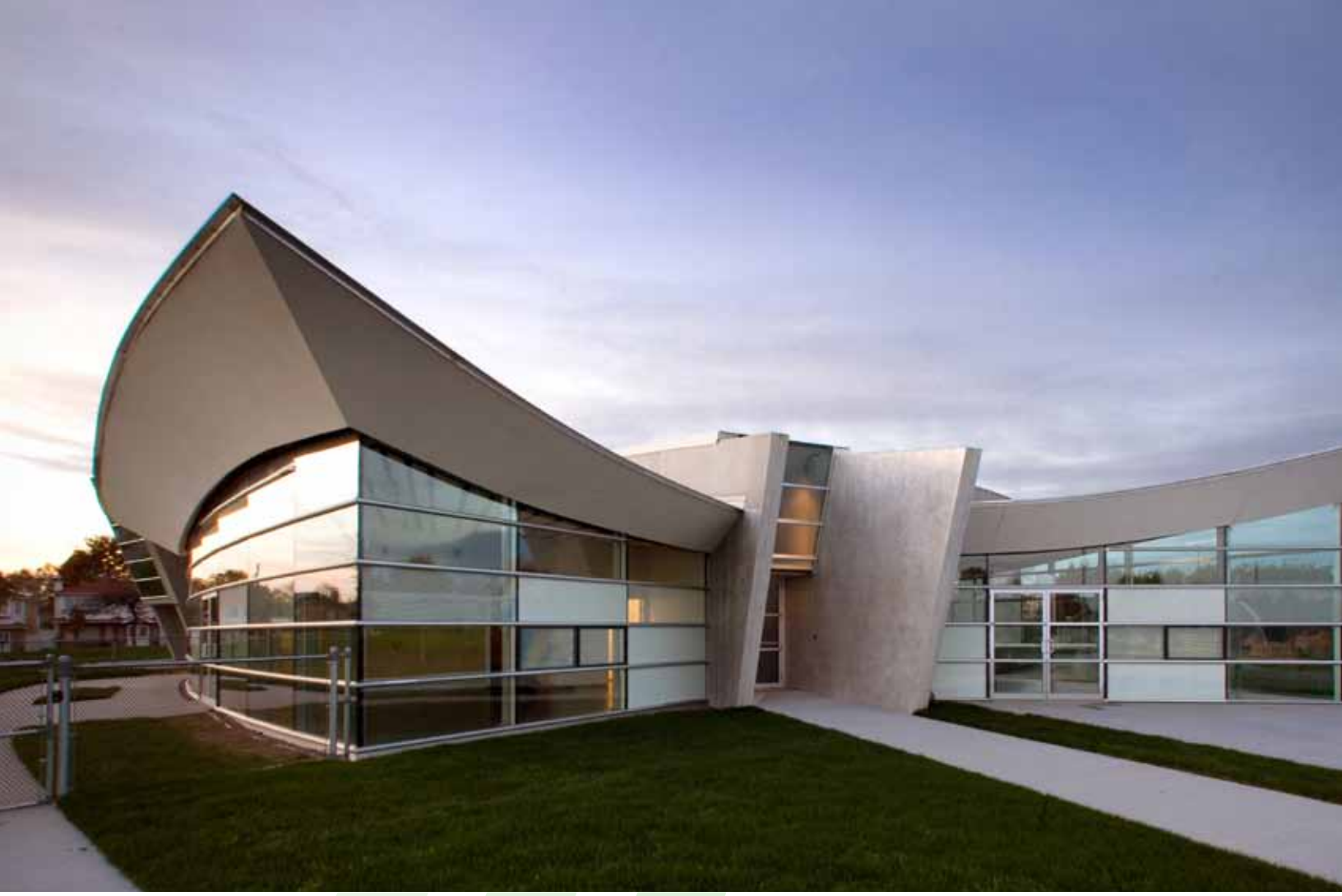


GREEN ECONOMY *WORKING PAPER #2*

ACHIEVING VANCOUVER'S GREEN GOALS THROUGH LOW-CARBON ECONOMIC DEVELOPMENT ZONES

July 2010

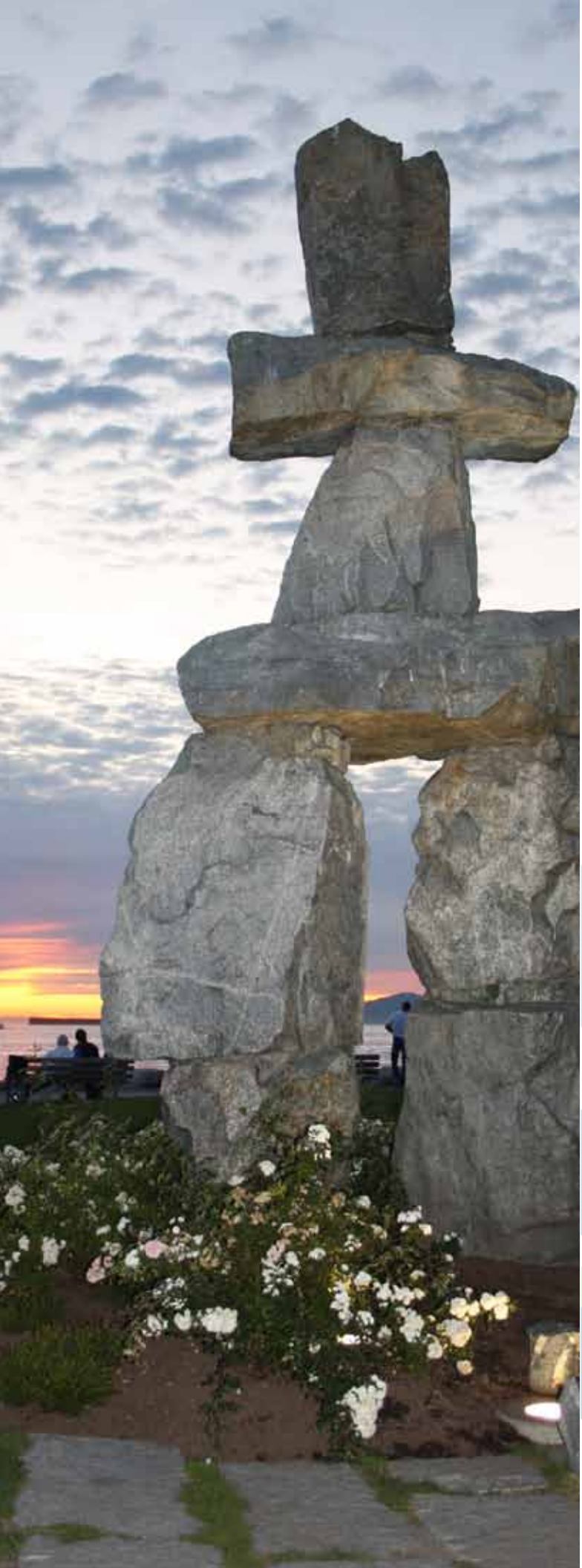
Hurrian Peyman, Graduate Fellow
ISIS Research Centre at the Sauder School of Business, UBC



