



COMMUNITY ENERGY PLANNING TOOL

A Community Energy Plan is a means for reviewing and evaluating community design options for a more efficient and sustainable use of energy. Since energy use is a component of every community project, planning for energy and resource use can help communities achieve long-term sustainability. Taking steps to conserve energy and use energy more efficiently, while also developing renewable resources, will reduce the environmental impacts of our energy use.

This is a voluntary planning tool complementary to those already in use in your community. The development of the plan follows a long-term approach. The goal of this approach is to lead your community towards a sustainable future. What that future looks like, and how it will be reached, is decided by your community, during the planning process. Through planning and strategy implementation, communities have proven they can motivate and facilitate accelerated rates of local energy conservation, efficiency, and renewable resource use.

A “community” can take many forms, but in general it is any area or group with common interests that engages its members. For planning purposes we have made distinctions between a municipality (meaning the governing body of a community, city or county) and a community (meaning the collective members of the locality). Groups may want to start at the municipal level for an initial plan, and then expand to encompass the community at large.



Developed by:

Oregon Department of Energy
625 Marion St NE, Salem, OR 97301

Phone: 503-378-4040 or 1-800-221-8035

E-mail: Karen.Chase@state.or.us or Robin.Straughan@state.or.us

Website: <http://oregon.gov/energy>

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I. Visioning

A. *Conduct facilitating visioning process with community members*

To begin the process of developing a plan, the community members will participate in a process to determine the vision of the group. The main components of the visioning include:

1. Sharing Oregon's energy situation
2. Helping community members understand their local resources
3. Discussing the project scope and funneling contrasting views into an end goal
4. Getting full commitment from community leaders

B. *Create an Epidemic* – Create an epidemic through local leadership. Find a business, government building, or residence in each neighborhood, street, city block, who is willing to lead by example. Equip them with the best-available technology to lower emissions and promote their results.

C. *Use Schools as Anchor Points* – Plan for public schools to be used as distribution points for public services and community support. Design mechanisms to cover the full costs to the schools of providing these services.

D. *Utilize Outside Resources* - International Council for Local Environmental Initiatives (ICLEI), also known as Local Governments for Sustainability, offers the Cities for Climate Protection™ (CCP) Campaign. This Campaign assists cities to adopt policies and implement quantifiable measures to reduce local greenhouse gas emissions, improve air quality, and enhance urban livability and sustainability. More than 800 local governments participate in the CCP, integrating climate change mitigation into their decision-making processes. As a member of ICLEI, you will also gain access to the CCP resources. These resources include: complete toolkits, sample local action plans, sample inventories and data collection forms, sample press releases and outreach materials, and software for measuring emissions and progress. <http://www.iclei.org>

II. Inventory

A. *Determine baseline conditions*

The first step in planning is to understand how and where energy is currently being used. The inventory is probably the most time-consuming part of developing the plan, but it is important to make sure that care is taken to collect complete and accurate information.

B. *Research and document all energy consumed*

1. For municipalities, consider energy used for vehicle fleets, buildings, outdoor lighting, water/sewer, waste disposal, and employee commutes. Data may be obtained from the municipality finance department or local utility.
2. For communities, consider energy used for residences, commercial businesses, industrial businesses, transportation, and waste disposal. Data may be obtained from the local utility.

C. *Determine greenhouse gas emissions and air pollutants*

Inventory your jurisdiction or community's greenhouse gas emissions. Gases that trap heat in the atmosphere are often called greenhouse gases. For more information on the science of climate change, please visit U. S. Environmental Protection Agency's (EPA) website: <http://www.epa.gov/climatechange/science/index.html>.

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Some greenhouse gases such as carbon dioxide occur naturally and are emitted to the atmosphere through natural processes and human activities. Other greenhouse gases are created and emitted solely through human actions. The principal greenhouse gases that enter the atmosphere because of human activities are:

- **Carbon Dioxide (CO₂):** Carbon dioxide enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and also as a result of other chemical reactions (e.g., manufacture of cement). Carbon dioxide is also removed from the atmosphere when it is absorbed by plants as part of the biological carbon cycle.
- **Methane (CH₄):** Methane is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.
- **Nitrous Oxide (N₂O):** Nitrous oxide is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.
- **Fluorinated Gases:** Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are synthetic, powerful greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances (i.e., CFCs, HCFCs, and halons). [Source: U.S. EPA website.]

