

Sustainability Element

7-21-2017

~~The concept of "Sustainability" has been an integral part of development work since the late 1980's. It originated is a foundational concept for planning in the 21st century, and it is vital to Langley's future. In this element we describe what sustainability means, how it applies to Langley, and how it creates a context for the rest of the elements in this comprehensive plan.~~

~~The concept of sustainability first entered mainstream awareness through in the UN's 1987 Brundtland Commission Report, *Our Common Future*. The central tenant recommendation in that report was the need for the world to engage in is that "sustainable development," which is defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." is key to societies survival. Sustainability is both a lens through which we can view society and it is an end goal in itself. Implicit in this definition is the concern that modern industrial society, with its dependence on non-renewable resources like fossil fuels and its degradation of the environment through such things as toxic pollutants, might not automatically leave a better, healthier world for future generations.~~

~~Sustainability is often explained as a stool held up by the three elements of economic prosperity, ecological or environmental responsibility, and social equity. These elements need to be equally balanced in order to achieve sustainability or the stool falls over. More recent definitions include a fourth stool leg of cultural vitality. In order to achieve the end goal of sustainability each of the four legs or pillars must be given the same weight.~~

~~At its most basic, "sustainability" means simply "the ability to sustain," that is, the ability to continue into the future without being significantly diminished or impaired. Sustainability becomes a concern only when there is reason to believe that neither "business as usual" nor reacting to change as it happens will be sufficient to carry us to a positive future.~~

~~The concept of a 'sustainable community' does not describe just one type of neighborhood, town, city or region. Activities that the environment can sustain and that citizens want and can afford may be quite different from community to community. Rather than being a fixed thing, a sustainable community is continually adjusting to meet the social and economic needs of tis residents while preserving the environment's ability to support it.~~

~~A sustainable community uses its resources to meet current needs while ensuring that adequate resources are available for future generations. It seeks a better quality of life for all its residents while maintaining nature's ability to function over time by minimizing waste, preventing pollution, promoting efficiency and developing local resources to revitalize the local economy. Decision-making in a sustainable community stems from a rich civic life and shared information among community members. A sustainable community resembles a living system in which human, natural and economic elements are interdependent and draw strength from each other.~~

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Potentially significant employment opportunities, consistent with more sustainable patterns of development, exist in many economic sectors. Redesigned and improved infrastructure, knowledge-based services, environmental technologies, improved management and use of natural resources, and tourism are all rich areas for private sector investment, supportive government policies, and expanded training.

Achieving sustainable community development means emphasizing sustainable employment and economic demand management (EDM). Sustainable employment includes turning “wastes” into resources (e.g., recycling); improving efficiency with regard to energy and materials; converting to greater reliance on renewable energy sources; increasing community self-reliance (e.g., food and energy production); and sustainable management of natural resources (e.g., community forestry). EDM shifts our economic development emphasis from the traditional concern with increasing growth to reducing social dependence on economic growth.¹

One of the most significant and complex issues facing society today is climate change. It requires at least two kinds of responses: adapting to the effects of climate change conditions, and minimizing our contribution to greenhouse gas emissions (often referred to as mitigation), widely understood by the scientific community to be an underlying cause of climate change.

Local governments are key to the climate change response because they influence more than 45% of local carbon emissions² through the decisions they make related to land use, transportation options, building standards, and waste management. Leadership, commitment and public support are required to respond appropriately to the challenge. The benefits are long term, yet the costs are immediate and the solutions are challenging. At the same time, adapting to climate change presents economic opportunities including the potential for establishing new technologies locally and creating more liveable, sustainable communities.