VANCOUVER GREEN CAPITAL

vancouver economic development

SAUDER School of Business
ISIS Research Centre



Contents

This paper has been produced as part of a series of working papers intended to further discussion on the green economy in Vancouver. Developed in support of VEDC's work in support of the City of Vancouver's Greenest City Action Team, the papers have been produced by consultants and researchers, and do not necessarily reflect the views of the VEDC or its stakeholders. These papers will be used to inform the strategies put forward by the Green Economy working group. Findings will be continuously refined as understanding of the green economy progresses.

cover photos and inside cover:
City of Vancouver

1. SCOPE

This report will investigate a number of questions:

- What are Low Carbon Economic Development Zones?
- What types of businesses are found in these green zones and how do they interact?
- Who have been the key players in these zones and what are the goals of these zones (especially economic goals)?
- Which elements of these "green" zones are adaptable to Vancouver and what types of goals will they likely accomplish?
- What have been the strengths and challenges of existing "green" zones?

2. INTRODUCTION/CONTEXT

With the growth in green businesses due to consumer, governmental and business concerns about rising energy prices, climate change and environmental degradation, many communities have sought to attract, foster and retain green businesses within their jurisdictions. In pursuit of this goal, communities across North America have developed a wide variety of different "green zones" with different names (Eco-districts, Green Corridors, Green Impact Zones), different objectives (social, environmental, economic) and different measures (tax breaks, eco-industrial parks, green incubation sites, green training programs, energy efficiency retrofits, government investment and regulations) to foster their growth. This paper will look at these regions, their elements, their political, social and business contexts and the successes that they've achieved. It will conclude by exploring which elements of Green Zones will help Vancouver meet its own community goals

Note: *"Green zone" is a term frequently used in urban planning to denote natural areas such as protected green spaces. Recognizing this technical designation in the planning profession, this paper will use the "green zone" term to denote an area whose goals are the creation of lower-carbon jobs, products or processes.*

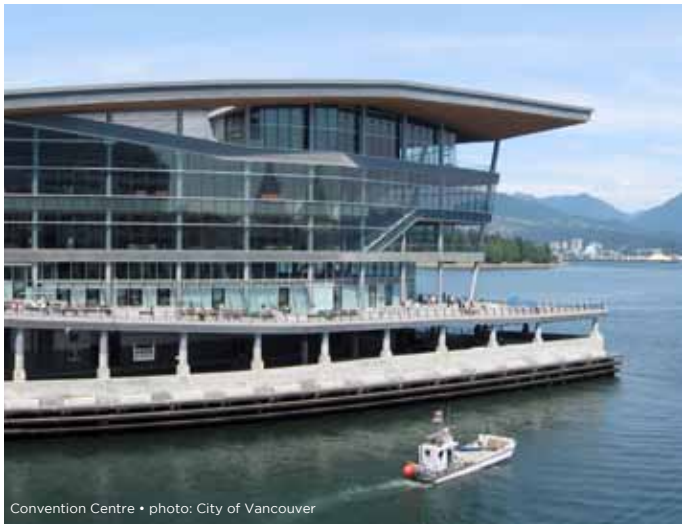
3. ELEMENTS OF GREEN ZONES

There are a number of different tools that are used within Green Zones or in other communities that wish to foster the green economy. No single element exists within all green zones, and those elements that do exist vary widely from fiscal measures to industrial processes to mechanisms for industry interaction. Different programs and elements are chosen by their ability to accentuate the strengths and resources of their respective communities.

The diversity of elements found within green zones reflects the wide variety of desired outcomes of these zones. While targeting industrial processes and technology implementation within zones is often mandated to achieve goals such as GHG reduction, other elements may be aimed more at outcomes such as job creation. Many of the job creation or business attraction measures employed are broadly similar to other economic development tools, though targeted and tailored at green firms' needs. For instance, incubation zones are used to stimulate a wide variety of business ventures, though green incubation requires engaging specific industry expertise or testing facilities.

The geographic question is also important in the formation of these zones. In some cases, co-location of enterprises or infrastructure investment is a critical prerequisite for integrating ideas or industrial processes in pursuit of green goals or urban renewal. Often the "zone" is more broadly defined and measures such as training programs or consultation services are extended to all new, eligible or existing businesses across a green jurisdiction. In some cases, the zone is created around pre-existing companies or clusters which are already succeeding within one or more green sub-sectors.

photo: City of Vancouver


Convention Centre • photo: City of Vancouver

3.1 Green industry incentives and Benefits

Overview and Examples:

Green Industry incentives and benefits include a range of financial and non-financial initiatives from municipal, regional state, provincial or federal governments to attract green businesses to an area. They include:

- **Business financing programs**
  - The Sacramento Municipal Utilities District offers lines of credit of up to $500,000 for energy businesses that contract or sub-contract with them[1]
- **Tax Credits and sales tax rebates**
  - The City of Austin, Texas offered Heliovolt, a solar power company, a 60% property tax abatement to locate itself within their city[2]
- **Consultation services**
  - The California Manufacturing Technology Center provides technical consulting to a range of manufacturers within the state[3]
- **Enhanced infrastructure**
  - The Midwestern Governors' Association pledged to create new transmission lines and pipes for bio-fuels to attract green business to the region[4]
- **Assistance with regulatory compliance**
  - The Sacramento County Business Environmental Resource Center provides advice to new start-ups to help them adapt to regulations.

