

Arlington County
Community Energy and Sustainability Task Force Report

FREQUENTLY ASKED QUESTIONS

April 11, 2011

Q: What is the Community Energy Plan?

A: The Community Energy Plan is a strategic planning effort to ensure Arlington’s economic competitiveness and energy supply security while reinforcing Arlington’s environmental commitment. Through this process Arlington will transform the way we generate, distribute, store and use energy.

A nationally recognized leader in climate action, Arlington County is working to reduce energy use and GHG emissions from government operations through the Arlington Initiative to Reduce Emissions (AIRE) program. The County has broadened that effort into the broader community to chart a course to ensure a healthy, viable, sustainable Arlington for generations to come.

Q: What is the CES Task Force recommending?

A: The report includes recommendations to sharply reduce energy use in Arlington, including an ambitious, long-term goal of reducing greenhouse gas (GHG) emissions by more than 70 percent by the year 2050, achieving an emissions goal of 3 metric tons CO₂e per capita per year by 2050.

The report uses greenhouse gas (GHG) emissions as a measure of overall energy productivity, in terms of carbon dioxide equivalent (CO₂e). A lower number indicates cleaner and lower energy use. In 2007, the Arlington community produced 13.4 metric tons CO₂e per resident, and the Task Force recommends a reduction to 3.0 metric tons CO₂e by 2050.

The report includes 18 recommendations and strategies to achieve this goal (view the CES Task Force final draft report at www.arlingtonva.us/energyplan):

Recommendations	Strategies
HT1: Reduce Arlington’s annual GHG emissions to 3.0 mt CO ₂ e per capita by 2050. If an effective regional energy plan is put in place, achieve 2.2 mt CO ₂ e per capita per year.	S1: Take steps to institutionalize long-term energy planning and processes.
B1: From 2015, renovated homes should operate at least 30% more efficiently on average compared to the 2007 baseline average. Non-residential buildings being renovated should operate at least 50% more efficiently than the 2007 baseline average.	S2: Create and implement an energy performance labeling (EPL) program.
B2: From 2015, all new homes and buildings should operate at least 30% more efficiently than current code expectations. From 2025, ongoing new home and building construction should operate 1% more efficiently every year through 2050.	S3: Gather community input and improve energy literacy on an ongoing basis.
B3: Emphasize that home and building operations must be effectively managed day-to-day to control energy costs.	S4: Provide education and training to all stakeholders.
	S5: Identify and promote financial incentives to improve energy efficiency.

- B4: Create a mixed-use, net-zero energy scale project.
- DE1: Establish in high-density areas District Energy Systems owned and operated by a new District Energy Company.
- RE1: Install 160 MW of solar photovoltaics by 2025 countywide.
- RE2: In lower-density neighborhoods, at least 50% of all domestic hot water needs and 20% of the space heating needs not supplied by district energy should be from clean and renewable sources by 2050.
- T1: Reduce vehicle miles traveled by continuing to develop Complete Streets, high-capacity transit corridors, and transit-oriented development.
- T2: Continue to support federal efforts to increase vehicle fuel efficiency.
- T3: Continue to support the reduction of carbon content in vehicle fuels.
- S6: Acquire, register and report GHG emissions data and monetize as appropriate.
- S7: Work with neighboring jurisdictions on a Regional Energy and Climate Plan.

Q: When the County Board takes action, will these recommendations become mandatory?

A: The Task Force recommendations put forth in the report are voluntary goals and strategies submitted for the approval of the County Board. Once the goals are approved, the County will develop an Implementation Plan, soliciting community input as we develop ways to achieve these goals.

Q: When I renovate my home, will I be required to meet new energy efficiency standards?

A: No, the recommendations in the report are voluntary goals and strategies. Arlington County will be developing guidelines to help homeowners identify energy-saving opportunities. In addition, the County will develop a clearinghouse of information on any and all financial incentives from Federal, State, local, and utility programs that may help people achieve the energy-saving measures. Recent changes by the International Code Council suggest that State-approved building codes will require greater energy efficiency in the future.

Q: Who will pay to implement the CES Task Force goals in the recommended time frame?

A: Many of the strategies for reduced energy use are cost-effective to the end-user, and represent worthwhile investment of owner's funds. New energy supply options, such as district energy and solar photovoltaics, will likely attract private investment. The County will help facilitate private investment where appropriate, and the County will develop a clearinghouse of information on financial options to help pay for many of these strategies.

Q: How will the CES Task Force Report impact the rights of property owners, and enforcement?

