

# Kitchen Remodel Saves Money, Energy



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**In most homes**, the kitchen area consumes the most energy after the utility room. Water usage, both hot and cold, is also quite substantial in the kitchen. Creating an efficient kitchen does not require any sacrifices and can actually make it more convenient to use.

The four primary components to an efficient kitchen are design, appliance selection, appliance usage and general efficiency habits. If you are not going to completely remodel a kitchen, you can still incorporate some of the same concepts to help manage energy use.

Start with the kitchen design layout and relative location of major workstations. The most accepted kitchen design utilizes the concept of a “kitchen triangle.” The goal is to have not more than eight feet between the center of any two of the range, refrigerator and sink.

These appliances should also be located in a fairly even triangle for the most convenient use. Increased convenience results in less time in the kitchen, less lighting, less hot water running down the drain and more efficient cooking. Also consider the traffic patterns through your kitchen so you are not trying to dodge children as you are cooking or cleaning. Fifteen inches of free work space around appliances is usually adequate.

Refrigerator/freezers require adequate air flow through the condenser coils to operate efficiently. Often the refrigerator is tucked tightly against a wall or under cabinets. This saves floor space, but it is best to locate it with more clearance to accommodate air flow patterns. Also avoid locating the refrigerator in direct sunlight.

The range, whether gas or electric, can be located almost anywhere to create the desired kitchen triangle. If you use natural ventilation from windows during summer, avoid locating the range near a window. A breeze from the window can carry away heat from the electric elements or gas burners and the cooking utensils. This increases cooking times, wastes energy and makes the rest of your kitchen uncomfortably warm.

Locate movable cabinets on outside walls if possible to create an additional thermal buffer from a cold wall. Since the kitchen temperature fluctuates more than other rooms, install a thermostatically controlled ceiling fan with a built-in heater. Insulated window shades also save energy and improve comfort.

Once you have your kitchen layout completed, you must

select energy-efficient major appliances, which are the refrigerator, dishwasher and range. Of these, the refrigerator is most important because it is operating 24 hours each day. All refrigerators have an energy label showing the amount of electricity they use.

There are some general guidelines for selecting a refrigerator. Although a side-by-side model may be the most convenient to use, it is the least efficient design because of the extra door gasket length. Models with the freezer on the bottom are the most efficient with top-freezer models not far behind. Also smaller is better than larger, so give some thought to how many cubic feet your family actually needs.

Depending on the size of your family and how many loads of dishes you do, the dishwasher can be a significant energy consumer. Select a model that has its own preheater so you can set the main water heater tank thermostat lower. Designs that have two small internal pumps instead of one large reversing pump generally consume less water. Dishwasher energy labels have two operating cost figures – one for a gas and one for an electric water heater.

There are no energy labels on ranges to guide your decision. There are some differences in the cooktop element technologies that effect how fast they heat a pot of water and the precision of temperature control. Induction elements provide the most precise temperature control on an electric range. Select an oven with convection option. The convection feature circulates the air to reduce roasting and baking times.

**The four primary components to an efficient kitchen are design, appliance selection, appliance usage and general efficiency habits.**

Once you have your appliances and your kitchen is complete, use them in an efficient manner. Check temperatures in the refrigerator and freezer portions. They should be about 40 degrees and 0 degrees, respectively. If they are colder, it wastes electricity and if they are warmer, foods don't stay fresh. Periodically clean dust off the condenser coils so they transfer heat efficiently. Switch off the condensation-reducing door seal heating elements.

Use your dishwasher only for full loads. If it has an automatic sensor to determine the best wash cycle, use it. For just a few dishes, wash them by hand. During winter, leave the hot soapy water in the sink until it cools. Cover pots when you are boiling water and use small countertop ovens and appliances instead of the range oven whenever possible.

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## Basin Electric Ranks Sixth in Renewable Energy Sales

The U.S. Department of Energy's National Renewable Energy Laboratory (NREL) released its annual ranking of leading utility green power programs in April. Basin Electric Power Cooperative in Bismarck, N.D., made the "Top 10" again for 2006 in the category of Green Pricing Program Renewable Energy Sales.

In 2005, Basin Electric was ranked eighth for its sale of wind resources, but in 2006 the cooperative ranked sixth with wind resource sales of 217,427,000 kilowatt hours/year.

According to Jeremy Woeste, Basin Electric member marketing coordinator, the cooperative's PrairieWinds® green energy pricing program was established in 2001 and sales of the Renewable Energy Credits (RECs) or green tags associated with wind energy production have progressively increased every year since then. "Basin Electric is continuing to work to establish and promote additional renewable resources."

Each year, NREL uses information provided by each utility to create "Top 10" rankings in the following categories: total sales of renewable energy to program participants, total number of customer participants, customer participation rate and the lowest price premium charged for a green pricing service using new renewable resources.

The top 10 utilities ranked by renewable energy sales were Austin (Texas) Energy, followed by Portland General Electric, Florida Power & Light, PacifiCorp, Xcel Energy, Basin Electric Power Cooperative, Sacramento Municipal Utility District, National Grid, OG&E Electric Services and Puget Sound Energy.

NREL is the U.S. Department of Energy's primary national laboratory for renewable energy and energy

## DOE Receives \$39.2 Million From North Dakota Company

DGC Keeps 1988 Promise To Share Revenue

Washington, D.C. – The owner of the nation's only commercial-scale coal gasification plant and largest carbon dioxide sequestration project in the world, Dakota Gasification Company (DGC), made a \$39.2-million payment to the U.S. Department of Energy, accepted by Energy Secretary Samuel Bodman on May 7.

The payment is part of a revenue-sharing agreement signed in 1988 when DGC bought the Great Plains Synfuels Plant – a coal gasification plant located near Beulah, N.D. DGC agreed to share revenue from gas sales with the Department of Energy (DOE). Revenue shared is based on a formula that takes into account natural gas prices and other economic indicators.

The payment is the seventh one made under the terms of the revenue-sharing agreement. The total amount paid to DOE to date – as part of the revenue-sharing agreements – totals \$285.2 million. When taking into consideration the tax credit given up by Basin Electric Power Cooperative, the total benefit to the federal government of selling the plant to Basin Electric is \$1.1 billion.

In 2000, the gasification plant began capturing carbon dioxide (CO<sub>2</sub>) and piping it to an oilfield in Canada. This is the largest CO<sub>2</sub> capture and sequestration project in the world – more than 10 million tons have been captured and more than 7.2 million tons have been sequestered.



Dakota Gasification Company's coal gasification plant, Great Plains Synfuels Plant, is located near Beulah, N.D.

Speakers at the presentation included Ron Harper, president of Dakota Gasification Company and CEO of Basin Electric Power Cooperative; N.D. Sen. Byron Dorgan; N.D. Sen. Kent Conrad; U.S. Rep. Earl Pomeroy; and U.S. Secretary of Energy Samuel Bodman.

In the early 1980s, DOE guaranteed a \$1.5 billion loan to the original developers of the Synfuels Plant. The developers defaulted on that loan in 1985 and DOE repaid the lenders and took control of the plant. DOE operated the plant from 1985-88, during which time the decision was made to offer the plant for sale through a bidding process.

The parent company of DGC is Basin Electric Power Cooperative, Bismarck, N.D. Basin Electric purchased the facility in 1988 in a bidding process. DGC was formed by Basin Electric to own and operate the gasification plant.