Vancouver Examples:

While Vancouver does not have the tax instruments at its disposal that US municipalities do, it is fortunate to be the key metropolitan center in a low-tax jurisdiction. Its combined federal/provincial corporate tax is one of the lowest in North America, dropping again in 2012[5]. It is also the location of progressive utilities and considerable investment in infrastructure such as the Hydrogen Highway. The combination of all of these factors creates a strong attractor for green business to Vancouver.

Advantages and Disadvantages:

Cities across the continent have increased tax benefits and incentives in order to counteract job losses that have resulted from the economic downturn and the trend towards internationally outsourcing industrial jobs. When incentives can lure companies, they are a relatively small cost compared to the direct and indirect benefits of a large or innovative business locating within the community.

However, incentives only play a minor role in businesses' location decisions. They have limited efficacy if the community does not have fundamentals like a qualified workforce, good access to markets and suppliers, and good infrastructure. There is also the risk that, when the incentives expire, the company will relocate to another community. Often, businesses are looking for a supportive environment that understands businesses and their needs, rather than looking at specific fiscal incentives.

Best Practices:

Some of the best practices around tax incentives include providing clear expectations of both parties. Some communities require that businesses, in order to qualify for the tax credits, provide above-average salary levels, guarantee a certain amount of employment and provide assurances that they will remain within the jurisdiction for a specific period of time. Many of these agreements include "claw back" clauses, which require repayment of credits should the business not meet Its commitments.

3.1.2 Green Incubation zones

Overview:

Green Incubation Zones are created by public, private and educational groups in order to foster the growth of start-up green businesses, usually specializing in a specific technology, and often located within a small geographic area. Companies are provided with business support, laboratory and testing facilities, facilitated relationships with suppliers and purchasers, access to venture capital, market research and consulting. Although green incubation zones can include governmental incentives listed in the section above, they also help businesses access business and educational institution expertise and provide consulting and contacts more tailored to the green businesses' particular technology.

Vancouver Examples:

The National Research Council created a fuel cell technology cluster at the Point Grey campus of UBC. The cluster houses several businesses and provides lab and testing facilities on a fee-for-service basis. It also provides marketing, consulting and national and international business contacts. One notable graduate of the program is Cellex Power, which was later purchased by New York's Plug Power. The cluster has contributed to Vancouver being a world leader in Fuel Cell technology. Other examples such as SFU's TIME centre or the private sector Boot-Up Labs make Vancouver a centre of entrepreneurship whose expertise is gradually shifting towards green ventures.

Advantages and Disadvantages:

Companies within business incubators have an 87% survival rate after 3 years—a rate far higher than other start-up businesses[6]. The same study also found that businesses after the same period of time remained within the same community 84% of the time, thereby avoiding the risk of a community losing their investment in the incubator zone[7]. Another study by the U.S. Economic Development Association determined that government money invested in incubators provided more jobs than money invested in infrastructure[8].

The Austin Clean Energy Incubator

is a subsector of the Austin Technology Incubator and is funded by the Texas State Energy Conservation Office, the City of Austin and Austin Energy. It provides strategic development, mentoring, access to capital, office space and laboratory testing space for its 18 companies in renewable energy, energy efficiency, energy management and fuel cells. One recent "graduate" of the program is Austin Biofuels which was purchased by Safe Renewables Corp.

Despite this success, incubation zones usually require pre-existing strong businesses. Their high success rate is related to their ability to select businesses for the incubator and so should be considered with caution.

Best Practices:

The National Business Incubation Association has developed a range of best practices for incubator zones[9]: These include:

- Develop a management system which records clients' business statistics in order to evaluate and improve services to clients
- Facilitate involvement of the cluster within the business and social community
- Develop a facility, tools and resources that meet clients' development needs
- Foster stakeholder support and advice within the community

3.1.3 Green Training Programs

Overview:

Recognizing that most who work in skilled jobs in the green sector have received their training and education at institutions like UBC and BCIT, Green Training programs are those offered at non-traditional facilities which provide skills training and/or upgrading that meets the needs of the green economy. These programs exclude

those already offered at universities and technical schools. Instead green training programs are designed to fill the gaps within existing training programs. Green Training programs can be very diverse, from training for laid-off finance staff to provide them with the knowledge and skills in carbon trading in GreenJumpStartNYC to pre-employment and weatherization skills for individuals with multiple barriers to employment.

Vancouver Examples:

photo: Light House

Identifying the need for programs to develop green building skills, Lighthouse Sustainable Building Centre and Built BC have offered government funded training programs to enhance green building skills. Building Opportunities with Business has also implemented training for work in urban agriculture

Advantages and Disadvantages:

There is a significant need to train people for the green economy. Some major firms like BC Hydro have 25% of their workforce eligible for retirement within 5 years[10]. Other fields, like construction, lack formal professional development for trades people and contractors to give them the skills and techniques needed for work in their field in a low-carbon economy. The advantage of using green training programs rather than educational institutions is that they can better adapt to those less accustomed to traditional educational settings.

One disadvantage of green training programs is that they do not always have strong links with business to ensure that the skills and knowledge that they are imparting are the ones desired within the workforce. The frustration and disempowerment from being unable to secure a job based on training can be accentuated if trainees already had lower level of trust and engagement with the workforce, as is common within job training programs.

The Oakland Green Job Corps,

developed in partnership with Laney College, Cypress Mandela Construction Training Program and Growth Sector Inc., provided 40 young adults with pre-employment, green building, solar installation skills and paid work experience. Trade groups worked in tandem with the program to ensure the curriculum was relevant to industry needs. The first class graduated in June, 2009 leading to well-paying green construction jobs within the community.

Best Practices:

The most effective green training programs have developed strong relationships with business to help shape the curriculum and provide work opportunities for graduates of the program. For example, BCIT has 18 industry partners for its Green Roof research program[11]. Being able to see clear positive outcomes of graduation aids the attraction and retention of students.

3.1.4 Green retrofitting programs

Overview:

Many communities and/or their utility companies have developed green retrofitting programs, using financing, audit programs, education and other incentives to encourage home and business owners at a household or neighbourhood level to make energy efficiency retrofits to their buildings. Loan payments are often tied to utility or tax bills, thereby allowing responsibility of the loan to be transferred from owner to owner if the house is sold before the loan is repaid[6]. These are known

as Property-Assessed Clean Energy (PACE) loans. Many financing programs are designed so that the monthly payment is less than the amount of monthly energy savings, providing a positive cash flow for owners.

