Currents

1937 70th Anniversary 2007

Your Link to Sussex Rural Electric Cooperative

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High Voltage. . .

Handling The Load...

When your house was first built, we built our lines and facilities to handle the amount of electrical load that the house would impose upon our system. In this process, we looked at the heating and cooling systems to be used, the size of the house and any ancillary loads like swimming pools and spas. With this information we installed transformers and wires sized to safely carry your load with some room to spare. Properly sized distribution facilities provide you with the best quality electric service possible.

Over time, the nature of your home may change. For instance, you may add central air conditioning or several room units. You might install a swimming pool, spa or put on an addition. Any time you make a significant improvement to your home, please let us know so we can make sure this new load will be properly handled by our existing system. If your new load exceeds the capacity of our existing facilities we will make the necessary changes to ensure that you continue to receive the best quality electric service possible.

Be sure to include us in your home improvement projects when they involve new electric load. When should you call? Calls are generally made for any major additions, for the installation of a pool, adding central air conditioning or installing more than two window air conditioning units. We'll work together to keep your service the best it can be. Contact our Engineering Department at 973-875-5101 x121.

Commentary by the President & CEO

Energy Efficiency In Construction

Take a ride through our county and you'll see a wealth of new home construction. People are anxious to join us in our comfortable and bucolic lifestyle. Maybe you are in the market for a new home yourself. Or, perhaps you are considering an addition to your current home. Anytime you find yourself involved with new construction, you need to look for some key features to ensure your new home or addition is as energy efficient as possible. What are they? Read on...

Your first line of defense in energy efficiency is the shell of your home. This shell consists of layers: the framing, insulation, house wrap, interior surfacing and exterior siding. Taken as a whole, the shell should have as few penetrations as practical and those penetrations should be effectively sealed against leaks.

The drawing to the right illustrates the walls of the shell. At a minimum, your exterior walls should be built using 2" x 6" lumber with 6" of properly installed insulation and a properly applied house wrap like Tyvek. Properly applied insulation means installed with minimal compaction and minimal gaps. Compacting insulation reduces its insulating capability.

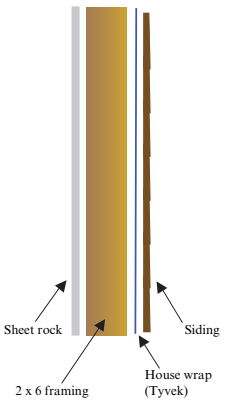
Where windows and doors penetrate the shell, a common practice is to stuff insulation into any cracks or gaps. This is essentially worthless (see compaction note above). Sealing with expanding foam is far more effective. The house wrap should fit tightly under the exterior frames of windows and doors to minimize leaks.

Where electric outlets and switches are cut in, apply foam gaskets to eliminate drafts (this is something you will need to do). Expanding foam is sometimes used for this but I personally avoid it because of the mess it creates for future repair work. Another culprit is the dryer connection. Be sure the hose and fittings are sealed wherever they penetrate a floor or wall and that the outside vent has a flap that closes when the dryer is off.

Roof assemblies are similar to walls. Here the lumber sizes are determined more by snow and wind loading and other structural factors. Insulation may consist of batts or blown in products. Batts are neater and allow for easier use of attic spaces but if installed under flooring, remember to avoid compression.

The next area of concern is doors and windows. These are the major penetrations in your building shell. For windows, look for low emissivity (or low-e) windows with flanges on the outside that overlap the structure and create a better seal. Low-e windows have special coatings on them to reduce energy transfer, both into and out of your home. Also look for insulated doors wherever practical and aesthetically acceptable. This is especially true for garages and basement doors. While the overall insulation values will be less than that of the wall, go for the highest levels possible. The doors and windows should be properly sealed and weather stripped to eliminate or at least slow down leaks and drafts.

Finally, be aware of ductwork and how it is constructed. Ductwork consists of two types of material, sheet metal for the trunks and flexible duct for the branches to the diffusers. Most ductwork will be in unconditioned spaces. This ductwork should be insulated completely (or constructed of ductboard) and all joints in sheet metal ducts should be sealed with mastic (or special mastic tape) not duct tape. Duct tape dries out over time and looses its seal allowing conditioned air to leak out.