A: We see no impact on the rights of property owners. Enforcement of building codes will continue as it has been, following State code.

Q: Will implementing the CES Task Force recommendations make it more costly to live in Arlington?

A: No, one of the fundamental goals of the project is to ensure reliable, affordable energy to residents and businesses.

Q: Will implementing the CES Task Force recommendations make the County zero energy?

A: No. Even our ambitious targets for improved energy efficiency and widespread use of solar energy will still fall short of achieving a zero energy community. However, it is possible that some individual buildings, and perhaps a cluster or neighborhood of buildings, could be "net zero energy" at some point.

Q: Will there be transparency and open discussion on the costs and benefits of the CES Task Force recommendations?

A: Yes. The development of the community energy implementation plan will involve a Community Energy Advisory Group, composed of community leaders and stakeholders, similar to the CES Task Force. This group will advise County staff and consultants on implementation plans and proposals. These implementation plans and proposals will be available on the County website, and full public comment and input will be welcomed and solicited throughout the process.

Q: Is the proposed commitment to renewable energy, primarily solar, practical? Is it sufficient?

A: We recognize the goal of 160 MW of solar photovoltaics (PV) represents a substantial investment in this technology. However, prices are falling, PV panel efficiencies are improving, and the engineering and installation is not difficult. There are acres of building surface available for solar PV in Arlington, including building roofs and south- and west-facing vertical walls that can accommodate solar PV. There are many exciting financial tools emerging to enable investment in solar, including lease options, group purchases, and sale of solar renewable energy credits.

We set a goal of 160 MW to help eliminate the peak demand for electric power in summer. Managing peak demand eases congestion and stress on the electric grid, which improves energy reliability for all. If efficiency efforts (including demand response) exceed expectations, this much solar power would further enhance grid reliability.

Q: Is the proposed commitment to reduce GHG emissions resulting from transportation practical? Is it sufficient?

A: Arlington's transportation accomplishments over the past two decades offer strong evidence that our Master Transportation Plan elements are practical and effective. We are confident that continued implementation of the MTP will further enhance transportation options throughout Arlington. The links between our transit-oriented land use development patterns and our MTP ensures that economic growth in Arlington can continue without increasing traffic. Transportation demand management, combined with expected improvements in vehicle fuel economy and increasing use of lower-carbon vehicle fuels (e.g., electric vehicles, compressed natural gas, and biofuels) in the decades ahead offer strong promise of deep reductions in GHG emissions from transportation. The estimates of vehicle fuel economy and lower carbon fuels in the Task Force report are limited to technologies available today. It is conceivable that even greater improvements are possible over the next 40 years, with technologies unknown today.

Q Will there be things that I can do in my home to reduce my energy use and reduce my "carbon footprint?"

A: Yes! The AIRE program (Arlington Initiative to Reduce Emissions) provides valuable tips for residents to reduce energy use, energy costs, and GHG emissions. Energy audits identify areas of energy waste, and prime opportunities for savings include adding insulation, air sealing to reduce drafts, upgrading heating and cooling systems, and purchasing ENERGY STAR-labeled appliances. Buying "green power" and installing solar energy are additional measures homeowners can take to cut their home's carbon footprint. Renters and condo owners can take action, too. Everyone can replace traditional incandescent bulbs with compact fluorescent bulbs, and remember to turn off lights when they aren't needed. Go to www.arlingtonva.us/aire for more information.

Q: What is the Community Energy and Sustainability Task Force? What is their role in the Community Energy Plan process?

A: In January 2010, under the leadership of then Arlington County Board Chairman Jay Fisette, the County Board appointed a 30-person Community Energy and Sustainability (CES) Task Force comprised of community leaders and stakeholders representing diverse sectors and interests. The Task Force was asked to help identify ways in which Arlington can ensure our economic, energy and environmental future. In April 2011, the Task Force will present the CES Task Force Report, the result of their yearlong assignment, to the County Board.

District Energy

Q: What is district energy?

A: District energy systems produce hot water or chilled water at a local central plant and then pipe that energy out to connected buildings in the district for space heating, domestic hot water heating and air conditioning. Individual buildings don't need their own boilers or furnaces, chillers or air conditioners. A district energy system does that work for them. Steam is used as the heating energy in older systems, but new modern systems usually use hot water.

Q: What are some of the benefits of district energy?

