

Expert Panel Feedback

(The following feedback was provided by the members of The Way We Green Expert Panel in response to the 21 Edmonton Sustainability Papers)

Guy Swinnerton		David Schindler		Debra Davidson		Pong Leung		Dan Smith	
General Comments	<p>Overall I thought that the Papers provided an excellent review and assessment of the key issues that have relevance to Edmonton's sustainability in the future. The Papers provide a very rich source of information and perspectives that have applicability well beyond Edmonton's boundaries, and I have recommended them to colleagues as critical background reading on that basis. I hope that you will find my comments relevant and helpful. Not surprisingly because of my background and interests I have focused my attention on those aspects of the various papers that have particular relevance to the sustainability of green space and biodiversity.</p>	<p>General</p> <p>Many of the papers are just regurgitation of material that can be found on any green website. The ones with Edmonton-specific information were much more entertaining and informative. (Though I suppose even regurgitation into a document that more people read is a good thing in a society that is generally ecologically illiterate).</p> <p>Some Elephants in the Room:</p> <p>Several papers mention the urgency of moving our food base closer to home, and the difficulty of feeding Edmonton. But no one remarks on the incompatibility of the impending “upgrader alley,” which will further depleting suitable gardening land by covering it with development, poisoning it with ozone or toxic trace metals (which are taken up by root crops and leafy vegetables).</p> <p>No one comments on the fact that maybe a goal should be for Edmonton not to grow in either population or in economy as one way of becoming more “sustainable.” At current growth rates, Edmonton will have a population of 12 million by 2100. Calgary will be similar. Few cities of this size are healthy. Clearly, we would be very water and food limited. There are models we can look at like southern California. Do we really want to have to get up at 6 am to see the scenery before smog hides it? Do we want the AMA to have to report traffic “red alerts” as they do now for blizzards? These are</p>	<p>Overall, I was struck by the amount of consistency in response options suggested across the chapters. This suggests tremendous potential for synergy, and also the ability to maximize resource expenditure by selecting those response options that have the highest payoff in terms of addressing multiple environmental concerns. There are a few response options that I found to be particularly compelling and either are relatively inexpensive or may actually generate funds for the City rather than imposing net costs:</p> <ol style="list-style-type: none">1) A Congestion Charge Zone, scaled to accommodate high efficiency vehicles. This will no doubt get a huge amount of opposition, so it will be important to get major employers involved, and occur in conjunction with a big marketing push in mass transit and cycling.2) A temporary Whyte Avenue Pedestrian Mall (104th Street downtown is another good option, perhaps even for a permanent pedestrian block since it is not an essential thoroughfare like Whyte Ave).3) Engaging school children. This could take several forms: considering the particular dangers of idling for small children, getting them	<ul style="list-style-type: none">• There is a strong sentiment in the discussion papers that the City of Edmonton should be concerned with the state of the environment locally and globally. For example, Edmonton Ecological Footprint is 3.2 times greater than the world average. If Edmonton wants to be a leader and role model for the rest of the world with respect to sustainability, this cannot to continue to be the case. There is a case for change.• In terms of what Edmonton should be striving for, the discussion paper on “What is Sustainability?” offers a recommendation that the City of Edmonton adopt scientifically robust socio-ecological principles of sustainability as criteria to guide long-term decision-making. In terms what the application of these criteria to Edmonton would mean, there is also a consistency in what discussions papers are suggesting, i.e. eliminate urban sprawl by designing our communities around active and public transport, and create sustainable buildings and neighbourhoods that are powered by renewable energy, radically reduce energy and water use, etc. The City can be looking upstream for solutions, i.e. reduce storm water with a green roof program (see City of Toronto).• The City of Edmonton needs to establish its sustainability “street cred”, i.e. there needs to be alignment throughout the City of Edmonton around sustainability from Council and Senior Leadership commitment to governance to policies and plans to operations to day-to-day decisions.	<p>Prologue:</p> <p>All of the Edmonton Sustainability Papers present interesting knowledge, ideas, assumptions and partial facts to support the various points of view. My task was to provide a critique of each paper, provide comments about the content, and then to provide a synthesis of the issues and options.</p> <p>Review of the papers confirms that there are very few if any wonderful or magic solutions to dealing with the realities of the future. The current approach of trying to create rules, by-laws and regulations to control more and more of a person’s or community’s life is likely to continue to the detriment of both. Regulation of homes, work places, food, water, land, health (medical care), and transportation can reach a point of near total control of life. This can lead to a wide variety of social problems as those setting the rules are dictating to the citizens what is best for them, thus eliminating personal decisions, personal choice and responsibility. How to balance the need for individual freedom and the structural complications of high population density and limited energy, water and food resources, and at the same time protect health and the environment is a very complex set of challenges. How these challenges are dealt with defines communities, their desirability, and the happiness of its citizens.</p> <p>One of the most serious issues related to the environment is that of global warming. The earth being in a constant state of adaptation instituted by the sun’s changing energy releases and gravitational factors that influence the distance between the two. The variations in these conditions have resulted in several periods of warming and cooling. The end on the last ice age started about 12,000 years ago when there was about 1.5 km of ice over the Edmonton region. It melted as did the permafrost soil, allowing prairie and forested surface cover to develop. Humans had nothing to do with it. Global warming is occurring now. The amount of frozen soil is decreasing, the size of glaciers is decreasing, the amount of sea ice is decreasing, and the air and soil temperatures and the amount of water gas in the atmosphere are increasing. Since the energy storage capacity of water vapor is many times that of carbon dioxide in the atmosphere and soil has several times the solar heat absorptivity of ice and snow (albedo), it is reasonable to expect that as ice and snow melt more heat will be stored in the soil and as temperature and the water gas</p>				

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		<p>realities in the Los Angeles area today, with about 30 million... the population of AB in 2100 if we don't behave better.</p> <p>With this population increase, there will be increasing demand for roads, schools, hospitals, more and more infrastructure. Maybe it's time we are happy with what we have.</p> <p>With all of the focus on housing, why does no one mention that the sizes of our houses keep increasing? No matter how well insulated, more resources and more energy for heating go into large houses.</p> <p>There is no vision as to what industries we should be promoting. Are we resigned to being at the mercy of the Oily Ones forever? Given the high contribution of industry to Edmonton's GHG footprint, perhaps we should be planning to move toward industries that require less energy, high tech rather than resource extraction.</p> <p>Several papers treat water quality in some way. No one mentions that we really need enforceable standards, rather than loosey-goosey "guidelines" that have no legal teeth.</p>	<p>engaged in anti-idling compliance in fun ways, say by having kids post little pre-made notes on idling cars could be a very effective way to raise awareness among drivers. School gardens would also be a great learning device as well as local food source.</p> <p>4) Infrastructure support for cyclists, including locking storage and dedicated lanes, particularly in the downtown core and university areas.</p> <p>The only <i>potential</i> conflict I could identify is that between protection of bio-diversity and enhancing local food production, but I believe this conflict can be avoided so long as a coordinated land management approach is developed. There is quite a bit of overlap in content, which was an unfortunate use of the City's resources. I think the biggest gap is a critical assessment of political viability—developing dream plans is the easy part but making them a reality is something else entirely. The Davidson paper covers this a bit, but certainly not sufficiently. The next planning stage should ideally include a political and economic assessment of response options.</p> <p>Another limitation is the tendency among many papers (with the exception of Paper 11) to treat the City of Edmonton as an island of sorts, with little consideration for its situatedness, either politically, economically, or ecologically, within a broader sphere of influence. This pertains both to the constraints posed by these external scales—e.g. To what</p>	<p>This sentiment is expressed in the "Best Practices..." article as well. Currently there is no comprehensive corporate initiative to transform the City to be a catalyst of sustainability in the community (that I am aware of) at the City of Edmonton and this will be necessary to make meaningful change as business and other stakeholders are looking to the City for leadership and permission to engage in more sustainable efforts. They also need to know that their policies and bylaws will support investments in sustainability, as such a definition of sustainability should be used to guide decision making in all plans.</p> <ul style="list-style-type: none">• There are a lot of tools and concepts that can help and in many ways they are very complimentary. For example if look at Agenda 21, the Adaptive Management Framework and The Natural Step Framework, they can (and should) be used in conjunction with each other. There is a misconception that one needs to choose between them, but it is not true.• There are many examples of successful technologies (e.g. net zero homes, district heating, biofuels, public transport, etc.) as well as policy measures (e.g. congestion fees, road tolls, tax shifting, etc.) that the City of Edmonton can learn from and apply in its own sustainability efforts. The challenge is not with the availability of technological and policy solutions, the challenge is with leadership, with Council, with the City and with the Community. Solutions are out there looking to be applied.• There are many experts and success stories in Edmonton and there is a big opportunity to harness their energy and expertise. People are looking to	<p>content of the air increase so will the energy storage capacity of the water gas in the air. The real question is "are humans causing an increase in the rate of global warming?" This is very difficult to answer since newer data suggests that the temperature is not as warmer as it has been in the past and no historical rate information is available. This suggests that major investments in carbon dioxide discharge reduction may be a waste of money that will have little or no impact on the environment except a bad one of expending a tremendous amount of energy. This effort may be better invested in air pollution control which could directly positively impact all living things.</p> <p>Many people seem to feel guilty about having a good to excellent standard of living. Rightly placed concern about air, land and water pollution has been transferred to concern with global warming as an implied result of excessive use of none renewable resources such as gas, oil and coal. As these non-renewable materials are converted the CO₂, H₂O and residues, the issue has been with the inevitable exhaustion of the supply. The concern is not with the good standard of living it is with the decreasing supply of the gas, oil and coal energy supply to maintain it. The wasteful use on these non-renewable resources must be brought under control. The science and technology components of society has a major task to develop better and much more efficient methods of converting potential, kinetic and radiation energy into useable forms, primarily electricity.</p> <p>Global warming was discussed by several authors, parroting the Intergovernmental Panel on Climate Change (IPCC) without investigation into the data origins or the evaluation methods. This has become a gold mine of research funds that may yield very little benefit when compared to what similar amounts funds invested in air pollution control could do to improve the life of living things.</p>

