NACo National Association of Counties

The Voice of America's Counties

An Overview of NACo's Green Government Initiative

How are counties going green?

Green Government

An initiative of the National Association of Counties

About NACo

- The National Association of Counties (NACo) is the only national organization that represents counties in the U.S.
- Close to 2,400 county members (entire counties, not just officials)
- A full service organization
  - Legislative Affairs
  - Research
  - Technical Assistance
  - Public Affairs Assistance
  - Enterprise Services
- NACoRF provides training and technical assistance
  - 100% externally funded (grants, contracts, private foundations, etc.)
  - NO lobbying (represents a unique challenge – must not be involved in legislative process but must collaborate with lobbyist; programming must match NACo policy)

The Path to the Green Government Initiative

- For nearly ten years have worked with EPA ENERGY STAR
  - Improve energy use of county buildings; benchmark energy usage and savings
  - Members asking how to green buildings/communities
  - Challenge with grants/contracts = set deliverables, often minimal flexibility
- We asked ourselves…
  - How do we meet member needs quickly (grants take too long; little availability)?
  - How do we create funding stream but maintain flexibility for an emerging topic?

The Path to the Green Government Initiative

Answer:

Corporate Sponsorship

Overview

- The Green Government Initiative serves as a catalyst between local governments and the private sector to facilitate green government practices, products and policies that result in financial and environmental savings.
- In 2007, launched with 9 sponsors. Today, 20.

Initiative Sponsors

American Institute of Architects *www.aia.org*	**Cisco** *www.cisco.com*	**Constellation Energy** *www.constellation.com*	**Diesel Technology Forum** *www.dieselforum.org*
EcoMedia *www.ecozonemedia.com*	**Edison Electric Institute** *www.eei.org*	**GE** *www.ge.com/citysolutions*	**General Motors** *www.gm.com*
Hewlett-Packard *www.hp.com*	**IBM** *www.ibm.com*	**Johnson Controls** *www.jci.com*	**NORESCO** *www.noresco.com*
Office Depot *www.officedepot.com*	**Real Estate Advocacy Group for States** *www.reags.org*	**Siemens** *www.siemens.com*	**United Soybean Board** *www.soybiobased.org*
U.S. Communities *www.uscommunities.org*	**U.S. Green Building Council** *www.usgbc.org*	**Wal-Mart** *www.walmart.com*	**Waste Management** *www.wm.com*

What is Green Government?

Green Buildings and Energy Efficiency

Green Fleets and Alternative Fuels

Climate Protection and Air Quality

Purchasing and Procurement

Waste Management and Recycling

Land Use and Conservation

Water Quality and Conservation

Resources Available at www.greencounties.org

Publications and Videos

- Fact sheets
- Guides
- Archived newsletters and articles
- Media scans
- County video spotlights

Webinars and Events

- Cost-free, two-hour sessions
- 20 in 2008
- Recordings and presentations available
- Online calendar of national, state, and local events

Database

- Searchable database of green county files
- Over 700 files so far

Presentations

- Presentations from NACo conferences, state association workshops and more

Competitions

- Two green competitions
- Drive Smarter Challenge
- Change the World, Start with ENERGY STAR Campaign
- July 1 – Nov 30

Publications

Ten Ways to Green Your County

Green Government
An initiative of the National Association of Counties

The NACo Green Government Initiative serves as the center of information for all things green including model plans and programs from across the country. The goal is to assist counties with efforts to protect and improve the environment, especially through emissions reductions, while saving tax money and improving services. Fact sheets and publications are developed on an ongoing basis for a multitude of green issues including how to create a green team, green county plans, energy, air quality, green building, water quality, land use, transportation, recycling and more.

The following is a list of ten ways you can begin to green your county today. Greening of a county is an incremental process and each small step taken can contribute to the broader green goal.

Create a Green Team

The county board or executive may assign a staff member or team of staff members to inventory your county's current programs and policies related to green government, develop a comprehensive green county action plan and organize county green events for employees and citizens such as "Bike to Work Days." Incorporate triple-bottom line analysis (a balance of economic, social, and environmental considerations). Ensure that regular meetings occur among the county board members and team to help synthesize your efforts countywide. Identify relevant external stakeholders, create public-private partnerships, and promote regional collaboration.

Improve Energy Use and Practice Integrated Environmental Design

Address indoor air quality, land use, energy, and conservation to optimize overall environmentally-sound design in new and existing buildings using green building standards, certifications or guidelines, and ensuring energy efficiency. Address new and existing county facilities and consider setting policies for new construction of commercial, residential (including affordable housing), and/or school buildings. Make necessary upgrades and improvements to increase energy efficiency of county buildings and operations (i.e. traffic signals) by 10% or more. Consider entering into a performance contract to let short-term paybacks help fund long-term projects. Encourage other sectors of your community through your participation in the ENERGY STAR Challenge, and annual County ENERGY STAR Change a Light Campaign to get residents to change the light bulbs in their homes to energy efficient ones.

Commit to Climate Protection

Participate in NACo's climate protection program to improve air quality and reduce emissions. Select a baseline, and conduct an emissions inventory utilizing a tool of your choice, such as those offered through ICLEI's (International Council of Local Environmental Initiatives). Define a quantifiable target and timeline for your emissions reduction plan, for your county operations, your community, or both.

Conserve and Protect Land and Water Resources

Develop policies and programs to help conserve your county's natural resources. Consider actions to preserve open space, preserve critical habitat and productive farmland, restore and protect wetlands, create buffers around water bodies, protect drinking water and limit impervious surfaces. Implement stormwater best management practices such as Low Impact Development, tree planting, and more. Apply for a County Leadership in Conservation Award and/or Five Star Restoration Program grant.

Support Renewable and Alternative Energies

Buy and support renewable and alternative energies for your county buildings, fleets, and community, to work towards energy independence and reduce greenhouse gas emissions. Consider on-site renewable energy sources such as geothermal, solar or wind power, for county facilities. Advance the research and development field for new green technologies.

