

**Wednesday April 9<sup>th</sup> 2014**

**Place:** DNV Hall 355 W. Queens Rd V7N 2K6  
**Time:** 7:00-9:00pm  
**Chair:** Val Moller – Woodcroft  
 Tel 604-926-8063 email:vmoller@telus.net

Regrets: Bill Tracey, Carol Hartnett

Presentation on “Adopt a Street” by DNV’s Courtenay Fraitzl - Community Beautification Coordinator

## 1. Order/content of Agenda

a. Chair Pro-Tem Suggests:

## 2. Adoption of Minutes of Mar 19<sup>th</sup>

- a. <http://www.fonvca.org/agendas/apr2014/minutes-mar2014.pdf>  
 b. Business arising from Minutes.

## 3. Roundtable on “Current Affairs”

A period of roughly 30 minutes for association members to exchange information of common concerns.

- a. EUCCA  
 b. DCA- Speaker Series Invitation – Rene Gourley  
[http://www.fonvca.org/agendas/apr2014/PB\\_Delbrook%20Invitation.pdf](http://www.fonvca.org/agendas/apr2014/PB_Delbrook%20Invitation.pdf)

## 4. Old Business

- a) Update: “Process” FONVCA Committee  
 b) Update: OCPIC by Corrie Kost / Dan Ellis

## 5. Correspondence Issues

- a) Business arising from 0 regular emails:  
 Distributed with full package and posted on web-site  
 b) Non-Posted letters – 9 this period  
 Distributed as non-posted addenda to the full package.

## 6. New Business

- a) Densification and Affordability – Doug Curran  
<http://www.globalsiteplans.com/content/why-grandma-is-moving-to-denver-not-miami/>

## b) 2014-2018 DNV Financial Plan

Deferred from March FONVCA meeting...

<http://www.dnv.org/budget2014>

Discussion of CA’s/DNV mtg of March 4<sup>th</sup>

<http://www.fonvca.org/agendas/mar2014/2014%20Municipal%20Tax%20on%20my%20home.pdf>

BC Analysis of Municipal Property Taxes

[http://www.cscd.gov.bc.ca/Lgd/library/revenue\\_source\\_review/An%20Analysis%20of%20Property%20Taxation.pdf](http://www.cscd.gov.bc.ca/Lgd/library/revenue_source_review/An%20Analysis%20of%20Property%20Taxation.pdf)

<http://www.fonvca.org/agendas/mar2014/cities-grossly-underestimating-money-they-receive.pdf>

## c) Fostering Dialogues Across Divides

<http://www.pentictonherald.ca/local-columnists/dealing-with-differences-of-opinion.html>  
[http://www.publicconversations.org/docs/resources/Jams\\_website.pdf](http://www.publicconversations.org/docs/resources/Jams_website.pdf)  
<http://www.cawi-ivtf.org/sites/all/files/pdf/publications/Creating-Change-We-Want-en.pdf>

## 7. Any Other Business

### a) Importance of building Shadow Studies

For a little background:

[http://www-bcf.usc.edu/~rknowles/sol\\_env/sol\\_env.html](http://www-bcf.usc.edu/~rknowles/sol_env/sol_env.html)

Examples of good criteria:

[http://www6.mississauga.ca/onlinemaps/planbldg/UrbanDesign/ShadowStudiesFinal\\_Feb2012.pdf](http://www6.mississauga.ca/onlinemaps/planbldg/UrbanDesign/ShadowStudiesFinal_Feb2012.pdf)  
<http://www.halifax.ca/council/agendasc/documents/130723cai2.pdf>

they are easy to do:

<http://sustainabilityworkshop.autodesk.com/buildings/ecotect-shadows-sunlight-hours> ← visit website for details

### b) Towards more prosperous cities: by Wendell Cox

<http://demographia.com/towardmoreprosperous.pdf>

## 8. For Your Information Items

### a) Non-Legal Issues

#### i. News-Clips of the month Mar 2014

<http://www.fonvca.org/agendas/apr2014/news-clips/>

The annotated newspaper clips may be worth a read!

#### ii. Municipal Financial Performance Indicators

<http://www.novascotia.ca/snsmr/municipal/finance/indicator/definitions.asp>

#### iii. Community Development – Participation

[http://www.centerforurbanstudies.com/documents/silverman\\_pattern/jcdis\\_participation\\_special\\_issue.pdf](http://www.centerforurbanstudies.com/documents/silverman_pattern/jcdis_participation_special_issue.pdf)

<http://www.charretteinstitute.org/charrette.html> explains the Charrette System.

### b) Legal Issues

#### i. Law Discourages Designated Drivers

<http://www.pentictonherald.ca/local-columnists/law-discourages-designated-drivers.html>

#### ii. Metro power to veto land use curtailed

<http://www.courts.gov.bc.ca/jdb-txt/SC/14/04/2014BCSC0413.htm>  
 because Langley did not, in fact, amend the regional context statement!