~~Today's world has many trends that raise this concern. Two of the most prominent are climate change and peak oil. There is broad scientific consensus that climate change is underway and that human activities are a major cause. The UN's Intergovernmental Panel on Climate Change estimates that approximately 60% of greenhouse gases come from burning fossil fuels, with significant additional contributions coming from commercial agriculture and deforestation. Avoiding the potentially catastrophic consequences of increased climate change will require profound changes in the way that humanity deals with energy, food, and forests.~~

~~Peak oil, which refers to the peak in world oil production due to reaching the physical limits of how much oil per year can be pumped out of the ground, may force us to diminish our use of that fossil fuel, but brings with it other challenges. A recent report to Congress by the Government Accountability Office concluded that the world may have already reached that peak and if not, it will likely do so within the next twenty years. Regardless of the~~

¹ <http://www.sfu.ca/sustainabledevelopment/about-us/what-is-sustainable-community-development.html>

² <http://www.toolkit.bc.ca>

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timing of the peak, it is clear that oil is getting harder and more costly to find and produce at the same time that increased economic activity all over the world is raising the demand for this and many other resources. We can't safely assume that we will be able to go on consuming these resources indefinitely at the price levels that characterized the 20th century. Because oil is so central to the current global economy, there is a serious risk that the shift from the era of cheap oil and rising production to the era of costly oil and physically imposed declining production could be wrenching — especially because we have done so little to prepare for this transition.

Yet sustainability is about more than just climate change and peak oil. Sustainability, as a process, requires anticipating change and thereby gaining more time to prepare for and proactively adjust to that change — whatever the changes might be. This proactive approach allows us to tap the opportunities that these changes offer rather than just reacting to change as threat.

Sustainability deals with two major types of ~~change~~:

- ~~Change that we have good reason to believe is coming and for which a reactive strategy is likely to be inadequate. Climate change and peak oil are both good examples. This type of change is best dealt with through steady, proactive investment in new systems that allow us to adapt to the new conditions as smoothly as possible. This will often involve evaluating such investments in new systems not in terms of present prices but in terms of expected future prices, such as for costs for energy. Much of what can be done in this regard is capable of leading us to a genuinely better future.~~
- ~~Change that takes us by surprise, such as has unfolded after the 9/11 attack on the World Trade Center in Manhattan. One of the consequences of this attack, felt here in Langley, was a decline in tourism for a few years after. A major earthquake in the Puget Sound region would affect us even more strongly. This type of change is best dealt with by keeping our eggs in lots of baskets, that is, by diversification. A key word here is "resilience." In preparing for surprises, we need to look at which systems (such as water and food) are most important to our lives, then work to make these systems resilient through diversification and other means. Just as in ecosystems, greater diversity can lead to greater richness, interest, and beauty as well as more resilience.~~

Many of the actions that make sense from a sustainability point of view also make sense in terms of emergency preparedness. For example, the likely rise in the cost of energy, and so also the cost of transportation, encourages the sustainability strategy of more local production of basic consumables, like food and energy. Correspondingly, in an emergency, like a power outage or an earthquake, the less dependent we are on distant sources for things like food and energy, the more resilient we will be. This is especially true given our location on an island.

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It can be helpful to look at the interest in sustainability as, in part, an insurance strategy. We do not know for sure what the impacts of things like climate change and peak oil will be on our lives. They are both so large in scale, so pervasive, and so unprecedented that they could unfold in many different ways. It is possible that some wonderful new technology or other discovery will come along and easily solve these problems. It is also possible that we are just at the beginning of a difficult time when we will wish that we had started preparing sooner. The risk of "buying the insurance" by preparing now is that events will work out so that the preparation was not necessary. The risk of not preparing is that it will turn out that we needed to.

And just as with insurance, there is a balance to be struck between the amount of time and resources we devote to preparing for the future and the amount we devote to living in the present. Fortunately many sustainability strategies, such as improving energy efficiency, make cost-effective sense today as well as in a wide variety of possible futures. The sooner we begin the process of preparing for a sustainable future, the easier and more sustainable the process itself can be.