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Clean Diesel Technology for County Operations

Green Government
An initiative of the National Association of Counties

Introduction

Diesel is inherently 20% to 40 % more efficient than comparable gasoline vehicles. Due to its durability, versatility and power, diesel is used in trucks, trains, boats and barges that move nearly 94% of goods in the U.S. Diesel powers nearly all the heavy construction equipment that builds our roads, bridges, homes and schools, two-thirds of all agricultural equipment, and virtually 100% of all marine, locomotive and emergency vehicles. Highway and street maintenance vehicles, delivery trucks, bucket trucks, fire and rescue equipment and construction machines like backhoes and loaders are all types of diesel equipment and vehicles likely to be found in county government fleets.

Among the biggest concerns for diesel use is the level of particulate matter and nitrogen oxide emissions. In October 2006, ultra-low-sulfur diesel fuel, containing 97% less sulfur, became the nation's standard for vehicles. In 2007, even more stringent emissions standards for heavy-duty vehicle engines with advanced pollution-control technology using ultra-low-sulfur diesel fuel will result in trucks and buses that are up to 95% cleaner than previous models.

Although it will be years before entire fleets are replaced with newer clean diesel models, many of these technologies can currently be applied to older vehicles and equipment. Several studies have found diesel retrofits to be among the most cost effective options for improving air quality. For some counties this can mean the difference between attainment and nonattainment designations for National Ambient Air Quality Standards and may be the quickest way to reduce emissions and achieve attainment status.

How it Works

Newer clean diesel systems combine cleaner diesel fuel, advanced engines and effective exhaust-control technology. Emissions from older diesel vehicles and equipment can be reduced through one of the "5 Rs" of retrofit. These include:

1. Replacing older vehicles with diesel hybrids or ones powered by natural gas;
2. Retrofitting existing vehicles with the addition of new exhaust gas filter technology such as diesel oxidation catalysts (DOC) and diesel particulate filters (DPF) that can reduce emissions between 25% and 90%;
3. Repowering vehicles with more advanced engines or rebuilding existing engines to reduce emissions to maximize the investment value in the vehicle;
4. Refueling the vehicle with biodiesel or other renewable diesel fuels; and/or
5. Rebuilding core engine components to manufacturers' original specifications to improve emissions levels.

In the case of retrofitting – DOCs promote a chemical reaction that oxidizes pollutants into water vapor and other gasses and can reduce particulate emissions by some 20% to 30%. DPFs physically trap particulate matter as exhaust gasses move through the filter and can reduce particulate matter emissions by up to 90%.

The "5 Rs" of retrofit

If your county opts to refuel its vehicles with biodiesel or other renewable diesel fuels, this can also reduce particulate matter emissions and petroleum consumption. Biodiesel fuels are derived from a variety of biomass sourc-

Case Study:

King County, Washington

In early 2007, King County announced a new partnership to bring about two million gallons of biodiesel to the area. The biodiesel, made from canola grown on Yakima County farms and fertilized with biosolids from King County's two wastewater treatment plants, will help power metro transit buses for nearly a year.

In 2003, the county partnered with Natural Selection Farms to determine how the biosolids produced at the treatment plants could help make biodiesel. Natural Selection Farms has since built a seed-crushing facility to make canola oil for shipment back to Seattle, where it will be further processed into biodiesel.

The biofuel will be enough to run all Metro diesel-powered buses on a 20% mix of biodiesel and ultra-low sulfur diesel for nearly a year. Metro expects to pay about $2.30 per gallon for initial shipments of the fuel containing the canola, about six cents per gallon more than it currently pays for soy-based biodiesel.

This new effort is expected to remove about 22,000 tons of carbon dioxide emissions in one year. That is the equivalent of removing 2,800 vehicles from the county's roads.

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Publications

Energy Efficient Lighting in County Facilities

Green Government
An initiative of the National Association of Counties

Introduction

Lighting accounts for 25% to 30% of energy usage in government buildings and is the largest cost component of a government building's electricity bill. Energy efficient lighting can help decrease our country's demand for foreign oil, thereby reducing greenhouse gas emissions and leading us toward energy independence. The U.S. Environmental Protection Agency's ENERGY STAR program estimates that if efficient lighting were used in all locations where it has been shown to be profitable throughout the country, the nation's demand for electricity would be cut by more than 10%.

Counties can consider incorporating energy efficient lighting techniques in either the design phase of a new county building or in retrofitting an existing county building. Across the nation, counties have also increasingly replaced traffic signals and exit signs with more energy efficient ones *(see side panel)*.

Energy Efficient Lighting Benefits

Turning to energy-efficient lighting means your county can have the best of all worlds – increased safety, comfort, and productivity for county employees and decreased energy consumption and costs, all while saving taxpayer dollars and helping the environment.

Good lighting is essential in any building. Making an investment for energy efficient lighting can result in:

- a short payback period from the initial upfront investment;
- reduced maintenance costs due to the longer life of the bulbs;
- lower electricity bills;
- lower cooling costs in warmer months (due to a reduction in the heat generated from the lighting itself);
- reduced greenhouse gas emissions; and
- increased occupant comfort, safety, and productivity.

Energy Efficient Lighting Techniques

Compact fluorescent lamps, or CFLs, are an efficient alternative to the traditional incandescent or halogen bulbs. Converting to CFLs enables a more consistent light output, uses less energy and provides longer bulb life.

CFLs last up to 10 times longer than traditional incandescent light bulbs, use about one-fourth the energy, and produce 90% less heat.

Low pressure sodium lamps, which emit a soft yellow light and operate much like a fluorescent lamp with a ballast*, are the most efficient of all commercially available lighting sources. Due to the yellow light emitted by these lamps, they are commonly used to improve energy efficiency in outdoor areas such as roadways and parking lots.

High-intensity discharge lamps produce a large quantity of light in a small package. These long lasting, energy-efficient lamps are typically used when high levels of light are required such as in large public areas, roadways, and parking lots.

Energy efficient lighting does not just mean selecting the most efficient bulb and ballast. It also means improving lighting controls to help reduce the total amount of lighting used on a daily basis. A number of options exist to control lighting in your county buildings, including:

- time-based controls such as in parking lot areas where lighting is programmed to go on and off with daylight;
- occupancy-based controls such as heat-sensing, motion-sensing, or sound-sensing, which are most commonly found in areas such as offices, conference rooms, and bathrooms; and
- lighting level-based controls, or photocells, that utilize available daylight first (also known as "daylighting") and supply only the necessary amount of electric light to achieve the appropriate target light level.

* A ballast is the part of a fluorescent light that supplies initial electricity to the bulb and regulates electric flow.

