



Enterprising Rural Families™

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This newsletter is an instrument of the *Enterprising Rural Families: Making It Work* program of the University of Wyoming Cooperative Extension Service. For further information concerning the Enterprising Rural Families program or on-line course contact information@eRuralFamilies.org or go to <http://eRuralFamilies.org/>.

TIP OF THE MONTH:

Economic Stress & Marriage

When two people marry, they bring with them their individual attitudes, values, and behaviors toward money. As a result, a common and frequent area of conflict among couples is money, and marital problems are more likely to be experienced by those who disagree about finances. Conflict among married couples is lowest when they share control over financial decisions.

Disagreements often center around level of contribution to the budget and involvement in the family finances, interest and expertise in purchasing, and who is most influential in making purchasing decisions.

Couples who employ systematic money management strategies can reduce or eliminate most areas of stress. Strategies would include proper record-keeping, goal-setting, and savings.

Disagreements over family finances has been shown to be related to the lack of family communications regarding money and money practices. **Spouses and families should hold regular and meaningful discussions about their financial situation, goals, practices, and budget.**

Based upon information from *Economic Stress and Families* by Jonathan J. Fox and Suzanne Bartholomae.

RENEWABLE ENERGY: IS IT RIGHT FOR YOUR FAMILY BUSINESS?

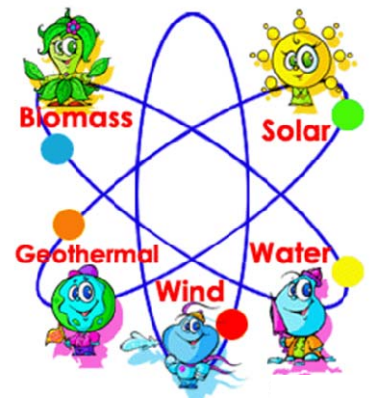
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All family businesses have at least one thing in common – they all use some form of energy, such as electricity for a computer or heat for a working space, as an input to eventually generate revenue (and hopefully profit)! The cost of energy and where it comes from is important to many businesses. Small-scale renewable energy (RE), including wind turbines, solar electric, solar thermal, geothermal heat pumps, and others, offers the chance for

family businesses to become producers of their own energy. With these systems becoming increasingly common, it is vital to understand why your business wants a RE system. Without clearly understanding your goals and expectations for the installation, small businesses can be disappointed with the performance of an often expensive investment.

What are Your Renewable Energy Options?

Before exploring why you want a RE system, it is necessary to briefly know what options are available. RE systems fall into two broad categories: those that generate electricity and those that generate thermal energy for space conditioning and water heating. Each business will have different energy requirements, and different RE systems will be better suited to individual needs. For example, a car wash may require a significant amount of hot water while a home office may principally use electricity. One important point to remember prior to installing a RE system is that *the cheapest unit of energy is not the one you produce, but the one you never use*. In short, energy efficiency improvements are typically more cost effective than a renewable energy system, so these should be completed before investing in an RE system. Once you decide if you want to focus on electricity production, thermal energy production, or both, it is time to learn about the different systems.



The table below provides a brief overview of the different types of RE systems available to Wyomingites:

System Type	Use	Selected Characteristics
Biomass	Space Heating	Generally requires regular attention to ensure fuel supply. Can range from a woodstove to more advanced boilers.
Ground Source Heat Pump	Space heating, cooling, and hot water	Also called geothermal heat pumps. Transfers energy to/from the ground; uses electricity to operate compressor and pump. Does not use high temperature geothermal resources, such as hot springs, so it is available everywhere in WY.
Solar Thermal	Hot water with limited use for space heating	Concentrates the sun's energy to supply hot water; requires roof or ground mounted southern exposure.
Solar Electric	Generate electricity	Also called photovoltaic (PV). Uses sunlight to directly generate electricity, without a conventional generator, so systems have no moving parts. Requires unobstructed southern exposure.
Wind	Generate electricity	Installation can be site specific, as a good wind resource is essential. Generally better suited for rural settings.

