

Case Study — Arlington Initiative to Rethink Energy (AIRE)

In Brief

| | |
|-------------------------|--|
| <i>Location:</i> | Arlington County, Virginia |
| <i>Policy type:</i> | Government Lead by Example, Financing, Public Buildings, Retrofits, Utilities, Vehicles, Climate Change |
| <i>Sector:</i> | Commercial, Transportation |
| <i>Start Date:</i> | 2007 |
| <i>Summary:</i> | A comprehensive initiative to reduce energy use and greenhouse gas emissions in county operations and throughout the community. |
| <i>Impact:</i> | 15% decline in energy intensity in county buildings; 11.7% decline in net government greenhouse gas emissions; a community energy plan has been formally adopted as an element of the Arlington County Comprehensive Plan. |
| <i>First Published:</i> | February 2011 |
| <i>Updated:</i> | October 2013 |

Overview

The Arlington Initiative to Reduce Emissions (AIRE) was launched in 2007 with an initial goal of reducing greenhouse gas emissions from county government operations to 10% below 2000 levels by 2012. Central to this effort was reducing energy use by 2% per year from 2007 to 2012 with energy efficiency retrofits. The program, which changed its name to the Arlington Initiative to Rethink Energy in 2013, now encompasses comprehensive energy planning in the community as well as continued energy efficiency and clean energy use in county operations. In May, 2013, the County reported it had eclipsed its goal of a 10% greenhouse gas emission reduction, [achieving an 11.7% net reduction from 2000-2012](#).



In June of 2013 Arlington adopted a Community Energy Plan as an element of the County Comprehensive Plan. The energy plan doubles as a climate action plan by using greenhouse gas emissions as a proxy for overall energy productivity. The Community Energy Plan recognizes the fundamental importance of secure, reliable energy to local economic sustainability.

The AIRE initiative was the signature effort of Paul Ferguson, former Chairman of the Arlington County Board. Mr. Ferguson engaged a group of employees from a range of county departments (including Department of Environmental Services; Parks, Recreation & Cultural Resources; Community Planning, Housing & Development; Economic Development; Human Services; and Libraries, as well as the Communications and Public Affairs staff in the County Manager's Office) to develop a plan. The team identified meaningful, realistic goals for which activities could be set in motion in the short-term with limited financial resources.

Management and Funding

The Department of Environmental Services (DES) in the county government manages AIRE and the Green Games. The efforts are now funded by a dedicated residential utility tax proposed by then County Manager Ron Carlee in the FY2008 budget and approved by a vote of 5-0 in May 2007 as [Chapter 63 of the County Code](#). The local taxing authority is allowed under Virginia Code [§ 58.1-3814](#). Capped by state law at \$3 per month per electric and natural gas account, the County designed the tax rate to reduce its

regressivity toward low-income and fixed-income households. The tax generates approximately \$1.6 million per year for the AIRE program. These funds support retrofits in public buildings and pay for eight full-time staff that lead sustainability efforts for the government and community, as well as program costs associated with the effort.

When AIRE was launched there were no active state or utility energy efficiency programs in Virginia. Arlington looked elsewhere for best practices to draw from. Additionally, as local governments in Virginia have limited home rule authority, Arlington was forced to be creative in implementing its initiatives, with a focus on integrating energy considerations into existing local authorities and relying heavily on public participation to foster a sense of ownership in policy directions.

In the years since it began, AIRE has met many of its original goals and enabled the county to leverage its early activity with new opportunities, such as the federal Energy Efficiency and Conservation Block Grant (EECBG) program. Goals met and other milestones achieved include:

- Requiring all new public buildings (over 5,000 ft²) to achieve LEED Silver certification.
- Investing \$7.5 million in energy efficiency retrofits in county buildings, including an energy-saving performance contract for the Arlington Justice Center (courthouse and jail). The 600,000 ft² Justice Center is now ENERGY STAR-labeled.
- Annual “[Building Energy Report Cards](#)” for government buildings are available to the public through the county’s Web site.
- Retrofitting over 2,500 street lights with low-energy LEDs
- Creating a personal property [tax incentive](#) for “clean fuel vehicles” (see Morrill et al. 2008 for more details).
- Continuing incentives for public employees to utilize alternate transit modes to commute.
- Purchasing Green-e certified renewable power credits. Purchases have risen steadily from 2.4 million kWh (3% of total government electricity use) in 2005 to over 11 million kWh in 2012 (13% of county gov’t use).
- Nearly 70 kW of solar PV installed on county buildings.
- Adopted the [Community Energy Plan](#) on July 15th, 2013 which contains a variety of energy use and emissions reductions goals, such as reducing the energy intensity of commercial buildings 60% by 2050, and reducing County government CO² emissions by 76% by 2050. Additionally, the plan is designed to encourage the strategic implementation of district energy and combined heat and power systems in Arlington.

AIRE also seeks to support private-sector efforts to reduce emissions by acknowledging local institutions and businesses that achieve milestone accomplishments, such as ENERGY STAR-labeled buildings, exemplary employee commuter programs, and 100% green power purchases. The county began recognizing businesses and institutions as “AIRE Champions” in late 2007, and the distinction proved

AIRE ENERGY SPOTLIGHT
DREWRY CENTER

FAST FACT
ARLINGTON COUNTY REDUCED EMISSIONS IN DREWRY CENTER BY 24% BETWEEN 2007 AND 2009.

ABOUT AIRE
Climate disruption is one of the most serious challenges facing our world today. To protect the health and economic well-being of current and future generations, we must reduce our emissions of heat-trapping gases by using the technology and practical solutions already at our disposal. The first AIRE program—Arlington Initiative to Reduce Emissions—began in 2007 with the goal of reducing greenhouse gas emissions (primarily carbon dioxide (CO₂)) across the County. Arlington is committed to cutting greenhouse gas emissions from government operations to 10% below 2005 levels by 2012. We will achieve this by improving energy efficiency in our buildings, vehicles, and infrastructure; using alternative fuels and green power; increasing recycling; conserving and protecting water; and maintaining and enhancing the tree canopy in Arlington. AIRE is supporting and encouraging the community to join us by committing to actions that will make Arlington a more sustainable place to live, work, and play.

www.arlingtonva.us/aire
www.arlingtonva.us/energy
aire@arlingtonva.us

EMISSIONS AT DREWRY CENTER, 2007 - 2009

| Year | Natural Gas (MMBtu) | Electricity (MMBtu) |
|------|---------------------|---------------------|
| 2007 | ~100 | ~200 |
| 2008 | ~80 | ~180 |
| 2009 | ~70 | ~150 |

OUR IMPROVEMENTS
Since 2008, we rebalanced lighting from T12s to T8s throughout the building, yielding a 20% reduction in total building electricity use. We also upgraded the building automation system in this facility, to better schedule heating and cooling equipment. In the summer of 2008, AIRE funds replaced the aging central boiler, and sharp reductions were seen in gas use in November and December 2008. In 2010, we will work to fine-tune the HVAC distribution system with both mechanical changes and building automation work.

A Building Energy Report Card for the Drewry Mental Health and Substance Abuse Center, profiling energy efficiency improvements and energy performance of the building.

valuable to local companies for publicity and boosting employee morale. Approximately 50 AIRE Champion awards were given between 2007 and 2010.

The Arlington Green Games were launched in October 2010. In the first performance year, approximately 150 businesses participated, constituting roughly 15 million square feet of commercial building space. Participating property managers and office tenants committed to a year-long program in which they received ongoing training, support, and resources as they:

- Assessed and tracked their building performance for a year using Portfolio Manager
- Set goals to reduce emissions and waste, and created plans to meet the goals
- Implemented their plan and kept a score sheet of self-reported efforts, including activities such as in-office news and reminders, discussing energy-saving options with facilities staff, or making improvements to lighting or equipment.

Ongoing engagement is a key focus of the Green Games. The county is hosted monthly events for facility managers and tenants such as Mingling Mondays (networking breakfasts), Time Out Tuesdays (brown bag lunches with guest speakers), and Webinar Wednesdays (county provided webinars on topics covering green power, energy efficiency, water efficiency, low-cost and no-cost actions, and utility incentives).

Since its inception the Green Games Competition has been continued annually, and has been expanded to include Apartment/Condo buildings and residents, as well restaurants and retail spaces.