#### iii. Earthquake Preparedness

[http://embc.gov.bc.ca/em/hazard\\_preparedness/earthquake\\_preparedness.html](http://embc.gov.bc.ca/em/hazard_preparedness/earthquake_preparedness.html)  
[http://www.bcauditor.com/files/publications/2014/report\\_15/report/OAG%20Catastrophic%20Earthquake\\_FINAL.pdf](http://www.bcauditor.com/files/publications/2014/report_15/report/OAG%20Catastrophic%20Earthquake_FINAL.pdf)

#### iv. Is Music a Noise in the City of North Vancouver?

Singing, even amplified, is not “noise” – tickets invalidated.  
<http://www.courts.gov.bc.ca/jdb-txt/SC/14/05/2014BCSC0513.htm>

## 9. Chair & Date of next meeting

**Wed. May 21st 2014**

**FONVCA Received Correspondence/Subject**

17 March 2014 → 13 April 2014

| <b>LINK</b> | <b>SUBJECT</b> |
|-------------|----------------|
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**Past Chair Pro/Tem of FONVCA (Jan 2010-present)**

**Notetaker**

| <b>Apr 2014</b> | <b>Val Moller</b> | <b>Woodcroft rep.</b>   | <b>To be determined</b>  |
|-----------------|-------------------|---|--------------------------|
| Mar 2014        | Peter Thompson    | Edgemont & Upper Capilano C.A.                                | John Gilmour             |
| Feb 2014        | John Miller       | Lower Capilano Community Residents Assoc.                     | Diana Belhouse           |
| Jan 2014        | Dan Ellis         | Lynn Valley C.A.  | John Miller              |
| Nov 2013        | Diana Belhouse    | Delbrook CA & S.O.S   | Eric Andersen            |
| Oct 2013        | Val Moller        | Woodcroft rep.  | Sharlene Hertz           |
| Sep 2013        | Eric Andersen     | Blueridge C.A.  | John Gilmour             |
| Jun 2013        | Peter Thompson    | Edgemont & Upper Capilano C.A.                                | Cathy Adams              |
| May 2013        | John Miller       | Lower Capilano Community Residents Assoc.                     | Dan Ellis                |
| Apr 2013        | Paul Tubb         | Pemberton Heights C.A.  | Sharlene Hertz           |
| Mar 2013        | Dan Ellis         | Lynn Valley C.A.  | Sharlene Hertz           |
| Feb 2013        | Diana Belhouse    | Delbrook C.A. & SOS   | John Miller              |
| Jan 2013        | Val Moller        | Woodcroft & LGCA  | Sharlene Hertz           |
| Nov 2012        | Eric Andersen     | Blueridge C.A.  | Cathy Adams              |
| Oct 2012        | Peter Thompson    | Edgemont & Upper Capilano C.A.                                | Sharlene Hertz           |
| Sep 2012        | John Hunter       | Seymour C.A.  | Kim Belcher              |
| Jun 2012        | Paul Tubb         | Pemberton Heights C.A.  | Diana Belhouse           |
| May 2012        | Diana Belhouse    | Delbrook C.A. & SOS   | John Miller              |
| Apr 2012        | Val Moller        | Lions gate C.A.   | Dan Ellis                |
| Mar 2012        | Eric Andersen     | Blueridge C.A.  | John Hunter              |
| Feb 2012        | Dan Ellis         | Lynn Valley C.A.  | John Miller              |
| Jan 2012        | Brian Platts      | Edgemont & Upper Capilano C.A.                                | Cathy Adams              |
| Nov 2011        | Paul Tubb         | Pemberton Heights   | Eric Andersen            |
| Oct 2011        | Diana Belhouse    | Delbrook C.A. & SOS   | Paul Tubb                |
| Sep 2011        | John Hunter       | Seymour C.A.  | Dan Ellis                |
| Jul 2011        | Cathy Adams       | Lions Gate C.A.   | John Hunter              |
| Jun 2011        | Eric Andersen     | Blueridge C.A.  | Cathy Adams              |
| May 2011        | Dan Ellis         | Lynn Valley C.A.  | Brian Platts/Corrie Kost |
| Apr 2011        | Brian Platts      | Edgemont & Upper Capilano C.A.                                | Diana Belhouse           |
| Mar 2011        | Val Moller        | Lions Gate C.A.   | Eric Andersen            |
| Feb 2011        | Paul Tubb         | Pemberton Heights ← Special focus on 2011-2015 Financial Plan |                          |
| Jan 2011        | Diana Belhouse    | S.O.S.  | Brenda Barrick           |
| Dec 2010        | John Hunter       | Seymour C.A. ← Meeting with DNV Staff on Draft#1 OCP          | None                     |
| Nov 2010        | Cathy Adams       | Lions Gate C.A.   | John Hunter              |
| Oct 2010        | Eric Andersen     | Blueridge C.A.  | Paul Tubb                |
| Sep 2010        | K'nud Hille       | Norgate Park C.A.   | Eric Andersen            |
| Jun 2010        | Dan Ellis         | Lynn Valley C.A.  | Cathy Adams              |
| May 2010        | Val Moller        | Lions Gate C.A.   | Cathy Adams              |
| Apr 2010        | Paul Tubb         | Pemberton Heights   | Dan Ellis                |
| Mar 2010        | Brian Platts      | Edgemont C.A.   | Diana Belhouse           |
| Feb 2010        | Special           |   |                          |
| Jan 2010        | Dianna Belhouse   | S.O.S   | K'nud Hille              |

