

**Fairfax County Energy Task Force Meeting Notes  
February 24, 2011**

**Welcome and Introduction (Chairman Sharon Bulova, Leo Schefer, Mark Gibb)**

- Energy efficiency makes economic sense and can position the County for sustained economic growth.
- Origins of the Task Force extend to Fairfax’s 10-year evolving work and desire to develop a sustainable energy program
- Community Energy Planning (CEP) is taking root in Northern Virginia. The CEP process has resulted in two approved plans (Loudoun and Arlington) and is informed by the transferable philosophies underpinning energy policies in European cities such as Stuttgart and Copenhagen
- NVRC is organizing a regional energy task force to coordinate CEP efforts across Northern Virginia

**Energy Efficiency and Community Energy Planning 101 (Peter Garforth)**

- 50% of the world population now lives in an urban environment.
- The world’s energy use is forecast to double over the next 40 years.
- Today the world’s energy consumption costs \$6 trillion.
- The United States annually consumes \$1.5 trillion in energy – 10% of U.S. GDP.
- When a \$1.5 trillion market restructures, there is plenty of business opportunities.
- Energy prices are unpredictable. The potential for climate change legislation creates uncertainty. Therefore, we need to plan for uncertainty.
- When a tree fell down in northwest Ohio recently, cutting power lines, it shut off 3% of the world’s Gross Domestic Product for three days.
- U.S. coal prices, with West Virginia being given as the example, are going up due to Chinese demand.
- 40% of U.S. energy goes into urban structures.
- Energy efficient countries in the European Union have a 40% competitive advantage over the United States in energy consumption.

	US to EU
Industry	1.2 to 1
Buildings	2.5 to 1
Transportation	1.4 to 1

- When the cultural differences are considered, the 40% difference in transportation energy is “not as big as people think”.
- Buildings are the big opportunity.
- 70% of the electricity generated in the United States is consumed by buildings.
- Over 50% of electrical energy in the United States is wasted, but paid for. How can we bring some of the waste into the usable environment? U.S. electrical providers supply highly efficient, low-cost electricity, so the waste is not a criticism of utility companies.
- A community energy plan should address the pattern of energy use.
- By the time the consumer gets electricity to heat a cup of coffee, only 5% of the calorific value of the fuel used to generate the electricity is actually used to heat the coffee, i.e. the end

user only gets 5% to 10% of the calorific value of the fuel used to generate electricity. A good energy plan could double or triple this.

- CO<sub>2</sub> production is a reasonable surrogate for energy efficiency. It's not perfect, but it is a good surrogate. Greenhouse Indicators (metric tons CO<sub>2</sub> per capita):
  - Canada 22.6 tons
  - US 21.7 tons
  - Denmark 14.1 tons
  - Arlington County 14.6 tons with 4.5-ton goal
  - Guelph, Ontario 14.2 tons with 6.0-ton goal
  - Copenhagen 3.0 tons with a zero goal
- Every locality is different. The details of one locality's energy efficiency success may not transfer to another locality, but the *philosophy does transfer*.
- The 1973 oil crisis had a devastating effect on Copenhagen, as their electricity generation was oil-fired. Today, nearly 40 years later, Copenhagen has the most energy efficient buildings on the planet. They use waste heat, mostly from electricity generation, on a neighborhood basis.
- As a result of the Copenhagen initiative, Denmark is now home to a number of the world's leading suppliers of energy efficient systems.
- After the 1973 crisis, Copenhagen citizens were told to take no more than one shower a week, to ride a bike or take transit in order to conserve energy. This would not be acceptable in the United States.
- Community energy plans do not have to be culturally limiting. To take the Copenhagen shower example, in Berlin and Shanghai today, you can leave the shower on all day, yet use less energy than is consumed by one shower in the United States.
- The Danes also have significant electric power generation from wind turbines along the coast, and import hydroelectric power from Norway. The key, however, is still the efficient use of the electrical energy generated.
- Application of community energy concepts are required to get "breakthrough" reductions in energy consumption.
- Some key philosophies for energy saving:
  - If you don't need it, don't use it.
  - Reuse waste heat, whether from electrical generation, or a data center, or anything else.
  - Use renewable energy **if** it makes economic sense.
- For breakthrough levels of energy reduction, one needs to look beyond the individual building to neighborhoods, i.e. scale plans. Locally, there are many extremely good examples of individual energy efficient buildings. The need now is to scale up and look at energy efficiency on the basis of a neighborhood.
- As we're building for 100 years, it's important to implement scale projects early to achieve a competitive advantage for a region's energy consumption.