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A Bright Future for Residential LEDs?

The semiconductor diodes known as Light Emitting Diodes (LEDs) are superior to incandescent and fluorescent bulbs in that they are less fragile, more efficient, and last longer. Current applications include flashlights, traffic lights, railroad crossing signals, exit signs, and remote controls.

The use of LEDs in residential settings, however, is not commonplace beyond decorative applications. This is likely due to their relatively high cost and the fact that LEDS have lacked the lumens per watt necessary for sufficient residential "white" lighting in the past. However, the technology appears to be moving in this direction at a steady pace.

Options

Michael Schwartz, product manager for new product development at OptiLED, Henderson, Nev., says, "LEDs have not been bright enough for track lighting, for example, but this is coming in the near future." Recent testing by OptiLED has achieved improved brightness of LEDs, but, Schwartz says, "We are not at the level necessary to light up a room." Instead, these LEDs have niche residential applications such as accent or ambient lighting.

Paul Thieken, director of marketing for solid-state lighting at CREE, Durham, N.C., understands the situation. He says, "Our new XLamp(r) 7090 XR-E Series is rated at 70 lumens per watt, and is on par with the efficacy of some fluorescent bulbs." Thieken says the XLamp(r) lights will be most economically viable for outdoor lighting and indoor architectural or "sconce" lighting in the near term. Down the road, they could move into the general residential space.

"The mass market is a couple of years beyond outdoor applications. Then we'll see LEDs being used in a wide range of residential applications," he says.

Thieken also points out that LEDs have several niche applications. For one, lights in hard-to-reach places are good candidates for LEDs due to their longevity (LEDs can last nearly 100,000 hours). LEDs have a clear advantage where vibrations are a concern (ceiling fans, garage doors), because there is no filament to break. LEDs can also better tolerate the cold environment of a refrigerator compared to fluorescent bulbs, which experience reduced efficiency at low temperatures.

Efficiency and Disposal Benefits May Spur Demand

The commercialization of LEDs for residential applications can get some help from various policies. California's Title 24 specifies energy efficiency standards for residential and nonresidential buildings, and LEDs clearly fall into that efficiency category. For example, an incandescent floodlight may consume 65 watts, while the LED version is capable of providing the same lighting with a consumption of just 11 watts.

In addition, California-mandated standards for generators of hazardous waste is a law known as Title 22. Because fluorescent lights contain mercury and LEDs do not, LEDs are one way to increase compliance with Title 22. "Both Title 22 and 24 are LED drivers in California," says Thieken.

CREE LED XLamp.

Source: CREE

Conclusion

Vendors of LEDs are aggressively pursuing a prototype that can provide the level of brightness appropriate for general residential use at the right price. In the meantime, LEDs continue to improve and are making their way into certain residential applications. OptiLED's Schwartz says, "The beauty of these products is that they are universal. They can be run on AC and DC and both at 120V and 240V." This universal aspect may prove to be a driver of LED development as well.

Contributor

Brad Spear

The table below is from *www.ccrane.com.* It gives you an excellent lifetime cost comparison. Remember, when compact florescent lights were first introduced, they faced a similar cost barrier and are now quite competitive.

Life Span & Energy Consumption Benefits of LED Light Bulbs vs. Incandescent Light Bulbs	**Incandescent 60 Watt Light Bulb**	**CC Vivid 2 Watt LED Light Bulb**
Life Span How long will the light bulb last?	1,000 hours	Up to 60,000 hours
Number of bulbs used over 60,000 hour period	60	1
Bulb Cost Per 60,000 hours	$40.20 (60 bulbs at 67¢ each)	$34.95
Electricity Usage kWh of electricity used over 60,000 hours	3600 kWh	120 kWh
Cost of Electricity 60,000 hours at 10¢ per kWh	$360.00	$12.00
Total Cost After 60,000 hours	**$400.20**	**$46.95**

Did you know...

The Westminster Dog show predates the electric light bulb with the first show running in 1877 featuring 65 breeds. Thomas Edison invented the first light bulb practical for home use in 1879. After one and a half years of work, success was achieved when an incandescent lamp with a filament of carbonized sewing thread burned for thirteen and a half hours.