Decision-Making

As we attempt to improve Langley's ability to sustain itself in changing times ahead, we can learn some lessons from those societies in the past that did not sustain themselves. In his book, *Collapse, How Societies Choose to Fail or Succeed*, Jared Diamond finds that the poor social decision-making that led various societies to collapse grows out of one or more of the following:

- the failure to anticipate a problem before it actually arrives
- the failure to perceive a problem once it has arrived
- the failure to attempt to solve the problem even after it is perceived

These failures are often due to such things as the role of special interest selfishness, rigid belief systems that insist on "staying the course" in the face of growing signs that change is needed, and the all too common denial with which humans often confront unfamiliar conditions.

Learning from this, we can improve our chances of success:

Goal 1: Engage in anticipatory decision-making, basing decisions on likely future conditions.

Policy 1: Consider multiple scenarios for future conditions when making decisions with long-term impacts. As appropriate, consider likely implications over many decades, including multi-generational time horizons.

Policy 2: Use innovative analytic measures, such as the ecological footprint, to help perceive current conditions and trends more clearly.

~~Policy 3: Track and publicize relevant local trends, and in this and other ways help the community to more clearly see itself and more quickly anticipate likely future challenges and opportunities.~~

~~Policy 4: Use public consultation as a means of keeping perceptions and problem-solving fresh and multi-faceted.~~

Community

The most important resource for moving Langley toward a sustainable future is the quality of our community. When people are well informed and in good relationship with their neighbors, they are able to work with change in creative and confident ways.

~~A sustainable community can take many forms, with many elements of those forms including issues such as walkability and bikeability. In addition, Many communities now recognize that the quality of life includes identifying and taking steps to preserve “Places of the Heart.” The Orton Family Foundation has developed “Heart and Soul Community Planning,” a process that involves the community in identifying specific places within the community that are worthy of preservation. The first step in the process is identifying core community values. Those values that are most often identified are:~~

- ~~1. Working locally and growing locally-owned businesses.~~
- ~~2. Living and shopping locally.~~
- ~~3. Participating in local schools, organizations, churches, and community events and festivals.~~
- ~~4. Keeping culture and nature in close proximity.~~
- ~~5. Providing easy access to goods and services.~~
- ~~6. Fostering a strong sense of community where people trust one another and feel safe.³~~

~~The development of this sense of community is a key element towards a sustainable community.~~

~~Goal 2: Help the community to be well-informed, well-connected, and confident.~~

~~Policy 1: Within its available resources, provide citizens with timely, relevant information about the state of the community.~~

~~Policy 2: Encourage good neighbor to neighbor relationships.~~

~~Policy 3: Encourage high levels of volunteer participation in both City-related and general community activities.~~

³ Excerpted from Rural by Design, Second Edition by Randall Arendt. ©2015, American Planning Association.

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~~Policy 4: Promote civic engagement for the sake of the long term common good of the whole community, present and future.~~

~~Walkability is a key element of a sustainable community. The median age in Langley is approximately 58 years. In an aging community, regular exercise is an essential element of a healthy and sustainable lifestyle. Access to trails and other opportunities to get about the city on foot are critical to this effort.~~

Demographics

A fundamental characteristic of a sustainable community is that it has a good balance of people of all ages, plus a diversity of skills and experience. The City cannot control the demographic balance of the community. It does, nevertheless, influence the demographic patterns through such things as land-use, housing, and economic-development policies. To strengthen the community's sustainability, the City should take into account the demographic implications of its policy choices and make choices that foster demographic diversity. ~~Langley's demographics are discussed in more detail in the Land Use and Housing elements. And as discussed Langley's population is older than the County and State and is aging at a greater rate in comparison. Through a sustainability lens the City is facing a demographic imbalance which has implications for housing, businesses seeking employees and health services, for example.~~

~~Goal 3: Foster a multi generational, and economically and culturally diverse community.~~

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Energy

~~To meet its energy needs sustainably, a community must pursue four approaches. BC Hydro has outlined them as 'The Four R's of Sustainable Energy Planning': 1. Reduce energy demand (through energy efficient community design, green buildings, and efficient technologies); 2. Re-use waste heat (captured from industrial and commercial sources, sewers and waste, for heating buildings and water); 3. Use Renewable heat (including solar and geo-exchange); and 4. Use Renewable electricity (including biomass/biogas, micro-hydro, wind, solar, tidal and geothermal).~~

