

This report examines Langley's current energy consumption and lays out a vision for a more sustainable long term energy strategy. As chair of the Energy Committee I worked with committee members Malcolm Ferrier, Carl Magnusson, and Mark Wahl to prepare this report as the basis for recommending revisions to Langley's Comprehensive Plan. The report outlines the economic impact of the City's current energy spending and the opportunity for a sound energy future through improved efficiency and local production. As Community Resource Conservation Manager, I will draw on the report to help prioritize and focus efforts to increase Langley's energy resilience. It is the committee's intention that the report will serve as a touchstone to help the City take the lead in modeling and facilitating a transition to a more sustainable energy future.

Linda Irvine
August 12, 2007

Langley's Energy Profile: Introduction

Energy is fundamentally important to our daily life: We depend on energy to provide housing, transportation, food, and most of our daily occupations and diversions. It is at the hub of our economy, yet it has been relatively inexpensive, and thus largely ignored. We have built homes, roads, and businesses without regard to energy requirements, creating an unsustainable infrastructure dependent on a supply of cheap energy. We are now entering an era when the consequences of our energy choices can no longer be ignored: as a result, we are vulnerable to volatile price swings, hostage to remote foreign sources of fuel, and contributing to climate change. As residents of a small community on a remote island, we are especially vulnerable to flaws in our energy infrastructure.

Local Economic Impacts

Langley's population expends hundreds of thousands of dollars each year on electricity from dams and coal powered plants across the state of Washington, while our transport system depends on importing fossil fuel from volatile, war-torn areas thousands of miles across the globe. Energy costs are subject to volatile price swings that hurt our economy, as residents reduce local spending to accommodate remote energy spending. Dollars spent on energy are dollars NOT spent on goods and services in Langley, thus damping the vitality of the local economy. It is in the City's interest to promote efficiency and local energy production, so that the wealth of the community stays in the community.

Climate Change Impacts

In addition, Langley residents are increasingly aware of present and impending climate change trends. Global consequences like species extinction, more turbulent weather, disruptions in crop, animal, bird and fish habitats; shrinking glaciers and melting permafrost; spread of disease; rising ocean levels and altered circulation are well known. These will have increasing impacts on Langley, and Langley's waterfront.¹ Many residents recognize the need for real change in our use

¹ "Sea-Level Rise and Coastal Habitats in the Pacific Northwest" National Wildlife Federation, 2007 available at www.nwf.org: By 2050, Whidbey Island may lose up to 40 percent of its beaches. Overall, 80-85 percent of beaches are predicted to be lost around Whidbey Island by 2100.

of energy and associated greenhouse gas emissions, as evidenced by Langley's recent reduction of greenhouse gas emissions from 2000 to 2005. The City has embarked on the ICLEI process of benchmarking, goal setting, and decision making to reduce greenhouse gas emissions, and should continue to work toward emissions reductions.

We offer the following research and recommendations to help Langley move toward a sustainable energy infrastructure - one where we can meet our needs without compromising the ability of future generations to meet their needs. At the heart of City efforts should be an educational campaign to raise awareness and motivate citizens to action. Our recommendations focus on:

1. Improving efficiency in new and existing buildings
2. Promoting local, distributed generation and solar hot water heat
3. Promoting an awareness of and reduction in our eco-footprint

Through all our recommendations, we are guided by the conviction that the City can and should take the lead in modeling, facilitating and eventually enforcing Langley's transition to a sustainable energy future.

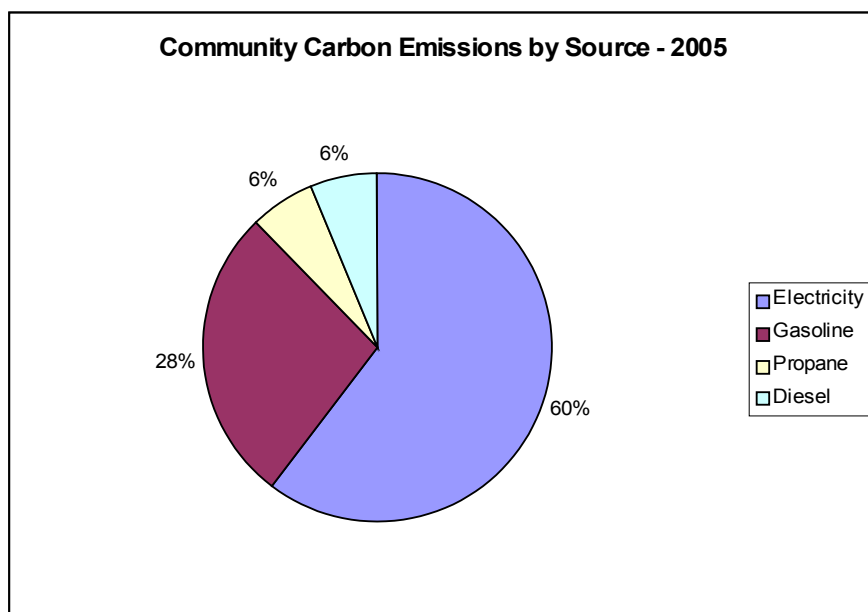
Current State of Energy in Langley

For the information on Langley's current energy profile, we are indebted to the work of ICLEI Intern Mariah VanZerr. Through use of the ICLEI software, an extensive baseline energy use profile for both the City and the Community was developed for the years 2000 and 2005.

