renewable-energy projects for up to \$25,000 per grant and to non-residential projects for up to \$150,000 per grant. A certain percentage of cost sharing is required for all grants. The **Energy Loan Fund Grant for Energy Efficiency** provides funds to cover up to 25% of the total costs of projects that can improve energy efficiency by at least 15%. The maximum amount will be awarded is \$50,000.
  - **In Pennsylvania Metropolitan Edison Company SEF Grants and Penelec SEF of the Community Foundation for the Alleghenies Grant Program** established by First Energy, grant funds for the development and use of renewable energy and clean-energy technologies, energy conservation and efficiency, and projects that improve the environment. The grant amount varies according to project, but the maximum limit is \$25,000. Also the **West Penn Power SEF Commercial Grant Program** provides funds to nonprofit companies and community-based organizations for the development and the use of renewable energy and clean energy. Grant amount varies by proposal.
  - **Small Wind Incentives Program** offers funds to **Virginia** landowners for purchase and installation of small wind energy systems. The maximum award will be the lower of \$10,000 or 33% of installed costs.

## 5. Loan Programs

ARC states also provide a variety of loans on very favorable terms for projects which use alternate or renewable energy or improve energy efficiency. Some of these are describes below.

- Under the **Solar Water Heater Loan Program** participating Eastern **Kentucky** counties are offering customers a 6-year payback term loan with 5% down payment and an interest rate of 3% to cover the total cost of a solar water heater for residential and commercial applications.
- **New York** provides three loan programs to its residents.
  - The **Home Performance with Energy Star Loan Program** offers up to \$20,000 unsecured loan with a 5.99% APR to residential customers for the installations and developments of energy efficient and renewable resources measures. However, the measure has to meet the Energy Star qualifications to be eligible and the equipment must be installed by approved Building Performance Institute certified contractors.
  - The **Energy Smart Loan Fund** provides reduced-interest rate loans (4.0% below the lender rate for ten years; 6.5% below the lender rate for

borrowers in the Liberty Zone) for lenders to fund projects to improve a facility's energy efficiency or utilize renewable energy systems.

- Moreover, all facilities can also apply for the **Green Building Improvement Loan**, up to \$500,000, if the facility has been registered for the LEED certification with the United States Green Building Council. The maximum loans for residential is \$20,000; for multifamily and all other non-residential is \$1 million plus \$500,000 for Green Building Improvement; and for existing multifamily is \$2.5 million, plus an additional maximum of \$2,500,000 for projects that include advanced meters.
- **Community Energy Loan Program (CELP) in Maryland** offers loans to eligible local governments and nonprofit organizations, including hospitals and schools, to finance energy saving projects. On average, about \$600,000 is available per loan and the current interest rate is approximately 3.5%. Organizations have up to 7 years to pay off the loan. By September 2005, 49 organizations have utilized this program, generating an annual saving of 2.4 million in the state. Also the **State Agency Loan Program** provides loans with 0% interest and a 1% administration fee for state agencies to fund energy efficiency improvements in state facilities. This program offers about 1 million in new loans each year. A total of \$1.5 million was awarded to state agencies in 2005, estimated to generate savings of about \$267,114 annually.
- The **Energy Investment Loan Program** in **Mississippi** provides loans ranging from \$15,000 to \$300,000 at an interest rate 3% below the prime rate, with a maximum loan term of 7 years, for renewable energy and energy efficiency projects.
- There are three loan programs established in **Ohio**.
  - **Double Saving Loan** provides loans up to \$10,000, with interest-rate reduced by up to 50% through a linked deposit, to qualified residential borrowers with projects that improve energy efficiency in one- to three-unit residential building.
  - **Renewable Energy Loans** offers loans to Ohio residents, range from \$500 to \$25,000 and businesses, range from \$5,000 to \$500,000, to implement energy-efficiency or renewable-energy projects. Also, this program will help applicants reduce interest rate by approximately half on standard bank loans.
  - **Business and Institutional Loans** are offered to businesses and institutions in Ohio. The loans will buy down the interest rate for energy efficiency projects, up to a maximum of \$250,000 at a 50% reduced interest rate. Qualifying projects must reduce energy cost by at least 15% have an energy payback of 5 years or less and have an expected project life longer than the energy payback time.
- **Pennsylvania** has created four loan programs.
  - **Metropolitan Edison Company SEF Loans** is a fund established by FirstEnergy to promote development and use of renewable energy and clean-energy technologies, energy conservation and efficiency, projects

that improve the environment. The loan amount may vary according to project, but the maximum limit is \$1 million.