Energy Efficient Exit Signs and Traffic Signals

Exit signs that have earned the ENERGY STAR label operate on five watts or less per sign, compared to as much as 40 watts for standard signs. When installed throughout a building, qualified exit signs can save hundreds or even thousands of dollars in energy and maintenance costs. Signs that have earned the ENERGY STAR label are tested for energy consumption and come with a five-year manufacturer warranty. One sign alone can save about $10 annually on electricity costs and can last up to 10 years without a lamp replacement, compared to less than one year for a sign with an incandescent bulb.

Changing traffic signal lights to LEDs (light emitting diode) can reduce energy use by 80% to 90%. These traffic signals will last at least seven years, compared to the traditional two years, allowing counties to redirect maintenance staff and equipment to other projects and decrease costs. In Clackamas County, Oregon, for example, a replacement of 381 traffic signals has helped the county save over 160,000 kilowatts per year, translating to more than $10,000 in annual savings. The project paid for itself within five years.

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Geothermal Energy in County Facilities

Green Government
An initiative of the National Association of Counties

Introduction

Geothermal energy is found underground in reservoirs of steam, hot water, and hot dry rocks. According to the U.S. Environmental Protection Agency (USEPA), geothermal energy is the most energy-efficient and cost effective space conditioning available today.

Geothermal heat pumps act similarly to traditional heat pumps, but do not pull heat from the outdoor air. Rather, heat is pulled from the Earth. Below grade, the ground temperature is relatively constant, creating an excellent heat source, or "sink," for a geothermal heat source system. This is the same effect that keeps residential basements relatively cool in the summer, and which has traditionally been used to store perishable goods underground. According to the U.S. Department of Energy, there are over 40,000 geothermal heat pumps installed in the U.S. each year.

Uses and Benefits

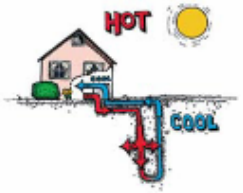
Using geothermal heat pumps as a building's heating and cooling system can save up to 50% of energy as compared to traditional systems. Geothermal sources or heat pumps may also be used to supply hot water in residential settings. ENERGY STAR qualified geothermal heat pumps, use about 40% to 60% less energy than a standard heat pump and are quieter than conventional systems, allowing this form of heating and cooling to rank among the highest of all HVAC systems for occupant comfort.

Geothermal energy can be used in new construction as well as in renovations to existing buildings. Some local governments use geothermal energy to heat the buildings of whole communities, and some use it under roadways and sidewalks to melt snow and ice.

Geothermal sources are also used by power plants to produce electricity. Prime locations for this kind of geothermal power, according to the National Renewable Energy Laboratory, are found in the western states, Alaska, and Hawaii. GeoPowering the West is an initiative through the U.S. Department of Energy to increase the use of geothermal energy in those areas.

Benefits of geothermal heat pumps include:

- Use of 100% renewable energy source
- Reduction of greenhouse gas emissions
- Reduction of fire insurance rates because there is no longer a need to use combustible fuels
- Reduction of the size of equipment rooms by about 30%, thereby lowering construction costs
- Potential elimination of the need for boilers, chillers, cooling towers, water treatment, and condenser pumps
- Potential elimination of rooftop equipment and saving of roof-wear
- Access to free hot water use in warmer months and reduced costs in cooler months



How it Works

Geothermal energy comes directly in the form of hot water and steam to heat buildings or generate power. Several feet below the surface of the earth the temperature is a constant 45 to 75 degrees. A geothermal heat pump, also known as a ground source or water source heat pump, moves this heat from the earth into a building in the winter and pulls heat from the building into the ground in the summer. This is accomplished through a series of pipes, also known as a loop, buried in the ground vertically or horizontally. A liquid, in most cases water, travels through the pipes absorbing heat or dispelling it into the soil.

Installation

Geothermal heat pump systems may be installed in several different forms and are arranged vertically or horizontally below ground (pipes are either side by side or above and below each other). The most common for county buildings and any other larger commercial buildings is the vertical system, where water is circulated to depths up to 400 feet below ground.

With new advances in drilling technology, horizontal bore fields have become popular in recent years and are proving to be as efficient as vertical units. This type of installation allows for piping to be installed horizontally under parking lots, green spaces, and buildings. With new directional boring heads and digital locators, installers can place horizontal loop fields in areas inaccessible to vertical bores.

Other types of bore fields include closed loop slinky systems in large bodies of water (such as lakes or rivers), hydro systems that use a combination of bore fields and cooling towers, and open loop systems (commonly called pump and dump) where water is circulated from a large body of water (lake, river) through the heat pump system and then returned to its source.

Get Started!

A geothermal heat pump can be a significant upfront expense due to equipment costs, but costs very little to maintain and operate. For instance, it reduces the need to use fossil fuel

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Publications

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Counties & Residential Green Building Standards

Introduction

The built environment has a profound impact on the natural environment, the economy, and human health and productivity. Homes account for over 20% of the nation's energy use and as a result, for over 20% of carbon dioxide emissions in the United States. Home builders and home buyers throughout the country are demonstrating an increased interest in green building – for environmental, health, and financial reasons. Counties can play an important role in providing services, incentives, programs and policies that support the green building movement.

The rising level of education among builders, growth in consumer awareness and the burgeoning demand for sustainable, environmentally friendly products have accelerated the mainstreaming of green building practices. According to the Residential Green Building SmartMarket Report produced by McGraw Hill Construction and the National Association of Home Builders (NAHB), residential and commercial green building will grow from 2% of the U.S. construction market in 2005 to as much as 10% in 2010—representing a difference of up to $30.8 billion.

Today, more than 80 regional and local green building programs are in place in the U.S. Local governments are finding innovative ways to promote residential green building in the private sector, while also making its health and financial benefits available to vulnerable populations through green affordable housing projects.

About Green Homes

Green homes are healthier, more comfortable, more durable, more energy efficient, and have a much smaller environmental footprint than conventional homes. Green homes rely upon established and proven design elements and technologies through best practice environmental features.