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				extent are City coffers linked to Provincial coffers? How does the siting of new upgrading facilities east of the City have an impact on the water supply available to the City? How do the development plans of neighbouring jurisdictions, especially as it pertains to green space, impact our own goals for bio-diversity protection? It also pertains to a broader level of ethical and environmental responsibility as well: a narrow focus might support strategies that simply export our degradation and waste to other jurisdictions, for example, which may look great for Edmonton’s ecological footprint, but would do nothing to reduce the global ecological footprint.	contribute so we need to provide them meaningful opportunities to do this.	
Paper 1 <i>What is a Sustainable City</i> (Richard Heinberg)	<p>Overall the paper provides an appropriate discussion of the concept of sustainability and its application in an urban context. The five axioms of sustainability provide a useful foundation around which to consider sustainability in an urban context.</p> <p>Although the paper focuses on sustainability of the city I presume that its intention was to provide an initial overview of the concept of sustainability. That being the case, it would have been useful to acknowledge that to a large extent the current debate on sustainability originates with the World Conservation Strategy of 1980. Sustainability in that Strategy focused on the sustainability of biodiversity that involved: (a) maintaining essential ecological processes and life support systems, (b) preserving genetic diversity, and (c) ensuring the sustainable utilization of species and ecosystems.</p> <ul style="list-style-type: none">As noted in Discussion paper 1, The Brundtland Commission’s <i>Our Common Future</i> was published in 1987. This	A good general paper on sustainability. Its one flaw is no mention of a role of biodiversity.	Among specific chapters, on the positive side, the Five Sustainability Axioms described in Paper 1 provide a nice roadmap for sustainability planning, although it should be noted that we are not likely in a position to provide the data necessary to take these axioms as a literal policy guide. The policies and practices section gets into more specifics and serve to reinforce the suggestions made in later papers	<ul style="list-style-type: none">Agree that sustainability should be used and that it is often time misused, and that sustainable is often used to discuss “less bad”, incremental improvements vs. solutions that work to create a truly sustainable world.Agree with his definition of sustainable as “able to be maintained over time”, although I would also add “indefinitely” or “forever”.Agree that “...a sustainable city, then, should maintain itself for many centuries...”, however would add that it should “also not be undermining the rest of society’s ability to maintain itself”, because the city is just one part of a larger system we call “society in the biosphere”, which is ultimately the system we need to sustain.Agree about the danger of short-term thinking and really like how indigenous communities “...consider the impact of	<p>Critique:</p> <p>This paper is focused and to the point. It identifies key definitions and criteria clearly with the objective of listing criteria of sustainability recommended for use by the City of Edmonton. Each of the criteria has limitations which were not discussed and have real impact of the growth and quality of the Edmonton environment. These are discussed below.</p> <p>Comments:</p> <p>The City of Edmonton’s existence and growth are related to two factors: naturally occurring renewable and non-renewable resources of the region and other regions to the north, and being the governmental centre for Alberta. These two factors have driven to growth in population and the expansion of the size of the City and its infrastructure. The City and the surrounding communities have seen substantial growth due to the mining, coal, oil, gas and forestry industrial growth. The City has experienced a loss of its industrial base over the years and has relied on the growth of government and soft industries for expansion and improvement of the quality of life.</p> <p>The “criteria of sustainability recommended for use by the City of Edmonton” includes seven points discussed below:</p> <p>1. “In a sustainable society, nature is not subject to</p>	

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<p>presented many of the arguments contained in the World Conservation Strategy through a stronger social and economic filter. A similar orientation was taken in the subsequent <i>Caring for the Earth: A Strategy for Sustainable Living</i> (IUCN/WWF, 1991). Although the issues of social and economic capital are important considerations in discussing sustainability, I think that too often in contemporary debates on sustainability, the issue of sustaining natural capital and more specifically sustaining biodiversity is not given the attention it requires and deserves. Some comment about the relationship between environmental, social and economic sustainability would have been useful together with acknowledgement that they are not necessarily compatible and what are the trade-offs that have to be considered. See a recent issue of <i>Science Vol 328</i>, April 9, 2010 regarding the need to give biodiversity urgent attention.</p> <ul style="list-style-type: none">• The importance of protecting and sustaining biodiversity and green infrastructure is referred to in a number of the discussion papers.				<p>their decisions on the seventh generation to come.” Simple and very powerful idea, that also connects with Canada’s heritage.</p> <ul style="list-style-type: none">• Really like that he referred to The Natural Step system conditions. ☺• Really like that he refers to the Ecological Footprint, which is an excellent tool. There are two papers co-authored by Mathis Wackernagel and Karl-Henrik Robert on how the Ecological Footprint can be used in a complementary manner with the four Principles of Sustainability (and also where it can’t help and where complementary tools are needed, e.g. Genuine Progress Indicators to measure social health). Please ask me for paper of you like.• Axiom #1: Agree and in additional should also consider the “sink” issues as well, e.g. we could substitute conventional oil with oil sands, and also perhaps with coal afterwards, however, will ecological systems be able to handle an systematically increasing concentration of carbon in the atmosphere as these substitutions happen? Climate change trends suggest not.• Axiom #2: Agree about the rates of consumption. The challenge is how to increase quality of life but decreasing materials and energy throughput in our economy. This is a design flaw with our systems today (e.g. energy, transport, etc.)• Axiom #3: Agree, this is essentially the same as the third Sustainability Principle referring to not subjecting nature to systematic degradation by physical means, one of the ways society does this is using resources faster than its rate of replenishment.	<p>systematically increasing concentrations of substances extracted from the earth’s crust.”</p> <p>For a growing community the concentrations of any raw materials may or may not increase depending on what technological advances develop to meet the needs and wants of the people. With a growing community the mass of substances will increase within the community even with concentrations remaining constant. The most important factor is the management of the material in a way that they can be concentrated, recovered and recycled. Society has a role to play in finding ways to make recycling a much cheaper option than the use of raw materials.</p> <p>2. “In a sustainable society, nature is not subject to systematically increasing concentrations of substances produced by society.”</p> <p>This is subject to the same comments as number 1.</p> <p>3. “In a sustainable society, nature is not subject to systematically increasing degradation by physical means.”</p> <p>Population growth leads to increasing the area impacted by trying to fulfill the needs of the people. The rate of growth of the City’s footprint can be reduced by increased population density and improving the quality of the higher density environment, but as long as there is population growth there will be increasing changes to the environment by physical means (housing, transportation, food and recreation activities).</p> <p>4. “In that society people are not subject to conditions that systematically undermine their capacity to meet their needs.”</p> <p>However, as population density increases more rules and regulations seem to develop to prevent one person from making changes to their living space that another person may not like. Social control to the lowest common denominator becomes the guide to social control of the individual. Very few communities have been able to control the desire of people in government to control and manage the life of the individual for the “good of the community or society”.</p> <p>5. “Population growth and/or growth in the rate of consumption of resources cannot be sustained.”</p> <p>Control of population growth is normally beyond the ability or the desire of the community to control. Individual family growth control decisions rests with the family in Canada. Community population growth control often runs counter to the wishes and sometimes needs of the commercial sector which may have planned for sustained growth.</p>

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						<ul style="list-style-type: none">• Axiom #5: Agree, and the first two Principles of Sustainability speak to this idea and refine the language to be more precise. I would also include an emphasis of trace metals and persistent compounds as substances that society needs to pay additional attention to.• Agree with the definition of <i>Basic Human Needs</i> on p.7, these are consistent with the ones in The Natural Step Framework.• Agree with his <i>Criteria for Sustainability</i>, i.e. the Principle of Sustainability deal with the “sink” concerns, while the axioms deal with the “source” (i.e. resource availability / depletion) concerns.• Agree with all the suggest policy and practices for cities, in other projects, we have used the criteria to identify strategic priority areas which then use the <i>Criteria for Sustainability</i> as design criteria for various community systems (e.g. water, energy, materials, land, food, transport, housing, etc.).	<p>However, population limits and reduction can result in reduced impact on the environment. Strong rejection of this type of limitation is based on the business development plans which were used to support the economic growth based in population growth.</p> <p>6. “To be sustainable, the use of renewable resources must proceed at a rate that is less than or equal to the rate of natural replenishment.”</p> <p>This is a great concept for a region, but, is nearly impossible for a community as all renewable resources are transported into the community. Communities import most of the paper, majority of food stuffs, fuels and even under to most advantageous conditions most of the energy they use.</p> <p>7. “To be sustainable, the rate of use of non-renewable resources must proceed at a rate that is declining, and the rate of decline must be greater than or equal to the rate of depletion.”</p> <p>As above, this is a noble objective, as is number 6, and should be an objective to strive for, However, the ability to recycle the majority of the used materials back into useable products in a cost competitive way within a community is very limited. If the boundary for a recycle program evaluation were to be the province or country the potential for success is much more realistic, especially with societal support.</p> <p>It seems that the objectives of sustainability as defined in the paper are good for a country or a large region are great and should be aspired to by individuals and communities. The City of Edmonton needs to put them in prospective by defining more precisely what can be done within the boundary of the City and what requires a larger regional vision. Working for this larger regional vision should be an element of the objectives or criteria package.</p>