- **Penelec SEF of the Community Foundation for the Alleghenies Loan Program** also established by FirstEnergy, provides loans up to \$500,000 to promote the development and use of renewable energy and clean-energy technologies, energy conservation and efficiency, projects that improve the environment. The loan amount varies according to project.
- **SEF of Central Eastern Pennsylvania Loan Program** provides a limited number of grants and loans to organizations needing funds for projects on research and development of clean and renewable energy technologies.
- **West Penn Power SEF Commercial Loan Program (PA)** – offers commercial loans to manufacturers, distributors, retailers and service companies involved in renewable and advanced clean energy technologies, as well as energy efficiency and conservation products and services to end-user companies and community-based programs. The amount of loans varies by proposal.
- The **ConserFund Loan Program in South Carolina** offers loans to fund energy efficiency improvements in state agencies, local governments, public colleges and universities, school districts and non-profit organizations. The loans can help organizations cover up to 100% of eligible projects costs, from \$25,000 to \$500,000.
- **Local Government Energy Loan Program in Tennessee** gives low interest loans to municipal and county governments for energy efficiency-related projects in courthouse, administration buildings, schools, maintenance facilities, and any other building owned by the city or county. Eligible projects can borrow up to \$500,000 at an approximate 3% interest rate for up to 7 years. The **Small Business Energy Loan Program** creates low interest loans of up to \$100,000 for a maximum of 7 years payback time to businesses with fewer than 300 employees or less than \$3.5 million in annual gross sales or receipts for renewable energy and energy efficiency projects.

## **6. Tax Incentives**

Tax incentives are a frequently used method by state governments to induce a desired activity. Listed below are examples of ARC state programs which provide either deductions or credits to various taxes for use of renewable or alternative fuels as well as promoting energy efficiency.

### **a. Personal and Corporate Income Taxes: Deductions and Credits**

- **Wood-Burning Heating System Deduction: Alabama** allows individual taxpayers to take the total costs of the installation of a wood-burning heating system or the conversion from gas or electricity heating system to wood as a deduction on their taxes.

- **Tax Modernization Plan;** The **Kentucky** Governor’s 2005 tax modernization plan includes a \$1.5 million tax credit to bio-diesel producers and blenders.
- **Solar and Fuel Cell Tax Credit:** **New York** offers a personal income tax credit for expenditures on solar-electric, solar-thermal and fuel cells equipment used on residential property, excluding the solar-energy systems used for pool heating or other recreational applications. The credit will equal to, 25% of the total costs of solar-electric and solar-thermal systems (up to \$3,750) and 20% for fuel cells systems (up to \$1,500). To qualify for the credit, the systems are limit to a maximum capacity of 25kW for the fuel cells and 10 kW for the solar-electric. Additionally, the fuel cells systems must also utilize the proton exchange membrane (PEM) technology. Further the state has a **Green Building Tax Credit Program (Corporate & Personal)** which provides owners and tenants of eligible buildings and tenant spaces, which meet certain “green” standards, with tax credits of up to \$2 million per building. The credit can be used against corporate taxes, personal income taxes, insurance corporation taxes or banking corporation taxes.
- **Maryland’s Income Tax Credit for Green Buildings (Personal & Corporate)** enacted in 2001, applies to only non-residential and residential multifamily buildings of at least 20,000 square feet. The credit encourages the use of alternate energy systems, such as PV, wind turbines and fuel cells. The tax credit amount differs depend on building type and renewable energy systems, for instances, 6-8% of the costs of construction or rehabilitation for green building, 20-25% for PV and wind systems and 30% for fuel cells systems. To be eligible, the buildings must meet specific environmental and energy requirement, but the renewable-energy system size is not specified.
- **Renewable Energy Tax Credit (Personal & Corporate)** provided in **North Carolina** offers a 35% tax credit for the cost of renewable energy property in North Carolina. The ceilings for the credit vary depending on the sector and the type of renewable-energy system. The maximum for different technology used in residential facilities are between \$3,500 and \$10,500 and in commercial and industrial facilities is \$2.5 million.
- **West Virginia** has enacted a **Business and Occupation Tax Reduction** from 40 percent of generating capacity to five percent.