Components of a green home can include:

- strategic site selection to minimize environmental impacts;
- landscaping and development designed to minimize water and energy usage and preserve or enhance the natural environment;

- building design that reduces waste, material usage, and maintenance needs, and increases durability through careful selection of building materials;
- incorporation of salvaged, recycled and/or sustainable building materials;
- emphasis on energy efficiency, particularly in the building envelope and the heating and cooling design;
- use of renewable energy sources (such as solar);
- use of ENERGY STAR-labeled appliances, light fixtures, and bulbs;
- installation of water-efficient appliances and fixtures such as low-flow toilets, water-conserving dishwashers, low-volume irrigation systems, and strategically situated water heaters;
- protection of indoor environmental quality through selection of non-toxic materials and management of potential sources of pollution such as fireplaces, garages, kitchen appliances, and mold; and
- a homeowner or tenant education manual detailing optimal green home usage and upkeep practices.

County Residential Green Building Programs

County residential green building programs help to foster a unified, regional approach to green design and construction, instill consumer awareness and offer training to builders interested in incorporating green features into their projects. These programs can emphasize affordability and flexibility by offering a menu of green options and allowing the homeowner to select green building elements based upon specific regional, personal and environmental needs. By involving builders and homeowner associations in the program development process, and providing outreach and education to the public, county green building programs cultivate a vested community interest and ensure consideration of the most appropriate incentives, policies or programs.

Arlington County, Virginia developed the Green Home Choice program to support Arlington homeowners and builders in going green. The voluntary program provides a list of building guidelines and techniques based on the EarthCraft program, the use of which results in a more efficient and healthy home. A score sheet covering areas such as energy conservation, site management, water and materials conservation, durability, and indoor environmental health helps homebuilders track green choices and earns them points toward certification. Compliance with the guidelines is verified by trained county inspectors. Builders who participate in the program receive front-of-the-line plan review, lawn signs indicating participation in the program, attendance at County-sponsored seminars, and recognition as "green" builders.

Established in 2003, the Green Home Choice program supports over two dozen local contractors, builders, architects, building service specialists, green products suppliers and hundreds of homeowners, and has contributed to the construction or renovation of more than 40 green homes in Arlington County. The program encourages use of ENERGY STAR appliances and techniques.

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Creating a Green County Team

Introduction

As counties look to advance green government practices across their agencies and communities, a team of staff members can be brought together to help facilitate the effort. Whether a county is just beginning to think green or is already implementing a countywide green plan, an interagency "green team" can provide the necessary avenues to ensure unified action in meeting the county's green goals.

Approaching the green issue in a team manner makes sense – helping the environment while also saving taxpayer dollars are actions all county staff members and departments impact in some way. A green team provides the necessary structure for an issue that can impact all county operations. Ultimately, the green goals of a county can affect everything from purchasing and procurement of paper, vehicles, and cleaning products to policies for land conservation, development, and employee commuter benefits.

Creating the Green Team

With support of the county administration and county board, a green team may be tasked with:

- reviewing internal operations impacting the county's triple bottom line (environment, economy/budget, and employees/society);
- evaluating the impact of policies on the green goals of the county; and
- creating a sense of commitment and common understanding of green actions among all levels of employees.

In New Castle County, Delaware, for example, the team's mission is to create an open dialogue on environment and energy measures and to find ways to implement those measures.

Green issues can vary from county to county and ultimately help to determine priorities and a course of action for the team. Green issues may include:

- air quality
- recycling and waste management
- energy efficiency and renewable energy
- transportation and fleets
- water conservation and land preservation
- environmentally preferable purchasing.

Although the composition of each county's green team will be unique, all green teams should strive for diversity in representatives from across agencies and staff levels. Such a diverse composition will not only identify risks and opportunities, but also ensure comprehensive buy-in from all departments. Representatives may include but are not limited to:

- Administration
- Finance/Procurement/General Services
- Health/Social Services
- Human Resources
- Facility Management/Public Works/Fleet Maintenance
- Natural Resources/Parks & Recreation
- Planning/Development
- Land Use/Transportation
- Public Information

Green Team Tasks

Once the team is established, a first task may be to inventory the programs and activities related to the county's identified green issues. The inventory may be used to help map the strategic goals for the team. The green team may subsequently develop government-wide and department-wide strategies and plans.

Sarasota County, Florida created its "Roadmap to Sustainability" to help institute broader organizational ownership and structure and establish metrics to effectively track the county's efforts. The Roadmap to Sustainability has proven to be a tool to organize all staff and activities and ensure all are cognizant of the overall county initiatives. With this knowledge, all county staff, regardless of department or function, are empowered to institute sustainable practices in the workplace.

The county's roadmap includes three key components: drivers (policy), vehicles (programs) and fuels (resources). The county opted to establish cross-discipline action teams for its seven issue areas of: environmental conservation, water conservation, waste reduction, energy reduction, transportation, facilities/construction, and community design/partnerships.

In King County, Washington, resources offered by its green team include a focus on green building:

- technical support and training on LEED (the U.S. Green Building Council's Leadership in Energy and Environmental Design certification program) and other green building technologies for King County departments and offices;
- assistance with project review and budget analysis for county buildings;
- strategies and policies relating to green building;
- current list of county projects that are working to incorporate LEED criteria; and
- a Green Building Resource Center, including an electronic bibliography and online catalogue to provide staff with resources in project management, architecture, landscape architecture, design, budgeting, engineering and resource conservation.

Green Team Coordination

The team should consider scheduling monthly meetings in addition to email work groups. A Microsoft Word or Microsoft Excel document may also be created to continually share accomplishments and track achievements toward green priority goals.

Team members should update their department or agency management members on the project status and should be given regular opportunity to keep the county board informed about the financial, environmental and social results.

Conclusion

With the full support of the county board, a green team can help a county know where it has been and where it is going in the ever-widening green arena. The green team can be an effective force to integrate actions and policies to achieve a green government. Ultimately, the culture of green that this team will create throughout the county's staff can expand to the entire community to help the county "go green."

NACO National Association of Counties
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Publications

Green Government
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Green Purchasing in County Offices

May / 2008

Introduction

Whether your county is already examining the energy use of its building(s), seeking LEED certification (Leadership in Energy and Environmental Design designation from the U.S. Green Building Council), or just beginning to think about "going green," establishing an internal plan to purchase environmentally-preferable office products can be a significant step toward achieving cost and environmental savings.