A: The beauty of a district energy system is that since it serves many customers from one location, it can accomplish things – such as a level of energy efficiency and energy supply flexibility – that individual buildings usually cannot. For instance, a district energy system can use a conventional fuel such as oil or natural gas very efficiently. And because of a district energy system's size, the district energy plant can also transition to use renewable fuels such as biomass, geothermal, and combined heat and power. Buildings connected to district energy systems have lower capital costs for their energy equipment because they don't need conventional boilers and chillers. They save valuable upfront dollars they can invest elsewhere. Plus, they save building space that can be used for other more valuable purposes.

Building owners and managers can count on district energy systems since energy professionals operate around-the-clock and have backup systems readily available. Most district energy systems operate at a reliability of "five nines" (99.999 percent).

In addition, district energy systems benefit the local power grid by reducing peak power demand and alleviating power congestion due to power transmission limitations, particularly in cities. So district energy not only helps heat and cool cities, it also helps alleviate the challenges posed by high electric consumption.

Q: How is district energy more efficient than the current alternatives?

A: When hot water or chilled water arrives at a customer's building, they are ready to use. They are 100 percent efficient "at the door," compared with 80 percent efficient or less when burning natural gas or fuel oil at a building. In addition, district energy systems can use the "waste heat" that results from burning fuel to produce electricity at a power plant, dramatically increasing the overall efficiency with which useful energy is extracted from the fuel.

When the waste heat is used, the system becomes a ***combined heat and power*** system (often referred to by the acronym "CHP"), generating both heating and cooling plus electricity for customers. A CHP system may have nearly double the fuel efficiency of an electric generation plant and can also lower the emissions typically associated with conventional fossil-fuel powered electrical production. The less energy that is used, the less sulfur dioxide and carbon dioxide and other emissions are expelled into the environment.

Q: What is a scale project and why are they important?

A: Different than one-off, single building pilot or demonstration projects, scale projects cover entire neighborhoods or substantial campus-like areas. Because of their size, scale projects will usually involve many parties in ownership and decision-making. They also will cross both public and private boundaries, and may need a deeper level of engagement, either in terms of new County or State policies or voluntary changes from all of the project participants. These projects are challenging, but success is a prerequisite to achieving the scale needed to drive transformation to the community level.

Q: Will scale projects be created everywhere in the County?

A: Several of the CES Task Force priority scale projects are potential district energy areas, including Crystal City, Rosslyn, Columbia Pike, and East Falls Church. However, the County would be interested to listen to any proposed scale project idea, regardless of whether or not a proposed project is in one of those four high priority areas of the County.

Q: Why haven't I heard of district energy?

A: Many people may not be familiar with district energy because it quietly does its job with rarely a crisis to report. Plus, the pipes that deliver the hot water and/or chilled water are usually buried underneath streets, so most people don't know they are there. District energy is not a new technology. It is not a technology we have to wait to test or to research. While it is not prevalent in our region, it is found in many U.S. cities and is common elsewhere around the world.

Q: What is wrong with our current energy distribution scenario?

A: The single biggest concern with our current energy distribution system is the tremendous amount of energy wasted at distant electric power plants. For every unit of electricity consumed in Arlington, more than two units of energy are released to the atmosphere or waterways as waste heat (from the burning of fossil fuels or nuclear reactions). Growing global demand for energy suggests the price of energy will continue to rise, and energy use has profound negative effects on our environment and public health. Using energy much more efficiently, and capturing wasted energy for reuse – as in district energy and combined heat and power systems – are proactive strategies for ensuring reliable energy supplies at affordable costs.

Q: Does this mean Arlington will be getting into the district energy business?

A: The form that a district energy entity may take is not yet known. District energy systems elsewhere around the world include (1) public ownership, as a municipal utility; (2) private ownership, as an investor-owned company; (3) a public-private partnership, involving a private company working with the municipal government, and (4) a cooperative ownership model. The County will be investigating these options for applicability and feasibility in Arlington.

Q: Is Arlington going to build a district energy plant?

A: The development of a district energy system will likely begin modestly, with an underground connection among a small number of adjacent buildings. The heating and cooling equipment would be located in one of the buildings. Over time, more buildings would be connected to these with additional heating, cooling, and/or CHP equipment within one or more buildings as the system grows. Eventually, a central district energy plant may become feasible and economical to serve a growing network of buildings. The County government would have considerable influence over the ownership, location, and appearance of any such central plant.

Q: Are district energy plants noisy?

A: Modern systems meet the most stringent noise and emissions standards in the world and make good neighbors. There are many examples of attractive installations in urban settings. The plants can be stand-alone energy facilities or can be located within buildings themselves.