

### **Panel Members:**

Our official panel included Jim and Dave Losee of Montana Homeworks, Vicki Judd of Northwestern Energy, Don Newton of Flathead Electric Co-op, and Jeff Salois of Sliters.

Several others contributed from in the audience: Lee Chapman of Big Sky Sheet Metal (Heating and AC), Brent King (Thermal Imaging), David Bopp of Harvest Moon Rating and Design, and Kim DeWitt of NW Montana Human Resources Energy Programs.

### **Residential Insulation**

Most insulation is synthetic, made from petroleum, but a soy-based product is available, which doesn't out-gas. But a soy-based product would not necessarily have a lower footprint than petroleum-based products, because the production of fertilizers, herbicides and insecticides used to grow the soy, is petro-energy dependent. Other "natural" and "green" options include cotton, sheep wool, cellulose.

Jeff provided pricing for various types and grades of insulation at Sliters.

Basements: Jeffrey Funk used blue foam to insulate his basement. He exposed the foundation three feet below ground and wrapped it with blue foam. "Works great."

### **Reducing Carbon Footprint**

Don Newton forwarded the following contact: Paul Tschida of Montana Department of Environmental Quality, 406-841-5232, who might be able to help with carbon footprint figures for various forms of insulation.

Using historical design and building techniques may also reduce carbon footprint. Also 'green' design and construction. See 'New construction' below for more.

### **Retrofit Existing Homes**

Typically, the most effective remedies are the simplest: sealing around doors and windows, weather stripping, keeping furnace filters clean, adding storm windows (or plastic), window shades, insulating curtains. Insulate (and vent) the attic.

Sliters offers two "quick fix" options for sealing out drafts: Great Stuff (spray sealer--for mouse holes, etc.), and foam outlet seals. A less-toxic latex version is available.

Use of window/door shades and curtains can create convection cycle causing heat loss and buildup of condensation. This is especially a problem with vaulted ceilings (upper windows). How to avoid this problem? leave gap at top and bottom of window coverings to allow air to move, but this could negate the savings of using the covering in the first place. Best is to remove source of moisture.

Fans (turning counter-clockwise at low speed) are recommended for hi-pitch or A-frame ceilings to move warm air down in winter. This has little effect with flat ceilings, but fans are useful in summer for cooling, if have flat ceilings. They don't necessarily reduce fuel requirements for heating or cooling, but they can create a 'sense' of coolness in summer and warmth in winter, which allows a lower thermostat setting in winter & higher cool setting in summer, to save fuel.

## 9/24 Gathering: Panel on Home Energy Costs

Lifestyle changes to reduce energy needs include: layering clothing, replacing incandescent bulbs with low-energy bulbs such as CFL and LED

FEC offers \$1,000 rebate for air-to-air heat pump installation, or \$3,000 for geothermal. Montana offers \$500 tax credit; federal tax credit program has expired. NW Montana Human Resources Energy Programs are also available.

### **New Construction & Remodeling**

'Green' considerations: building into a hillside, landscaping and siting of structure for shade and light; constructing thicker walls, lath and plaster, etc..

Refer to green building codes.

### **Source of Electricity in Flathead**

All electric power comes from Bonneville (BPA); mostly hydropower, with a bit of wind, methane and nuclear. FEC plans to add methane (from our landfill) in near future.

FEC provides interesting graph. Indicates after year 2011, BPA will no longer meet our needs; FEC will purchase non-federal power and encourage conservation. Examples of non-federal power include net-metering.

### **Comparison of Various Methods of Heating/Cooling**

FEC provided a useful chart comparing various heating/cooling methods, for percent efficiency, fuel consumption, fuel cost, cost per million BTU and typical annualized home heating cost for various square footage structures (1200 -3200 sq ft.)

Heat exchangers both heat and cool. Air-to-air heat exchange (heat pumps) provide 200% efficiency (compared to electric at 100%); ground- or water-source heat exchange (geo-thermal systems) provide 350% efficiency and also hot water, but are the most costly to install.

In our climate, air-to-air heat pumps work with a regular furnace. The heat pump extracts and concentrates heat from the outside air, even when temperatures are as low as 14 degrees F. At temperatures lower than that, the furnace kicks in to provide heat. Thus the heat pump provides heat 80 - 85% of the time. Ground or water source systems do not require second source of heat.

Contacts:

- Lee Chapman of Big Sky Sheet Metal for air-to-air systems, 837-1072
- Jay Stetson of Water Well Drilling, for geothermal well drilling, Cell 261-6344.
- EComfort of Kalispell ([www.ecomfortsystem.com](http://www.ecomfortsystem.com)) carries a geo-thermal system called Water-Furnace ([waterfurnace.com](http://waterfurnace.com)), 755-6169; [kevin@tikkaplumbing.com](mailto:kevin@tikkaplumbing.com).

Remember: a highly efficient heat system is only as good as your home's insulation and sealing.