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					<div><div><div>Sustainability Declaration</div><div>Strategic Priority Areas</div><div><div>Description of Success</div><div>Description of Success</div><div>Description of Success</div></div><div><div>Transition Strategies</div><div>Transition Strategies</div><div>Transition Strategies</div></div><div><div>Description of Current Reality</div><div>Description of Current Reality</div><div>Description of Current Reality</div></div></div><div><p>The Sustainability Declaration articulates sustainability for the community and is adopted by Council as formal policy to guide decision making.</p><p>Strategic Priority Areas are a focus for the community to address in order to achieve the vision outlined in the Sustainability Declaration.</p><p>For each "strategic priority area", three components are developed.</p><p>A Description of Success that describes the state of the priority area in the future 20 – 25 years from now, "We will have achieved this when..."</p><p>A Description of Current Reality that outlines the current situation and the assets, "Our strengths and challenges are..."</p><p>Transition Strategies that provides guidance on how to close the gap between today and the desired future. OCP Policy Directives will then be derived from these Transition Guidelines.</p></div></div> <td></td>				
<div><div>Paper 2</div><div>The State of Edmonton’s Ambient Air Quality</div><div>(Matthew Dance)</div></div>	<ul style="list-style-type: none">• The paper provides a clear and concise discussion of the topic with recognition of the need to discuss the issue of ambient air quality within the specific circumstances pertaining to Edmonton.• Some useful comparisons are made to experiences in other countries.• The paper raises some potential ways forward to addressing ambient air quality issues that should provide the basis for further discussion.	<p>A well done paper, I kept expecting the incompatability of clean air and upgrader alley to appear but it didn’t....</p>		<ul style="list-style-type: none">• The instruments that a municipality can use to influence air quality outcomes, includes: by-laws, City policy and strategic plans such as Municipal Development Plans, Transportation Master Plans and By-laws In addition, the City of Edmonton is in the process of developing an environmental sustainability plan, The Way We Green.• Alberta Environment reports that Edmonton’s air, as measured by this Air Quality Index, is considered ‘good’ over 90% of the time. Those times when the air quality is not good usually occur as result of weather conditions that inhibit pollution dispersion into the atmosphere. The Air Quality Index is based on outdoor concentrations of carbon monoxide, fine particulate matter, nitrogen dioxide, ozone and sulphur dioxide.• Furthermore, although Edmonton has ‘good’ air quality over 90% of the time, we do have an issue with two specific pollutants - Particulate Matter (PM) and Ozone (O3) – that are components of urban smog. Alberta Environment’s	<div><div>Critique:</div><div><p>This paper is focused on the outdoor air quality (AQ) which, for the limited monitoring data available, indicates that the AQ is good over 90% of the time. The objective of ‘keeping clean areas clean’ is correctly used to support proper monitoring of fine particulates and ground level ozone. This principle is excellent and fundamental to a quality environment. In this case I wonder if the boundary of the study zone should extend beyond the City limits as the neighboring communities down wind of Edmonton may have experienced more serious conditions.</p><p>There is room in the discussion to question several current components of the LRT expansions in terms of speed and convenience for people to move around the City. The idea of LRT stations with no parking so that riders have to get a ride to the station and then back to home does not make sense. This is a 100% increase in the number of trips and a large loss of time of those that try to use the system.</p></div></div> <div><div>Comments:</div><div><p>The outdoor ambient air quality in Edmonton is generally good to very good. The indoor air quality in commercial building, places of employment, schools and homes may be different. Some studies in Edmonton have expressed concern with indoor air quality. People in Edmonton spend as much if not more time indoors than other communities. This part of the total living environment should be addressed.</p></div></div>				

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					<p>PM and Ozone Assessmentxvi (2006 – 2008) indicates that the Edmonton Region has an increasing intensity of ground level ozone that requires the development of an ozone management plan.</p> <ul style="list-style-type: none">• Questions:• What impact do industrial emissions have on local (Edmonton’s) air quality?• What is the air quality in Edmonton in all of the places where monitoring does not occur? For instance, the AAQ monitor in downtown Edmonton is located away from major arteries and on the top of a building. Does this adequately reflect the air that we breathe at street level?• What is the impact of older vehicles and single occupancy vehicles on air quality adjacent to the major roadways in Edmonton?• To better understand the current distribution and occurrence of PM&O3, additional AAQ monitoring should be implement in key Edmonton locations, such as along major transportation and pedestrian arteries. Within this context, the City of Edmonton should develop an air quality strategy that could include citizen engagement coupled with a goal of understanding current air quality and future trends. Emerging novel technologies, such as distributed monitoring networks and crowdsourcing, can help engage citizens with this goal in mind.• Ideas: Area Source:• The current Alberta building code does not explicitly state minimum energy efficiency. In contrast, British Columbia is undergoing a Greening the Building Code process. the City of Edmonton can initiate a program to train builders in new energy efficiency building techniques• Ideas: Transportation<ul style="list-style-type: none">○ The Way We Move emphasizes the use	

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				<div>of roads for the transportation of goods, and the</div> <div><div><div>○ LRT / Transit / Active Transportation Network as the primary means of moving people</div><div>○ Anti-idling – City fleet, school zones.</div><div>○ Removing gross emitters</div><div>○ An analysis of a Congestion Charge Zone,</div><div>○ Limiting the number of parking stalls in Edmonton’s downtown core,</div><div>○ Evaluating the benefits of increasing the cost to park in downtown Edmonton, and;</div><div>○ Implementing a pedestrian mall pilot project on Jasper or Whyte Avenue where the avenue would be closed for a brief period of time.</div></div></div>	
<div><div>Paper 3</div><div><i>Edmonton’s Water Supply</i></div><div>(EPCOR Water Services)</div></div>	<div><div><div><div>• The paper provides a comprehensive and thorough review of the topic. Of particular note are the following points that are made within the paper:</div><div>• While total water consumption has increased over time, the amount used by individual customers in their homes and yards has decreased. Apparently although this trend may reflect more efficient appliances and lower leakage rates, changes in consumer behaviour as a result of public education is an important contributory factor. This finding raises the issue as to the effectiveness of public education in modifying consumer behaviour in connection with the use and sustainability of other resources and natural capital relevant to the sustainability of the city of Edmonton.</div><div>• The paper also draws attention to the importance of developing best management practices that include on-going monitoring, auditing, evaluation, and where necessary the application of improved methods of operation and control.</div><div>• Reference to Figure 9, Edmonton Capital</div></div></div></div>	<div>I believe the statements re. increased flows are erroneous. The only part of the system to have increased flow recently is the melting Saskatchewan Glacier. As pointed out in paper 18, the reservoirs are at an all time low. AMEC has produced papers regarding concerns that the Battle River is already oversubscribed. The big season for water demand is summer, declining summer flows will not be compensated by higher winter and spring flows. Fish are also most vulnerable in summer, with high temperatures and low oxygen. There is mention of historical drought, but no mention of the fact that there were no major droughts in the 20th Century, or that almost every previous century had at least one drought lasting several decades, or that the N. Sask. was too low to float freighter canoes.</div>	<div>Discussion Paper Three, on Water Supply does not account for the anticipated changes to our water supply as a result of climate change—I found that rather striking, considering that this is the sector in which climate change impacts will be most acutely felt here in the prairies. What are the implications of increased variability in seasonal flow patterns for our security of water supplies, particularly given our lack of storage capacity?</div>		<div><div>Critique:</div><div><div>The quantity of water available to the City of Edmonton from the North Saskatchewan River (NSR) is relatively stable and is expected to remain so for an extended period of time. The quality is highly variable and requires extensive, careful and continuous attention, which is provided. Climate change impacts are being studied with suggestions that river flow may undergo modest increases or at least remain about the same as current flows.</div><div>Water conservation within the City appears to have increased and should be continued within good health protection guidelines.</div><div>The City should stay involved in the NSR basin management efforts to ensure that future uses of the river are compatible with the needs of the City.</div></div><div><div>Comments:</div><div><div>The supplier of water to Edmonton, EPCOR Water Services Inc. (EWSI) has been managing Edmonton’s drinking water supply for many years in this form (EWSI) and as an Edmonton utility for many years before that. The monitoring and protection of Edmonton’s water supply, to my knowledge, has never been compromised. The source is substantial and the City of Edmonton’s interests are currently well protected.</div><div>Future changes in quantity and quality must be monitored and managed continuously to prevent future deterioration of the water as well as improving treatment to remove materials deemed of concern in the future.</div></div></div></div>

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	Service Region Map is a timely and appropriate reminder that when looking at the sustainability of Edmonton we have to include a regional perspective. This geographical scale is of course equally relevant to considering the sustainability of Edmonton’s patterns of use consumption of other resources.				
Paper 4 <i>North Saskatchewan River Water Quality</i> (EPCOR Water Services)	<ul style="list-style-type: none">Reinforces, as do many other papers, the necessity of taking a regional perspective to addressing many of Edmonton’s sustainability issues.Reinforces the interconnectivity of resource sectors in understanding the causes and possible solutions to dealing with sustainability within the urban environment.A good example from this paper is the impact of agricultural land management and animal husbandry practices on water quality. Since the improvement of land and agricultural stewardship practices involve both federal and provincial programs, the importance of multi-level government programs is a critical consideration.	Some actual graphs of trends at the sites rather than the simple bar graphs would be an improvement. Upgrader alley and its demands/pollutants need specific discussion.			<p>Critique:</p> <p>Although there are no references in the discussion paper, a great deal of work on the quality of the NSR was done by Professor Pat Bouthillier through the Provincial Board of Health. Although the treatment of wastewater by the City of Edmonton is at a superior level, up stream and in City, stormwater discharges are a real concern due to there quality. The most important issues for the City related to NSR water quality are the possible upstream changes to land use and the related discharges to the river. Also, very important is the control of agricultural lands discharges to the NSR and the related microorganisms, pesticides and nutrients that enter the water.</p> <p>Comments:</p> <p>The graphs provided are very interesting and useful.</p>
Paper 5a <i>Peak Energy & its Implications for the City of Edmonton</i> (David Hughes)	<ul style="list-style-type: none">A useful paper in that it provides a more tempered and cautionary perspective as to energy sustainability and it implications for Edmonton’s future.No reference is made to energy requirement for lighting a city. With the growing interest in dark skies and the work of the Dark Sky Association, what are the energy savings as well as the other benefits that might be achieved through more” conservative” lighting policies?	Good paper. It might be mentioned that as well as fossilized energy, fossil fuels represent fossilized accumulation of toxicants, the major reason why microbes left these energy deposits behind. More discussion is needed of our ridiculous per capita increase in electrical energy & how to decrease it.			<p>Critique:</p> <p>The reliance of the City and the Province on the oil and gas industries for continued growth appears to be at odds with the longer term reality that the future of these industries is very limited. The currently accepted growth paradigm will not sustain Edmonton as the cost and availability of all fossil fuels declines.</p> <p>Comments:</p> <p>With good supporting documents the report challenges the current concept of a city the size of Edmonton, at this latitude continuing to grow with low density urban sprawl. When the fossil fuel industry slows the city will decline. “The challenge”.....”is to understand this fact and rethink all future investments in this context.” The City of Edmonton must diversify if economic base in order to maintain its sustainability.</p>
Paper 5b <i>Peak Oil: The</i>	<ul style="list-style-type: none">The paper provides an optimistic picture regarding the issue of fossil fuels and the	No mention that as finding oil becomes more and more difficult,	I was a bit concerned with several pieces of information lacking in		<p>Critique:</p> <p>The discussion of peak oil was expanded to cover</p>