### Points from the Discussion

- 1) Copenhagen: After the 1973 energy crisis, the city sought ways to make itself energy independent. There was natural skepticism, so they began with:
  - a) Small scale projects.
  - b) Projects based on proven solutions.

This philosophy enabled Copenhagen's leaders to demonstrate the feasibility of their energy plan in order to gain widespread support.

The Copenhagen philosophy is transferable across cultures, but the detail of their approach would not be transferable to Northern Virginia. An example: Citizens were asked to take no more than one shower a week until their crisis was resolved.

- 2) Nuclear Power: 35% to 40% of Virginia's electricity is generated from nuclear power. How does that play into Fairfax County's energy initiative? The key, as with other fuels, is to use the nuclear generation efficiently.
- 3) A number of the potential Arlington-scaled projects are on the Fairfax County line. Most of these Arlington projects are retrofits. Most are part of a broader set of initiatives under the County CEP.
- 4) Popular Feelings vs. Analysis: Without a catalytic event like Copenhagen's, how do you produce interest and support among the county population? Today we have uncertainty over fuel prices and energy supply. This provides a trigger given leadership the economic concern is the catalyst that can drive the policy. Everyone is concerned about price.

In looking for examples that can demonstrate the economic benefits, it helps to have real estate of sufficient scale under the control of one company. Crystal City, for example, is due for renovation, and is 50% owned by one company. That company is in a position to get going, if it so wishes.

Tyson's Corner provides similar opportunities. Springfield also is ripe for redevelopment in the near future.

- 5) Northern Virginia is in a position to be the pivotal leader on energy efficiency within the United States. For marketing and economic development, this could give the region a social and economic competitive advantage. However, Arlington and Loudoun have set different goals. How can individual locality efforts be combined into a marketable whole? Short answer: That's why we have the Northern Virginia Regional Commission! They can bring the localities together in common purpose while recognizing that each is different, and therefore, require different goals within a Northern Virginia framework.

The regional approach is particularly important in a practical sense to utility suppliers and expanding companies.

- 6) Waste Energy: Most of Northern Virginia's electricity is generated at power plants remote from the region. The volume of remote generation likely will continue to grow as the populous is expected to grow based on current plans. The transmission loss "in the wires" is 3% to 5%. The major waste comes from the way our energy generation system is structured. As the generation is remote from people (by the people's desire), waste heat at the power station cannot be reused.
- 7) The typical end user does not care about the environment. They do care about cost. But, not all end users are the same. Triage is necessary to sort out the incentives for each group of attitudes so that projects can be selected with the most probability of popular success. *Bottom line, however, is that any project has to be cost effective and provide a return on its investment.*

Real estate research shows a convergence between a growing desire to live in communities that are not so auto dependent and the type of scaled community necessary for an energy efficiency gain. Among the development community, the smart money is on transit oriented development, not McMansions.

- 8) In the leading energy efficient European countries, high fuel taxes drive transportation decisions, but those taxes do not apply to the energy used to heat and cool buildings.
- 9) At Tysons Corner, Fairfax County is building a major new United States city from the ground up. City building on this scale has rarely, if ever, happened before in a compressed timescale. Cities normally take hundreds of years to evolve. Potentially, this provides manufacturers on the cutting edge of energy efficient systems with an attractive demonstration project with which to enter the U.S. market. To date, American companies in this field have had to use foreign projects.
- 10) NOVEC noted that utilities look for ways to reduce the energy needs of their customers. In particular, utilities or other organizations can provide a wealth of data for consumers to turn into knowledge that will enable them to better manage their energy decisions.
- 11) Should the Energy Task Force set goals? A practical goal to which progress can be measured is strongly recommended. To be meaningful, it needs to be a "breakthrough goal".

**Discussion on a goal should be added to the syllabus.**

#### Who should we add to our group?

Senior executives from Noblis, Northrop Grumman, SAIC, Enviro Solutions – companies on the cutting edge of energy efficient systems are part of the Energy Task Force, as are the CIT and the Smart Energy Committee of NVTC; CTB member Douglas Koelemay represents VDOT; the small business community is represented through the Fairfax Chamber and NVTC; Dewberry, Davis Carter Scott, and a number of innovative developers are on the Energy Task Force, which covers contractors and consultants who understand what's feasible in terms of high energy efficiency, heating ventilation and air conditioning systems; GSA and the Fairfax Water Board are being considered; Data centers are represented by John Lee of Lee Technologies; NAIOP's Martha Marks was invited and Jon Peterson can also represent NAIOP.