~~Local governments have more influence over land use-related energy demand more so than any other of the four mechanisms, thus a major focus should be placed on the opportunity to mitigate energy use through land uses. Renewable energy resources are those that can be regenerated relatively quickly and therefore are not exhausted. They derive either from the sun or from heat generated deep within the earth, and include electricity and heat generated from solar insolation (sunlight striking a surface), wind power, ocean energy harvested from wave and tidal power, biomass energy and geothermal energy.⁴~~

~~The City has recently become part of the SolSmart a program of the US Department of Energy's SunShot Initiative. The purpose is assist local governments to reduce barriers to solar energy growth. The City is taking advantage of Puget Sound Energy's (PSE) program~~

⁴ https://crcresearch.org/files-crcresearch_v2/File/Sustainable%20Communities%20Research%20Collaborative-Ashaw.pdf

to convert street lights to LEDs to reduce the City's energy bills. The City is also participating in PSE's 'Green Direct' program that offers participants access to energy that is generated from renewable sources instead of a mix of fossil fuels and hydroelectricity. The City's choices of fleet vehicles are lower emission types.

~~Regardless of when the actual peak in world oil production occurs, it looks increasingly likely that we have left the over 100 year era of low cost oil, in particular, and low cost fossil fuels in general. In the face of this major challenge to industrial society, we do have choices. For example, the Centre for Alternative Technology in Britain has created a transition plan that could replace Britain's fossil fuel dependence with renewable energy sources in twenty years. Such a transition is technically feasible. The obstacles to doing this are primarily institutional and involve the same issues described above in the section on decision making.~~

~~The City of Langley can play only a small role in this global challenge, but insofar as we are able, the City chooses to be part of the solution.~~

~~*Goal 4: Foster the timely transition for the whole community away from dependence on fossil fuels and towards the efficient use of renewable energy.*~~

~~Policy 1: Foster state of the art resource efficiency in both new and existing buildings and neighborhoods of all kinds in Langley.~~

~~Policy 2: Foster local renewable energy generation.~~

~~Policy 3: Foster approaches to transportation that reduce per capita fossil fuel use.~~

~~Policy 4: Model these, where practical, through City facilities and activities.~~

Economy

Complete, compact communities are central to economic development. Complete, compact development promotes active lifestyles, improves human health, and fosters human interaction, strengthening community, spurring local innovation, and reducing crime. Complete compact communities are more conducive to locally owned businesses that reinvest locally. Economic impact assessments have demonstrated that \$100 spent in a locally-owned store generates \$45 in local economic return while the same amount spent in a non-locally owned store generates only \$13 in return ⁵

Establishing and maintaining local economies that are economically viable, environmentally sound and socially responsible is key for community sustainability. Participation from all sectors of the community is necessary to determine community needs and to identify and implement innovative and appropriate solutions.⁶

⁵ <https://www.toolkit.bc.ca/business-case-climate-action>

⁶ <http://www.sustainable.org/economy>

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According to US Census in 2015 40.7 percent of Langley's population 16 years and older were in the labor force. Almost 51 percent had occupations in the fields of management, business, science and arts. Sales and office occupations made up 20.8 percent with service occupations making up 13 percent.

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Tourism is the significant economic activity in the City of Langley and contributes to the City's tax base through retail/hotel/restaurant patronage.

Some recent infrastructure improvements by Puget Sound Energy to construct a new substation, upgrade transmission lines and other improvements have improved the reliability of electrical service in South Whidbey. In addition, Whidbey Telecom has been installing fiber optic throughout the area that will offer 100 gigabit service, providing the region with some of the fastest internet speeds in the country. This increased bandwidth will greatly improve the speed at which business, telecommuters and others can operate and is a requirement for high-tech, high-paying jobs.