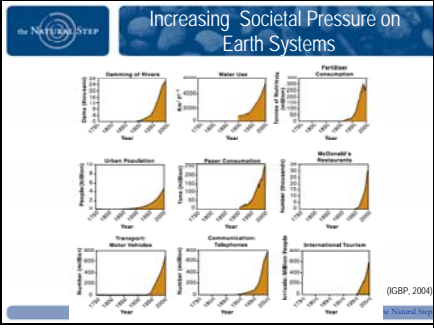
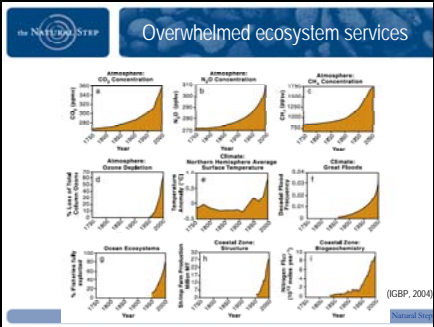
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<i>Future for Fossil Fuels and impacts for Edmonton</i> (MK Jaccard & Associates)	<p>important capacity we have with substitutability.</p> <ul style="list-style-type: none">However, although passing reference is made at the beginning of the paper to the current oil spill in the Gulf of Mexico, the discussion is almost completely devoid of any consideration of some of the negative externalities that may arise from alternative energy sources, including environmental and social costs. For example, the use of bio-fuels and wind energy are not without environmental and social costs.	<p>environmental damage per barrel of oil extracted and environmental risk per barrel also grow, to say nothing of reclamation costs. We do not have the long time horizons that this paper implies to reduce GHG. Numerous papers since 2007 are now saying that we have overshot, and must hasten to get the atmosphere back below 350 ppm CO2.... <i>Now</i> ...if we are to avoid serious consequences. In short, there is increasing evidence that the IPCC vastly underestimate rates and consequences of climate warming.</p>	<p>Discussion Paper 5b as well. This paper does make the important point that we are not in fact running out of fossil fuels, which is important. However, the authors make no mention at all of the fact that the non-conventional sources they place so much faith in are significantly more costly to develop, and the huge economic gains we have experienced in the West over the past half century have been achieved in a very large part due to the availability of very cheap energy sources. To presume that the increased costs will simply be absorbed and we can carry on with current growth trajectories is a complete economic fallacy. Nor does it mention the significantly higher ecological footprint, including greenhouse gasses, associated with non-conventional sources.</p>		<p>energy resources management. The oil discussion was limited by future discovery knowledge uncertainties. The discussion of alternatives was limited to current conservative expectations and has excluded options that are still developing. As a result it is a conservative and reasonable guide for the City at this time.</p> <p>Comments:</p> <p>The eight adoption strategies seem to be reasonable objectives for the City.</p> <p>The concept of a carbon tax is primarily a way for the City to make a lot of money while providing no services and doing very little for protection of the environment. Management fees and accounting processes will ensure the managing companies will make a lot of money. It is somewhat like turning the utilities services for electricity over to a company to make money for the City.</p>
Paper 6 <i>Climate Change: Projections and Implications for Edmonton</i> (Debra Davidson)	<ul style="list-style-type: none">A succinct and straightforward review of the scientific evidence of the important role of anthropogenic factors in climate change.Important recognition of the importance of green space and natural area connectivity both in terms of accommodating biodiversity, and facilitating species migration as a result of climate change. In addition, the effect that green space and natural vegetation can make in tempering the heat island effect, trees reducing the effect of greenhouse gases, and natural vegetation cover having a greater capacity to deal with heavy rainfall and therefore buffer areas from flooding. [see paper 8 for a more detailed examination].	<p>Too much reliance on IPCC, which contains mostly information that is now almost a decade out of date. Also, it should be recognized that the global average temperature increase is relatively meaningless for continental land masses.... The global average is dominated by the oceans, which warm much slower than continents, especially areas nearer the poles where albedo changes are a part of the problem.</p> <p>While there are some upsides to climate warming, loss of the free water reservoir for storing winter precipitation (snowpacks) and lower late summer flows will be much more important. Wetlands are already almost non-existent, and we've accumulated a water deficit of several meters since the turn of the millennium.</p>			<p>Critique:</p> <p>Climate change is occurring and the climate has been warming for several thousand years. For the most part humans have had nothing to do with that climate change. Recent concern with anthropogenic caused changes are difficult to confirm, however, temperature increases are real but will appear to be within the range historically estimated. The impact of solar physics, solar distances and earth based changes are also important features of the changes.</p> <p>Currently, short of massive extinction of humans, very little can be done to slow or stop human activity and desire for a better quality of life. The idea of wealth transfer through taxes on well to do countries to less well to do countries is a social issues which requires careful examination and consideration.</p> <p>Comments:</p> <ol style="list-style-type: none">The assumption that government or people can mitigate climate change caused by space physics and the relationships of various solar system masses is not sound.Adapting to climate change is important for Alberta and Edmonton.Many impacts of global warming were cited in the

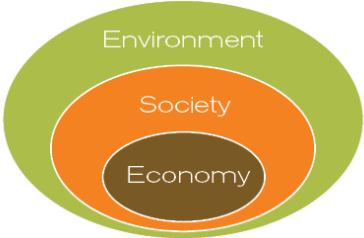
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								<p>paper. It was not noted that since the last ice age the earth has been warming and that since a large amount of the ice and snow cover has melted the rate of temperature increase has in fact increased due to the greater albedo of soil compared to the ice and snow. At the bottom of page 2 the statement the GHG has caused global warming is wrong. As the mass of ice reflecting energy from the sun decreased over the past 12,000 years the amount of energy absorption by the exposed soil increased and the temperature increased. This also led to increased water gas in the atmosphere which increased the heat storage capacity of the atmosphere.</p> <p>4. Many recent examinations of IPCC and related papers have questioned the data that was used and the statistics used to evaluate the data. The possibly deleted data and errors in statistical models bring very serious questions on the correctness of the anthropogenic acceleration of global warming.</p> <p>5. Figure 3, a and b, should also include a figure showing the ice cover 10 to 12 K years ago. Also the amount of energy required to melt 1.5 km of ice over much of the northern hemisphere should be calculated.</p> <p>6. Why is there more human activity? More people all with wants related to a better standard of living. These wants are to be expected, but, it does not mean that the standard of living should be lowered, it means that new and better technological approaches must be found to reduce the impact on non-renewable resources and to better use the renewable resources (nuclear, water, wind and sun).</p> <p>7. The City does need to better understand planning for higher density living. Safety, space for the individual, storage, sound reduction and air quality control are all very important.</p> <p>8. Figure 5 omitted H₂O gas which has the highest total energy storage capacity.</p>	
<p>Paper 7</p> <p><i>Food Security for Edmonton</i></p> <p>(Becky Lipton)</p>	<ul style="list-style-type: none">Although the paper raises some relevant issues, the paper fails to examine these with sufficient rigour.Food security at the local level is to a considerable extent an issue of land remaining in viable agriculture. Although there are obviously many other in-puts that go into the food production process, land is an essential ingredient, preferably land that is “good” agricultural quality. The paper acknowledges the importance of Class 1 soils but it is not explained whether or not	Farmland in Canada is also being bought by foreigners, who will use our “virtual water” to produce their food (and hydro, timber, etc). Note my remarks above re. future population.... This is an important influence on food security.	I am very pleased to see a paper devoted to food security. Food security is already a concern for families living in poverty, but in the context of climate change, a much larger number of families will become food insecure. As this chapter points out, however, this is entirely avoidable considering Edmonton is sitting on top of rich agricultural conditions. A proactive approach that includes protection of remaining					<p>Critique:</p> <p>A good discussion about getting Edmonton more involved in meeting the food needs of the residents.</p> <p>Comments:</p> <p>1. Understanding the risks for a cold region community is critical to understanding the importance of trying to meet more of the needs for food in and around Edmonton.</p> <p>2. The list of externalities is good (page 4).</p> <p>3. The recommendations seem like a lot of bureaucracy but may help to promote the concept.</p>	

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	<p>Class 1 soils occur uniformly around the current built-up area and whether or not there remains the opportunity to direct development away from these better quality soils.</p> <ul style="list-style-type: none">• Needs to include discussion that recognizes that agricultural land within urban and peri-urban areas fulfill roles and functions in additions to that of food production. These functions may demonstrate varying levels of compatibility with food production, especially where the latter is of an intensive nature. Agricultural land is an anthropogenic landscape and may exhibit attributes of landscape character that have important cultural elements, as well as aesthetic qualities and a sense of place.• Agricultural land may be part of the matrix in an ecological networks system but edges and boundaries may contribute more significantly to ecological connectivity and linkages between natural areas within the urban landscape and more extensive “natural landscapes” across the wider region.• Needs to be critical assessment of while recognizing the benefits of locally produced food, what are some of the potential problems/issues that are caused from an environmental perspective with intensive agriculture, e.g. drainage of wetlands, reduction in an area’s biodiversity, waste and chemical pollution from fertilizers etc.• Acknowledge that protecting good agricultural land might result in development being directed to land of poorer quality from a farming perspective but has high biodiversity, wildlife, and amenity values. Such trade-offs need to be recognized and assessed. A comprehensive and integrated approach is essential. Single-sector approaches do not work.• What are the implications for locally grown food as a result of climate change?		<p>farmlands, farmer’s markets, community gardens, and encouragement for backyard gardening can go a long way in avoiding a potential food security crisis.</p>		