Local and state governments combined, purchase more than $1 trillion of goods and services each year. Green purchases can help your county save money, reduce harmful environmental impacts, improve worker safety, and generate publicity and educational opportunities in your community. For example, in 2007, King County, WA agencies purchased $41 million of environmentally-preferable products, saving an estimated $877,000 compared to the cost of conventional products.

What is Green Purchasing?

In Mecklenburg County, NC the county's green purchasing policy defines environmentally-preferable products as: Environmentally-preferable goods and services are those that have a lesser or reduced effect on human health and the environment when specifically compared with other goods and services that serve the same purpose.

In general, environmentally-preferable products:

- contain fewer hazardous chemicals,
- use resources more efficiently,
- reduce waste, and
- are energy efficient.

An indicator that a product meets environmental goals is if the product displays an eco-label or, a third-party accepted "seal of approval" including: EcoLogo, ENERGY STAR, Electronic Product Environmental Assessment Tool (EPEAT), Forest Stewardship Council, GREENGUARD and Green Seal (see the Additional Resources section for further information on these labels and the Consumer Reports Eco-Labels Center).

Purchasing Impacts

Office purchases can have environmental impacts including:

- paper from forests,
- greenhouse gases from office technology, heating, lighting, air travel, commuting and deliveries,
- waste from offices, shipping, receiving, and cafeterias,
- inefficient water use internally and disposal of products that do not safely biodegrade,
- use of chemicals in manufacturing processes and potential impact on workers,
- harmful chemicals in cleaning and janitorial supplies, and
- disposal of electronics and other potentially hazardous items at 'end of life.'

These environmental impacts are not just created by the composition of the product. Impacts on the environment also occur in the way in which the product is transported, packaged, and even the greenness of the manufacturing plant that produced the product.

In 2004, the Mecklenburg County Board of Commissioners adopted the Environmental Leadership Policy. In 2007, the county's green purchasing efforts resulted in 991 tons of virgin wood saved from being cut; 2,244 pounds of air pollutants avoided; 153,372 kilowatt-hours of energy not required; and 261,856 gallons of water from being utilized.

Principles for Greening Purchasing

The definition of green purchases will vary for each county depending on the environmental, social, and economic goals. It is important to explore the goals of your county in having a green purchasing policy before you begin to develop it.

After identifying your county's green purchasing goals, consider any number of the following practices…

- ask vendors for a product's environmental performance information,
- replace hazardous products, such as cleaning supplies, with a safer product or process,
- standardize purchases so leftover products are shared with other departments,
- increase the efficiency of procurement procedures to eliminate unnecessary and/or duplicate purchases,
- look for local products that meet your needs,
- order supplies in bulk to help reduce greenhouse gas emissions from deliveries,
- favor the purchase of durable, energy-efficient and recycled-content products,
- reduce the number of days your regular suppliers deliver to your buildings (for example, if they deliver daily now, reduce it to one or two days per week) to reduce greenhouse gas emissions from deliveries,
- purchase safer, more environmentally friendly products (for example, biodegradable liquids, packaging and products that are "certified non-toxic"),
- look for opportunities to reuse, repair, lease and/or share equipment such as

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Solid Waste Management, Recycling and E-Waste

Introduction

Counties are facing growing problems with waste management as landfills are quickly filling, new sites are difficult to find and waste disposal costs are increasing. According to the U.S. Environmental Protection Agency (USEPA), Americans generated 251 million tons of solid waste in 2006, with organic materials as the largest component. Paper products alone contributed 34 percent of the waste; 12 percent was plastic and 8 percent was metal.

Recycling efforts in 2006 recovered 61 million tons of materials and an additional 21 million tons were recovered through composting. By recycling these 82 million tons of municipal solid waste, the equivalent of 49.7 million metric tons of carbon emissions were prevented from being released into the environment.

The term "waste management" is commonly defined by the three Rs: Reduce, Reuse and Recycle, which are:

- Reduce: Reducing consumption and the amount of material thrown away is generally the preferred option for managing waste, because it prevents pollution from occurring in the first place. It lowers disposal costs by reducing the amount of waste that needs to be handled and saves energy and resources that would otherwise be used in production.
- Reuse: Reusing involves finding another use for older products. This can involve repairing, donating or selling the products.
- Recycle: Rather than sending waste to landfills, recycling involves removing materials such as glass, metal, plastic, and paper and reprocessing them to create new products.

Collection Methods for Recyclables

Recyclables are typically collected by curbside pickup, drop-off centers or a combination of the two.

Curbside pick-up makes recycling easier for residents. According to the USEPA, by 2006 there were nearly 8,700 curbside collection programs serving approximately 50 percent of the American population. Alachua County, Florida uses curbside pick-up for its recycling program. The county provides the bins to residents and places no limit on the number of bins each household is allowed to use. The program has been successful, recycling 32 percent of waste produced.

Drop-off centers require residents to transport their recyclables to a main collection point. Sometimes, drop-off centers are used as collection points for hazardous or less common materials for recycling in conjunction with curbside pick-up. In other areas, drop-off centers are the only method of recycling collection. The benefit of these centers is that the county does not need to pay anything to collect recycling from households; however, it also requires more effort from residents. Summit County, Colorado uses a drop-off recycling system and prevents 10 percent of waste from going to landfills.

Pay-As-You-Throw Waste Disposal

A pay-as-you-throw system allows residents to pay only for the amount of waste they produce. The system functions similarly to utility billing, such as for electricity, because charges are determined by use. Charges may be based on weight or volume, with both methods providing a financial incentive to recycle more materials rather than throw them away. In volume-based pay systems, residents are charged by the number and size of the waste containers they fill. These charges may either be incurred based on the number of bags or cans at the curb, or residents may be required to buy special stickers or trash bags that include the cost of collection in the purchase price. In a weight-based system, waste is weighed at the curbside and residents are charged per pound. However, this requires scales to be added onto the collection trucks.

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Greening County Fleets

Introduction

County fleets are typically a diverse mix of light, heavy duty and off-road vehicles and equipment that deliver a variety of essential services for county governments and residents.

Examples of on-road fleet vehicles include:

- passenger vehicles for county administration, inspection and human services activities,
- police cars, ambulances, fire trucks and other emergency vehicles,
- school buses and public-transit buses, and
- waste-disposal vehicles.

Examples of off-road fleet vehicles include:

- construction equipment such as backhoes or front end loaders,
- agricultural vehicles,
- landscaping equipment, and
- landfill equipment.