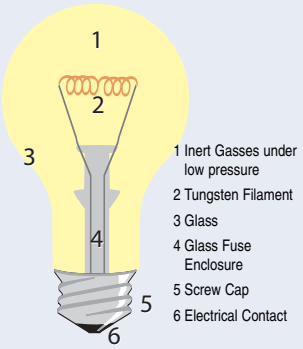
Edison's eventual achievement was inventing not just an incandescent electric light, but also an electric lighting system that contained all the elements necessary to make the incandescent light practical, safe, and economical. Edison actually had to invent a total of seven system elements that were critical to the practical application of electric lights as an alternative to the gas lights that were prevalent in that day.

These were the development of:

1. the parallel circuit,
2. a durable light bulb,
3. an improved dynamo,
4. the underground conductor network,
5. the devices for maintaining constant voltage,
6. safety fuses and insulating materials, and
7. light sockets with on-off switches.

The first public demonstration of the Thomas Edison's incandescent lighting system was in December 1879, when the Menlo Park laboratory complex was electrically lighted.

On September 4, 1882, the first commercial power station, located on Pearl Street in lower Manhattan, went into operation providing light and electricity power to customers in a one square mile area. Initially the Pearl Street utility served 59 customers for about 24 cents per kilowatt hour. In the late 1880s, power demand for electric motors brought the industry from mainly nighttime lighting to 24-hour service and dramatically raised electricity demand for transportation and industry needs. By the end of the 1880s, small central stations dotted many U.S. cities; each was limited to a few blocks area because of transmission inefficiencies of direct current (dc).



Parts of a Light Bulb

1809 - Humphry Davy, an English chemist, invented the first electric light. Davy connected two wires to a battery and attached a charcoal strip between the other ends of the wires. The charged carbon glowed making the first arc lamp.

1820 - Warren De la Rue enclosed a platinum coil in an evacuated tube and passed an electric current through it. His lamp design worked but the cost of the precious metal platinum made this an impossible invention for wide-spread use.

1835 - James Bowman Lindsay demonstrated constant electric lighting system using a prototype lightbulb.

1850 - Edward Shepard invented an electrical incandescent arc lamp using a charcoal filament. Joseph Wilson Swan started working with carbonized paper filaments the same year.

1854 - Henricg Globel, a German watchmaker, invented the first true lightbulb. He used a carbonized bamboo filament placed inside a glass bulb.

1875 - Herman Sprengel invented the mercury vacuum pump making it possible to develop a practical electric light bulb. Making a really good vacuum inside the bulb possible.

1875 - Henry Woodward and Matthew Evans patented a lightbulb.

1878 - Sir Joseph Wilson Swan (1828-1914), an English physicist, was the first person to invent a practical and longer-lasting electic lightbulb (13.5 hours). Swan used a carbon fiber filament derived from cotton.

1879 - Thomas Alva Edison invented a carbon filament that burned for forty hours. Edison placed his filament in an oxygenless bulb. (Edison evolved his designs for the lightbulb based on the 1875 patent he purchased from inventors, Henry Woodward and Matthew Evans.)

1880 - Edison continued to improve his lightbulb until it could last for over 1200 hours using a bamboo-derived filament.

1903 - Willis Whitnew invented a filament that would not make the inside of a lightbulb turn dark. It was a metal-coated carbon filament (a predecessor to the tungsten filament).

1906 - The General Electric Company was the first to patent a method of making tungsten filaments for use in incandescent light bulbs. The filaments were costly.

1910 - William David Coolidge (1873-1975) invented an improved method of making tungsten filaments. The tungsten filament outlasted all other types of filaments and Coolidge made the costs practical.

1925 - The first frosted light bulbs were produced.

1991 - Philips invented a light bulb that lasts 60,000 hours. The bulb uses magnetic induction.

Source: *http://inventors.about.com/library/inventors/bllight2.htm*
http://inventors.about.com/library/inventors/bledison.htm

News and Events

LAFAYETTE

Longaberger Basket Fundraiser - The Lafayette Preservation Foundation is conducting a Longaberger Basket fundraiser on April 20, 2007 to benefit the "Mabee House Building Fund", at the Lafayette Township School, 178 Beaver Run Road, Lafayette. Doors open at 6:00 PM. Admission is $10. No one under 18 will be admitted. For information and reservations, please call 973-383-5801.