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Paper 8 <i>Urban Biodiversity: Why it Matters & How to protect it</i> (Colleen Cassady St. Clair)	<ul style="list-style-type: none">• Important observation that biodiversity within cities and their immediate surroundings provide crucial and convenient opportunities for people to interact with the natural world with consequent biophysical and psychological, and educational benefits.• Provides an important reminder that Edmonton’s natural areas are rich in biodiversity and are not “sterile” green spaces. This observation provides an important counter to the tendency to dismiss the ecological value of the river valley and the natural areas on the tableland.• The paper draws attention to the fact that green infrastructure, green space, parks, and natural areas need to be differentiated in terms of their biodiversity and ecological value.• Critical point is the importance of integrating the ecological network within the city with ecological networks that operate on a wider bioregional scale including the Capital Region and beyond.• Important reference to the role of private householders and natural landscaping within gardens in helping sustain biodiversity and create connectivity and stepping stones within the urban fabric.• Important to stress the growing importance of restoration and rehabilitation ecology within both industrial and residential urban areas.• Need to comment on the role and contribution that conventional park systems can and should make to protect biodiversity within urban areas with appropriate environmental management and maintenance practices.• Important message is the need for effective	<p>It’s good that someone mentions biodiversity and ecosystem services. I’m not sure that I am a fan of using the latter as an improved index, currently the measurements are informative, but quite crude, and it is difficult to measure losses. Perhaps instead, it is worth mentioning the biodiversity losses in whole taxonomic groups, with fishes, mollusks, bees, butterflies and amphibians all “on the ropes” with 20 % or more of species gone. Or to relate losses to the smaller northern Alberta biotic community, which is probably less than 1000 species of plants and animals at most sites.</p> <p>I further disagree that “ecosystem services” are popular with economists... economists who espouse them are generally frowned upon by others in the “dismal science.”</p> <p>Storm water retention ponds are vastly overrated.... They could be better designed to remove nutrients and toxins, and promote biodiversity than they do. Edmonton and the surrounding area are still very hard on wetlands.... Just drive west on the Yellowhead.</p>			<p>Critique:</p> <p>The paper over looks the importance of adverse human-wild mammal interactions as well as the interaction with pets in the city. The concept is nice but the reality can be disastrous.</p> <p>Comments:</p> <ol style="list-style-type: none">1. I strongly support the need for preserving biodiversity. However, trying to maintain a mixture of non-domesticated mammal species within the urdan environment appears to be problematic. The interaction between wild animals and humans (adults and children) and their domestic pets is frequently serious (and in the case of pets deadly).2. The movement of disease into the community by non-domestic animals has been and will be a concern. For example, schtomises (swimmers itch) from waterfowl, giardiasis (carried by some mammals most notably beavers), and rabies (carried by a number of wild animals including foxes and skunks), are all problems.3. In the case of plants, some aspects of the interactions between commonly grown yard and house plants can be beneficial and some can cause problems. These should be evaluated by an urban botanist.4. The regions and access to areas near Edmonton should be protected and developed for maintaining a full range of living things.5. The population density within Edmonton should be increased, but this cannot happen in a sustained way until the quality of the higher density living units is dramatically improved.

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	<p>engagement of Edmonton’s population.</p> <ul style="list-style-type: none"> Importance of having a set of criteria and process to monitor the status of biodiversity within the city and specifically the loss of natural areas. How do we track the extent to which issues of biodiversity protection and existing policies such as the Natural Areas Policy are taken into consideration in all aspects of land-use planning decision-making within Edmonton? 				
<p>Paper 9</p> <p><i>City Discharges to the North Saskatchewan River</i></p> <p>(Gyurek / Lodewyk / Malesevic, City of Edmonton, Drainage Branch)</p>	<ul style="list-style-type: none"> Provides a timely reminder that is illustrated in a number of other papers that urban development tends to modifies and frequently destroys natural capital and associated natural processes. The interruption and break-up of the natural hydrological cycle is just one example where urban development results in environmental and economic costs for society. Reference to the Natural Areas Policy 351 and the associated <i>Natural Connections Strategic Plan</i> is a useful reminder of the importance for timely dialogue between relevant departments. What are the trade-offs that have be considered when evaluating wetlands as important components of ecological networks and their role in managing stormwater runoff volumes and improving water quality? 	<p>Reductions in per capita waste of 363 to 350 is not that great for 12 yrs.... A percent a year.</p>			<p>Critique:</p> <p>The report is written in a defensive tone that does not initially identify the very aggressive and positive efforts the City has made to reduce its impact on the NSR. The report correctly identifies storm water as the current major source of pollution from the City.</p> <p>Comments:</p> <p>The future needs for wastewater treatment are going to become very important. New understanding of a wide variety of contaminants will lead to expectation in terms of the quality of effluents returned to the environment (NSR).</p>
<p>Paper 10</p> <p><i>Sustainable Waste Management</i></p> <p>(City of Edmonton,</p>	<ul style="list-style-type: none"> Useful overview of the topic including appropriate recognition of what Edmonton has achieved to-date. 	<p>Reductions in per capita waste of 363 to 350 is not that great for 12 yrs.... A percent a year.</p>			<p>Critique:</p> <p>Nicely written brief report on Edmonton’s Waste Management System with the positive aspects and future objectives outlined. Waste management has received excellent attention in Edmonton over the past decade or two. The concern is how to improve the recovery of non-renewable resources such as minerals and elements now or in the future for recycling.</p>

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Waste Management Branch)					<p>Comments:</p> <p>A good and concise report. It seems weak on where recycling can improve and how. It is noted that the City is committed to research and innovation. It seems that the need for innovative new technologies is in need of a boost.</p>
<p>Paper 11</p> <p><i>Environmental Impacts Beyond Edmonton's Borders</i></p> <p>(Laura Franceschini, Stantec)</p>	<ul style="list-style-type: none">Reiterates many of the issues and points covered in other discussion papers by considering Edmonton's position with a wider geographical context.Underscores the importance of the fact that cities do not exist in isolation, and that although we can look at cities operating within a range of open systems, ultimately at the global level we are have to recognize that it is a closed system.Recognizes the vulnerability of cities to catastrophic events beyond their immediate control. Consequently cities have to plan for resiliency in order to respond to and survive such events.Recognizes the importance of safeguarding natural capital, including biodiversity, from wasteful use and depletion. Retaining sufficient natural capital is an important consideration in achieving and retaining that resiliency.A message that is reiterated in many of these papers is that underlying many of the Edmonton's sustainability issues are the repercussions of urban sprawl that result in significant environmental, economic, and social costs. The consequent key message is that urban sprawl must be discouraged and prevented.	Edmonton's whopper of an ecological footprint is a real concern, but the high proportion of it related to carbon emissions offers a huge opportunity to reduce it.	The content of Paper 11 overlapped quite a bit with other papers and seems to have missed the mark somewhat, if the intention was to highlight the higher scales of influence I mentioned earlier.	<p>This was a very interesting paper that did a great job of tying global environmental impacts to Edmonton. Some of the facts that she showed are worrying. I offer two slides that reinforce global concerns and society's role:</p> <div></div> <p>I like her comment about living off of nature's "interest" rather than its "capital". This should resonate with people who understand financial sustainability.</p> <p>Part of the shift that needs to happen is a paradigm shift to recognize that we are</p>	<p>Critique:</p> <p>The concept of the 'butterfly effect' is a good metaphor for global interrelationships. This paper also carries forth the errors related to global warming noted above.</p> <p>It should be clear that big cities are a reality that must be designed and operated to ensure a good quality of life for the residents and ensures as small an impact on the non-renewable and renewable resources available.</p> <p>Comments:</p> <p>The natural resource depletion discussion has some good points but missed some extremely important points: 1. natural resources are either non-renewable (oil, gas, coal) or renewable (fibre, water, minerals, elements, some energy sources (water, solar, wind), etc.); 2. a better standard of living is sought by most people in the world (i.e., better food, water, living space, electricity, earning opportunities, schools, recreation and transportation); and 3. the natural environment has a very big impact on the need to use energy sources (the colder the daily temperature the more investment in living space that is required to maintain a good quality of life). In the later case the controlling factor is actual temperature and not latitude. Edmonton is among a very few large cities that experience extremely cold conditions. As a result much more effort must be put into building design and insulation, air exchange and heating and other features that must operate during the worst conditions.</p> <p>The topic of water supply and quality presents some very good ideas about the issues in the surrounding regions. As climate warming continues the frozen reservoirs of fresh water in the eastern Rocky Mountains will melt and that source of supplemental water to the North Saskatchewan River (NSR) will not be available. The City should be evaluating this situation and the impact on water supply in the future. It is highly unlikely that the NSR flow will ever be so low as to be a serious impact on the raw water supply for Edmonton. Also, about 90% of the water the City withdraws from the NSR is returned after treatment.</p> <p>The issue over ground water withdrawals is a much more serious issue. Much of the land in and around Edmonton</p>

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						<p>living on “Spaceship Earth” and there is no place to throw things “away”. Moving from the traditional triple bottom line thinking to a understanding the society and the economy of subsidiaries of the environment:</p> <div data-bbox="1545 378 1908 613"></div> <p>This may be somewhat threatening to some people but is reality unless the economy exists on another planet we are not familiar with.</p> <p>The City of Edmonton can’t solve global problems alone, and it will need the help of partners and also many, many other local and global stakeholders. What it can do is be a <u>role model</u> for others to emulate, his mean both from a policy and planning perspective, but also walking the talk and “being the change” you want to see. The City has already done great work already in this regard with energy efficiency so it can take lessons from this experience and apply it to other areas of concern, e.g. water, food, wastes, etc. This will establish credibility with stakeholders when you engagement.</p> <p>A lot of the solutions she proposes are consistent with what is being mentioned in other papers, e.g. build up the downtown core, reduce sprawl, encourage active and public transport, encourage local and organic food, reduce energy and water use in facilities and homes, invest in renewable energy, etc., which is great as it confirms what others are saying.</p>	<p>has a subsurface of Clay and similar materials. As a result water percolation through the clay is extremely slow. Some of the water below the clay is either ancient water or water that has moved from the foothills to the location. Water pumped from such locations may not be replaced for a very long time. This is very serious for communities and agricultural activities in these areas.</p> <p>Air quality is an important issue, however, the most significant impact on humans is the indoor air quality. A great deal of work and even regulations are required to reduce indoor air contamination.</p> <p>Deforestation is, and has been for thousands of years, an important issue. Alberta in setting-up the white and green zone for the Province has been able to greatly control the lose of forested areas. The oil and gas industry use of these areas has not been well controlled but the forest industry prepared Detailed Forest Management Plans (DFMP) every few years which identifies what will be done over the next one hundred and two hundred years. Each year plans are submitted following the DFMP. Other issues like mono-culture replanting and re-growth times are evolving.</p> <p>Soil depletion occurs wherever new growth, usually crops are removed and moved. Soil management is the biggest issue in the farming industry and requires continuous attention.</p> <p>Desertification has occurred on a massive scale on earth due to changing weather patterns. One of the activities that could be addressed is how to return water and plant trees, etc., in desert areas. A problem for the near future.</p> <p>Food production is influenced by all of the above issues. Reducing farmland loss and improving soil quality for production and important steps. Promotion of the vegetarian approach is not necessarily the best.</p> <p>The most important issue is maintaining biodiversity. The concept of maintaining every living thing in every location is not going to work as interactions between species are sometimes antagonistic.</p>

