



City of Glendale Council Sustainability Committee Minutes

June 15, 2010

10:30 a.m. to 11:30 a.m.

Council Chambers Conference Room B-2

Attendees

Council Sustainability Committee Members:

Present were Councilmember/Chairperson David Goulet (Ocotillo District), Councilmember Steve Frate (Sahuaro District)

Absent:

Councilmember Yvonne Knaack (Barrel District)

City Staff Members:

Ken Reedy, Deborah Mazoyer, Roger Bailey, Becky Benna, Larry Broyles, Jon Froke, Karen Flores, Doug Kukino, Jo Miller, Pam Wertz, Quinn Fortier, Bob Manginell, and Marilyn Clark.

Approval of Minutes

Chairperson Goulet called for a motion to approve the minutes for the April 20, 2010 Council Sustainability meeting. Councilmember Frate made a motion to approve. The motion was seconded by Chairperson Goulet. The minutes of the April 20, 2010 Council Sustainability Committee Meeting were approved as written.

Renewable Energy

Quinn Fortier, Electrical Plans Examiner from Building Safety presented this agenda item, which outlined the cost and use of different types of renewable energy and energy efficiency products for residential and commercial customers.

The first type of renewable energy explored was the solar hot water system. Mr. Fortier described the difference in techniques used by active and passive solar water heaters, stating an active system uses a mechanical device pump to circulate fluid, and a passive system, which has no pump, uses a natural convection to circulate fluid. He stated approximately 15% of a residential energy bill is for heating water. According to the Salt River Project web site, the typical cost of installing a solar water heating system is approximately \$5,000. He stated Salt

River Project offers a solar incentive of \$1,300 to residential customers. After applying the Arizona Tax Credit of \$1,000 and the Federal Tax Credit of \$1,110, the net cost is \$1,590. The estimated annual savings would be \$234, with a simple payback of seven years.

The next renewable energy source was a photovoltaic system, which uses a solar panel to convert sunlight to electric power. Per the Salt River Project web site, a typical five kilowatt system comes with an installation cost of \$35,000. After applying the Salt River Project incentive of \$10,750, the Arizona Tax Credit of \$1,000, and the Federal Tax Credit of \$7,275, the net cost is \$15,975. The estimated annual savings for this system would be \$720, with a simple payback of 22 years.

From 2008 to 2009, there has been a 1000% increase in solar water heater projects and an 800% increase in submittals for photovoltaic projects in Glendale. As of June 2010, Glendale has had 83 residential and two commercial solar water heater projects, and 64 residential and three commercial photovoltaic projects.

Photovoltaic inverters are also available for commercial use. These inverters can range from 30 to 500 kilowatts. Deer Valley High School has the largest commercial rooftop photovoltaic system on a K-12 school in the nation, with over one megawatts of energy produced. The system consists of 4,484 solar panels. In the first quarter of 2010, it produced 307,785 kilowatt-hours of electricity at 11 cents per Kilowatts, which is \$33,856 in savings. The photovoltaic system located on the IRS building on Camino San Xavier in Glendale operates at 85 kilowatts.

Another new technology is the Enphase Microinverter, which shifts DC to AC conversion from a large, centralized inverter to a compact unit attached directly to each solar module in a power system. Distributing the conversion process to each module makes the entire solar power system more productive, and has a longer life span than traditional inverter systems. Mr. Fortier stated that the disadvantage of the Enphase Microinverter is the initial cost involved.

Next, Mr. Fortier explained the technology of thin film cells. This type of renewable energy uses extremely thin layers of semiconductor material. Thin film cells require less energy to make and can be fabricated by a variety of processes. Because of this, they provide a promising path for providing more affordable solar cells for residential use. Because of their light weight, they are suitable in special architectural uses, such as photovoltaic roof shingles. Thin film cells are not typically used in the valley on roof shingle systems due to wind speeds. They have been tested with winds up to 80 miles per hour, with the design standard being 90 miles per hour.

The latest technology is the Photovoltaic Thermal Solar co-generation panels. This technology offers both, water heating and electrical production. The water flows past the solar cells cooling them down, which in turn, causes higher output of electrical production. The costs involved are approximately 25 percent more than a typical photovoltaic system; however, the manufacturer claims the panels are three times more efficient.

There are several things the customer should consider before deciding on any photovoltaic system, such as how long an inverter will last, the cost of additional insurance premiums, what happens if the roof needs replacing, what is the payback time, how quickly will the technology change, and what, if any, installation or hazardous items you should be aware of.

Another technology of renewable energy called biogas is use at the Glendale Energy Power Plant, located at the City of Glendale's Municipal Landfill. This process started on line in January 2010. The biogas generator produces 2.8 megawatts of power, which runs mainly on methane gas produced from the landfill. This is the first biogas project in Arizona Public Service's 245-megawatt renewable energy portfolio. All of the energy produced at the Glendale landfill is sent to APS customers.

Mr. Fortier compared the costs and savings in power consumption with several different types of old and inefficient light bulbs with energy efficiency light bulbs. A compact fluorescent light bulb would give you approximately 50 to 70 percent more savings in power consumption over a standard incandescent light bulb.

Mr. Fortier talked about the differences between the 100% electric vehicles and hybrid vehicles that are available today. He stated the Federal Government granted close to 100 million dollars to the Phoenix & Tucson metro areas to study the feasibility and practicality of an all battery electric vehicle, and to develop and install the new charging station infrastructures. Stations will be installed at malls, parking garages, coffee shops, and destinations where people are expected to stay a few hours. The two-year test study will start in December 2010, which is the release date for the Nissan Leaf. There will be 900 vehicles in the Arizona market for the study. Mr. Fortier discussed the differences in charging times for residential chargers compared to commercial chargers.

The Nissan Leaf is a 100% battery operated electric vehicle with a 100-mile battery range that can travel up to 90 miles per hour. The estimated charge cost is \$2.75 at \$0.11 kilowatt-hours. The Leaf is a five-passenger five-door vehicle, which carries a manufacturer's suggested retail price of \$32,780. The Leaf also comes with a \$7,500 tax savings incentive, so the total cost to the consumer would be \$25,280.

The Chevy Volt is a plug in hybrid electric vehicle that has a 40-mile battery range with an on-board gas engine designed to extend the range of the vehicle hundreds of miles. The Chevy Volt has a top speed of 100 miles per hour and can go from zero to 60 in nine seconds. The cost not released yet, comes with a federal tax savings of \$7,500.

The committee engaged in several discussions throughout the presentation, and as this was for information purposes only, no action was required by staff. Chairperson Goulet complimented Mr. Fortier on his presentation and thanked him for this time.

Staff Updates

Chairperson Goulet shared information on a presentation he attended with the Strata International Group. He was very impressed with the firm's green building technology and asked that staff meet with the group for possible consideration at a future Committee meeting.

As there was no further business, the meeting was adjourned at approximately 11:15 a.m.

NEXT MEETING: August 17, 2010
 10:30 a.m. to 11:30 a.m.
 Council Chambers Conference Room B-2

TOPIC: Waste Management & Recycling

Respectfully submitted,



Marilyn Clark