Sources of Energy

Langley consumes most of its energy in the form of electricity and gasoline. Figure 1 shows the community emissions profile in CO₂ equivalents. Although emissions sources are only an approximation of energy sources, the figure illustrates that "energy" is more than just electricity. Any comprehensive energy policy must also address gasoline, which is largely a function of our transportation system and patterns of settlement. Because transportation and land use are addressed in a separate Comprehensive Plan section, we have focused our research on electrical efficiency and local renewable energy production, but offer several recommendations that will affect transportation and land use. This community emissions profile includes only emissions *within city limits*; a full accounting of energy to include transportation outside of city limits would show an even greater contribution from gasoline and diesel.

Figure 1. Emissions Sources by share of total CO₂ equivalents, 2005



Energy Spending

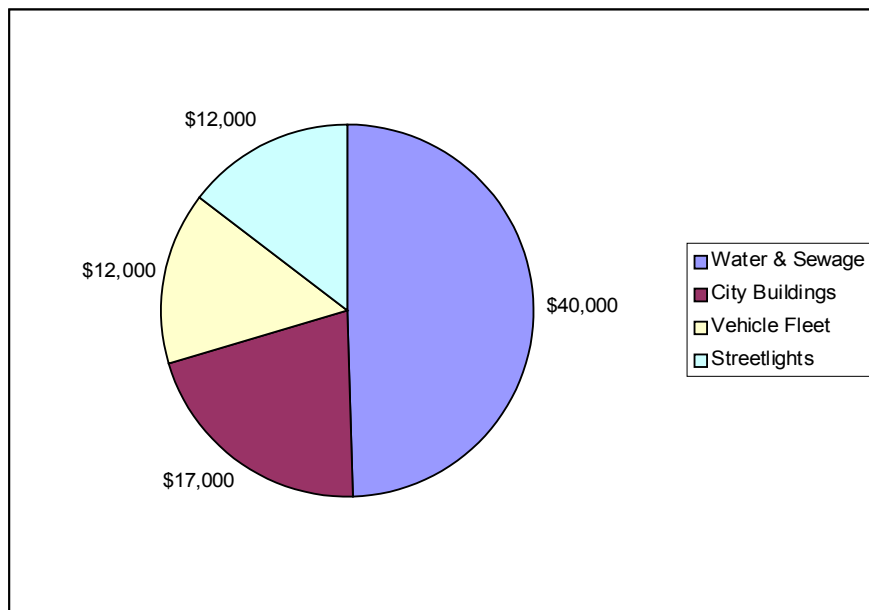
Energy spending is draining dollars from our community. To estimate the size of this dollar drain, we use records of City costs, combined with the knowledge that the city accounts for just 5% of overall community carbon emissions (once again using emissions as a proxy for energy use). Figure 2 shows the City energy expenditures in 2005, totaling \$81,000 for fuel and electricity. At twenty times this amount, Langley residents, businesses and the city together spend over **\$1.6 million** on energy per year!

Another way to arrive at a similarly mind boggling figure: The average Washington household spends over \$1,000 per year on energy delivered to their home.² Add gasoline and other

² Access Washington, the official State Government Website: <http://energytips.wa.gov/>

transportation expenses, and the average household energy bill more than doubles, to over \$2,000.³ Langley has over 500 occupied households, or over \$1 million in annual energy expenditures for residences and residential transport. According to the ICLEI Energy Benchmarking Survey, in 2005, residential and transportation energy made up 70% of Langley's total emissions. (The other 30% was generated by commercial activity). Using emissions as a proxy for expenditures, total expenditures are estimated to be over **\$1.4 million** per year.