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Paper 12 <i>Edmonton's Ecological Footprint</i> (Mark Anielski)	<ul style="list-style-type: none">• Very good overview of the Ecological Footprint (EF) concept and how it is calculated.• Effective use of data to illustrate Edmonton's position with other cities in Canada and countries with the largest EFs.• Reference to the potential for increasing local food production on agricultural lands raise the important issue of the implications of the Capital Region Plan for directing urban growth at the regional level. Once again, safeguarding good agricultural land may require steering urban development towards marginal agricultural land that has very high biodiversity and conservation values, e.g. the Beaver Hills area to the east of the city.• The need to curtail urban sprawl is once again recognized as an important issue.	<p>Some discussion of house sizes as well as energy options and insulation is needed.</p> <p>The huge loss of agricultural land in just 7 years should be of immediate concern. There are few examples of paved or “developed” land being turned back to ag, ie it's a 1-way ratchet.</p>	<p>Discussion paper 12, while on the whole very well-written and informative, is targeted specifically to households. Many sustainability proponents impose a bit too much of the blame for environmental degradation, and the responsibility for ameliorating it, onto individual citizens, industry and government are responsible for a much larger proportion of our total footprint. Furthermore, it would be more accurate to say that environmental degradation is caused by our production processes, and our waste generation, rather than consumption per se, and individual citizens have a very limited role to play in these. To offer just one example, individuals would “consume” far fewer computers if these commodities weren't designed to be obsolete in a matter of 2-3 years. The City would make much greater gains by placing a greater amount of its policy attention on commercial, industrial and construction waste rather than household waste.</p>	<p>Very interesting statistics about Edmonton Ecological Footprint (EF), especially compared to other cities and countries. Shows that Edmonton has a lot of room to improve.</p> <p>“In 2004 Edmonton had the second highest EF amongst Canadian cities, after Calgary. This was due primarily to Alberta's relative large carbon footprint due to the use of coal-fired electricity and natural gas.”</p> <p>“In 2008, Edmonton's EF of 8.56 gha/capita was 3.2 times greater than the world's average of 2.7 gha/capita and 4.1 times greater than the planet Earth's biocapacity of 2.1 gha per person.”</p> <p>“Compared to benchmark Nordic countries, Edmonton compared favourably with Denmark (8.0 gha/capita) but is 15% larger than Norway (6.9 gha/capita) and 56% larger than Sweden (5.1 gha/capita). These Nordic countries serve as reasonable benchmarks for Alberta and Edmonton given similar climatic and socio-economic conditions.”</p> <p>“In order to sustain our consumptive demands on nature requires significant imports of energy, food and other materials (the equivalent of 6.37 million hectares of land, an area almost the size of Sri Lanka which has 20 million people) into the Edmonton economy from outside our geographic area.”</p> <p>“Edmonton's relative large EF is partly due to a relatively large energy or carbon footprint (which makes up 56.8% of Edmonton's EF) and relatively healthy high consumptive and material lifestyle. Compared to other Canadian cities Edmonton's energy land (carbon) footprint was between 1.12 gha/capita or 23.6% larger than Ottawa and 1.81 gha/capita or 44.7% larger than Toronto. Compared to Nordic country benchmarks,</p>	<p>Critique:</p> <p>The concept of ‘ecological footprint’ is interesting and could be useful when comparing apples to apples. But, when comparing different climatic environments the current approach is lacking. Average annual temperature has very little meaning when designing a building or a community to be functional during two to three weeks of minus 30°C temperatures and also two to three weeks of plus 30°C temperatures.</p> <p>I do not agree that CO₂ should be used in the evaluation as the relationship is not clear and appears convoluted.</p> <p>Comments:</p> <p>As noted above, the natural environment has a very big impact on the need to use energy sources (the colder the daily temperature the more investment in living space that is required to maintain a good quality of life). In the later case the controlling factor is actual temperature and not latitude. Edmonton is among a very few large cities that experience extremely cold conditions. As a result much more effort must be put into building design and insulation, air exchange and heating, and other features that must operate during the worst conditions.</p> <p>It is wrong to compare prairie Canada with the Nordic countries as the latter have a very different climate. It appears that the objective was to make Edmonton look bad because of the different climate without saying so.</p> <p>The ways of reducing the EF in Edmonton are all good when adopted with care. For example, reducing unnecessary water use is good. But, water use should be adequate to maintain good hygiene and ensure that water pipes are flushed properly before water is used for cooking or consumption.</p>

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				<p>Edmonton’s carbon footprint 3.5 times larger than Finland 3.8 times larger than Norway and 6.1 times larger than Sweden.”</p> <p>The EF is a great communication tool to help people understand their impact and also to spark discussions about what to do.</p> <p>I was particularly interested in the comparisons to Scandinavia, because I lived there for three years (in Sweden). I can certainly say that the Swedes have a very high quality of life. They also do some very simple things that I wished we did more of in Canada, these include urban planning and policies to encourage active transportation (people bike in winter as well), district heating systems, and offering permit parking anywhere for flex fuel vehicles.</p> <p>In terms of improving energy efficiency as a big opportunity to reduce Edmonton’s EF, there is a company in Edmonton, <i>the Landmark Group of Builders</i>, who wants to build all net zero homes by 2015, perhaps a partner for the City of Edmonton?</p> <p>One caution about the EF, and that is that it has some blind spots with respect to sustainability, so it should be complemented by other metrics to ensure that decision-making is done from a full sustainability perspective. These blind spots concern persistent chemical compounds, trace metals and social issues, which are not captured in a robust way in the EF.</p>	
Paper 14 <i>Greener Energy Opportunities and Prioirities for</i>	<ul style="list-style-type: none">Useful overview of the alternative and multitude of technologies available for making improvements to the way in which energy is supplied to Edmonton, and the examples of best practices from elsewhere.	Some good ideas, but I have no substantial comments.	Paper 14 was loaded with solid research that makes a very good case for the viability of alternative energy sources for Edmonton.	Really interesting summary of the low-hanging fruit energy options for Edmonton. When I lived in Sweden I saw all of these options in everyday living, so it is certainly technically possible to implement. The question is one of creating the environment where they become	<p>Critique:</p> <p>A good review of some energy options however, the report is missing the actual cost of construction, operation and maintenance of each option discussed. It is also missing the actual environmental impact of each of these options.</p> <p>Comments:</p>

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<i>the City of Edmonton</i> (Tim Weis, Pembina Institute)				<p>reality. One idea that I thought was brilliant in promoting biofuels was the municipality’s policy to provide all flex-fuel vehicles (i.e. cars which can use biofuels) free parking spaces in the City. It was very simple and was great in terms of promoting adoption. Personally a citizen, it would be great to see more of these ideas implemented.</p> <p>Enjoyed the section on policy options for the City and examples of communities who have done a lot of great work to promote alternative energy.</p> <p>I really like the idea of the City of Edmonton taking a direct role in encouraging alternative energy via Capital Power. It is likely something that can be done relatively quickly and see results fast. It is also an opportunity to learn about the challenges and opportunities to inform policy decisions.</p> <p><i>The Landmark Group of Builders</i> has committed to all net zero homes by 2015.</p> <p>There is an “Eco Solar Home Tour” in Edmonton with demonstration homes: http://www.ecosolar.ca</p>	<p>The report did not discuss nor evaluate the existing energy sources: hydro-power, oil, gas and coal. Nor did the report explore new directions like run of the river hydro-power, intermittent hydro-power for hydrogen production and storage until needed or power cells for the production of electricity.</p>
Paper 15 <i>Best Practices in Sustainable Cities</i> (Amy Seabrooke, Stantec)	<ul style="list-style-type: none">For any best practice to be effective in contributing to sustainability there has to be an effective monitoring and evaluation built into the system. Monitoring and evaluation is an integral part of adaptive management involving planning for sustainability.Once again, reference is made to addressing urban growth and specifically the expansion of the urban boundary into rural areas.Commission on Architecture and the Built Environment (CABE) in the UK provides very useful global examples of planning and best practices for sustainable cities from a number of perspectives.	Some good ideas, but I have no substantial comments.		<p>Best Practices:</p> <p>Governance and Management – structures, processes and systems that support the implementation and ongoing management of sustainability.</p> <p>Policy and Regulation – policies and municipal bylaws that influence land use and development practices.</p> <p>Pricing – economic instruments to encourage a shift toward sustainable behaviours and actions.</p> <p>Education and Engagement – programs and processes to engage stakeholders and</p>	<p>Critique:</p> <p>The presentation of ‘best practices’ was related to a set of categories that the authors selected and examples were given of each. Each of the examples addressed some part of the concept of sustainability. A package or set of ideas suitable for Edmonton was not provided.</p> <p>Comments:</p> <p>A good source of some ideas about increasing sustainable conditions.</p>