An inventory is an accounting of the amounts and sources of emissions of greenhouse gases attributable to the existence and operations of an institution. A greenhouse gas inventory also provides information on the activities that cause emissions and removals, as well as background on the methods used to make the calculations. A crucial first step, completing an inventory will force a process that highlights data flow issues between agencies, and in addition, will also highlight institutional barriers to sustainability.

One inventory resource tool is software from Clean Air Climate Protection, available from ICLEI Local Governments for Sustainability. <http://www.iclei.org>. This one-stop emissions management tool tracks emissions and reductions of greenhouse gases (carbon dioxide, methane, nitrous oxide) and criteria air pollutants (carbon monoxide, volatile organic compounds, etc.) associated with electricity and fuel use and waste disposal. This tool can help to: create emissions inventories for the community as a whole or for the government's internal operations, quantify the effect of existing and proposed emissions reduction measures, predict future emissions levels, and set reduction targets and track progress towards meeting those goals.

The Clean Air and Climate Protection Software is designed to:

- Track emissions on either a supply or demand side basis.
- Build emissions scenarios for use in the planning process.
- Create a full emissions reduction plan.

The software contains thousands of emission factors that are used to calculate emissions based on simple fuel and energy use data, or by using information on waste disposal. Advanced users will appreciate the flexibility of being able to enter data in a number of different forms, utilize information collected through other inventory tools, customize emission coefficients, and create new fuel and vehicle types. <http://www.cacpsoftware.org/>

Alternately, you can use a spreadsheet method for inventorying your emissions. Multnomah County developed an electronic spreadsheet for conducting their inventory and it is available for use by other communities. Please e-mail the contacts on the front page, to request a copy of this tool.

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III. Analysis

What is the overall picture?

Take a step back and look at the whole picture of energy use and greenhouse gas emissions you have just developed. How is the energy used? Who are the priority users? Where are changes easily made?

Residential analysis – Consider updating appliances, windows, insulation, and faucets. Develop a plan for the family to reduce electrical use that includes activities such as, but not limited to: raising or lowering the thermostat or replacing light bulbs with compact fluorescents. Oregon households that heat with oil, propane, kerosene, butane, or wood are eligible for the State Home Oil Weatherization (SHOW) Program. SHOW-eligible homeowners can conduct their own energy audit and apply for cash rebates for installed weatherization and heating measures. See the SHOW website at:

<http://oregon.gov/ENERGY/CONS/RES/weather/weahome.shtml>

Additionally, any homeowner (or business) can do a quick energy analysis by using an online energy audit checklist. It will quickly walk you through ten aspects of the structure that should be evaluated in order to determine what conservation measures could be taken to improve energy efficiency. The checklist is on the Oregon Department of Energy's website at: <http://oregon.gov/ENERGY/CONS/RES/weather/docs/Audit.pdf>. The U.S. Department of Energy also has a website that gives information on do-it-yourself home energy audits: http://eere.energy.gov/consumer/your_home/energy_audits/index.cfm/mytopic=11170

Energy Trust of Oregon Assistance – Energy Trust offers programs that aid in the analysis of energy use and appliance efficiency. Homeowners who are Oregon customers of Portland General Electric, Pacific Power, NW Natural, or Cascade Natural Gas are eligible to participate in their Home Energy Solutions programs. See <http://energytrust.org/residential/> for details. The Energy Trust does offer free home energy reviews to residents within their service territory and has an online Home Energy Analyzer tool at: <http://energytrust.org/residential/hes/index.html>

The Energy Trust also provides technical and financial assistance to businesses, including free energy audits and incentives for adding renewable energy resources. Visit their website for more information: <http://energytrust.org/business/>

School and Local Government Assistance – Assess the needs of your building. Are there areas that are too cold or too hot? Are the appliances or windows aged? The Oregon Department of Energy has programs to assist in reviewing the energy systems of buildings, new or old. For more information see <http://oregon.gov/ENERGY/CONS/school/schlhm.shtml>

Industry/Business analysis – The Industrial Energy Conservation Guide is a comprehensive energy analysis guides for systems that are typical in most industries (boilers, compressed air, motors, drives, etc.). All industrial energy users will find these guides useful in determining if there are efficiency opportunities available or when they should work with an independent energy auditor. The guide indicates it is for small and medium size manufacturers yet is useful

What is a carbon footprint?