Vancouver Examples:

Although there has been interest from the City and utility companies for implementing energy efficiency financing, currently there are a limited number of these programs in Vancouver. The City provides $3500 rebates for the purchase of solar water heating[7]. BC Hydro has an Energy Conservation Assistance Program (ECAP) that provides free energy audits and energy efficiency product installations for low-income Vancouver homeowners[8]. Vancity also provides financing programs for energy efficiency improvements at lower interest rates than would be offered for other renovations[9].

Advantages and Disadvantages:

Green retrofitting can have economic, environmental and social benefits. Energy efficiency improvements generally reduce a home's energy costs by approximately 28%[10]. On a macro level, the consulting firm, McKinsey, determined that improving energy efficiency is the most cost-effective means of reducing GHG emissions in the U.S.[11]. Green retrofitting programs can stimulate employment. In Sonoma County, even during the housing crash, their financing program contributed to a 7% increase in construction activity within the county[12].

One disadvantage of green retrofitting is that, in order to even achieve $10,000 in retrofits in even 1% of a community's housing stock, it would utilize a significant amount of a community's assets up front. Although Vancouver would receive interest revenue from this money, it would tie up $56 million of resources[13]. Some financing programs, due to marketing, regulatory or funding challenges, have had very low uptake. The first phase of Berkeley FIRST program only had 13 households follow through on the financing program[14].

The Sacramento Municipal Utilities District

launched a financing program in 1991 to provide 5-10-year loans at fixed interest rates for home energy efficiency upgrades. It has been one of the most successful in North America, having issued loans to over 87,000 households. Their default rate has consistently remained low, largely due to the fact that loan repayments are attached to the utility bill.

Best Practices:

Some best practices of these programs include:

- Where legislation supports it, allowing payments to be made on utility or property tax bills. This allows the responsibility of the loan to be passed to those who will receive the benefits of the upgrade.
- Using energy efficiency audits as a means to overcome risk aversion in homeowners and to document successes
- Charging administrative fees or a premium on the interest rate to make the program financially self-sustaining and deter frivolous applicants
- Marketing the program through building developers and contractors

3.1.5 Eco-industrial parks

Overview:

Although Eco-Industrial Parks are often perceived to be centres of "industrial ecology", where one business's waste serves as an input for another firm, as is the case in Kalunborg, there are very limited examples of where this is actually the case. Instead, Eco-industrial parks are industrial parks which either exclusively have "green" businesses as tenants or set higher environmental standards for their tenants. Unlike green incubation zones, they include a wide range of businesses at all stages

of the business lifecycle. Some common methods used by these parks are "green" infrastructure and by-laws facilitating higher energy efficiency, waste audit programs, shared administrative and shipping resources and consulting for greener business practices. Eco-industrial parks can either be formed "from scratch" by attracting new tenants or by imposing new regulations on an existing industrial park.

Vancouver Examples:

Vancouver does not have any eco-industrial parks. Its green industrial businesses are located in South Vancouver and in the lands in and around the Port of Vancouver.

Advantages and Disadvantages:

These parks allow communities to meet environmental and economic goals and help businesses reduce their costs and differentiate themselves by their environmental standards. Because of the parks' mandate, the park stimulates businesses to use full-system thinking about industrial process and environmental impact and companies often experiment with more sustainable practices.

Best Practices:

Eco-Industrial parks have different best practices, depending on if they are created "from scratch" or from pre-existing industrial parks. For new parks, it is essential that they be pragmatic and pay attention to the business fundamentals that make companies successful. An area needs to be able to offer a base of skilled labour and multi-modal transportation as well as offer a high ROI for companies locating there. For this reason, they are often most successful when they are focusing on businesses for which the area already has a competitive advantage. These parks also should have clear terms of reference for the engineers implementing the eco-industrial park plans. By definition, eco-industrial parks push the boundaries of current regulations so it is necessary that engineers be prepared to implement them and there is someone sufficiently assertive and skilled in negotiating for regulatory changes or exemptions. Finally, because eco-industrial parks are unfamiliar to the community and potential tenants, it is vital that a clear communication plan be developed[15].

Taiganova Eco Industrial Park

is an eco-industrial park just outside of Fort McMurray in northern Alberta which is focused on meeting the needs of the companies working in the Oilsands. It was created with the mandate that it would have the same financial and time costs as a traditional industrial park. It is owned by the city and is the only available industrial land in the area. The park requires tenants to follow environmental standards 40% more strict than pre-existing regulations. It is currently 80% occupied and awaiting construction. The Park was developed in conjunction with Eco-Industrial Solutions, a Vancouver Firm.

For transformed eco-industrial parks, it is important that there is significant local government involvement. The change in the nature of the park may require different zoning and land-use regulations so efforts of the park and the municipality need to be coordinated. It is also sometimes necessary for the park to be pro-active in identifying and analyzing needs and opportunities for existing businesses on the site[16].

3.1.6 District power:

Overview:

District Power is the process by which multiple buildings share a common heating and cooling system, in order to limit the energy needs of the building. The first use of District Power was in the 1880s but its usage waned in the last 50 years until technological advances made it a viable model. District power systems have a single central power source or multiple smaller

ones. Often they have heat exchange systems where a business or residential unit's waste heat is transferred and used to meet other buildings' heating needs. In many cases, district energy is powered by alternative energy like bio-fuels or wood waste. According to the 2008 CDEA survey, there were 118 District Energy Projects in Canada[17].