# FONVCA

## Draft Minutes of Regular Meeting, Wednesday March 19, 2014

**Place:** DNV Hall 355 West Queens Rd.,

**Time:** 7:00-9:00pm

**Chair Pro-tem:** Peter Thompson – Edgemont and Upper Capilano CA

**Regrets:** Dan Ellis

**Attendees:**

|                 |                               |
|-----------------|-------------------------------|
| Peter Thompson  | (Chair Pro-tem)               |
| Corrie Kost     | Edgemont & Upper Capilano RA  |
| Lyle Craver     | Lynn Valley CA                |
| Diana Bellhouse | Delbrook CA & Save our Shores |
| Doug Curran     | Community                     |
| John Gilmour    | Community (Note-taker)        |
| Eric Anderson   | Blueridge CA                  |
| Val Moller      | Woodcroft /LGNA               |

1. Call to order at 7:05pm

**2. Adoption of minutes of February 19, 2014**

<http://www.fonvca.org/agendas/mar2014/minutes-feb2014.pdf>

Val commented on the minutes that everything in the section attributed to her sounds like it's reported by her. Val said she spoke to Corrie about this that from the end of the 3<sup>rd</sup> sentence down [ending in "Woodcroft on Feb 20<sup>th</sup>"] was a result of discussions of other present at the meeting.

Moved: Val Second: Corrie Carried

Doug was not allowed to comment on the minutes as he did not attend the meeting.

**3. Roundtable on "Current Affairs"**

**Woodcroft** -Val reported a fairly good turnout at the public meeting on February 20<sup>th</sup>. Doug asked about the Woodcroft Feb 20<sup>th</sup> meeting relating to traffic on Fullerton and the improvements proposed. Doug advised that a portion of those improvements will be paid by Larco. Val said Woodcroft is up to date on that.

**Blueridge** - Eric Anderson reported that he has been having discussions with Courtenay Fraitzl, DNV Staff member who has been very helpful as a community building coordinator. She will be a guest speaker at the April FONVCA meeting. Eric is to coordinate.

**Lynn Valley** - Lyle Craver reported on the Public Information Meeting held on February 19 in the former Zellers space. John added that there were about 400 people there. Doug attended this event and was surprised that people seemed to recognize that this project was the future of Lynn Valley. Doug also reported that Bosa had offered as part of its CAC package, to pay for an additional traffic lane under the Hwy #1 overpass over Lynn Valley Road. John reported that the Bosa rezoning package is part of the agenda for consideration at the next council meeting. He added that the transcript of comments made by community members almost word for word at the meeting was

attached to the staff report. [Ref: pages 95-101 of [http://www.dnv.org/upload/documents/Council\\_Agendas\\_Minutes/ca140324.pdf](http://www.dnv.org/upload/documents/Council_Agendas_Minutes/ca140324.pdf)]

**Delbrook** - Diana Bellhouse reported that Delbrook is hosting sessions on community and planning and will circulate the notice of meeting to FONVCA.

**EUCCA - Peter Thompson:**

- asked if anyone had heard if the fall municipal election date had been changed to October. No one had heard about this.
- advised that Metro van was now in the process of hooking up an 84" water main to the water pumping station location near the Cleveland Dam.
- advised that the LGSWWTP is progressing along. Price tag is about \$700million. The funding formula and commitment from senior levels of government is not clear yet. Doug said that the 1/3, 1/3, 1/3 split is proposed but he had been told by Darrell Mussatto the project would not proceed if the senior level contributions were not committed to. Doug said the odour issue is no longer an issue as it was absolutely necessary to address the odour issue for the Norgate residents in order for it to proceed. The cost to address the odour was said to be in the range of \$120million. Peter added that the pile driving during construction will create a lot of noise. Corrie expressed concern that a rise in sea level and flooding could damage the facility. Peter advised that any pumps and air intakes are located near the top of the building for this reason.
- reported the Edgemont and Upper Capilano CA had their AGM with guest speaker Jacqueline van Dyk from the NVDPL on the subject of the DNV Library Strategic Plan.

**4. OLD BUSINESS**

**a) Update: "Process" FONVCA Committee**

- Corrie was to draft some minimal standards. One stumbling block is how does a CA work with the strata councils and be a bonafide community group. He subsequently found that it's not a rigid requirement and is flexible. The draft is to be completed shortly.

**b) OCPIC** – Corrie said that the OCPIC mandate is in process of being renewed. Doug said he thought the DNV may not be using this committee much in the future. Doug also mentioned the Bob Ransford article in the Vancouver Sun recently [March 10<sup>th</sup>] which proposed a community jury to review project proposals rather than people already with a predetermined opinion on a proposed project.

**5. CORRESPONDENCE**

(a) Posted to FONVCA Website: An email to DNV Council. cc: FONVCA re: Mountain biking from Monica Craver was received re: Why don't the mountain bikers go to the ski resorts in the summer rather than damage the public trails on [DNV] lower levels. FONVCA response has already been sent in [<http://www.fonvca.org/agendas/feb2014/January-29-letter-to-council.pdf>].

