Energy Related Findings & Recommendations

It is important to address energy issues facing building owners and tenants because energy costs are a significant portion of operating costs for most retail, running $1.50 to $2.50 per square foot for basic systems in typical stores. The larger this reoccurring cost, the less competitive and sustainable businesses are, particularly in times of economic downturn. Energy savings, on the other hand, go right to the bottom line, increasing business profitability. Sweet Home has the opportunity to upgrade and refine its energy use to its advantage during the process of downtown redevelopment.

ENERGY FINDINGS

- Many buildings in the downtown core, while structurally sound, have lighting heating and cooling systems that are inadequate and inefficient due to their age.
- Many buildings have building shells that are leaky and difficult to weatherize and were not designed for more efficient central systems, further complicating the situation for building owners.
- Outmoded fixtures, lack of circuits and limited power panels in the buildings hamper retail lighting.
- The availability of piped natural gas means that gas heat is the typical heating solution. However, many commercial buildings are using electricity for space and water heating, rather than the less expensive gas.
- Sweet Home's maritime climate means that heating and cooling requirements are lower than average, but harder to manage due to the need to frequently shift between heating and cooling.
- The modest annual percentage of sunshine means that daylighting can be a real advantage. Lighting control and design, therefore, are important for both retail and housing. Skylights, lightshelf canopies and transoms are valuable and more effective if used properly.

ENERGY RECOMMENDATIONS

<u>Topics covered in this section include:</u>

Achieving Energy Sustainability
Reducing Energy Waste
    Smart Design
    Best Technologies
Matching End-Use to Energy Source
    Space Heat
    Space Cooling
    Water Heating
Developing New Local Sources
Summary
Available Resources
    Information
    Design Assistance
    Financial Incentives

ACHIEVING ENERGY SUSTAINABILITY

Energy sustainability can have many meanings. In this context it means the energy used produces a net benefit and is not wasted.

The net impact of this approach is to reduce the energy cost drain on the community while building additional support structures within the community. In addition, energy efficiency provides numerous direct benefits, such as:

- Lower operating costs – reduced overhead means a stronger business
- Better performance – energy efficient equipment is typically higher quality
- Reliability – very low failure rates
- Productivity – increased comfort, healthiness
- Accountability – excellent real time operating data

Achieving energy sustainability is a two step process:

1) Reduce waste as much as practical.
2) Identify the best energy ***source*** to match with the energy ***use***.

An attainable goal is:

Existing and planned downtown buildings will use 30% less energy than conventional buildings.

Existing downtown buildings can meet this goal because, while they are generally structurally sound, their energy systems are old enough to justify complete replacement during remodeling. New buildings can meet this goal by being designed to higher

efficiency standards. Local merchants can be encouraged to expand their inventory of energy efficient products into a developing market, expanding the local retail base.

REDUCING ENERGY WASTE

The first step is to reduce energy waste through smart design and use of 'the best' proven technology. A unit of energy saved is a unit that doesn't have to be generated or paid for.

Smart Design – For both new construction and remodels, the following energy design elements should be incorporated to the maximum degree economically feasible.

- Daylighting – Use skylights, transoms and windows to provide natural lighting to the greatest extent it is economically feasible. While it is important these elements be carefully designed to avoid overheating and glare, studies show that areas that are day-lit produce up to 40% more sales than artificially lit areas.
- Natural cooling – Use outside air as much as practical to provide cooling. With Sweet Home's maritime climate, this usually means no mechanical cooling is required most days of the year.
- Vegetation screens – Use plants for screening against wind chill and over-heating from the sun. Plants also provide softening and attractiveness to the building site.
- Energy efficient and durable building shell materials – Avoid materials with poor insulating qualities or high maintenance finishes.
- Recycled and recyclable materials – These materials reduce the energy content of the construction, making the remodel a lower environmental impact project.

Best Technologies – The following proven, commercially available technologies should be incorporated into any remodels or new construction to the maximum level feasible.

- High efficiency lights – High efficiency lights provide more illumination for the same amount of energy - - providing a typically higher quality of light as well. With Pacific Power/ Energy Trust of Oregon programs, they cost less, too, through incentive and rebate programs.
- Non-mechanical cooling – As mentioned above, making sure that heating, ventilation and air conditioning equipment use outside air as much as possible, can save tremendous amounts of energy and money. This is commonly referred to as the "economizer cycle" by heating and cooling specialists.
- Tight, insulating building shells, doors and windows – Tight, energy efficient buildings use substantially less energy and are much more comfortable. No drafts - - meaning no cold or hot spots.
- Selective glass to control sunlight – Window glass can be treated with coatings that effect what kind of light is allowed through. For example, they can keep direct sunlight out to prevent overheating, as well as keep heat in during winter months. The coatings are customized to specific needs.
- Extensive energy control & monitoring – Nothing saves energy as quickly as something that is turned off when not needed. Good equipment controls that

assure it is off when not in use, or goes to a "sleep" mode, pay back very quickly. For larger building systems, computerized controls (referred to as Direct Digital Control, or DDC) typically pay for themselves within a matter of months.

MATCHING END-USE TO ENERGY SOURCE

To get the highest energy efficiency at the lowest cost, the job (lighting, heating, motors, etc.) needs to be matched with the best energy source for that use. For example:

Space Heat – A first step is to insulate and install double glass windows, since the cheapest unit of energy is one that doesn't have to be purchased. Next, try to capture heat from the sun through the use of properly oriented windows and skylights, since this fuel is free. Finally, use gas or electric heat pumps, with gas backup, to supply the extra energy needed. Electric resistance heat (wall heaters and/or baseboards) should be used as a last resort since it is about double the cost to operate of gas equipment or a heat pump.