## **b. Sales Tax**

- **Georgia** under its **3-Day Sales Tax Exemption** exempts the sales of any qualifying energy efficient residential appliances (under \$1,500) that meets or exceeds the “Energy Star” program requirements, sold between August 03 and August 06, 2006, from the state sales and use taxes, but not local sales taxes. In addition the State provided a sales tax exemption on purchases for non-commercial, home and personal use energy efficient products, under the price of \$1,500, purchased between

October 6 and October 9, 2005. Furthermore, Georgia mandates a sales tax exemption on energy purchases used for crop irrigation.

- **New York** has a **Solar Sales Tax Exemption** applied to sales and installation of residential solar-energy systems, which utilize solar energy to provide heating, cooling, hot water and/or electricity, from the state's sales and use taxes.
- There is in **Maryland** a **Wood Heating Fuel Exemption** from the sales tax on all purchase of wood or "refuse-derived" fuel, used for heating in residential buildings.
- A **Conversion Facilities Tax Exemption** exists in **Ohio** which exempts certain equipments used in energy conversion, such as thermal-efficiency improvements and the conversion of solid waste to energy, from property tax, the state's sales and use tax and the state's franchise tax where applicable.

### c. Property Tax

- According to **New York's Solar, Wind & Biomass Energy System Exemption** solar, wind energy and farm-waste energy systems (limit to a maximum capacity of 400kW only), constructed in New York State prior to July 1, 1988 or between January 1, 1991 and January 1, 2006, and were eligible for a 15-year real property tax exemption. The amount of exemption will equal to the increase in assessed value attributable to the renewable energy system.
- A **Corporate Property Tax Credit** allowing counties in **Maryland** to provide tax credits to corporate or property tax when solar, geothermal and other qualifying alternate energy systems are used for heating or cooling. The tax credit amount and the length of the credit vary, because counties have the autonomy to decide on the amount of credit and length of time up to a maximum of 3 years. In addition the State permits solar heating and cooling systems to be assessed at no more than the value of a conventional system for property tax purpose and a full property tax exemption for solar energy equipment.
- The **North Carolina Active Solar Heating and Cooling Systems Exemption** program exempts active solar heating and cooling systems, placed on residential, commercial and industrial property, from being assessed at more than the value of a conventional system for property tax purposes.
- **Wind Energy Systems Exemption** in **Tennessee** was enacted in 2003, providing that wind energy systems operated by public utilities, businesses or industrial facilities shall not be taxed at more than one-third of their total installed cost.
- **Virginia** allows a **Local Option Property Tax Exemption for Solar** which any county, city or town may exempt or partially exempt solar energy equipment or recycling equipment, installed in residential, commercial or industrial property, from local property taxes.

- For the installation of wind farms **West Virginia** provides a **Property Tax Assessment Reduction** for utility wind turbines which lowered the property tax from 100 percent to five percent of assessed value.

## **7. Rebate Programs**

Another way that ARC states promote alternative, renewable and efficient energy is by offering rebates under the programs outlines below.