A Carbon Footprint is a measure of the impact human activities have on the environment in terms of the amount of green house gases produced, measured in units of carbon dioxide.

Community members can quickly determine their own individual footprints by using an online calculator. This link will take you to several different calculators:

<http://www.epa.gov/climatechange/emissions/individual.html>

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for the largest industries since it addresses efficiency opportunities in common industrial systems. You can find it online at: <http://www.ceere.org/iac/assessment%20tool/index.html>. The U.S. Department of Energy's Industries of the Future program provides analysis tools that are useful in evaluating how to apply the best available practices for energy using systems in your facility: <http://www1.eere.energy.gov/industry/technologies/industries.html>. Additionally, the Oregon Department of Energy has energy efficiency information for Oregon industries at the following website: <http://oregon.gov/ENERGY/CONS/Industry/index.shtml>

Fleets – Conduct an inventory of fleet size and type, and also, amount and type of fuel used. After the inventory is completed, set both optimistic and “realistic” goals. Realistic goals may be target points that are required to hit, whereas optimistic goals could be rewarded if met or exceeded. This is a site from the United Kingdom, and is very helpful to begin the inventory process. <http://energysavingtrust.org.uk/fleet/>

Embedded Energy – Consider the embedded energy used in your daily activities. ‘Embedded energy’ is the amount of energy that has been used to plant, grow, harvest, store, assemble, package, transport, etc. whatever item you are buying. For example:

Groceries – In the U.S., the average grocery store’s produce travels nearly 1,500 miles between the farm where it was grown and your refrigerator. About 40% of our fruit is produced overseas and, even though broccoli is likely grown within 20 miles of the average American’s house, the broccoli we buy at the supermarket travels an average 1,800 miles to get there. Notably, 9% of our red meat comes from foreign countries, including locations as far away as Australia and New Zealand. Even if Certified Organic, large amounts of fossil fuel, energy use, and emissions result from transport and packaging. At your next shopping visit, read the labeling and consider a substitution product from neighboring sources. Buy Oregon products whenever available. <http://www.sustainabletable.org/>

Internet Orders – Consider the distance traveled by items ordered over the Internet.

IV. Identify Goals & Opportunities

A. *Commitment to Process* - To ensure ongoing commitment, all sectors, neighborhoods, governments, and industries need to be a part of the planning process. Examples of how to be inclusive: open-forum public meetings, participate in meetings of community leaders, community competitions over carbon reduction, commitment to tribal culture and rights preservation, outreach to actively include lower-income communities.

Some essential groups:

- **City:** City Council, bureau heads, citizen advisory groups
- **Infrastructure providers:** Water, sewer, communications, roads, etc.
- **Business leaders**
- **Freight and logistics industry:** Individual airline, trucking, rail, and marine companies
- **Building industry:** Architects, builders, developers, and owners
- **Food industry:** Farmers, processors, grocery stores, restaurants, hunger relief agencies
- **Health care and emergency service providers**
- **Public agencies:** Schools, social service agencies, local, regional and state government
- **Local non-profit organizations**
- **Utilities and Oregon Public Utility Commission**
- **Faith communities**
- **Tribal Leaders**
- **Agricultural Leaders**

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(list adapted from Descending the Oil Peak: Navigating the Transition from Oil and Natural Gas Report of the City of Portland Peak Oil Task Force, March 2007)

Educate yourself and others. Include smart energy use and sustainability as well as local history, natural resources, and economy of local area in public school curriculum. Develop mechanisms to keep community decision-makers informed of trends in energy markets, including fluctuations in the global fuel supply and how residents are being affected by higher fuel prices. Survey the community on their global warming and energy knowledge. If there is a need, invite a climate and/or energy specialist from a local university/department to speak. Ask the speaker to emphasize local consequences. <http://www.climatemanual.org/Cities/index.htm>

B. *Identify areas for improvement* – Do not consider budget at this stage, simply identify and list these areas. Think about what type of commitment needs to be made and over what time period. Always consider energy conservation and energy efficiency upgrades as the first steps in any changes in management or infrastructure upgrades. These are generally the most cost-effective and easiest improvements to make.