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					<p>the general public in sustainability planning and implementation efforts.</p> <p>Infrastructure – capital projects that promote closed loop systems and produce environmental, social and economic benefits.</p> <p>Agree with the importance of <i>Governance and Management</i> to set the stage for ongoing work towards sustainability at the City of Edmonton. This will be important to ensure that the City has credibility when engaging other stakeholders and is prepared internally to implement.</p> <p>As well, also agree with the need to create partnerships with other community stakeholders to help make a Sustainable Edmonton a reality, and a need for a publicly available monitoring system of some sort to track progress.</p> <p>Unfortunately, I don't have much to add to the best practices themselves other than to say that, as a citizen, it would be great to see them happen in Edmonton.</p> <p>The Natural Step is affiliated with a number of best practice organizations:</p> <p><i>Resort Municipality of Whistler</i> (RMOW) – The Natural Step is a close partner with the RMOW, see http://www.naturalstep.org/en/canada/vancouver-bc-unique-vision.</p> <p><i>City of Portland</i> – TNS has established the Oregon TNS Network, which has a strong presence in the community, see http://www.naturalstep.org/en/usa.</p> <p><i>SustainDane</i> – Comprehensive training program for community partners towards sustainability, including the City, see http://www.naturalstep.org/en/city-madison-wisconsin.</p> <p>In addition there are a lot of best practice examples in the book <i>The Natural Step for</i></p>	


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				<i>Communities</i> , see: http://www.chapters.indigo.ca/books/Natural-Step-Communities-How-Cities-Sarah-James-Torbjörn-Lahti/9780865714915-item.html?ref=Search+Books%3a+%2527The+Natural+Step%2527	
Paper 16 <i>Correct Pricing & Deregulation : The Key to Economic and Environmental Sustainability</i> (Lawrence Solomon, Energy Probe)	<ul style="list-style-type: none">• The observation needs to be made that in many of those compact cities, little or no consideration was given to green infrastructure and specifically the provision of public parks and the protection of natural areas. The urban park movement with its focus on the provision of public open space was a response in many parts of the world to ensure more “healthy” cities.• Reiterates the problems arising from urban sprawl for both urban and rural residents. Correctly acknowledges that this problem has been caused and in many cases exacerbated by the positions taking by local governments and their land-use planning policies and actions.• Useful discussion of the implications of property taxes based on market value assessment as a contributing factor to urban sprawl and its associated inefficiencies.• Reference to alternative approaches including asset sales and user fees, and deregulation provide interesting and innovative alternatives. Need to consider the full range of externalities that might arise because of such approaches including consumer attitudes and reactions.	Some good ideas, but I have no substantial comments.		<p>Really interesting paper that argues for higher densities and policies that provide a disincentive for sprawl.</p> <p>I like the idea of removing the perverse incentives of property taxes where people are taxed more for living in the urban core, where the cost of delivering services is the lowest. This drives people to live in lower tax homes in the suburbs.</p> <p>I like the idea of a “tax shift” from property taxes to other forms of revenue the more clearly link the user and the cost of the service, in particular the idea of user fees the reflect the cost for roads and for public transit. I am facilitated by the example of road tolls from Sweden and London, and would absolutely love to see that happen in Edmonton. This would provide real incentive for people to choose neighbourhoods where services are near and provide incentives for business and developers to develop these “urban village”-type neighbourhoods.</p> <p>I liked the argument of pricing public transit to reflect real costs. For example, I am impressed by transit systems where passengers pay based on how far they travel. Traveling 20 stops costs more than traveling 2 stops. Again, this provides an incentive to live, work and shop within your neighbourhood.</p> <p>I also like the idea of the city selling underused assets such as golf courses and sidewalk space to facilities the tax shift. In particular the golf course, especially when you consider the relatively low percentage of the population who use the course.</p> <p>I like the idea of screening decisions and</p>	<p>Critique: This paper was somewhat discouraging in that it focused on a different way of taxing. I think the authors forgot that the taxpayers paid for the infrastructure of the city though buying properties, building structures and paying taxes or special charges to make the city accessible to all at no charge.</p> <p>Comments: This paper presents a concept that would greatly reduce communication, transportation and enjoyment of the city.</p> <p>Second, the city needs to learn more about how the make LRT systems community friendly. The placement of an LRT rail down the middle of a main roadway blocking cross traffic for substantial periods of time does not make to good community design. It leads to cars stopped –idling, leading to air quality problems and time wasted. Third, designing LRT stations with no place to park for riders that do not live within walking distance seems problematic for those that consider time important.</p>

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				policies through the question: “Will this promote sprawl?” I hope that there is enough political will to do this, because both economically and environmentally it is the right thing to do.	
Paper 17 <i>The Power of Prices & the Failure of Markets</i> (David Thompson, Policy Link)	<ul style="list-style-type: none">Once again focuses on the problem of curtaining urban and suburban sprawl as one of the major factors in addressing Edmonton’s sustainability.Sprawl is also a major factor in the loss, fragmentation, and deterioration of the ecological health of ecological networks and the associated ecological goods and services that are dependent on their continued existence.The statement is made that firms and individuals don’t want to cause environmental harm. However, in reality in the trade-off decision process natural capital, including natural areas and biodiversity, are often undervalued because of the failure to fully appreciate the total value of environmental goods and services that are dependent on and “flow” from this capital.An important consideration in addressing urban sprawl is also the extent to which elected councils and their administration are reluctant to use and apply consistently existing policies and relevant legislation that address many of the problems of urban growth.Notwithstanding the discussion of the relative merits of the market system, what would be the implications of stricter land-use planning legislation that is found in a number of countries, including countries within Europe?It is unlikely that there is any one panacea to the urban sprawl issue. To what extent can stricter land-use planning legislation be combined with Environmental Pricing	Some good ideas, but I have no substantial comments.		<p>The paper also focuses on sprawl as a major challenge for Edmonton.</p> <p>I like the idea of need to have price reflect the true costs by including externalities in the price, i.e. currently housing on the edge of town has artificially low prices because externalities have not been included. This needs to be fixed by included externalities via policy tools.</p> <p>I like the idea of Environmental Pricing Reform as a way to integrate externalities into price, e.g. sewage and solid waste charges, road user fees, parking fees, transit subsidies development, construction and ownership cost adjustments time-of-use billing for water and electricity diversify its revenue streams and reduce its heavy reliance on property taxes.</p> <p>I was surprised to see some of the perverse incentives that exist at the City, namely “some of Edmonton’s rates are simply flat or based on square footage, or are per hectare, or per-dwelling rates that don’t vary according to proximity to the city centre or existing infrastructure” and “Edmonton’s property tax rate for multi-family dwellings is 15% higher than the rate for single family dwellings”. I hope this changes.</p> <p>I was also surprised to hear that “fuel taxes generally fail to cover even these costs. When added to other “user pay” taxes for transportation, the whole basket of road user taxes covers only 60%-70% of road costs, with the remainder covered by subsidies from other tax sources.” This does not even include environmental or</p>	<p>Critique:</p> <p>It appears the authors are promoting the use of higher prices or taxes to control urban sprawl. Why not look at why people do not want to live in the crowded, congested, unsafe, dangerous downtown areas. Why do people select gated communities to live in if they can afford to live in such an area?</p> <p>Much of the discussion reads like a way to grab more money from the citizens and provide no improvement in the quality of life (environmental pricing reform). Also, the author forgot that people pay for the cost of building and maintaining their infrastructure through the initial price of a property, property taxes, direct service fees, and user fee to cover the services.</p> <p>Comments:</p> <p>Overall I feel the authors of this paper and paper 16 forgot who pays and why. If higher density living was desirable more people would choose it over moving away from those areas. The approach suggested was to charge people for not making the choices that they want. It would be better to design or re-design higher density living environments so that they are more desirable than rural sprawl areas.</p> <p>It should also be noted that many people prefer privacy and open limited access environments. Designing areas and transportation systems that adapt to and support this desire seems much more logical.</p>

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	Reform to curb unnecessary land conversion?			<p>health related costs from road use. I find it incredible that this situation is allowed to exist, why have we not addressed this as a society? According to Transport Canada figures, the costs of collisions alone in the metropolitan Edmonton area are upwards of \$500 million per year. (!)</p> <p>I liked the idea of needing to think about how the LRT can be developed to not encourage sprawl. "...providing LRT stations to the edge of a city, and large park-and-ride lots on ring roads, makes moving to the edge more attractive. If the area around a suburban station is already filled with new, low-density residential development, then increasing density near those stations will be slow. Extending LRT to the edge also drains resources away from other parts of the system, thus making it more challenging to build a dense, urban-style network. Creating an LRT system that is focused on the suburbs can contribute to sprawl." This is a good caution for The Way We Move.</p>	
<p>Paper 18</p> <p><i>Resilient Edmonton – Why and How?</i></p> <p>(Applegath and Yazer, Cohos Evamy)</p>	<ul style="list-style-type: none">• An excellent paper that provides a very useful conceptual framework for considering the importance of resiliency within a social-ecological systems framework and how Edmonton might respond to “disturbances”.• A key paper within the “Edmonton Sustainability Papers” group of papers because it provides a framework and context for considering all of the other papers, and provides a broad-based SWOT analysis of some of Edmonton’s critical systems. A similar analysis could be applied to other components of Edmonton’s social, economic and environmental systems that are not specifically addressed in this paper.• Correctly emphasizes that Edmonton’s short-term and long-term sustainability depends to considerable extent on its capacity to respond and to be resilient to disturbances, both shock and trends, many	<p>The root of the term “resilience” and its hypothetical relationship with stability should be mentioned. It is stolen from the ecological literature. C.S. (Buzz) Holling 1973. Annual Review of Ecology and Systematics. Brian Walker, who is referenced, is also an ecologist, who saw the parallels in human ecology after working with Holling. This is one of the most quoted papers in all of ecology.</p>	<p>The final chapter on Resilience is quite informative, although I would add Health and Emergency Response as a fifth critical system that demands prioritization to ensure Edmonton’s resilience in the years ahead. Further, the juxtaposition of mitigation and adaptation as being somehow conflicting is unfortunate. Comprehensive adaptation does (must) encompass mitigation, and in many cases specific response options offer gains in both. To take just one example, development of a more redundant and less concentrated electricity system, which can be accomplished far more effectively with renewables would be an obvious boon for both mitigation and adaptation. As would</p>	<p>It was interesting to see that approaching the topic from a resiliency perspective also led to similar recommendations for the City of Edmonton, i.e. increasing density, mixed uses neighbourhoods, pedestrian friendly, local food, transit oriented planning, integration with natural systems.</p> <p>It makes sense to add a layer to decision making to ensure that decisions are leading to both a sustainable Edmonton and a resilient Edmonton. I imagine that many initiatives would be supportive of both.</p> <p>The authors chose the systems of water, energy, transport and food, which are all very important. I wonder also about systems that deal with “materials” (e.g. products and waste) (which can also include a conversation about trace metals and persistent chemical compounds), and</p>	<p>Critique:</p> <p>Resilience is an interesting topic and area of study which looks at the community as a group or collection of systems which modify themselves to maintain their ability to function.</p> <p>The resilience process forgot about how people think and function. People frequently do not want a totally fixed and defined environment that after two to five years becomes stagnant and boring.</p> <p>Comments:</p> <p>This method of modeling communities to ensure that flexibility exists provides a tool for evaluating community response to challenges appears to be useful. However, to live in a community where ‘big brother’ has decided where you will live, work, eat and recreate is the socialist idea of total control by the ‘know all, see all’ government. The proposed utopian environment forgets that the physical components of a society, the infrastructure and all its parts, must be made and assembled. The padded cell society is acceptable for bureaucrats that do not have to create products, but not for people that do real physical work. Someone has to pay for a</p>