- **Biomass Energy Interest Subsidy Program** in **Alabama** provides reimbursement of interest to property owners on loans for installing biomass energy system.
- The following rebate programs exist in **New York**
  - **Small Commercial Lighting Incentives Program** offers incentives, up to \$30,000, for businesses to install effective and energy-efficient lighting in small commercial spaces. Under this program, lighting contractors, distributors, manufacturers, and designers are also eligible for various incentives associated with bringing energy-efficient lighting to small commercial spaces.
  - **Wind Incentive Program** develops a network of eligible installers who will install end-use wind energy turbines for facilities in all sectors, the incentive program offers up to \$100,000 per installation to eligible installers. The incentives are paid based on a percentage of the installation cost (50% of costs for systems of 500W to 10kW; 15% for systems larger than 80kW and 70% for commercial customers).
  - Under the **Smart Equipment Choices Program** applicants are eligible for rebates up to \$10,000 for installation and replacement of electric efficiency equipment and up to \$25,000 for gas efficiency equipment in non-residential structures.
  - **Energy Smart New Construction Program** promotes the incorporation of energy efficiency and renewable energy resources in the design, construction, and operation of commercial, industrial, institutional and multifamily building, the NYSERDA has a 10 million budget for this program to provide incentives up to \$375,000 per project for Whole Building Design projects and up to \$120,000 for most other projects.
  - **PV Incentive Program** provides incentives of \$4 to \$4.5 per watt, based on direct-current (DC) module rating, to eligible installers for the installation of approved, grid-connected PV systems that has a maximum of 50kW capacity. The total budget available for this program has been raised to 12 million in 2005.
  - **LIPA Solar Pioneer Program** offers rebates for approximately 50% of the costs of a PV system with a maximum of 10kW capacity. As the overall price of PV system has been decreasing, the program has adjusted its rebate from \$5 per watt for the 1000kW of PV installed to \$3.75 per watt (DC) for the next 1,000kW block for residential and

commercial customers and \$4.75 per watt (DC) for schools, nonprofits and government agencies.

- **Maryland's Solar Energy Grant Program** provides funding for homeowners, businesses, local governments and non-profit organizations to install solar water-heating and solar-electric (PV) systems. The reimbursement is 20% of the equipment cost (up to \$3,000 for residential property, \$5,000 for commercial property and \$2,000 for solar water-heating equipment). Systems have to meet the minimum size requirement set by the U.S. Department of Energy to be eligible. The **Clean Energy Rewards Program** approved by the Montgomery county council offers residents and businesses incentives for buying clean energy. However, the reward levels and incentive rates have yet to be set.
- **Sustainable Development Fund Solar PV Grant Program** issues rebates to PECO customers for purchase of PV systems. The grant is paid based on system performance and customer type. For example, \$4 per watt up to \$20,000 is the buy-down incentive for the PV system owner; \$1 per kWh in the first year up to \$5,000 is the performance incentive for PV system owner; and \$0.1 per kWh in the first year up to \$250 is the performance incentive for the participating contractor.
- **Residential Solar Initiative for EarthCraft Homes Rebate in South Carolina** offers homebuilders a rebate for every home built with a solar hot water heating system. A maximum of \$20,000 in total rebates has been allocated for this program, so a total of 20 rebates of \$1,000 each will be awarded to builders for approved new installations.
- Under **Kentucky's Solar Water Heater Rebate Program** the Kentucky Solar Partnership is offering a \$500 rebate for solar water heaters installed on residences. The budget is available for 25 installations in total.

## **8. Other Programs**

The TVA has established a **Green Power Partners Program** in its service territory. Green power consists of electricity generated from renewable sources. Green Power is sold in 150 kWh blocks which is about 12 percent of an average households use. The cost is four dollars (\$4) for each block. The green power used is from the TVA's 18 wind turbines, 16 solar facilities and one methane plant. No expansion is currently planned as there is a 30 percent surplus of unsold green power available.

**Clean Energy Procurement** programs require that public bodies obtain a certain percentage of their electric power from renewable sources. Maryland requires state owned facilities to acquire 6 percent and 11 cities and one county have established 5 percent requirements. New York's requirement is 10 percent. Several localities in ARC states also have renewable procurement standards.

**Solar Easement Guidelines** have been established in Georgia, Kentucky, Tennessee and Virginia. These allow owners of solar systems to obtain easements which insure access

to direct sunlight to operate their systems. These restrictions would limit new construction or other impediments to be constructed which block sunlight.