Vancouver Example:

See sidebar

Advantages and Disadvantages:

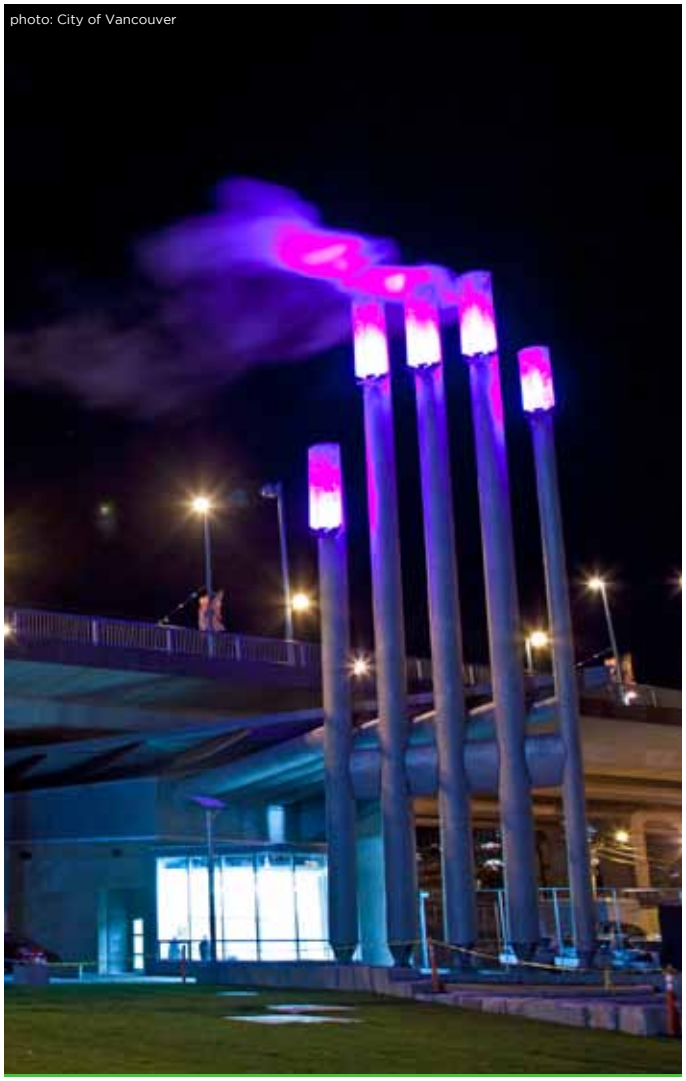
By working with multiple buildings, district power allows buildings to take efficient energy generation to scale and reduce carbon emissions. District power that combines heating and electricity generation can have one of the lowest carbon footprints of any heating power generation style[18].

The drawback of district heating is that, because of the high upfront costs of the system it takes many years before the cost of the system is paid back through energy savings. It is also not effective in low-density areas or neighbourhoods with multiple detached homes. Despite its prevalence in Europe and the technology's ability to minimize particulate emissions, combustion as a central heat and/or power source for district energy has given rise to considerable neighborhood opposition in North America, in part due to outdated notions of power plants with smokestacks and widespread pollution.

Best Practices:

A city can facilitate district power by ensuring high residential and commercial density along with ensuring that municipal owned residential units are on district power. This helps projects achieve economies of scale. In cases where the district power is independently owned its growth can be facilitated through providing municipal guarantees for loans[19].

photo: City of Vancouver



South East False Creek Neighbourhood Energy Utility

Vancouver's South East False Creek Neighbourhood Energy Utility produces energy from waste sewage (with back-up natural gas for peak periods). This system provides 70% of their annual energy needs and reduces their carbon emissions by 50%. The system is owned by the city. The price model is keeping within 10% of BC Hydro's costs with prices that near and possibly surpass BC Hydro's prices in the future.

3.1.7 Demonstration Projects

Overview:

Demonstration Projects are publicly–funded examples of a clean technology displayed to expose the public and businesses to new products, gain scientific knowledge and provide environmental benefits to the community. Usually they occur with products which are early in the technology life-cycle. They are especially effective in areas which do not have a sufficiently large local market for the product and require export revenue in order to make the product financially sustainable.

Vancouver Examples:

Vancouver has had a range of demonstration projects to highlight new technology. These range from the installation of Legend Power's Electrical Harmonizer at the Telus World of Science to Angstrom Power developing the system to power doctors' PDA systems at Vancouver General Hospital. The Olympic Village, as well, was a demonstration of district power which had real-time monitoring of energy usage using a locally produced technology.

Advantages and Disadvantages:

Demonstration Projects can be beneficial to business innovation for three main reasons 1) the information that these tests provide reduce uncertainty for businesses; 2) they help to establish a dominant technology; and 3) their existence helps create a supplier and consumer value chain.

Demonstration Projects in the public sector can have disadvantages. By needing to select a particular technology to demonstrate, it forces governments to pick the "winning technology"—a role for which they may not be best qualified[20]. It can also take a significant amount of time for the economic benefits of Demonstration Projects to come to fruition[21].

Malmo, Sweden

implemented a Hydrogen Filling Station and Bus Demonstration Project between 2002 and 2009 to show a natural gas/ hydrogen mix's ability to fuel an urban transport system (Much of the technology for this was built in Canada). The project had very positive support from the public and determined that the mix could greatly reduce fuel consumption. They also identified challenges with the fuel dispenser for mixed hydrogen fuels, thereby spurring further research.

Best Practices:

Despite the prevalence of environmental demonstration projects, there is a scarcity of research on the most effective ways to choose, plan and assess them. One paper stated that there were, in 2005, only six papers on the subject, some dating back to the 70s[22]. It is vital to develop key objectives for demonstration projects to determine whether they have a research or economic function. In order to avoid needing to "pick winners", where financially feasible it is beneficial to demonstrate several technologies simultaneously. Close interaction between firms demonstrating technology and their implementation partners can make a significant contribution to the successful deployment and operation of a new technology.

3.1.8 Other Means to Foster Green Zones

Procurement Policies:

Some communities have prioritized green businesses in their procurement policies, thereby creating a greater market for their products and services. One example of this is Livermore, California which has developed policies that favour procuring recycled materials for city needs and green construction techniques and solar power for civic buildings[23].

Industrial Land Protection:

Protecting industrial land is also vital for communities that wish to attract and retain green manufacturing or other businesses that have large space needs. This is particularly the case for Vancouver, which has only 6% of the region's industrial land[24] a 1% industrial vacancy rate[25] and 150% increase in industrial land cost from 2001-2008[26]. In Vancouver, several surveyed recycling plants stated that this scarcity deterred them from expanding operations and motivated them to transfer elsewhere[27].

Reducing "Green Tape":

Other communities have fostered green zones by examining their building codes and business regulations and removing those that unnecessarily hamper the growth of green businesses.In other cases, it is necessary to mention green elements within the building codes. For example, Vancouver has eliminated or adjusted building regulations to create fitting regulations for green roofs and "grey water" usage.. This process has been most prevalent in Germany which has not only permitted green roof growth but rewarded them for the positive externalities that they create. This regulatory atmosphere in Germany has helped Germany become a world-leader in Green Roofs[28], with 12-14% of their flat-roof area now "green"[29].