County Case Study:

Arlington County Virginia
Population: 189,453
County Seat: Arlington

As part of its Fresh AIRE (Arlington Initiative to Reduce Emissions) program, Arlington County, Virginia is home to the nation's first all-hybrid Taxicab fleet (Yellow Cab). These vehicles are hybrids, producing emissions 40 percent lower than those of standard cabs. Additionally, in order to compensate for the unavoidable amounts of carbon that are released into the environment, these cabs purchase carbon offsets, which provide money for clean-source companies. Arlington County has also incorporated 475 large trucks and school buses that run on bio-diesel fuel, 22 public transportation buses running on natural gas, and 80 gas-electric hybrids.

According to the U.S. Environmental Protection Agency (USEPA), motor vehicles are responsible for over 50 percent of nitrogen oxide pollution, 45 percent of volatile organic compounds, 25 percent of particulate matter, and 30 percent of carbon monoxide emissions. Counties can take steps that will reduce the environmental and energy impact of their fleet operations while also saving taxpayer dollars. They can also play an important role by setting an example for county residents and private fleet operators to implement energy conservation measures.

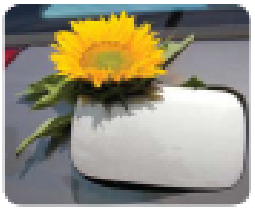
Any fuel, vehicle, or technology a county may select will have pros and cons – counties that are greening their fleets typically use a variety of existing fuels and vehicles. Ultimately, the decision on the kinds of vehicles, fuels and/or technologies will very much suit county's economic and environmental goals as well as location.

Costs and Benefits

In order to reduce emissions, counties can adopt a variety of conservation measures, retrofit technologies, and alternative fuels and vehicles. These include:

- biomass and bio-fuel,
- clean diesel technology,
- propane fuel,
- natural gas fuel, and
- electric, hybrid, and bio-fuel vehicles.

Choosing to incorporate green vehicles or alternative fuels into the county fleet can help reduce dependence on foreign sources of fuel. They present a great way to get federal (and sometimes state) incentives, and may also offer a use for many waste products. Additionally, using greener fuels and vehicles means cleaner air and environment, helping to keep residents healthy. The USEPA has stated that about 30 percent of Americans are living in areas with so many pollutants that their health and the environment can be negatively affected.



Although many forms of improvements and replacements in the county fleet require upfront expenditures, they can save money in the long run, both in fuel and maintenance costs. Several types of these replacements and improvements do not require servicing as frequently as do the traditionally-powered vehicles. For example, whereas a gasoline vehicle should have the oil changed every three months, an electric vehicle needs no oil change.

Additionally, many of these fuels, such as propane (in some areas), natural gas, and ethanol are less expensive than gasoline. According to the U.S. Department of Energy's (DOE) Energy Efficiency and Renewable Energy program, the average price of gasoline has been consistently higher than that of natural gas or of several different ethanol blends.

Biomass and Bio-fuels

Biomass and bio-fuels (biomass in liquid form) are produced from organic materials. This is a broad category, including ethanol, bio-diesel, renewable diesel, and even some natural gas. Some renewable fuels can be produced from surplus and non-agricultural

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Solar Energy for County Facilities

Introduction

Solar power involves the use of the sun's energy to provide electricity, heat, or light. This energy can be harnessed for use in both large- and small-scale projects, from a home to a commercial building. According to the NACo County Green Programs Survey, which was sent to counties nationwide in June 2008, 14% of the 147 respondents generate renewable energy. Of this renewable energy, 40% is solar power.

Sunlight is made of photons, which contain energy. Several technologies have emerged to harness this energy including concentrating solar power, photovoltaics, solar heating and solar lighting, all of which will be explained in this fact sheet.

Costs and Benefits

The sun shines daily, serving as a constant free fuel. The U.S. Department of Energy (DOE) reports that even on extremely overcast days, solar energy systems can still produce 25% of maximum output, and this number increases to as much as 80% on days that are only partially cloudy. Due to this abundantly available fuel, solar power can be a cost-effective choice. Note: Regional differences (particularly weather patterns) may make another source of energy more cost effective.

Many regional utilities offer credit on energy bills for providing the utility with excess electricity from the customer's solar or other alternative energy electricity system. This "net energy metering" can lead to significant bill reductions for customers with this technology.

Environmentally, the use of solar energy benefits both land and air quality. Solar power does not create greenhouse gas emissions, nor does it release other toxins into the air. It also replaces the use of fossil fuels with a renewable resource.

Concentrating Solar Power Systems

By using mirrors or lenses to concentrate the rays of the sun, solar thermal systems can produce temperatures as high as 750 degrees Fahrenheit. DOE reports that this intense heat can produce anywhere from 10 kilowatts to 100 megawatts of electricity. Solar concentrators come in three main designs: parabolic troughs, power towers, and dish engine systems. Arrays of lenses are also occasionally used.

The parabolic trough uses a curved collector to reflect light onto a pipe running along the inside of the curved surface. This raises the temperature of a heat transfer fluid in the pipe, which then is used to run a steam generator. Often, these troughs will be combined to create a collector field, which is generally aligned on a north-south axis, in order to optimize the sun as it travels across the sky.

According to the Union of Concerned Scientists, a nonprofit organization working for a healthy world, there are currently nine solar electric generating stations in California's Mojave Desert, built from 1985 to 1991.

Power towers concentrate sunlight from a very large area on a receiver at the top of a tower. The sunlight is reflected by heliostats, large sun-tracking mirrors that all point the sunlight at the tower. Inside the tower the receiver contains a heat-transfer fluid which then generates steam power to drive turbines, producing electricity.

A dish engine system is essentially an electric generator that runs on sunlight. A dish made of glass mirrors collects direct rays of light from the sun and concentrates these rays in a receiver. The receiver converts it to heat and then transfers it to the engine, which uses it to produce electricity. This is essentially an electric generator that runs on sunlight.

Some concentrating solar systems are combined with thermal storage capacities to operate during nighttime. Others are combined with natural gas powered generators, so that power can be produced on demand if needed. In both cases, the reason is to ensure power can be produced on demand even if the sun is not shining.