Figure 2. City Operations Energy Costs, 2005

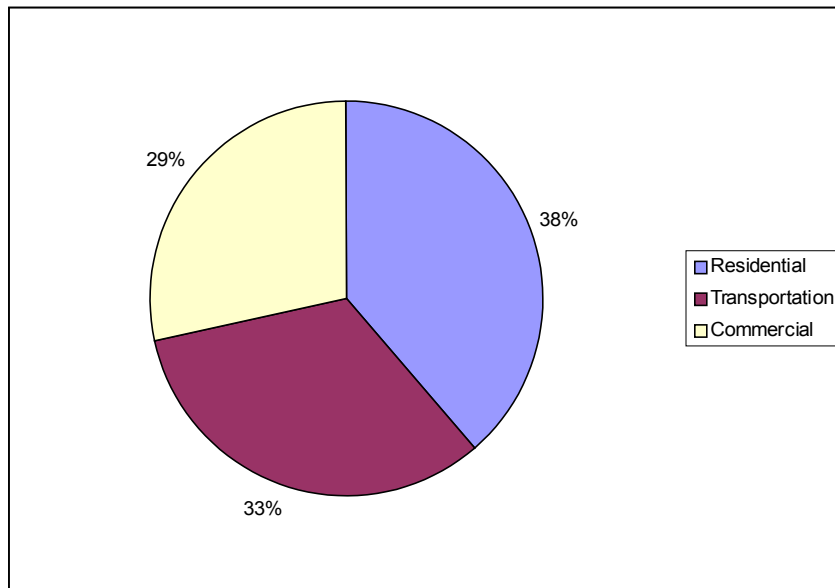


Energy Use

Where do we spend that \$1.4 to \$1.6 million dollars? How can we stop the flow of dollars from our community? Figure 3 shows the energy use by sector, indicating that we are somewhat evenly split between residential, transportation, and commercial energy consumption. As previously stated, these recommendations will not focus on the transportation sector, but it seems logical that given this profile, no energy efforts will be complete without addressing residential, commercial, and transportation energy use.

³ Ibid.

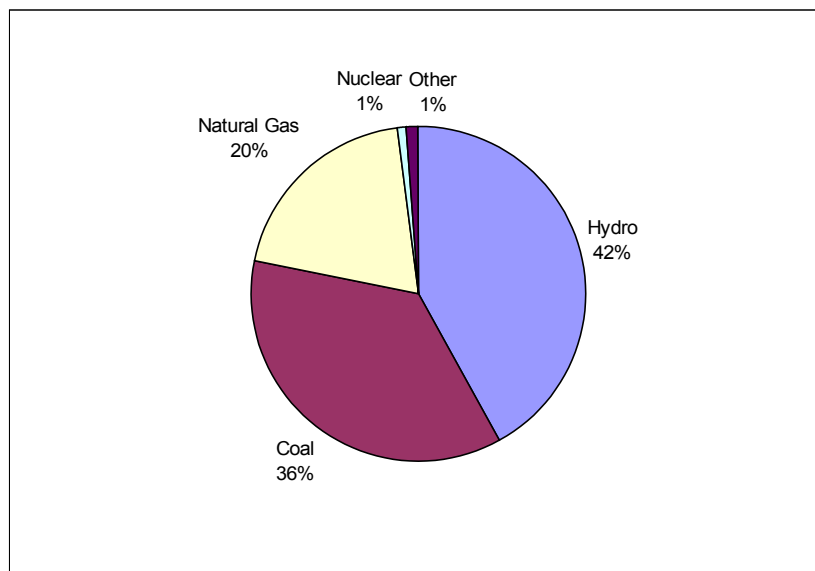
Figure 3. Energy Use by Sector, 2005



Sources of Electricity

It is important to note that electricity consumption is not a problem per se, but rather how the electricity is generated. Contrary to popular myth, Langley does not get most of its electricity from hydropower. In fact, Puget Sound Energy generates more than half of our electricity from fossil fuels, with almost 40% coming from coal. Figure 4 shows the fuel source for PSE's electricity in 2004.⁴

Figure 4. PSE Power Supply Profile, 2004



With the passing of Initiative 937 in the November 2006, all electric utilities in Washington must meet a minimum of 15% renewable sources by 2020. In fact, Langley might reach this milestone much sooner, through gains in efficiency, local production of renewable energy, and purchase of PSE's Green Power options.

⁴ http://www.psehopkinsridge.com/energyEnvironment/EnergySupply_ElectricityPowerSupplyProfile.aspx

Vision for the Future

What can Langley do to foster a sustainable energy future? Commercial, private, and governmental success stories abound across the country. The challenge for Langley is to translate and apply such examples to every-day village life. The appeals of saving energy, saving the environment and saving money, all while being a model for other communities, are strong drivers for change in energy habits. We see a future where Langley has:

Stable, Sustainable Energy Consumption

Langley homes and businesses are highly efficient. Homes are well insulated, appliances are EnergyStar rated, and homes are modest in size. Residents know and practice energy-wise habits at home and at work. New homes and businesses come into the community in dense, well-connected, low-impact development. Local sources of financing encourage investments in energy efficient retrofits and new construction.

Local, Secure Energy Supply

Langley relies on grid-tied local sources of energy for much of its energy needs, and is on the path to net zero electricity use. Distributed generation on homes, businesses, and city buildings provides solar hot water and electricity. The City is closely partnering with the County to provide efficiency services and renewable power generating capacity on Whidbey Island.

Healthy, Energy-Wise Residents & Visitors

Langley is a compact, walkable community, well connected to other hubs by bus, bike, and carpool. Accommodations for those with disabilities include golf carts and wheelchair accessibility. Schools are teaching children about efficiency and using their enthusiasm to promote community projects and educate parents. Eco tourists arrive by kayak, bicycle, and foot ferry to view the renewable energy installations. The concept of “Eco-footprint” is well understood and we are reducing our eco-footprint each year.

Education is the key to attaining this future. With information and tools, citizens and businesses can economically conserve and re-channel energy. The role of Langley government is to shepherd the educational function, create or shift regulations to encourage certain energy-wise behaviors, help publicize good results, model sustainable policies, and model energy efficiency in its own functioning. Langley can't wait for Federal, State or County edicts to foster change. Langley government must take the lead in helping citizens to create change for themselves.