C. *Set goals* – By setting sharp, clearly defined goals, you can more accurately measure and take pride in the achievement of those goals. Energy Star is a government-backed program helping businesses and individuals protect the environment through superior energy efficiency and has provided these hints for energy goal types:

Defined reduction - Goals are presented in terms of a specific quantity or percentage decrease in energy use, such as a 10 percent reduction or a decrease of 300 million Btus.

Best-in-class - This goal aims for a certain level of performance compared to an established benchmark.

Efficiency improvement - Goals are expressed as a function of reducing the energy intensity of a specific performance indicator, such as 2 Btus per unit of product.

Environmental Improvement - This goal translates energy savings into pollution prevention or reduction goals. Additionally, some organizations may find it useful to establish:

Threshold goals - The minimum acceptable level of performance.

Stretch goals - Levels beyond the minimum or targets that are used to create an incentive for greater achievement.

Some helpful general goal-setting tips:

1. Write your goal in the positive instead of the negative.
2. Write down your goal in complete detail. For example, instead of “purchase offsets,” state, “Initiate involvement in renewable energy through the purchase of x-amount of Green Tags from Bonneville Environmental Foundation.”
3. Set goals that can be monitored or have a traceable progression.
4. Consider available resources.
5. Create a way to celebrate successes throughout the process.

First Goals – Some goals will be fairly simple and can be met immediately. Examples include, turning down the thermostat a few degrees (in the winter) or purchasing local produce.

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Second Goals – These goals may require slightly more effort, but can be implemented within a week or month time period. Examples of these may be converting to compact fluorescent light bulbs, developing a community garden, or installing bike lockers.

Tertiary Goals – These goals are large projects that may require significant budget and space considerations, and/or prior reductions of energy use. Three examples of tertiary goals would be the installation of solar photovoltaics, the purchase of a smaller residence, or larger urban development projects.

V. Develop Action Plan

A. *Prioritize goals*

Prioritizing your goals may be evident once you have set your first, second, and tertiary goals. Your immediate, short-term goals should be those that you can achieve quickly, likely with your current resources. Your longer-term goals will take more planning, resources, and time to achieve.

B. *Select strategy or strategies*

Once you've settled on the right strategy, you can begin the drafting and implementation of your energy plan. Remember that this strategy will need some areas for flexibility or roadblocks, but also that there are always ways to move ahead by *exceeding* your own goals.

C. *Develop timeline*

Set timetables for inventory and budgeting to better recognize how to set timing for goals. Assign a specific liaison or group to connect the two. Often this part of the process is the most time consuming, however, with available resources, the process will be expedited significantly.

D. *Develop budget*

Prioritize what objectives can be achieved and maintained with allotted budget. If need be, start small and work up to other goals with resulting savings. Consider aid in the form of loans, tax credits, or low-income assistance.

Loans – The Oregon Department of Energy's Loan Program can loan to individuals, businesses, schools, cities, counties, special districts, state and federal agencies, public corporations, cooperatives, tribes, and non-profits for projects that enhance energy conservation and renewable energy development. For more information see the website: <http://oregon.gov/ENERGY/LOANS/selphm.shtml>

Tax Credits – Take advantage of available tax credits. The Department of Energy has credits for Businesses and Consumers.

Residential Energy Tax Credit (RETC)

Homeowners and renters can get a state tax credit for some renewable resource systems, including solar and wind systems, fuel cells (using renewable resources or conventional fuels). Tax credits are also available for energy efficiency and conservation measures such as heating and air conditioning systems, appliances, and hybrid vehicles. The credit may be taken in one year or carried forward for up to five years. Additions to systems in future years are eligible. A pass-through option allows another Oregon resident or business to claim the tax credit if they pay the applicant the value up-front. See the RETC website at: <http://oregon.gov/ENERGY/CONS/RES/RETC.shtml>

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Business Energy Tax Credit (BETC)

Business investments in energy efficiency and renewable energy resources can earn a state tax credit worth up to 50 percent of eligible project costs. The tax credit can cover all costs directly related to the project, including equipment cost, engineering and design fees, materials, supplies and installation costs. Schools, government agencies, and other nonprofit organizations can use the program by finding a business partner to pass through the value of the tax credit. For more information see the BETC website at:

<http://oregon.gov/ENERGY/CONS/BUS/BETC.shtml>

Property Tax Exemption (ORS 307.175)

Additional property value resulting from the installation of solar, geothermal, wind, water, fuel cell or methane gas energy systems for heating, cooling or generating electricity is exempt from state property tax until Dec. 31, 2012. The exemption is for end users and does not apply to property owned by the energy industry.