(b) Non-Posted emails – distributed to attendees only  
Letter #1

Re: Various Lower Cap issues. The discussion of Marine Drive was valid due to Doug previously sending an email to Corrie to have this placed on the agenda. Val said the Marine Drive committee was formed by the DNV, Ross Taylor and residents to get rid of auto-related business, add wider

sidewalks, etc, which did end up happening. Doug referred to councillor Muri's comment re: lost dollars due to lower density. This letter was not initially posted because it was addressed to Corrie.

#### Letter #2

Topic: Public design guidelines – Doug said the proposed public realm is not well supported by DNV staff but these ideas were central to the idea of a walkable community. Susan Haid is alleged to admitting the dept had not well communicated the community wishes and were admitted as defects to the plan.

Motion to **post** letter. M: Corrie S: Diane Carried

Doug said that the Woonerf St design is actually not fully embraced by staff and should be. There are 6000 of them in Holland where accidents were lowered by 80% as a result. Val said she had received 2 comments for lower Cap residents which were:

Q. How can trucks make deliveries while on the Woonerf Street?

A. Corrie said that it is not a problem and the roads should be able handle it.

Q. The towers on the Larco site cast shadows on the street?

A. Doug said the shadow study showed the shadows are cast on the Larco property

#### Letter 3

Topic: Public Realm designs are similar to what Roger Brooks has been recommending for the Lower Lonsdale waterfront area. Motion to **post** letter. M: Val S: Doug Carried

#### Letters 4, 5 & 6

Non-posted emails to FONVCA. Corrie said these letters were not immediately posted to the website due to possible impugning of individuals or identifiable groups.

Topic: These letters relate to comments made at the last FONVCA meeting

Motion to **not post** these letters M: Corrie S: Val Carried

### 6. NEW BUSINESS

#### a) Majority of Seniors live in own home.

<http://www.statcan.gc.ca/daily-quotidien/140224/dq140224a-eng.pdf>

<http://www.fonvca.org/agendas/mar2014/news-clips/Majority%20of%20seniors%20live%20in%20their%20own%20homes.pdf>

Interesting article

#### b) 2014-2018 DNV Financial Plan

<http://www.dnv.org/budget2014>

Discussion of CA's/DNV mtg of March 4<sup>th</sup>

<http://www.fonvca.org/agendas/mar2014/2014%20Municipal%20Taxes%20on%20my%20home.pdf>

BC Analysis of Municipal Property Taxes

[http://www.cscd.gov.bc.ca/Lgd/library/revenue\\_source\\_review/An%20Analysis%20of%20Property%20Taxation.pdf](http://www.cscd.gov.bc.ca/Lgd/library/revenue_source_review/An%20Analysis%20of%20Property%20Taxation.pdf)

<http://www.fonvca.org/agendas/mar2014/cities-grossly-underestimating-money-they-receive.pdf>

Discussion of Item was deferred

#### c) Appropriate term length for municipal councils.

- Corrie distributed response from MLA Ralf Sultan to this issue. He had written to Ralph Sultan recently who said this idea came from UBCM to increase the length of term to 4 years from 3 years. Peter asked John what he thought of the proposal. John said he had no problem with the 4 years but there should be a limit to the number of consecutive terms due to long term councillors become more self-serving the longer they are in office. Corrie and Doug agreed with this as they thought it

should be no longer than 2 consecutive terms as it encourages career politicians. Erik thinks it should stay at 3 years. Val thinks 4 years is better so there is less thinking about elections. Corrie said the idea should have been voted upon by the people.

- Lyle objects to the closeness of Election Day to Remembrance Day. Diana also thinks that Election Day is at the wrong time of year.

## **7. ANY OTHER BUSINESS**

**a) Municipal taxation** – for information purposes

**b) Housing affordability study by Demographia** – Annual Affordability Survey. Their conclusion is that density causes housing to be less affordable. Doug said he thought this was not correct. Peter said he thought this was not correct also.

## **8. For Your Information Items**

No discussion - See agenda for details.

## **9. Chair & Date of next meeting**

**Wed. April 16<sup>th</sup> 2014 Chair: Val Moller – Woodcroft**

[Note: Subsequently the Date was tentatively changed to **April 9<sup>th</sup>** due to room availability – consult [www.fonvca.org](http://www.fonvca.org) for any update]

## An Invitation

### Wildly Successful Public Engagement

When: Wednesday, April 30, 2014 @ 7 pm, doors open 6:30pm

Location: DNV Municipal Hall 355 West Queens Road, North Vancouver, BC

Presentations, Panel Discussion, Questions

#### The Delbrook Dialogues

The Delbrook Community Association is pleased to launch the inaugural event in a series of *Delbrook Dialogues*. Our first *Dialogue* is on April 30th and we are pleased to host leading BC authorities on public engagement. This forum is open to the public; seating is limited.

#### Panellists

##### Andrew Pottinger Ph.D., APR – Principal

Pottinger Bird Community Relations

Mr. Pottinger specializes in strategic communication planning, issues/crisis communications and community relations for property developments.

##### Andy Hiscox – Managing Associate

##### Colette Parsons – Urban Design & Landscape Architect

CitySpaces is a leading provider of development consulting, community planning, and innovative and effective consultation strategies for communities throughout Western Canada with the goal of helping to build lasting, livable communities.