Green Educational Facilities

It is imperative to have world-class educational facilities with strong environmental departments for the success of green zones. They provide not only the skilled-labour in trades, the sciences and business which foster the growth of green business but also they can be mini-incubators for green business ideas of staff and students. Vancouver has outstanding environmental programs in city planning, ecology, resource management and architecture. Vancouver's BCIT provides skill training in environmental engineering, environmental technology and ecological restoration. To supplement this, there are also very strong programs at SFU campuses downtown and in neighbouring Burnaby.

photo: City of Vancouver

4. LOW CARBON ECONOMIC ZONES

4.1 Context: Memorandum of Understanding with California[30];

In July, 2009, Vancouver Mayor Gregor Robertson signed a memorandum of understanding with California governor Arnold Schwarzenegger to promote Low Carbon Economic Development Zones on the west coast of North America. The purpose of these zones is to reduce emissions, increase the use of low-carbon forms of energy and stimulate economic growth. Within the MOU, all signatories agree to measure at least 90% of their community's emissions and contribute to partners lowering GHG emissions by 80% before the year 2050. These partners will use tools including market mechanisms (i.e. cap and trade), financing, government incentives like rebates and regulations, technology exchanges and green job training programs in order to attain these goals. An extensive internet search of Low Carbon Economic Development Zones has not provided information about any other communities which have opted to also adopt this technique.

4.2 Current Green Zones

Communities around the world have identified the need, especially during economic downturns, to promote their green economies. Setting geographic zones has been a technique used in China, UK, the United States, Canada and others. There seems to be no common definition for these "zones", with cities such as Portland choosing to target particular neighborhoods for a variety of geographically-defined initiatives, while others such as the East Bay Corridor extend a set of general principles across multiple municipalities. In some examples from the United States, zones correspond to tax increment financing zones, or other zones that allow particular financial tools available to American municipalities to be leveraged to achieve the environmental or job creation goals of a given zone.

Nonetheless, some common elements within the zones are evident. Foremost among these are strategic partnerships and the involvement of key institutions. Because sustainability is a relatively new field, and expertise is distributed across the private, public, non-profit, and academic sectors, an important facet of green zones is the engagement of a number of key players in support of broader community goals. These initiatives have largely been spearheaded by municipal governments (in partnership with other actors), though they have often leveraged funding from senior governments, due to the timing of these initiatives in conjunction with the availability of significant stimulus funding in the United States.

Most of these programs are very new. As a result metrics on the zones' ability to generate jobs or attract businesses are sparse or non-existent. However, they have generated a lot of interest, so there are already discernable marketing benefits to these zones.

4.2.1 Portland Eco-District

Overview:

The Portland Eco-District was designed in order to test, accelerate and codify best practices in green development, low environmental impact and economic and social resiliency. The Portland Eco-District is the result of a Public-Private partnership consisting of the Portland Sustainability Institute, the City of Portland, Metropolitan Portland, Portland State University and the Oregon University system, Oregon BEST Business Centre and a committee of real estate, design and construction industry leaders and environmental organizations. Its objectives are to:

- Promote sustainable neighborhood development
- Support the creation of community-led district governing entities to manage EcoDistrict implementation
- Formalize new municipal policy and regulatory structures that institutionalize sustainable neighborhood development
- Create metrics and protocols for setting goals, baselining performance, and prioritizing projects
- Promote faster innovation cycles for emerging sustainable practices and technologies
- Accelerate integrated infrastructure projects, including district utilities (energy, water, and waste)
- Formalize new municipal policy and regulatory structures that institutionalize sustainable neighborhood development

Programs:

Portland plans to have five eco-districts across five diverse neighbourhoods and districts within the city. Each neighbourhood will develop a new sustainable management association or have a pre-existing neighbourhood or business organization take on that role. The association will work to measure the baseline metrics of the community and develop strategy to implement green practices within the communities that meet their own needs and strengths. Portland State University, for example is looking into developing district scale green building.

Successes and Challenges:

The Portland program is still in its very early stages and so little data about the program is currently available. The program will both strive to build infrastructure of neighbourhood-wide green building and also work on behavior change among eco-district residents. One early success from this was their initiative to reduce the number of single occupancy vehicles in Lloyd Eco-District which it funded from the savings from not having to build additional parking infrastructure.

Portland hopes that their eco-district plan will be scalable across the nation. The Portland Sustainability Institute is creating a toolkit about best practices in community engagement, governance, performance assessment, strategy prioritization, feasibility, implementation, monitoring, financing and policy development.

4.2.2 East Bay Green Corridor

Overview:

The East Bay Green Corridor Partnership was founded in 2007, originally consisting of the cities of Berkeley, Oakland, Richmond and Emeryville as well as University of California, Berkeley and the Lawrence Berkeley National Laboratory. In 2008, they added the cities of El Cerrito, Alameda, Albany and San Leandro as well as Peralta and Contra Costa community colleges. The goals of the cluster are to create conditions that support new and emerging green industry businesses, strengthen existing programs promoting technology transfer and development, support employment growth and build a cohesive regional identity.

The programs emerged within communities which had already been implementing green programs independently. Oakland had developed the Oakland Green Jobs Corps and Richmond had started their Solar Richmond program. Berkeley had initiated a Berkeley First program to provide financing for energy efficiency improvements. On top of this, the consumers within the region also embraced green businesses of all types. The region had the

highest per-capita ownership of hybrid vehicles and environmentally-friendly businesses like Clif Bars had flourished in the region, due to local appreciation of green products.

When the Green Corridor started, the region already had a large number of green businesses in biofuel, green building and organics, including businesses like JBEI and Amyris. Many of these companies are spin-offs from projects that had emerged from the University of California, Berkeley and the Lawrence Berkeley National laboratory. In the past, many of the companies that had developed out of these institutions had re-located to the South Bay after they had moved past the research and development phase. The East Bay Green Corridor was created in order to encourage them to remain in the East Bay where there was available industrial land, knowledge and labour talent. The region intends to offer a setting for businesses to grow "from cradle to scale", where the enterprise can move from being a research-based institution, through its commercialization and manufacturing process. By making companies aware of available land within the region and advocacy, the Corridor will encourage businesses, if they need to change communities, to remain within the region.