The above RE systems are growing more common in Wyoming, but if you want to learn more about the different RE systems, please visit the UW Cooperative Extension Service Energy website at www.wyomingrenewables.org

Why, or Why Not, Own a Renewable Energy System

There are numerous reasons that family businesses may want to install a small RE system, including:

- » Economic Considerations
 - Saving money now
 - Saving money in the future
- » Independence
 - Personal
 - National
- » Education and Community
 - Native curiosity
 - Positive publicity for the business
- » Environmental concern
 - Reducing impacts of fossil fuel consumption
 - Sustainability

The desire to reduce the cost of energy, both now and in the future, is often a primary justification for considering a RE system. Some systems, especially thermal systems, can produce energy less expensively than traditional fuel sources, especially when compared to high cost energy such as propane or electric heat. Also, as RE systems either directly or indirectly use the sun as a fuel source, future volatility in fuel prices is not a concern (assuming sunshine stays free)! In this manner, an RE system is similar to purchasing insurance against future price increases. Still, family businesses must be aware that some renewable energy systems, such as solar electric (photovoltaics), produce energy more expensively

than provided by existing sources. Also, as a small-scale RE system can be thought of as “owning rather than renting” your energy source, it does require a significant upfront capital investment, just like purchasing a home or office. In some family businesses this capital could be put to more profitable use. Therefore, you must be careful to assess the true cost of capital, and the value of price stability benefits, before simply assuming that a RE system will save your business money.

Independence is another concern for many of Wyoming’s individualistic business people. Although small-scale RE systems generally do little for national energy independence, as they typically displace domestic coal or natural gas resources as opposed to imported petroleum, they can offer a degree of personal independence. Most electricity-generating RE systems are grid-connected, meaning that you still depend on your utility when the sun is not shining or the wind is not blowing, but you can become less reliant on your utility with an RE system. (If you are willing to spend more and make a few lifestyle changes, it is possible to integrate batteries with your system and go “off-grid,” but this is generally cost-prohibitive for businesses with access to utility-provided electricity). Similarly, a solar thermal, bio-mass, or ground source heat pump system can allow you to sever your relationship with a natural gas or propane supplier. With independence comes responsibility. To continue the renting versus owning analogy, if your RE system malfunctions, it is your obligation to fix it, not your utility’s (landlord’s) duty. You must also be willing to invest time and energy into the system to perform maintenance. In sum, your energy independence will come at a cost of time and treasure!

Education and your community can be quite important to family businesses, and an RE system can be part of your involvement. As many people value the attributes of RE, it may provide positive publicity through noting your products are produced with RE or to simply have a visible system (e.g. wind or solar) on your building. These systems can also be used to educate your community about where their energy originates (hint: it is not the outlet on the wall). In addition, some family businesses are simply fascinated by the ability to produce their own energy. Many systems use intriguing technology to harvest energy, and this can appeal to the technical interest of business owners. Similarly, with excellent wind and solar resources in Wyoming, some may feel compelled to harvest the energy, as if not used it feels like “leaving hay standing in the field.” Many of these educational and community values can help to change what a “cost effective” RE system is to your business.



An example of a solar electric system at the Natrona County Cooperative Extension Office.

Finally, the environmental benefits of using RE are very important to some family businesses. If you believe that burning fossil-fuels has negative environmental impacts, such as acid rain, mercury deposition, or global warming, a RE energy system offers the chance to reduce your environmental footprint.



For example, a solar electric array will produce energy that has much lower carbon emissions than energy from a coal-fired power plant. Similarly, many family businesses value the aspects of sustainability, such as being able to pass down an environment that is as good, if not better, to their children. As RE systems use the sun as an input, you are not using exhaustible resources. By not using these resources, you will leave a bit more for future generations to use. These values can be brought into your decision concerning a cost effective RE system. For example, you may be willing to pay another 2¢ per kilowatt-hour to know that you are reducing your business's carbon footprint while leaving resources for your children.

Understanding what your family business expects from a renewable energy system, and the many RE options that are available for Wyomingites, can be a daunting experience. If you clearly acquaint yourself with the reasons why a RE system would benefit your business, or why not, you will be well-positioned to make the best possible decision. If you require more information, remember that UW Cooperative Extension Service can assist.

Please contact Milt Geiger at 307-766-3002 or mgeiger1@uwyo.edu with additional questions.

The major alternative renewable energy sources are.

- Solar
- Geothermal
- Biomass
- Water/Hydropower
- Wind

The term Alternative Renewable Energy is generally used to indicate non-traditional energy systems which do not use fossil fuels and have low environmental impact.

There are many *non*-fossil fuel based energy systems either already in use or being evolved and developed to counter the harmful effects of increasing use of fossil fuels.



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