##### Jessie Sutherland, MA

Finding Home™ Initiative supports individuals and neighbourhoods to foster a sense of belonging, build inclusive communities, and increase effectiveness in responding to personal, local, and global challenges.

##### Michael von Hausen

Michael von Hausen is President of MVH Urban Planning & Design Inc., a firm that specializes in sensitive land development planning, sustainable urban design, group facilitation, and community partnerships. Michael is Adjunct Professor in the Graduate Urban Studies Program at Simon Fraser University and Chief Instructor of the award-winning Urban Design Certificate Program at SFU.

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The Delbrook Community Association (DCA) is proceeding with a community driven planning process for the Delbrook Recreation Centre site. Our three-step program is **Inform, Engage, and Report**. Our hope is that through early dialogue and engagement with our residents we can identify, and subsequently report on:

- 1.) our community's needs and priorities
- 2.) steps to meet our defined needs that enhance our quality of life

We aim for early engagement with our community to gain knowledge of issues pertaining to modern community design in preparation of the District's broad public engagement process regarding the Delbrook site slated for 2015. Join us for the first of our 'inform' sessions.

## AGENDA ITEM 6a

### Why Grandma is Moving to Denver, Not Miami

Denver has the [longest winter of any of the U.S. cities](#), averaging over [fifty inches of snowfall per year](#), and has an average annual temperature more than [twenty-five degrees lower than Miami, Florida](#). So why is grandma moving to [Denver](#) and not Miami?

Despite the chilling winters, Denver also has [300 days of sun](#), and plenty of attractions like museums and sports teams. In addition, Denver has a [booming economy](#) and good [urban planning and design](#) features to support seniors.

[MoneyRates.com](#) ranks Colorado higher on their list of “Best Places to Retire [in the US]” than frequently cited retirement areas like Florida and California.

The State of Colorado also has one of the highest life expectancies in the entire United States at [nearly eighty years](#), and ranks above Florida and Arizona in this regard. As the state’s largest metro area, Denver captures many aging adults.

Denver has good transportation options for aging adults who are limited or can no longer use a car. Carpooling and van-sharing programs like [Lakewood Rides](#), [bike-sharing programs](#), and good [bus](#) and [light-rail systems](#) are prevalent. Walkability enhancements like those found in Boulder help seniors navigate their cities without a vehicle. Denver has infrastructure to support adults much better than the sprawling, spread-out areas of Miami or Phoenix. Many of these assets will be further explored in future Denver blog posts.



Three city buses near Denver, Colorado

Denver also has co-housing. **Co-housing communities are small-scale neighborhoods that provide a balance between personal privacy and living in a small, tight-knit community.** These co-homes are entirely self-sufficient. Developments are designed, planned, and managed with the intent of having a high degree of resident participation in community decision-



making—making them ideal for increasing the quality of life of aging adults and livability of the community. There are two exemplary examples of co-housing in the Denver region:

- [Silver Sage Co-Housing](#) in Boulder, Colorado; and
- [Harmony Village Co-Housing](#) in Golden, Colorado.



Harmony Village near Denver, Colorado



Harmony Village near Denver, Colorado

Another urban planning factor enhancing Denver’s ability to prepare for the looming Baby Boom generation are progressive [Accessory-Dwelling Unit \(ADU\) ordinances](#), to help seniors live autonomously near friends or relatives and family members.

It's not to say cities like Phoenix or Miami are bad – they still rank high on “best of” lists for seniors and certainly have their pros. **But cold, snowy Denver may just make up the gap before most Baby Boomers have put down their final roots.**

**Do you think seniors are more concerned about climate or are there other important factors [urban planners](#) can influence? Do you think co-housing could be used in your city to attract seniors? What are other important factors to consider when creating age-inclusive cities?**

Credits: Images by Jonathan Knight. Data linked to sources.



### **[Jonathan Knight](#)**

Jonathan Knight is an award-winning planner and a recent graduate of Kansas State University with a Master's of Regional and Community Planning and Minor in Business. His interest in planning probably came from his avid playing of "Roller Coaster Tycoon" as a child: always fascinated in how complex things in the built environment worked; how they fit together; and why people feel certain ways in different environments. He has worked in sustainability, regional planning, and school planning. He is a professional freelance photojournalist and has been published in national, regional, and local publications. Upon graduation, Jonathan followed his dreams of living near the Rocky Mountains and moved west to Denver, Colorado. At some point during his time at The Grid in 2014, he will have climbed all 58 14,000 foot peaks in Colorado-- a 12-year journey completed! Jonathan will be blogging about innovative urban planning, transportation, and housing projects occurring in the Denver region as it seeks to be a world-class city for businesses and people.