Low-Income Assistance – Utilize available resources for assistance to those in lower income levels. A large amount of emissions come from poorly working or seriously outdated windows, air conditioners, insulation, etc. One resource is the Low-Income Weatherization Assistance Program administered by Oregon Housing and Community Services (OHCS). This Program provides weatherization and energy conservation services at no cost to households below 60 percent of Oregon statewide median income.

OHCS uses a network of agencies to determine applicant eligibility and deliver services. Once a home is scheduled for weatherization, the applicant is contacted and an energy audit is scheduled. The energy audit determines the appropriate measures to be initiated based on the existing condition of the home and the funds available. Services provided may include: ceiling, wall, and floor insulation, energy related minor home repairs, energy conservation education, infiltration reduction, furnace repair and replacement, and heating duct improvements. Completed work is inspected by the local agency to ensure compliance with program standards. Details of this program can be found at:

http://oregon.gov/OHCS/SOS_LowIncomeWeatherization.shtml

Energy Return On Investment – Energy return on investment (EROI) is the ratio of energy delivered to energy costs. Calculating or assessing EROI can help to prioritize and choose which renewable resources to invest in first. While EROI might seem complicated, and the values needed might take some investigating to obtain, it will give you a way to compare investment choices based upon the ratio of energy delivered to energy costs. EROI is not the only basis for decision-making; however it can be a valuable tool.

In the case of electricity generation, the EROI involves the comparison of the electricity generated to the amount of primary energy, such as coal and oil, used in all stages of the electricity's generation and distribution. Comparing cumulative energy requirements with the amount of electricity the technology produces over its lifetime yields a simple ratio for energy return on investment: $EROI = (\text{cumulative electricity generated}) / (\text{cumulative primary energy required})$. This ratio can then be used with other considerations to compare choices.

For more background information on EROI and examples, see this website:

[http://www.eoearth.org/article/Energy_return_on_investment_\(EROI\)_for_wind_energy](http://www.eoearth.org/article/Energy_return_on_investment_(EROI)_for_wind_energy)

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Bonneville Power Administration and Consumer-Owned Utilities – The Bonneville Power Administration (BPA) provides power to Oregon's 36 consumer-owned utilities and to direct-service industrial customers. BPA offers utilities a discount on wholesale power rates if they run qualifying conservation and renewable resource programs. Programs must be incremental to what the utility would have done without the discount, or in total they must account for more than 3 percent of its retail revenues. Eligible renewable resource programs include purchases of power or tradable certificates from renewable generating resources, including BPA's own Environmentally Preferred Power. Incentives for customers installing renewable energy systems under 25 kilowatts qualify as conservation programs.

Financing Options for Schools – Consider contracts such as the Energy Savings Performance Contracting. An energy savings performance contract is an agreement between an energy services company (ESCO) and a building owner. The owner uses the energy cost savings to reimburse the ESCO and to pay off the loan that financed the energy conservation projects. Agreements with ESCOs are typically five to seven-year agreements. The ESCO provides an array of services: conducts a facility energy study, identifies cost-effective projects, designs all aspects of the chosen projects, hires subcontractors, manages the project installation, and finances the project. For more details see: <http://oregon.gov/ENERGY/CONS/school/perfcontract.shtml>

Simple Tips: Lighting

Did you know that compact fluorescent lamps (CFLs) use about 75 percent less energy than standard incandescent bulbs and last up to 10 times longer?