COUNTY-WIDE

Literacy Volunteers of Sussex County: Do you know someone who needs help in using English? Whether American-born or foreign-born, our volunteer tutors can help. Tutoring is free and confidential. Call us at 973-300-9444.

Also, the Literacy Volunteers of Sussex County will demonstrate a computer program to aid in English skills, which is now available at three Sussex County libraries. Demonstrations at 10-11 AM in: Main Library (Frankford) 3/21, Louise Childs Branch (Stanhope) 3/27, and Sussex-Wantage 3/30.

MONROE, NY

Mustang Club of Orange County and Monroe Ford present the 1st Annual Mustang and Ford Spring Round-Up. Food, DJ, Raffle, 50/50

Open to all Ford / Lincoln / Mercury vehicles. Registration $12 ($8 if by May 5th). Spectators Free.

Saturday, May 12 - 9:00 AM - 4:00 PM. Monroe Ford, Route 17M, Monroe, NY.

Rain Date: May 19

Contact Steve Motola (973) 809-4052, Bob Martin (845) 597-7184 or Joe Rementer (845) 346-5312 for more information. ❑

Energy Efficiency

Continued from page 1

Of course, you need to insist on energy efficient appliances, lighting and HVAC systems but that is a topic for another time. If you are able to implement these measures you will enjoy a home that is less expensive to operate and is more comfortable. Who wouldn't want a result like that?

One word of caution. If you are looking at a home that is already completed, a lot of the measures noted will be invisible. In this situation you will have to ask the builder about his / her methods and it's up to you as to how much stock you feel you can put in their answers. If possible, visit with people who have a home built by your builder or ask to see one currently under construction.

Here's a handy checklist for you home shopping pleasure:

- ❑ 2" x 6" exterior wall construction
- ❑ Proper insulation application with minimal compression
- ❑ Proper house wrap installation that minimizes gaps
- ❑ Skillful installation of electric outlets, light switches, dryer vents, plumbing, etc. that minimizes gaps or seals gaps properly.
- ❑ Low-e windows, gaps caulked or sealed with foam
- ❑ Insulated doors, weather stripped and gaps sealed
- ❑ Mastic (or mastic tape) sealed main ductwork and connections
- ❑ All exposed ductwork insulated (or constructed of ductboard)

Insulation values as follows (as per 2006 IECC residential climate zone requirements for our area):

- ❑ R-38 Ceilings
- ❑ U-0.35 Windows
- ❑ R-19 Walls
- ❑ R-30 Floors
- ❑ R-10 Foundations

The depth of insulation required to produce a R-30 depends on the type of insulation. Blown-in fiberglass will have about R-2.25 per inch, blown-in cellulose has about R-3.5 per inch and fiberglass batt has about R-3 per inch. In case you're not sure what type you have, fiberglass insulation looks like cotton candy, while cellulose looks likes ground-up newspaper.

The thickness of the walls will pretty much dictate what level of insulation can be installed. Two-by-four walls will typically have R-13 fiberglass batt installed, while 2x6 walls will have R-19.

Investing in Your Future

Your Cooperative has been making a significant investment in metering technology to bring new capabilities and cost savings to our Members. The installation of our automated meter reading (AMR) system (2002 - 2005) was our first effort in this regard. Our current effort involves installing modules that integrate with the AMR devices and allow us to remotely connect and disconnect service from our office. We frequently need to take such action due to a change in home ownership, tenants moving, seasonal home use and delinquent account actions. This new technology allows us to eliminate the need to send an employee to perform these services and which dramatically improves our response time and saves money as a result.

In those situations where the disconnect action is due to non-payment, the Cooperative will ***no longer notify Members with a tag at their house.*** Again, this results in a cost savings for the Cooperative that benefits the entire Membership. This change in procedure makes it imperative that our Members keep their phone number current with us as this will be our means of notification should a delinquent status or payment error create an order to interrupt service. If you have recently changed your phone number, please contact our office and let us know of the change.

Over the next few weeks, our employees will be in the field installing a number of these devices. Should one be installed on your house, you will experience a temporary outage of approximately ten minutes. Following installation, you will not notice any difference in your service.

Please contact the office if you have any additional questions.

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Your Touchstone Energy® Cooperative
The power of human connections

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