# FONVCA DEFERRED AGENDA ITEM 6b2

2014 Municipal Taxes on my home: 2851 Colwood Dr.

|                      |              |                          |
|----------------------|--------------|--------------------------|
| Total Property Taxes |              |                          |
| 2014                 | ~ \$6200     | <b>Increase of 132 %</b> |
| 2007                 | \$4044       |                          |
| 2000                 | \$2671       |                          |
| Municipal Taxes      |              |                          |
| 2014                 | ~ \$3000     | <b>Increase of 137 %</b> |
| 2007                 | \$2020       |                          |
| 2000                 | \$1265       |                          |
| Cost of Utilities    |              |                          |
| 2014                 | \$1473       | <b>Increase of 146 %</b> |
| 2007                 | \$ 809       |                          |
| 2000                 | \$ 599       |                          |
| School Taxes         |              |                          |
| 2014                 | ~ \$1950     | <b>Increase of 74 %</b>  |
| 2007                 | \$1378       |                          |
| 2000                 | \$1119       |                          |
| GVTA/Translink       |              |                          |
| 2014                 | ~ \$410      | <b>Increase of 440 %</b> |
| 2007                 | \$292        |                          |
| 2000                 | \$ 76        |                          |
| CPI (Vancouver)      |              |                          |
| 2014                 | 124          | <b>Increase of 24 %</b>  |
| 2007                 | 114          |                          |
| 2000                 | 100          |                          |
| BC Assessment(*)     |              |                          |
| 2014                 | \$ 1,219,500 | Increase of 237 %        |
| 2007                 | \$ 792,300   |                          |
| 2000                 | \$ 362,400   |                          |

(\*) Overall municipal assessments have nothing to do with the overall cost of utilities, schools, roads, police protection, fire protection, etc. They are only used to set the mill rate. **Taxes are to cover the cost of services.** These costs are not related to overall assessments.  
**Municipal Taxes and Fees are out of control.**

# **Municipal Revenue Sources Review An Analysis of Property Taxation**



**August, 2012**



Ministry of  
Community, Sport and  
Cultural Development

## Property Tax in British Columbia

Municipalities use property taxation as their primary source of funding to provide services that have been requested by their taxpayers. Roughly half of all municipal revenue in the Province of British Columbia (Province) is collected through property taxation. The remaining half is mainly collected through user fees and developer contributions with minor revenue collected from senior government transfers.

Of total municipal property taxes, approximately 95% are collected as property value tax and grants-in-lieu of taxes. The remaining 5% is collected as parcel tax.

### Property Value Tax and Grants-in-Lieu of Taxes

A property value tax (also called an ad valorem tax) is a tax levied on the assessed value of land and improvements on a property. Land means physical land, including land covered by water. Improvements are buildings, fixtures and structures placed on or in the land, excluding chattels and production machinery.

A grant-in-lieu of taxes is similar to a property value tax but is collected from provincial and federal governments and their associated agencies and Crown corporations. Since senior governments are exempt from property taxation under section 125 of the *Constitution Act*, they pay annual grants instead of property value taxes; however, the methodology is quite similar.

### Property Tax Formula

The formula for determining property value tax revenue is as follows:

$$\text{Tax Revenue} = \text{Taxable Assessment} \times \text{Tax Rate}$$

#### Taxable Assessment

Taxable assessment represents the assessed value of land and improvements on which a municipality may levy property taxes. The determination of taxable assessment is done by an independent Crown corporation called British Columbia Assessment (BCA). With some minor exceptions, appraisers with BCA must annually value the land and improvements of all property in the Province (both rural and municipal). Each individual property is referred to as a folio and assigned a unique identification code by BCA.

#### Valuation Approaches

The Province, like most jurisdictions across Canada and the United States, uses actual or market value as the standard method of valuing properties. The method used to determine market value varies depending on the nature of the property and sufficient availability of market evidence but is based on:

- **Sales Comparison Approach** – market value is based on the sale price of comparable properties. This valuation method works best for properties that are frequently bought and sold such as residential housing.
- **Income Approach** – market value is based on the capitalized value of current rents and leases. This valuation method works best for properties that sell less frequently but have an active rental or lease market such as commercial office space.

- **Cost Approach** – market value is based on the replacement cost of a property (taking into account depreciation of buildings and other improvements). This valuation method works best for properties that are neither sold nor rented frequently such as industrial properties.
- **Prescribed Approach** – market value is based on prescribed costs set by regulation or policy. This valuation method works best for properties that cannot easily be valued using any of the other approaches such as ski hills and linear assets like rail tracks.

It is also common practice to value land based on its highest and best use, meaning the reasonable and optimal legal use of property which is both physically possible and financially feasible. For example vacant downtown land may be valued at its development potential rather than existing use. BCA will consider many factors when determining highest and best use, including: zoning, official community plans, and recent development trends.

#### Classes of Property

In addition to assessing a value, BCA assigns properties (or portions of properties) to a specific class based on its type or use. Currently in British Columbia, there are nine classes of property prescribed by the Lieutenant Governor in Council. Those classes are:

- **Class 1 – Residential** – Land and improvements used for residential purposes including: single family dwellings, apartments, condominiums, and manufactured homes.
- **Class 2 – Utilities** – Land and improvements used or held for rail transport, pipelines, telecommunications, closed circuit TV and electricity.
- **Class 3 – Supportive Housing** – Special needs housing for people at risk. Each property is assessed at a nominal amount of \$2.
- **Class 4 – Major Industry** – Land and improvements used for mining, processing, manufacturing, extraction, smelting, refining, and marine transport. Most properties in this class are involved in coal and mineral mining and manufacturing wood products and pulp and paper.
- **Class 5 – Light Industry** – Land and improvements used for extraction, processing, manufacturing, and transportation as well as associated storage and warehousing that is not included in Classes 2 or 4.
- **Class 6 – Business and Other** – All land and improvements not included in any of the other classes. This class is primarily made up of commercial property like office and retail space.
- **Class 7 – Managed Forest Land** – Land that is being used for the production and harvesting of timber.
- **Class 8 – Recreation/Non-Profit** – Land used for recreational activities (e.g. golf, skiing, tennis, swimming, etc.) and land and improvements used as places of public worship or for fraternal meetings.