Source: EnergyStar.gov

VI. Implementation

- A. *Retrofit Available Technology* – Energy use will be reduced as much as possible to maximize benefits to environment or for any future renewable technology purchase. Activities such as weatherization, conservation, and items like the compact fluorescent light bulbs are the most cost effective ways to retrofit, as large-scale changes to infrastructure can be costly.
- B. *Consider Renewable Energy* – Determine which resources to apply to what energy needs in your community. Areas in eastern Oregon may benefit more from solar energy than coastal communities that do not have the same amount of sunny days. Divide your assessment into categories of currently accessible technology: solar, biomass, wind, geothermal, alternative fuels and low-impact (small-scale) hydro.

Uses for Renewable Sources of Energy

	Heat	Electricity	Vehicle Fuel
Water Power		Yes	
Biomass Energy	Yes	Yes	Yes
Wind Power		Yes	
Solar Energy	Yes	Yes	
Geothermal Energy	Yes	Yes	

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Source: Oregon Department of Energy <http://oregon.gov/ENERGY/RENEW/inform.shtml>

1. Solar

There are three main types of solar energy technology: solar electric, solar water heating, and solar space heating. Additional options include passive solar space heating and daylighting use building architecture, properly chosen and placed windows, and thermal storage (e.g., flooring materials that absorb and store radiant heat). Solar domestic water heating systems preheat water so that less electricity or gas heat is needed. Solar electric power systems, also called photovoltaic (PV) systems, generate electricity. If a utility customer's PV system produces more power than the customer uses, "net metering" laws require that the customer receive credit at full retail value for the surplus electricity that flows back to the power grid.

Oregon Department of Energy and Energy Trust of Oregon are some resources. See <http://oregon.gov/ENERGY/RENEW/Solar> or <http://energytrust.org/RR/PV>.

2. Wind

Wind may apply to some remote areas only because of EROI. Wind turbines convert wind into electricity, by turning the blades and driving an electrical generator. Turbines are designed to automatically face the wind either mechanically or by computer-controlled drive systems. In order to determine whether wind is a good resource of power, you must first assess the wind levels of the potential site. Therefore in order to assure that the wind resource at your site will provide you with an appropriate return on your investment, you should collect wind speed and direction data. You can get an idea of your wind resource by using online maps and interactive tools, such as First Look: <http://firstlook.3tiergroup.com>.

Construction of wind turbines can be costly. To help offset these costs, the state offers loan programs as well as tax credits. Permits are also a consideration for developing wind projects. A resource on what permits are available is at: <http://www.nationalwind.org/publications/siting/permitting2002.pdf>

Oregon Department of Energy or Energy Trust of Oregon are some resources: See their websites at <http://oregon.gov/ENERGY/RENEW/Wind/windhome.shtml> and <http://energytrust.org/RR/wind>.

3. Low-Impact Hydro, Geothermal, Alternative Fuels, and Biomass

Renewable resources such as low-impact (small-scale) hydro, geothermal, alternative fuels, and biomass are considerations but are usually substantial projects that require space and large amounts of resource. However, alternative fuels may be considered for use in your fleet.

Oregon Department of Energy and Energy Trust of Oregon are some general resources: <http://oregon.gov/ENERGY/RENEW> or <http://energytrust.org>

- C. *Provided Renewable Energy Participation* – Another option is to purchase renewable energy offsets, also known as green tags. Green tags are tax-deductible purchases, charged separate from the utility bill, that help support renewable energy on our power grids, solar power systems for schools and public buildings, wind power systems for farms, ranches and communities, watershed restoration to improve water quality and native fish habitat.

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One green tag represents enough renewable energy to offset a typical home for a month with clean wind and solar power, and is equal to:

- 1,000 kilowatt-hours of renewable energy onto North America's power grids
- 1,400 pounds of avoided air pollution (primarily measured as carbon dioxide)
- 1,500 miles of offsetting emissions from a standard car

Buy renewable energy from your utility or green tags that support energy efficiency and renewable resource. The Climate Trust purchases carbon offsets and can provide green tags. Their website is <http://climatetrust.org>. Green tags can also be purchased through the Bonneville Environmental Foundation at <https://greentagsusa.org>. If the old adage is true, that what goes around comes around. Purchasing offsets are a simple way to help fund renewable projects that will benefit all of us.