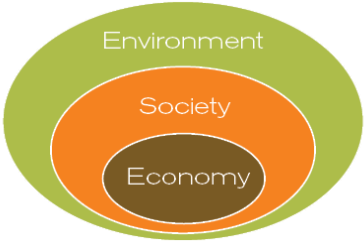
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	<p>of which are continental and global in scope and outside the control of city government.</p> <ul style="list-style-type: none">• A very useful discussion of the implications and relative merits of pursuing different strategies to deal with disturbances, i.e., mitigation, preparation and adaptation.• Appreciated recognition of the importance of place making and the sense of place that the role that heritage resources and landscapes contribute to. People respond in a positive way to a sense of identify within social and environmental space and are willing to contribute to its retention and enhancement. They become stewards of their environment.• <i>Key observation: society’s well being is intricately tied to the state of natural systems, the quality and availability of natural capital including the ecological health and integrity of an areas biodiversity and its constituent wildlife populations, habitat, and ecological processes. For example, the United Nations declared 2010 to be the International Year of Biodiversity. It is a celebration of life on earth and of the value of biodiversity for our lives. “Biodiversity is life - Biodiversity is our life.</i>• Key observation – the meaningful engagement of individuals and communities in the planning and design of their cities and neighbourhoods. <p><i>Reiterates the costs involved in promoting and accepting urban sprawl, not least from the expense of servicing and maintaining this form of urban development.</i></p>			<p>enhancement of local food systems, water conservation, etc. The authors also implicitly (and perhaps unintentionally) give the impression that we should not be focusing on adaptation, perhaps in the hopes that if we mitigate now we won’t need to adapt. This is a grave error in judgment.</p>		<p>also social “systems” such as “arts and culture”, etc. How should these be included in the conversation about resilience?</p> <p>I like the idea about “resilience centers” and in many ways this makes a lot of sense and would be an interesting way to integrate sustainability / resilience into The Way We Grow and The Way We Move.</p> <p>I found the discussion about local food dependency interesting, according to the Ecological Footprint article by Mark Anielski Edmonton’s food consumption far outstrips is food capacity by over 20x (I think, I need to check the article). Would mean radical changes in diet (more vegetables) and a radical increases in urban farming.</p> <p>I like the points they have in the “Looking Forward” section. They are quite easy to grasp, and all consistent with “sustainability”.</p>		<p>manufactured product before there is money for all of the support and service people jobs required to support its use.</p>	
<p>Paper 19 <i>Sustainability Planning: Frameworks, Principles & Management Tools</i> (Savelson /</p>	<ul style="list-style-type: none">• Provide a useful overview of sustainability planning models, principles and management tools• The Adaptive Management Framework (AMF) has many similar characteristics to frameworks that are currently used for assessing management effectiveness of protected areas (see IUCN publications).				<p>I like the “Integration” stage in the Adaptive Management Framework (AMF), this is often a forgotten step. I am curious to see how it works.</p> <p>I agree that the AMF is not principle based, and that The Natural Step Framework can provide scientifically rigourous design criteria for the</p>		<p>Critique: The paper presented 11 synopses on sustainability planning tools with a brief description, statements of strengths and weaknesses and applications of each. Listing the “most well known” approaches did not provide insight into the best or correct approach to planning for sustainability.</p> <p>Comments: The listing approach provides helpful information on what is available but seems to fall short of providing a good</p>		

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Buckle, Stantec)	<ul style="list-style-type: none">• Notable that smart growth principles include: green infrastructure, green space, farmland, and ecological areas• Notable that the “Melbourne Principles” include biodiversity, sense of place, partnerships, and empowerment. <p><i>Interest consideration is the extent that sustainability planning can be integrated into implementing Edmonton’s capacity for resilience addressed in paper 1</i></p>			<p>development of the vision and strategies in the Adaptive Management Framework.</p> <p>Agenda 21 lays out good solid steps that are important in creating community sustainability plans, i.e. council support, broad stakeholder engagement, community monitoring systems, etc. Again, Agenda 21 can be made more robust by ensuring that community visions and baselines are guided by scientifically relevant principles.</p> <p>The TNS Framework provides a scientifically rigorous definition of sustainability, which includes social sustainability. Social sustainability can be elaborated with the use of the nine basic human needs.</p> <p>Principles are important to the backcasting process especially in large groups of people. Without them the “goals” can easily be a reflection of the lowest common denominator.</p> <p>Smart Growth Principles are very complimentary to TNS’ socio-ecological Principles of Sustainability. They can be thought of as the logical extension of the Principles of Sustainability applied to a land use and urban planning context. They can also provide rigour to some of the Smart Growth Principles, e.g. what is “green”?</p> <p>Agree with all Melbourne Principles, however, they do not describe an end-state that you can backcast from. There is also a difference in the end state, “vision”, and many of the principles that speak to the process, e.g. “Partnerships” and “Empowerment”.</p> <p>ISO14001 no so relevant from a community planning perspective, however the classic management system process of “Plan Do Check Act” is very important and which is why that The Way We Green should be an ongoing process that involves</p>	<p>understanding of planning for the sustainable community growth or continuation plan.</p>

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			<p>stakeholders over time to plan actions, check progress, reflect on what worked / do not, and the create new actions. The Resort Municipality of Whistler’s Whistler 2020 process is an excellent example of this. Thoughts on how a management system process can be applied in a community sustainability planning context are provided below:</p>  <p>Ongoing Strategy Development, Action Planning, Monitoring and Evaluation</p> <p>4d Municipal Development Plan</p> <p>4c Aligning MDP Policies</p> <p>4b Partnerships with Community Leaders</p> <p>4a Monitoring System for KPIs</p> <p>3 Where are we today?</p>	

Global Reporting Initiative perhaps relevant for corporate sustainability plan for the City of Edmonton, would allow for benchmarking against other communities, although not sure how many other municipalities use it.

Triple Bottom Line is good, but does not necessarily reflect the reality of nested systems, i.e. that the economy is the wholly owned subsidiary of the environment. In this sense, the economy needs to also align with socio ecological principles of sustainability, which it does not right now. Below is a visual of nested

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						<p>systems.</p>  <p>Life Cycle Analysis is more relevant from a product or service perspective. Can be used to evaluate life cycles of necessary, should also be guided by socio-ecological principles of sustainability otherwise you will get lots of data and be trying to choose between two evils, e.g. lower energy use vs. higher trace metals in compact florescent light bulbs...which one?</p> <p>ecoBudget, very interesting and would be neat to see the City of Edmonton do this. I think that considering the high ecological footprint of the city, it could highlight that we are overspending our ecoBudget.</p> <p>Many of these concepts are complementary and you can use more than one. It is not an “either or” discussion.</p> <p>Agree with the Key Considerations on p.21.</p>	
Paper 20 <i>Achieving a Sustainable building Stock</i> (Klaas	<ul style="list-style-type: none"> • Informative overview of the various voluntary rating systems for sustainable buildings. • A very useful list overview of sustainable building strategies. A number of which have a direct influence on the ecological health and of the urban environment including the 						

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Rodenburg, Stantec)	<p>retention of green field sites and the safeguarding of associated natural capital and ecological goods and services.</p> <ul style="list-style-type: none">• Reference to “Green Teams” underscores the importance of societal awareness, the providing of relevant and timely information, the engagement of the public/residents, and the consequent enhancement of the social capacity of a neighbourhood or community to effectively and efficiently address societal problems.				
<p>Paper 21</p> <p><i>Towards a Sustainable Transportation System</i></p> <p>(Aryn Machell, City of Edmonton, Transportation Planning Branch)</p>	<ul style="list-style-type: none">• Acknowledges that a transportation has two main direct impacts on environmental sustainability related to land: (1) development of natural areas and agricultural lands that support natural systems can destroy habitat & deplete other forms of natural capital thus reducing biodiversity; (2) creation of impermeable surfaces increases rates of run off, affects riparian systems and the water table and can intensify the heat island.• Transportation systems are essentially linear anthropogenic features across the landscape. As a result, transportation corridors invariably have a significant negative impact on the biodiversity and ecological health of an area because they disrupt, fragment, and/or isolate natural areas and ecosystems and their supporting ecological processes.• Transportation/communication routes create significant barriers within otherwise functioning ecological networks and their essential linkages and corridors. As a result, the permeability of the landscape in relation to the movement of various species of wildlife, including ungulates and avian species, can be seriously compromised.• Transportation /communication routes may result in direct kills of wildlife from road				

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	<p>traffic and trains.</p> <ul style="list-style-type: none">• Transportation corridors often result in the introduction of noxious weeds and other alien species into an otherwise healthy ecosystem.• The linear nature of transportation systems increases the edge effect on any ecosystem with the result that the remaining patches of natural area are far more prone to the penetration of alien and predator species.				