- **Class 9 – Farm** – Land used for farming.

The critical purpose behind the different classes of property lies in the setting of tax rates. For each local government and public authority, tax rates may vary between different classes of property (e.g. between Class 1 and Class 2) but not within a class of property (e.g. all Class 2 property is taxed at the same rate). Taxes are discussed in greater detail in the second half of this paper.

The 2012 assessment roll contains entries for over 1.9 million properties valued at approximately \$1.1 trillion. Approximately 87.7% of all properties contain a residential component (Class 1), equating to approximately \$850 billion of the total value on the assessment roll. Class 6 properties are the next most common property type, making up 6% of all properties and \$177 billion of the total roll value.

### Tax Rates

Property tax rates are expressed as a rate per \$1,000 of assessment.

### General Municipal Taxation

Every year, each municipality in the Province must adopt a property tax bylaw. The tax bylaw must be adopted after the annual financial plan (budget) for the municipality as the financial plan determines the service level, spending and revenue requirements of a municipality for the current fiscal year. Based on the tax revenue requirements in the financial plan, the municipality will set its municipal tax rates to raise the appropriate revenue from the nine different classes of property.

Municipalities generally have very broad authority to set their tax rates. While they cannot vary tax rates within a class of property, they can vary tax rates between different classes. Setting different tax rates for different property classes is often referred to as a “variable rate” taxation system.

There are some specific restrictions on municipal taxing authority:

- **Utilities** — under section 199 of the *Community Charter*, Cabinet can make regulations prescribing limits on tax rates and the relationships between tax rates. A relationship between tax rates (also referred to as a tax ratio), is the ratio of the tax rate between two classes. For example, if the tax rate for Class 1 (Residential) is \$2 per 1,000 and for Class 6 (Business and Other) is \$10 per 1,000; the ratio of Class 6 to Class 1 is 10:2 (or 5:1).

This regulatory authority is currently used to set a maximum tax rate and ratio on Class 2 (Utilities). The maximum tax rate that can be levied by any municipality is the greater of \$40 per 1,000 or 2.5 times the Class 6 (Business and Other) tax rate.

- **Ports** — marine port property is a sub-category of Class 4 (Major Industry). In 2003, the Province launched the Ports Property Tax Initiative. One result of this initiative was a cap on municipal property taxes levied on port terminals. Under the *Ports Property Tax Act*, the cap was set at \$27.50 per 1,000 on existing land and improvements and \$22.50

per 1,000 on new investment. The Province provided affected municipalities, offsetting funding for the imposition of the cap.

- **New Municipalities or Boundary Extension** – incorporation of new municipalities or boundary extensions to existing municipalities are done through letters patent. In some cases, the letters patent will restrict the tax rate a municipality can levy on a specific property or class of property. Usually the restricted rate is based on the rural area tax rate levied under the *Taxation (Rural Area) Act*.

#### Taxation for Other Public Bodies

In addition to levying taxes for its own purposes, each municipality also levies taxes for other public authorities. Each year the municipality levies and collects the taxes, then remits the revenue to the appropriate public authority. The principal authorities are:

- **British Columbia Government (School Tax)**—school tax rates are set annually by Order-in-Council. A province-wide rate is set for each non-residential class including a nominal rate for Supportive Housing. The residential rate varies between school districts based on population and assessment base.
- **British Columbia Government (Police Tax)**— larger municipalities over 5,000 people, pay for most of their police costs. In smaller communities under 5,000 people and in rural areas, the Province sets tax rates to recover a portion of police costs. These tax rates are based on provincial tax ratios.
- **Regional District**— the regional district will annually requisition a dollar amount from member municipalities for regional services. Depending on the taxing rules for each service, which are set in the establishment bylaws, the municipality has the option of setting tax rates based on provincial tax ratios (set by regulation) or municipal ratios (based on relationship between General Municipal Taxes for different classes of property in the current year).
- **Hospital District**—in cooperation with regional health authorities, hospital districts determine the annual contributions from municipalities for health-related capital costs. Hospital districts will requisition amounts from each municipality who will then set the tax rates based on provincial tax ratios to raise the necessary revenue.
- **Translink (in Metro Vancouver only)**— Translink is the regional transportation authority in Metro Vancouver. Within the municipalities of Metro Vancouver, Translink levies two distinct property value taxes.
  1. The first tax is for core operations and capital and is levied on all property classes. This tax is based on an initial historical bylaw set by Translink and sets different rates for each class. Subsequent increases to these historical tax rates cannot exceed provincial ratios (for the increase portion only).
  2. The second tax is a special replacement tax only levied on the following classes: Residential, Utilities, Major Industry, Light Industry. Business and Other. The maximum amount of revenue this tax can generate per year is \$18 million.