Another option is to purchase renewable energy directly from energy providers. For example, Portland General Electric's "Clean Wind" project allows you to purchase wind energy by kilowatt-hour block, and over time the blocks reduce in price. Green power options are available from many utilities in the state. Clark PUD is a similar project, combining wind, solar, and geothermal energy. To learn more about green power programs, visit: http://energytrust.org/library/links/green_power.html

- D. *Computer Use* – One desktop computer left on all day for one year can result in more than 1500 pounds of CO₂ being released into the atmosphere. It would take 100 to 500 trees to offset that amount of extra CO₂. Turn it off. Contrary to the public belief that one should keep it on in sleep mode, there is no hardware damage and less energy will be used in turning it off. When leaving it on for re-use purposes, the sleep or standby mode uses less energy than the screensaver. You can also look into purchasing "greener" computers. The Electronic Product Assessment Tool is a helpful resource. <http://epeat.net/>
- E. *Mobility* – Organize a *vanpool*, which is a group of 7 to 15 commuters sharing their ride in a passenger van. Guarantee a ride home for all employees participating in the vanpool in case of emergency.

There are three basic types of vanpool arrangements:

- Owner/operator vanpools use a van owned (and usually driven) by a commuter who wants to have riders share his or her cost of operating the van. The van may have been purchased for general use -- recreation, commuting, family transportation -- but is used on weekdays by other commuters who pay a periodic charge to the driver/owner. The individual owner/operator is responsible for all maintenance and liability insurance.
- Employer-sponsored vanpooling uses vans owned (or leased) by an employer and offered to employees for commuting purposes as an extra benefit. Many companies operate fleets of vans to help their employees get to work without using their cars. Employees pay the company a set fare, depending on the length of their commute. The employer maintains the vans and arranges for insurance coverage.
- Third-party vanpooling allows individuals or employers to contract for vans on a month-to-month basis from a vanpool management company. A number of these companies exist around the United States. Some serve local markets, while others are national in scope. The vanpool management company usually provides maintenance and insurance as part of the package for which each individual vanpool group pays a monthly or weekly fare. A few websites for vanpool and rideshare options in Oregon are: <http://www.carpoolmatchnw.org> and <http://www.cherriotsrideshare.org>.

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Provide options for mobility *other than motorized vehicles* such as bicycling, walking, and telecommuting. Bicycling and walking have health benefits in addition to the environmental benefits. Try making a commitment to bike or walk once a week and adding more days will no longer be a “chore.” Telework (sometimes called telecommuting) is working at a location closer to home instead of commuting to the main office or place of business. Employees may telework one or two days a week at the employee’s home, a satellite office, telework center, or telecommunity center near home. Organizations purchasing equipment to support telework are eligible for the Oregon Department of Energy’s Business Energy Tax Credit. <http://www.oregon.gov/ENERGY/TRANS/Telework/telehm.shtml>

Accessorize workplaces with bicycle lockers or other “bike parking” that create ease in transporting with a bicycle. Survey employees on what types of amenities (for example, showers, schedule buffers, incentives) would help encourage the decision to bicycle. Employers who purchase bicycles for business purposes may be eligible for a Business Energy Tax Credit.

Promote citywide *car-sharing programs* such as those already modeled in Portland, Seattle, and Chicago. Car-sharing companies will purchase low-emission, fuel-efficient vehicles and park them near homes and workplaces. Members use them when they need them, paying just a simple hourly rate that includes gas, insurance, and maintenance. One local example is Zipcar: <http://zipcar.com>.

- F. *Green your Fleets – Downsize vehicles.* Assign trucks or sports-utility vehicles only if necessary to carry a load, otherwise use the smallest vehicle possible. Consider adding hybrids or flex-fuel vehicles (such as those that run on 85% ethanol [E85] or biodiesel) when replacing others. Look for plug-in hybrids and other new low or no-emissions vehicles to become available on the market.

Consider *scheduling* so that each vehicle will be filled to full capacity. Fuller loads will also reduce other scheduling issues such as overtime or missed appointments (missed due to hitting traffic or other impediments).

Train employees on *fuel-efficient driving techniques*. They should practice “relaxed” driving in that they should not over-accelerate. This will also benefit those who suffer road rage. Reduce idling as much as possible, or ban it completely. Consider instituting a policy or practice to turn vehicles off if they will be sitting idle for more than 10 seconds.