Concentrating solar power systems may also use special photovoltaic cells (see the section on Photovoltaic Systems below) designed for the intense light from the concentrator. However, these types of collectors are mostly under development and not commercially available.

Boulder County, Colorado is working to identify potential sites for concentrating solar power plants, as well as finding partners to support and demonstrate these projects. The county has created a map with possible areas for these plants. The county is also encouraging a company with plants in the county, Frito Lay, to build 50 acres of solar concentrators to provide renewable fuel. This plan would reduce the plant's electricity consumption by 90% and the use of natural gas by 80%. For more information, see the Boulder County sustainability website, located at *www.bouldercounty.org/sustain/*.

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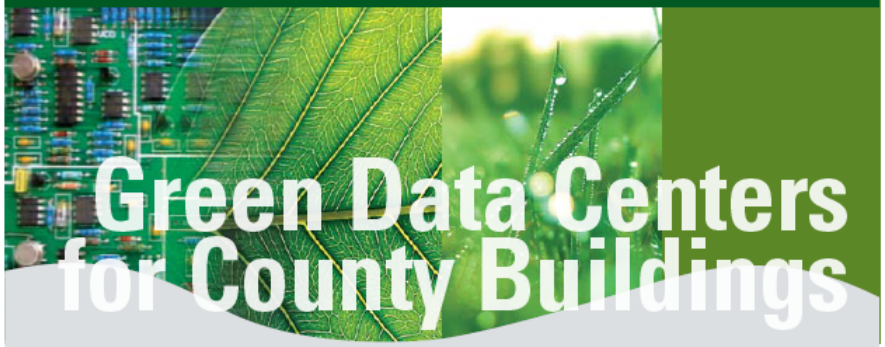

Green Data Centers for County Buildings

Introduction

The need for data centers in county buildings is rapidly increasing. Governments of all sizes use information technology to publish information on the internet, maintain websites, retain digital records, provide emergency services, allow residents to access services online, and perform scientific computations. The power for these important tasks is housed in a data center.

According to the Lawrence Berkeley National Laboratory (Berkeley Lab), a data center performs any of the following:

- houses electronic equipment such as computers, servers, routers, data storage devices, etc;
- stores, processes, manages, and exchanges data and information; and/or
- provides services or management for data processing.

Costs and Benefits

According to Pacific Gas & Electric Company (PG&E), data centers consume up to 50 times more electricity than standard office spaces, and represent 1.5% of all U.S. electrical energy consumption. The U.S. Environmental Protection Agency's (USEPA) ENERGY STAR program estimates that the energy used by servers and data centers across the country was 61 billion kilowatt hours in 2006, costing a total of $4.5 billion. This quantity is equivalent to the output of 15 power plants. Based on current trends, energy consumed by data centers will continue to grow by 12% per year.

Improving the efficiency of county building data centers can reduce these significant energy costs, save taxpayer dollars, and decrease emissions. According to a USEPA report to Congress in August 2007, state of the art technology could improve energy efficiency by as much as 70%, and combined energy savings of 30% are achievable within existing sites without major upgrades. Purchasing new energy efficient equipment can be initially expensive, but pay for itself over time. There are also a number of simple yet effective ways to green a county data center that are a lower-cost and easy to implement (*see table: Cost and Payback of Data Center Improvements.*)

According to IBM a typical data center draws approximately two to three times the amount of energy required for the equipment. The remaining energy is used for chillers, power systems, air conditioners, power distribution units, and other equipment. Moreover, many data centers are oversized to meet the maximum potential energy needs, and older infrastructure components can be extremely inefficient. The transition to a green data center can drastically reduce energy and ownership costs.

To defray the cost of data center upgrades, several companies offer rebates on the purchase of energy efficient equipment. PG&E's Non-Residential Retrofit Program offers customized incentives for PG&E consumers purchasing chiller replacements, variable speed drive installations and interior and exterior lighting retrofits. The USEPA ENERGY STAR also sponsors special offers, such as sales tax exemptions or credits, or rebates on products that can improve data center efficiency. ENERGY STAR

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Counties and Green Public-Private Partnerships

Introduction

As counties seek to advance environmental projects and practices, private sector partnerships may provide financial and technical support. Public-private partnerships enable counties and businesses to combine resources to support green initiatives, with benefits to both. Increasingly, public-private partnerships are used as a policy tool to transform the role of county governments in public service delivery, infrastructure development, poverty alleviation, and a range of green development projects.

According to the National Council for Public-Private Partnerships, the term "public-private partnership" refers to: " a contractual agreement between a public agency and a private sector entity. Through this agreement, the skills and assets of each sector (public and private) are shared in delivering a service or facility for the use of the general public. In addition to the sharing of resources, each party shares in the risks and rewards potential in the delivery of the service and/or facility."

Forming Boards & Committees

Identify goals ...

The first step to creating an effective public-private partnership is to identify the green issues affecting the county. Environmental challenges may vary from county to county, and defining priorities will help to determine the goals of the green initiative.

NACo Green Government Initiative

The NACo Green Government Initiative provides comprehensive resources for counties on all things green. The program is made possible through a public-private partnership between NACo and about 20 companies and organizations. These corporate and industry partners collaborate as active members of the Green Government Advisory Board working alongside elected county officials. Advisory Board members provide input based on their knowledge of a wide range of green government issues, including: energy, air quality, water quality, land use, transportation, purchasing, and recycling. Private sector partners work to further green government goals to facilitate county best practices, products and policies that result in financial and environmental savings. For more information and a list of sponsors and advisory board members please visit www.greencounties.org.

Identify partners ...

Once the county has identified its green goals, representatives can begin to identify potential businesses and community partners interested in supporting environmental initiatives. Businesses offering green products or services are potential partners, as are businesses in the sectors of

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Counties & Commercial Green Buildings

Introduction

By leading efforts to develop services, incentives, programs and policies, counties across the nation are helping deliver the proven environmental and economic benefits of green building to their communities. According to a joint study conducted by the National Association of Counties (NACo) and the American Institute of Architects (AIA), at least 25% of people living in the country's 200 most populous counties live in a county with a green building program. The study found that green programs have increased by 400% over the last three years.