Performance

The county has found some energy-saving opportunities that also save large amounts of money. For example, a \$500 fix in one warehouse produced \$10,000 in annual natural gas savings. Also, energy conservation measures such as turning off lights, turning off engines, and lowering thermostat settings cost nothing and save energy and money immediately. However, in most cases, the payback takes several years. The recently-completed energy performance contract for the Justice Center has a 14-year payback, assuming energy prices remain constant. Avoided cost savings will increase with expected increases in energy prices. On average, the county's investments in public lighting, buildings, and vehicles have been paid back in 5 years, with net savings each year thereafter.

The AIRE program has been broadly successful in terms of visibility and program implementation. However, growth in county government services added a level of difficulty to achieving the 10% (absolute) reduction in greenhouse gas emissions from operations. When AIRE was launched in 2007, there was confidence among staff that the 10% emissions goal could be met relatively easily, since between 2000 and 2005 the County government had reduced greenhouse gas emissions about 3.3% (2,440 mt eCO₂) from a year 2000 baseline level. Arlington was successful in eclipsing its emissions reduction goal, achieving a net emissions reduction of 11.7% by 2012, though some of the reductions were due to renewable energy credit purchases and a decreasing CO₂ emission factor for purchased electricity.

Nevertheless, several other actions did contribute to reaching AIRE's goal, including increasing energy efficiency in buildings and traffic signals. Through the program's efforts the energy intensity of county buildings has declined about 15% since 2007, but some fear this might not be a strong indicator of overall energy savings because the government increased the size of its building inventory through new construction by about 17% in the past 12 years. An expansion of its wastewater treatment plant and the addition of thousands of streetlights and traffic signals since 2000 have further challenged energy use goals. Despite the challenges in reaching their goal, real reductions in energy use intensity have occurred, and the program has been deservedly lauded as a success thus far.

Lessons Learned

AIRE staff report that engaging and collaborating with as many stakeholders as possible and keeping them involved has played a large role in their success. Engaging other agencies leads to idea generation and cooperation. Engaging the community leads to enthusiasm and participation. Engagement tends to lead to things cascading in a positive manner.

Additionally, program staff offered two big lessons related to what motivates interest and participation:

- 1) People and institutions love to compete, and
- 2) If you make something fun, participation grows, even if the topic is pretty dry, like energy. Once people understand that ‘benchmarking’ means comparing your performance to others it becomes sport.

To some, overall growth in the community and of Arlington County’s government operations may seem to diminish the successes in individual buildings. However, quantifying avoided cost savings helps explain the importance of improving building energy intensity (Btu/ft²).

The Community Energy Plan includes ambitious yet achievable targets for continued improved energy efficiency in County operations. Arlington remains committed to *leading by example* and sharing its lessons learned with broader stakeholders.

Related Resources

Arlington County AIRE Web page: <http://freshaireva.us/>

Arlington County’s Community Energy Plan: <http://freshaireva.us/2012/04/energyplan/>

ACEEE Summer Study proceedings paper on AIRE:

Morrill, J., J. Kelsch, and W. Roper. 2008. “Making *Fresh AIRE* Out of Thin Air: Launching a Local Climate Action Initiative with Minimal State and Utility Involvement.” In *Proceedings of the 2008 ACEEE Summer Study on Buildings*. Washington, D.C.: American Council for an Energy-Efficient Economy.
<http://aceee.org/proceedings-paper/ss08/panel11/paper17>

Arlington County Board May 21, 2013 Memorandum on Achieving the AIRE 2012 goal
<http://freshaireva.us/wp-content/uploads/2013/05/052113-CMO-AIRE-2012-goal-report-Final.pdf>

Arlington County 2012 Government Operations Greenhouse Gas Inventory, May 2013
<http://freshaireva.us/wp-content/uploads/2013/05/2012-ArCo-Gov-Ops-Inventory-with-cover.pdf>

Contact

John Morrill, CEM
Energy Manager
Arlington County Office of Sustainability and Environmental Management
2100 Clarendon Blvd # 705
Arlington, VA 22201
Telephone: (703) 228-4426
Email: jmorrill@arlingtonva.us