~~The end of the era of low cost oil, the growth of the world economy in places like China and India, and the impacts of climate change are likely to cause a profound restructuring of the global economy over the next 20 years in ways that will be felt locally. In the context of these trends, it would make sense from a sustainability point of view for local business activity to decrease its dependence of fossil fuels, to increase the amount of local production for local use, and to diversify. Most of these changes will need to come through private efforts, but the City can help through policies and regulations that encourage these directions.~~

Goal 5: Foster a diverse local economy that minimizes its dependence on fossil fuels and that includes a strong component of local production for local needs.

Food and Agriculture

Industrialization of agriculture has taken a large toll on small, family farms. In the last century, the number of farms fell nearly 65 percent, and the farm labor force dropped from 41 to 1.9 percent. Today, just one in 10 small farms produces enough income to support a family. But small farms play a significant role in the economic, cultural and environmental health of a community. For Whidbey Island fourth generation family farmers, as well as a new breed of young farmers, are recapturing the island's farming heritage, creating a fresh food culture supported by diverse crops, seed research, market demand, delivery systems and agritourism.

While hobby farms and roadside stands selling eggs, berries and honey are in abundance, a greater food systems cluster has developed, which consists of producers, processors, distributors and markets. This cluster enables Whidbey's 21st-Century farmers to resurrect farming traditions and to grow triple-bottom line endeavors: farms that benefit people, place and profit.⁷

⁷ <http://livebettermagazine.com/article/a-community-of-collaboration-whidbey-island-sustainable-agriculture/>

While there is no agriculturally zoned land in Langley agriculture is still being undertaken on a few larger properties as well as food gardens found in many backyards.

Just as we are likely at the end of the era of low cost oil, we are likely also at the end of the era of low cost food. The reasons are many:

- Industrial agriculture depends heavily on fossil fuels — to run farm machinery, to create fertilizers and pesticides, to pump irrigation water, to process and store foods, and to ship foods over long distances. On average every calorie of food produced requires ten calories of fossil fuels. As fuel costs go up, so will the cost of food produced by these energy intensive means.
- The rising cost of fossil fuels has led to more land being devoted to producing biofuels instead of growing food. The competition between land for food and land for fuel will further drive up the cost of food.
- Industrial agriculture still depends on climate, yet climate change produces greater climate variability as well as shifting climate zones from one geographic region to another. The net result is not favorable to reliable crop production.
- Arable land is constantly being lost by erosion and other forms of land degradation, and by conversion to other uses such as urbanization. During the past 50 years the amount of arable land per person in the world has declined by about fifty percent and will likely decline further in the coming decades.
- The supply of fresh water available for agriculture, which accounts for sixty percent of national water use, is declining even without the effects of climate change. More water is going to cities, aquifers are being drawn down through overuse, and pollution is decreasing the usable supply. This growing water shortage will also raise food costs.
- Perhaps the most critical resource for agriculture is skilled farmers, yet today the average age of farmers is over fifty five and rising, with less than six percent of farmers thirty five and younger. Moreover, dealing with the challenges of higher energy costs, erratic climate, and declining water supply will likely require many more farmers. Estimates are that a successful non fossil fuel agriculture would require from fifteen to twenty five percent of the population to be involved in growing food — more than ten times the present percentage.

While the new agriculture of the 21st century will likely take many forms at many different scales, there is likely to be an important component at Langley's small-town scale. One of these forms will be personal gardens, either at the residence or as a plot in a community garden. Another form will be somewhat larger commercial market gardens, including various forms of community-supported agriculture (CSA). Two of the advantages of having such market gardens within Langley are: easy access to part-time labor, and reduced transport and handling costs to a significant local market. In addition, market gardens that also serve as teaching facilities and/or visitor attractions may benefit from the additional facilities and amenities that Langley provides. We also have our waterfront, which provides us with important access to marine food sources.

Beyond food production, additional important components of a more localized and less energy-dependent food system are food processing and food distribution.

Here again, within its available capacity, the City can be part of the solution.

Goal 6: Foster more localized and less energy dependent food production, processing, and distribution. Do so in ways that take into account adverse impacts on neighboring land uses, fairness to all parties, and meet the needs of the present without compromising the likely needs of the future.