Join the Columbia Willamette or Rogue Valley Clean Cities Coalitions. Clean Cities *coalitions* across North America collaborate to expand fleets knowledge and share experiences regarding alternative fuel use. The mission of the Clean Cities Program is to advance the nation's economic, environmental, and energy security by supporting local decisions to adopt practices that contribute to the reduction of petroleum consumption. With over 100 active members, the Columbia Willamette Clean Cities Coalition is one of the largest of the 80 coalitions in the country for its service area. For more information visit: <http://eere.energy.gov/cleancities>.

Plan and install *green pavement*, high percolation parking surfaces or grass parking surfaces. These surfaces will help to control runoff, reduce the heat island effect, capture airborne dust particles, and are more aesthetically pleasing.

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Utilize *low-speed electric vehicles* as an alternative to larger vehicles. Try Segways, which are battery-powered two-wheeled personal mobility vehicles (recharged by plugging into a standard socket) that reach speeds up to 12 miles per hour, or electric bicycles.

Work with the Oregon Department of Agriculture and consider *alternative fuels*. Alternatives to gasoline and diesel play a role in meeting our objectives of cleaner air, reducing demands on foreign petroleum and diversity of transportation fuel. The alternative fuels identified in federal mandate legislation are: [ethanol](#), [methanol](#), [electricity](#), [compressed natural gas](#), [liquefied natural gas](#), [liquefied petroleum gas](#), [biodiesel](#), [hydrogen](#), or [hybrid](#) vehicles using a number of fuels. Many of these transportation fuels burn cleaner, come from renewable sources, and originate in North America. Because fuel efficiency gains are more difficult with medium- and heavy-duty vehicles, they are good candidates for the use of alternative fuels. However, not all fuels provide equal greenhouse gas and air quality emissions benefits. For this reason, consider using fuels like compressed natural gas (CNG), liquid natural gas (LNG), or propane (LPG).

- G. *Promote Better Energy Habits* – Educate yourself about renewable technology and emphasize within your own habits that they are not a license to over-use. Encourage research of new approaches to renewable energy and to start “water-cooler” conversations about them.

Buy local – Try ordering inventory that has traveled less than 500 miles. Use local suppliers whenever practical.

- H. *Join the Oregon Natural Step Network* – The Oregon Natural Step Network supports organizations interested in using The Natural Step framework for sustainability. It is founded on the principle that businesses and organizations can reduce their impact on the environment while enhancing their overall efficiency and effectiveness. The Network seeks to align business and government practices with natural cycles that support the web of life. Their website is: <http://ortns.org>

VII. Evaluation

A. Assess Progress

1. *Baselines* – Determine the starting point from which to measure progress. Establish a base year from which to compare. Determine units of measurement that pertain to your needs and goals. For example, Btu per square foot, energy cost per square foot, dollars, or kWh.
2. *Benchmarks* – Determine the level of benchmarking (for example —equipment, process line, facility or organizational). Compare current energy use, bills, savings, and emissions numbers to prior numbers. Compare energy performance to peers and “competitors” to establish a relative understanding of where your performance ranks. Develop community challenges.

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3. *Community Energy List* – Develop a community website that may be linked to others, like <http://craigslist.com>, in which to house the exchange of ideas. Have links for Residences, Industry/Business, and Public Sectors that include examples of what's been tried, what's worked, what's failed, what's affordable, and what's in progress. Also included on the website, an exchange of used goods that help the energy action process.
4. *Energy Star Evaluation Methods* – Use Energy Star's Portfolio Manager <https://energystar.gov/istar/pmpam> to rate the current energy performance your facility against similar facilities. Or, if you've built a new building, compare your design's target energy performance from [Target Finder](#) with the building's actual energy performance score. A good website for more information is: http://www.energystar.gov/index.cfm?c=guidelines_evaluate_performance.measure

B. *Revise if Needed*

1. *Assign a Leader* – Develop a community group, employee, or family member who will consider and create revisions.
2. *Community Energy "craigslist" to announce revisions* – utilize this website and/or community meetings to announce any revisions.
3. *Revision Plan* – If there are many revisions needed, develop a revision plan with clear steps and baselines.