Space Cooling – In addition to natural cooling discussed above, and as with space heating, installing insulation and insulated windows should be a first step. Shading of windows and skylights is a next step. If mechanical cooling is needed, a heat pump can provide efficient cooling as well as heating (as it's reversible). A standard air conditioner is simply an expensive, non-reversible heat pump and would be the last choice as it is the most expensive to operate.

Water Heating – As with space heating and cooling, the cheapest unit of energy is one that doesn't have to be purchased. Within that framework, a first step should be to install low-flow fixtures for hot water. Using solar to heat water has the lowest cost over the long term. In Sweet Home, sunlight should be able to provide ½ of hot water (primarily from Spring to Fall). The next best source is heat recovered from commercial cooking or processing, which has a typical 2 to3-year payback. Gas is the third best source to use for water heating - - with electric water heating a distant fourth at twice the cost.

DEVELOPING NEW LOCAL SOURCES

To maximize the number of energy dollars that stay in the community, Sweet Home needs to expand its offering of energy efficiency products. At present, few of the local retailers or wholesalers stock energy efficient equipment other than compact fluorescent bulbs. This is especially true for general lighting products and appliances, where the local offerings are almost exclusively the lowest cost, and therefore lowest efficiency items (even though they may cost much more to operate). The most likely reason is that the suppliers of building and electrical materials do not yet see a large enough market demand for energy efficient items. Downtown leaders can act as a catalyst to alert local retailers to this opportunity for an expanded product line and if they are unresponsive, support the development of new business that will offer these products.

SUMMARY

There is an immediate, and financially sound, opportunity to make the downtown re-development of Sweet Home a sustainable energy success story that will help strengthen the economy, deliver more comfortable, productive and long-lived buildings, insulate businesses against economic swings, keep resources within the community, and solve long standing environmental issues. The community needs to include commercial energy efficiency into the overall downtown redevelopment process in parallel with the rest of the plan. There are a number of resources available to help this occur. They are described in the next section.

AVAILABLE RESOURCES

There are three types of commercial energy conservation/efficiency assistance available: information, design assistance and financial incentives.

INFORMATION

Three excellent sources of general energy information include:

- Pacific Power– Your electric utility has many of the answers you need, and, more importantly, knows you and the community. They can also provide design assistance and steer you to incentives to help make your project work (see below). Contact them at 1-800- 222-4335. For details on their programs, log on to www.pacificpower.net.
- Energy Ideas Clearinghouse* - The Energy Ideas Clearinghouse is a service that provides quick answers, customized research, and/or technical assistance on almost any question related to building design or energy use. Contact the Clearinghouse at www.energyideas.org, or call 1-800-872-3568.
- The Oregon Office of Energy – The Oregon Office of Energy website, www.energy.state.or.us , provides abundant information on energy issues and programs of importance to Oregonians.

DESIGN ASSISTANCE

Design assistance, pertaining to increased energy efficiency, is available from a variety of sources. They include:

- BetterBricks* – BetterBricks provides building owners, architects and other business professionals with information and design assistance for the important link between energy efficiency and improved productivity. When organizations invest in a great facility, they are not just investing in the space; they are investing in an even more valuable resource – the people who will work, learn or shop there. For more information, visit the BetterBricks website at www.betterbricks.com, or call 1-888-216-5357.

- Lighting Design Lab* - The Seattle-based Lighting Design Lab promotes energy-efficient lighting in the Pacific Northwest. The Lab provides training and support for lighting designers and specifiers through use of its facilities and outreach

programs (http://www.northwestlighting.com). If the community is interested, a Retail Lighting Workshop open to commercial business and property owners, could be brought to Sweet Home at no charge. Contact the Oregon Downtown Development Association for more info.

- Pacific Power – Pacific Power will provide design assistance on specific equipment that is included in their programs. For details contact them at 1-800-222-4335. For details on their programs, log on to www.pacificpower.net.

  Not so accessible, but worth the time if you are in Seattle (or a good excuse to go there!) is:

- Future @ Work* - Future @ Work is a 3000 square-foot exhibit located in downtown Seattle. The space is a showcase for workplace design solutions that demonstrate the bottom-line benefits of energy efficient, sustainable buildings and practices. For more information, visit www.future-at-work.com, or to schedule a tour, call Amy Cortese at 1-800-411-0834 X 278.

FINANCIAL INCENTIVES

Financial incentives from the State and local electric utilities make energy efficient equipment much more competitive to purchase and much cheaper to operate in the long-run.

- The State of Oregon has two energy programs for commercial buildings, the Business Energy Tax Credit (BETC) program and an Energy Loan Program.
  - The Business Energy Tax Credit (BETC) program offers a tax credit of 35% of the incremental cost of equipment that is more efficient than code requirements or uses a renewable fuel.
  - The Energy Loan Program offers low interest loans to help pay for energy efficient and renewable energy equipment.

  For details on these and other Office of Energy programs, check the Oregon Office of Energy website at www.energy.state.or.us.

- Pacific Power offers financial incentives for retrofit of energy efficient equipment that meet their program criteria through the Energy Trust of Oregon. For details contact 1-800-222-4335. For details on their program requirements, log on to www.pacificpower.net or www.energytrust.org .

*These programs are sponsored by the Northwest Energy Efficiency Alliance, a non-profit partnership of electric utilities, state governments, public interest groups and industry representatives from Idaho, Montana, Oregon and Washington. The Alliance works to provide affordable, energy efficient products to the businesses and residents of the Northwest.