Policy 1: Preserve and protect land for growing food.

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Infrastructure

Infrastructure systems can deliver the services citizens need in an economically and environmentally sustainable manner. Such systems are efficient and integrated, and take advantage of ecosystem-based infrastructure to reduce carbon footprints and resource requirements, and provide better value. On average, operation and maintenance of delivery systems account for 80% of a local government's infrastructure costs. As such, long-term sustainability is a key consideration for infrastructure planning.

Whether infrastructure is viewed through a holistic economic or a holistic environmental lens, the result is the same: an integrated sustainability vision. Asset management includes maintaining and increasing equipment efficiency and reducing leaks. More sophisticated approaches include extracting value from "waste," like methane and heat from sewage. Most fundamentally, it involves reducing financial liability with less infrastructure-intensive, low-density development that can be sustained through existing revenue streams.

Sustainable, low carbon infrastructure typically within local government jurisdiction includes:

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- **Water Supply**, stormwater and wastewater systems that safely manage our water, are energy efficient, reduce the burden on water supplies and reduce ecological impacts.
- **Ecosystems** such as forests, urban landscaping, and aquatic systems that are integrated into the green/ecological infrastructure network of the community.
- **Solid waste management systems** that divert waste from landfills and utilize waste as a valuable source of materials and sometimes energy.
- **Energy systems** that provide clean, renewable sources of heat and electricity. Historically, these systems are not usually part of local government operations, but opportunities are emerging.
- **Integration** of the above systems wherever possible, and creation of closed loops that treat "waste" as a resource and potential revenue source.

Water

Unlike energy and food, water is already localized. Langley has a municipal water system that currently provides an ample high quality water supply as well as sewage treatment. However, both the water supply and sewage treatment require significant amounts of energy, primarily for pumping. As energy becomes more expensive, the cost of supplying

~~these services will rise unless the system can be made more efficient. The aquifers that provide our supply are fed by rainwater, so they are subject to climate shifts and to contamination from surface sources. Increased food production in Langley may increase demand on the water system. The City can address these issues by enhancing the sustainability and diversity of its water systems.~~

~~Goal 7: Conserve its water supply and diversify our water systems.~~

~~Policy 1: Protect the quality of its water supply.~~

~~Policy 2: Increase the energy efficiency of the water supply and treatment system.~~

~~Policy 3: Encourage water conservation by users.~~

~~Policy 4: Encourage water system diversification through such approaches as rainwater catchments, grey water recycling, and alternative biological waste treatment systems, where appropriate.~~

~~Ecological Footprint.~~

~~Since its beginnings at the University of British Columbia in 1992, ecological footprint analysis has become widely used around the world as a tool for guiding progress towards a more sustainable way of life. Since it combines consideration of the environmental impacts of energy use, food production, forest products, and the built environment, it provides a useful way of assessing which actions have the most overall environmental benefit. By using ecological footprint analysis, and encouraging others in the community to use it, in conjunction with other criteria specified through the City's code, the City can help guide the community towards a positive sustainable future.~~

Implementation

A framework for implementation of the community's vision, goals and policies it is essential to ensure the Plan has the intended impact. Effective plan implementation requires: commitment at all levels to the vision, goals and policies in the Plan; ongoing community engagement in city decision-making; effective management of city processes; and the use of best practices by both the City and development proponents.

Plan monitoring is necessary to ensure that the Plan is operating as anticipated. It requires that questions be asked about the continued relevance of the Plan as circumstances change. To be effective, monitoring should consider the following points:

- Is progress being made towards the Plan's vision, goals and are the policies having the expected result?
- Are the assumptions on which the Plan is based still valid (e.g. growth rates)?
- Are there new issues, concerns or opportunities that may require new or different policies?
- Are there changes in political or public priorities that may result in a different allocation of resources?

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Goal 8: Encourage the reduction of Langley's ecological footprint, both per capita and overall.