The U.S. Department of Energy (DOE) defines commercial buildings as "those designed, built and operated for any use other than residential, manufacturing, or agriculture, including everything from schools to hospitals, offices to grocery stores." Commercial buildings affect the environment, economy, health and even worker productivity. According to ENERGY STAR®, a program sponsored by the US Environmental Protection Agency (USEPA), commercial buildings account for 18% of total U.S. energy consumption and contribute an estimated 15% of U.S. greenhouse gas emissions.

Johnson County, KS Sunset Office Building

About Green Buildings

The U.S. Green Building Council (USGBC) reports that green building involves the maximization of the building's and site's efficiency in using, generating and recycling energy, water and materials, as well as the minimization of the impact of buildings on health and the environment. This includes both the construction of new buildings and the renovation, operation and maintenance of existing buildings. Aspects of green commercial buildings may include:

- a site selected to take advantage of mass transit, protect the existing landscape and minimize the disruption of natural elements, taking into account soil, the use of native plants for landscaping elements and existing infrastructure (for more information, see the section on "Protecting the Existing Environment" on page 3);
- the use of sustainable materials, which may be biobased, made from recycled materials, or reused from other buildings (for more information, see the "Green Materials" section on page 5);
- the use of cleaner fuels to power construction equipment and minimization of emissions through the use of retrofitted vehicles and equipment;
- the use of ENERGY STAR-labeled appliances, which are more energy efficient than other products on the market (for more information, visit *www.energystar.gov*);
- properly sized heating, ventilation and air-conditioning (HVAC) systems, which moderate temperature in the building more efficiently (for more information on selecting right-sized appliances, visit *www.energystar.gov*.);
- high water efficiency, including the use of "grey" recycled water for toilet flushing and site irrigation, the installation of ultra low-flush toilets and the collection of rainwater for use in landscaping irrigation (for more information on water conservation and efficiency, visit *www.epa.gov/OW/index.html*);
- better indoor air quality, including dedicated ventilation systems, separate exhaust systems in areas with high pollution sources, the regulation of ventilation air quantities based on occupation needs, a no-smoking policy, high-efficiency filtration and use of interior finish materials with low amounts or no volatile organic chemicals (VOCs) (for more information on indoor air quality, visit *www.epa.gov/ebtpages/airindoorairpollution.html*); and
- better lighting efficiency, which may include using daylight, more efficient light bulbs or new lighting technology (for more information, see NACo's Green Government Initiative fact sheet, "Energy Efficient Lighting in County Facilities," located at *www.greencounties.org*.).

Benefits of Commercial Green Buildings

Properly designed, constructed and operated green buildings can have significant health, economic and environmental benefits. This occurs through decreased energy use, improved ventilation and lighting, a reduction in the use of fossil fuels and decrease in the amount of associated greenhouse gases released into the atmosphere, enhanced community education and an increased understanding, availability and uptake of green building technology.

Financial Benefits

Green buildings are designed to be more energy- and water-efficient than traditional buildings, also yielding savings in these areas. According to studies conducted by the USGBC, investing an average premium of 2% to build green can result in an average lifecycle savings of 20% of the total construction costs for the building – more than ten times the initial investment. An investment of $4 per square foot can yield an average of a $58 benefit over 20 years. In addition, "The

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Upcoming Fact Sheet Topics

- Landfill Gas to Energy
- Wind Energy
- Water Efficiency
- Green Codes
- Green Roofs

Also coming soon… Greening the Local Economy Guidebook

Resources Available at www.greencounties.org

Publications and Videos

- Fact sheets
- Guides
- Archived newsletters and articles
- Media scans
- County video spotlights

Webinars and Events

- Cost-free, two-hour sessions
- 20 in 2008
- Recordings and presentations available
- Online calendar of national, state, and local events

Database

- Searchable database of green county files
- Over 700 files so far

Presentations

- Presentations from NACo conferences, state association workshops and more

Competitions

- Two green competitions
- Drive Smarter Challenge
- Change the World, Start with ENERGY STAR Campaign
- July 1 – Nov 30

Past Webinars

- Some of the past webinars included…
- **Green Counties 101**
  - *Marin County, CA; La Plata County, CO; Howard County, MD; Dane County WI*
- **Green Purchasing 101**
  - *U.S. Communities; Office Depot; Matanuska-Susitna Borough, AK; Los Angeles County, CA; Sarasota County, FL*
- **Funding Options for On-Site Renewable Energy Projects**
  - *Johnson Controls; ENERGY STAR; National Renewable Energy Laboratory; Butte County, CA*
- **Waste Management, Recycling and E-Waste 101**
  - *Waste Management; Alameda County, CA; Logan County, OH; Clackamas County, OR*
- **Communicating Your County Climate Protection Message**
  - *American Institute of Architects; Pew Center on Global Climate Change; Boulder County, CO; Sarasota County, FL; Whatcom County, WA*
- **LEED for Existing Buildings**
  - *U.S. Green Building Council; Building Owners and Managers Association; State of CA Dept of General Services; Ada County, ID*

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Searchable Database

Issue Areas:

- ☐ Global Warming/Climate Change/ Air Quality
- ☐ Indoor Air Quality/Pest Management/Green Cleaning
- ☐ Green Building – commercial and residential
- ☐ Energy Efficiency/Renewable Energy
- ☐ Fleets – alternative fuels and vehicles
- ☐ Transportation
- ☐ Land Use - conservation, trees, landscaping, open space
- ☐ Water – conservation and quality
- ☐ Purchasing
- ☐ Waste Management - reduction, prevention, recycling
- ☐ Staff Resources – internal audits/inventories, trainings, teams, committees, task forces, etc.

Information Types:

- ☐ Proposals, Resolutions, Ordinances and Codes
- ☐ Executive Orders
- ☐ Policies
- ☐ Plans – including analysis reports and inventories
- ☐ Programs - including public and private incentives, project case studies, etc.
- ☐ Staff Descriptions – including committees, task forces, councils, etc.
- ☐ Outreach/Education

Also search by keyword, county size, and/or state

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Presentations

- Presentations available (including county best practices) from workshops including:
  - Fueling the County Fleet
  - Diversified Power Sources and Renewable Energies
  - Green Purchasing and Procurement
  - Green Standards and Certifications
  - Renewable Energy Forecast
  - E-Waste
  - Ethanol Debate
  - Climate Tools
  - Green Jobs and Economy
  - **Energy Efficiency and Weatherization**
  - Implementing Green Policies – Codes and Ordinances

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