Programs:

The corridor has provided a forum at which community leaders can collaborate rather than compete amongst themselves to attract green businesses. It has begun an inventory of the region's industrial land that is available to green businesses and the green initiatives that regional communities currently have in order to assess the viability expanding them to other communities in the Corridor.

Successes and Challenges:

The East Bay Green Corridor is still relatively new and so there are relatively few metrics by which to measure its success. Because the program's start-up largely coincided with the economic downturn, it is difficult to determine whether the results are due to the recession or the program. Since its start, there has been a decrease of green tech venture capital funding[31] within the region but communities within the Green Corridor (independently) have attracted $76 million of federal stimulus funding[32] and $350 million over 10 years from British Petroleum and produced 25 new clean tech start-ups. None of this money, though, was provided to the Green Corridor Organization which appears to have limited capacity; it only hired its first director two years into its operations and its official website has not yet updated to include the new partners which have entered the corridor in the previous year. The organization has, though, provided a forum in which mayors and community officials can share ideas and strategize together to meet regional environmental and economic goals.

4.2.3 Kansas City Green Impact Zones

Overview:

The Kansas City Green Impact Zone, which started in 2009, is an initiative to concentrate and coordinate funding and public-private partnerships to transform through energy efficiency and other green initiatives a 150-block neighbourhood that has been in economic decline. Its objectives are to strengthen the neighbourhood, improve energy efficiency and create jobs. Because of the diversity of its objectives, it has both "green" and "non-green" aspects.

Programs:

Programs within the community include Kansas City's house weatherization programs, community policing and community services, house improvement through installation of smart meters, employment training, infrastructure creation and public policy advocacy. According to the director, approximately 50% of their work is to facilitate the involvement of groups and individuals who do not normally participate in civic programs into pre-existing green projects, like the weatherization program designed by the city[33]. They provide the "boots on the ground" which allows them, through community events and door-to-door canvassing to access the community at large.

The other aspect of their work has been programs, like the implementation of the smart-meter program in the community, in which they have taken on the role of designing the program's operations. They have also taken a large role in helping to shape public policy to make energy efficiency programs more responsive to the community's needs. Although they recognize the importance of keeping their program focused, they plan to expand the program to focus more on youth and local business groups. There are plans to start business plan competitions for youth to encourage entrepreneurship and to provide education and assistance to local businesses to strengthen the neighbourhood's community.

Successes and Challenges:

Like many of the other green zones, it is still in its early phases and so there is limited information about the program's level of success. Recently, they have been able to attract a growing high-tech company, QM Power[34].

Some challenges that they've had include managing expectations for the Initiative within the community. Despite their attempts to control the message, the media was not always clear that the program's implementation was contingent on funding regulations so not everyone who wished to participate in the program would have access to funding.

Toledo, Ohio

4.2.4 Toledo, Ohio

Overview:

Toledo does not have a formal unifying "zone" program but they have adopted a number of the tools commonly used by green zones. They have also recently move to formalize their green zone status; one county commissioner has made a push to incorporate an East Bay Green Corridor model[35].

Programs:

The University of Toledo created the Wright Center for Photovoltaics Innovation and Commercialization. This program provides small businesses with access to testing equipment that they would be unable to afford otherwise and has created seven start-up companies including First Solar which now builds more photo-voltaic cells than any producer in America. There also is the Regional Growth Partnership, a privately-funded and directed non-profit organization to help small tech-based businesses access financing, find offices and manufacturing facilities, market themselves and develop their businesses. One success of this program is Xunlight, a major solar power business, which was a spin-off of the University of Toledo.

Successes and Challenges:

Much of this region's successes can be attributed to its industrial history. Since the 1950s, Toledo has been known as "glass city" creating windshields for the automotive industry. However, due to industrial outsourcing and the downturn of the American auto industry, more than 200,000 jobs have been lost in the community[36]. This glass-making infrastructure and skilled work-force has helped facilitate the development of the solar power industry, which requires the same skills as those needed for glass making industry.

5. DISCUSSION

In order to determine the effectiveness of green zones in Vancouver, it is necessary to define a zone's objectives, whether it's intended to:

1. Attract businesses within the "green" sector (alternative energy, fuel cell technology, land and water remediation, environmental consulting etc) to Vancouver
2. Encourage all businesses, regardless of the sector, to have more environmentally-friendly products and processes
3. Utilize "industrial ecology" practices which utilize district power and waste exchanges to limit the environmental impact of its businesses.
4. Market the city as an attractive location for businesses, investment and the labour force.

It is recognized that these objectives are not mutually exclusive and attaining one objective may facilitate the achievement of others. However, in order to clarify goals and practices, it is important to look at each of them separately.

5.1 Attracting Green Sector Businesses

Although some green zone elements, like retrofitting finance programs, green training programs and green business incentives, can have efficacy in attracting, retaining and fostering green sector businesses, there is little advantage to restricting these elements to a limited zone within the city rather than the city as a whole. Because of the mobility of the workforce around the city, these geographic limitations would not necessarily foster business within the designated zone.

Elements, like eco-industrial parks, which are more effective within a limited geographic area, may be difficult for a municipality to undertake. Eco-industrial parks that cater exclusively to one type of business for which the region does not have a clear competitive advantage can have limited effectiveness, and Vancouver's green firms specialize far more in services than industrial functions. It can be difficult to attract significant numbers of businesses from a specific sector if the industrial park does not have marked advantages over other available industrial land.

Green incubation zones can have a significant ability to attract green sector businesses. However, the resources necessary for facilities to foster many of the high-tech green industries is very high. Vancouver's fuel-cell cluster has received $193 million of R&D investment[37]. This is likely beyond the capacity of a city-based initiative. Leveraging existing incubators is perhaps the better strategy for attracting and growing businesses.

As a result, although attracting green sector businesses can and should be a strategy for the

city, geographically limited green zones may not be an effective tool to achieve the goal.

5.2 Improving all sectors' environmental products and processes

A green zone can set extra environmental regulations for the businesses practicing there, helping to make those businesses more environmentally-friendly than their rivals. These green zone regulations can be more palatable for firms because those businesses would benefit from the green branding of being located in a zone. In effect, the zone could work as an eco-label which would not only brand the company and the zone but also, by extension, the city in which it is located. Because Vancouver is already branding itself as the green capital, such a zone would be a good strategic fit.

One of Vancouver's advantages is as a center of testing and development of technologies, so a zone that embraced new technology demonstration and deployment could be a highly profitable venture. Similar to UBC's "Living Laboratory" concept, it would allow for direct interaction with and research on technologies in real-world conditions. It would also have the beneficial effect of showcasing local technology strengths, allow companies critical early-phase feedback on their offerings.

Vancouver has a potential site for such a zone in the False Creek Flats. This site has the added benefit of its availability of multi-modal transportation and its proximity to downtown. This site could be especially attractive to businesses because of the overall scarcity of affordable industrial land within Vancouver. Because of these added advantages, and the benefit of the zone's green branding, businesses are more likely to be attracted to a green zone, regardless of the added cost caused by the environmental regulation.

Of the three potential objectives of a green zone, this is the one that could best be met with a green zone with the city.

5.3 Creating mechanisms for Industrial Ecology

A green zone which focuses on creating a setting for industrial ecology and waste exchanges among businesses would require extensive centralized planning and infrastructure.One of the challenges of planning such a project is it requires firms to have a synchronicity of wastes and needs with its neighbours. If this synchronicity is to be achieved, it limits the types of businesses that can locate within any given lot within a zone. This may make it very difficult to sell lots within a green zone.

Even if a firm needs a neighbouring business's waste product, in order for it to fit within its production practice, this waste needs to be provided with consistent timing and quality. Transportation of the waste also needs to be safe and affordable. Because of these challenges, this is not the most effective objective of a green zone. Even with these difficulties, though, many eco-industrial parks have created infrastructure including space set-aside where inter-building piping could be located if waste exchanges were operationally and economically feasible.

Although it may not be effective to make this the central objective of a green zone, the City may wish to pay attention to the waste exchange project that the Strathcona Business Improvement Association has initiated. They are in the process of creating an infrastructure where Strathcona businesses can network to exchange their non-commercial outputs with other firms. Although they will likely face the challenge of low industrial density within the area, they are meeting the challenge through proposing transportation delivered by marginalized community members using non carbon emitting vehicles (i.e. bikes with trailers).

Endnotes.

1. http://www.calrecycle.ca.gov/rmdz/Sacramento/
2. http://www.prospect.org/cs/articles?article=cities_on_the_front_lines
3. http://www.calrecycle.ca.gov/rmdz/Sacramento/
4. http://greeneconomypost.com/midwestern-midwestern-governors-unite-green-energy-jobs-4935.htm
5. VEDC, Media Fact Sheet, www.vancouvereconomic.com/userfiles/file/MEDIA/VEDC_FastFacts_CompAdv.pdf
6. University of Michigan, NBIA, Ohio University and Southern Technology Council, Business Incubation Works. Athens, Ohio: National Business Incubation Association, 1997.
7. ibid
8. "Construction Grants Program Impact Assessment Report," Thornton, Grant, Economic Development Administration, 2009
9. "Principles and Best Practices" National Business Incubator Association, www.nbia.org/resource_library/best_practices/index.php
10. BC Hydro (2009) (pdf). BC Hydro 2009 Annual Report. Vancouver
11. McKinsey & Co., "Curbing Global Energy Demand Growth: The Energy Productivity Opportunity," May 2007.
12. http://commons.bcit.ca/greenroof/industry.html These are frequently referred to as Property-Assessed Clean Energy (or PACE) loans due to legislative initiatives in the United States. In Canada or jurisdictions where the costs are amortized through utility bills, this mechanism is more frequently referred to as on-bill financing.
13. http://vancouver.ca/greenestcity/greeninitiatives.htm
14. http://www.affordablewarmth.ca/node/751
15. https://www.vancity.com/Loans/BrightIdeas/
16. Natural Resources Canada. 2006. Energy Efficiency Report to Parliament.
17. McKinsey & Co., "Curbing Global Energy Demand Growth: The Energy Productivity Opportunity," May 2007.
18. Interview with John Haig, Sonoma County
19. Based on housing number data from CMHC, Renovation and Home Purchase Detailed Tables, 2009
20. Interview, Daniel Lambert, Berkeley FIRST
21. Interview, Tracy Casavants, Eco-Industrial Solutions, 2010
22. ibid
23. Canadian District Energy Association, District Energy; A national survey report, 2009
24. http://www.claverton-energy.com/carbon-footprints-of-various-sources-of-heat-chpdh-comes-out-lowest.html
25. Cogeneration and District Heating, Energy Charter Secretariat, 2006
26. "Public demonstration projects and field trials: Accelerating commercialization of sustainable technology in solar photovoltaics", Brown, James; Hendry, Chris, Energy Policy, 2009
27. Ibid
28. ibid
29. http://www.ci.livermore.ca.us/city_newsletters/LivNews25_spring_07.pdf
30. 2005 Inventory: 1,623 acres vs. 26,089 total acres. 2008 city data: 1,676 acres in city
31. article, 11/10/09, Daily Commercial News
32. Policy Report, July 2009, South Van Industrial Area, p. 22
33. Interviews, Recycling Alternative, West Coast Reduction
34. "Green Roof Policies: Tools for Encouraging Sustainable Design" Ngan, Goya; 2004
35. "Green Roofs in Germany: Yesterday, Today and Tomorrow". Herman, Robert: In Proceedings of the Greening Rooftops for Sustainable Communities Symposium May2003.
36. "Proposed Low Carbon Economic Development Agreement Between the state of California and Vancouver" 2009
37. Interview, Michael Caplan, East Bay Green Corridor
38. SFGate.com: http://articles.sfgate.com/2009-06-27/business/17210690_1_uc-berkeley-green-industry-green-careers
39. Interview, Anita Maltbia, Kansas City Green Impact Zone
40. Kansas City.com; http://www.kansascity.com/2010/04/12/1873308/qm-power-moves-into-kcs-green.html
41. Toledo Blade, http://toledoblade.com/article/20100426/NEWS16/4260339
42. "City Clean Tech Incubation—How does Toledo beat Austin?" Green Flow, http://www.commoncurrent.com/notes/2009/04/city-clean-tech-incubation-how.html, 2010
43. Vancouver Fuel Cell and Hydrogen Technologies Cluster Fact Sheet, http://www.nrc-cnrc.gc.ca/eng/clusters/factsheets/vancouver.html


VANCOUVER
GREEN CAPITAL


vancouver
economic development


SAUDER
School of Business
ISIS Research Centre