- **Victoria Regional Transit Commission (in the Capital Regional District (CRD) only)** — this Commission is governed under the *British Columbia Transit Act* and provides transit services within the CRD. The Commission sets tax rates based on provincially prescribed tax ratios.
- **British Columbia Assessment (BCA)** — BCA is responsible for assessing all property values in the Province. The revenue required to cover operating and capital costs of BCA is raised through a property value tax. BCA levies a province-wide tax through an annual bylaw. Cabinet can place restrictions, including limiting tax rates and ratios, on BCA's taxing authority by regulation. To date, Cabinet has imposed no such regulation.
- **Municipal Finance Authority of British Columbia (MFA)** — the MFA is the local government banker and raises long-term debt from the bond markets to finance municipal infrastructure. The revenue to cover operating and capital costs of the MFA are raised through a property value tax. The MFA levies a province-wide tax through an annual bylaw. The tax rates are restricted by provincially set ratios.

| <b>Prescribed Tax Rates and Ratios for Other Public Authorities (2011)</b> |                       |                         |                      |                                  |                      |                           |   |
|--|-----------------------|-------------------------|----------------------|----------------------------------|----------------------|---------------------------|---|
| <b>Class</b>   | <b>Title</b>          | <b>School Tax Rates</b> | <b>Translink Tax</b> | <b>Translink Replacement Tax</b> | <b>BCA Tax Rates</b> | <b>Provincial Ratios*</b> | <b>Victoria Transit Commission Tax Ratios</b> |
| 1  | Residential           | Variable                | 0.3349               | 0.0151                           | 0.0621               | 1.0 : 1.0                 | 1.0 : 1.0                                     |
| 2  | Utility               | 14.10                   | 2.5440               | 0.1632                           | 0.5114               | 3.5 : 1.0                 | 5.4 : 1.0                                     |
| 3  | Supportive Housing    | 0.10                    | 1.4527               | -                                | 0.0621               | 1.0 : 1.0                 | 1.0 : 1.0                                     |
| 4  | Major Industry        | 6.60                    | 2.1027               | 0.1665                           | 0.5114               | 3.4 : 1.0                 | 5.4 : 1.0                                     |
| 5  | Light Industry        | 6.60                    | 1.8150               | 0.1476                           | 0.1896               | 3.4 : 1.0                 | 5.4 : 1.0                                     |
| 6  | Business & Other      | 6.60                    | 1.4735               | 0.1351                           | 0.1896               | 2.45 : 1.0                | 5.4 : 1.0                                     |
| 7  | Managed Forests       | 2.00                    | -                    | -                                | 0.2953               | 3.0 : 1.0                 | 5.4 : 1.0                                     |
| 8  | Recreation/Non-Profit | 3.40                    | 0.3059               | -                                | 0.0621               | 1.0 : 1.0                 | 1.0 : 1.0                                     |
| 9  | Farmland              | 6.80                    | 0.3543               | -                                | 0.0621               | 1.0 : 1.0                 | 1.0 : 1.0                                     |

\* used for regional districts, regional hospital districts, police tax, increases to the Translink Tax, and MFA tax  
**Note:** for police tax, the Supportive Housing rate (Class 3) is capped at \$0.100/1000

#### Tax Exemptions

Every property owner in the Province must pay property taxes unless specifically exempted by provincial statute. Statutory exemptions are listed in both the *Community Charter* and the *Taxation (Rural) Area Act*. Local governments may also grant permissive (discretionary) exemptions under the *Community Charter* and the *Local Government Act*.

#### Statutory Exemptions

Statutory exemptions are automatic exemptions from property tax provided by federal or provincial statute; municipalities have no discretion in this matter. In fact, statutory exemptions are assigned by BCA (not municipalities) and based on ownership and use of property. Usually these are properties that

address a broad public interest or provide a public service. Statutory exemptions are found in multiple provincial acts. Most are highly specific exemptions relevant to a small segment of properties, for example:

| Exempt Property                    | Exempting legislation              | Exempting Section |
|------------------------------------|------------------------------------|-------------------|
| Hospitals and health facilities    | <i>Health Authorities Act</i>      | Section 15        |
| Universities                       | <i>University Act</i>              | Section 54        |
| Colleges, BCIT, other Institutions | <i>College &amp; Institute Act</i> | Section 58        |
| Public Schools                     | <i>School Act</i>                  | Section 129       |

In addition to these specific exemptions, there are also broader statutory exemptions that apply to properties located within a municipal boundary. These exemptions are provided in the Sections 220 to 223 of the *Community Charter* and cover properties like libraries, cemeteries, places of public worship, and municipal property. There are also parallel provisions for rural properties found in the *Taxation (Rural Area) Act* (Section 15) and *Local Government Act* (Section 809(1)).

A statutory exemption triggers an exemption from all property taxes including municipal taxes and taxes for other public authorities (e.g. school, hospital, regional district, etc).

Please note that provincial and federal Crown properties are exempt under the federal Constitution but pay a grant-in-lieu of taxes.

#### Permissive Exemptions

Permissive exemptions are discretionary in nature and each municipality has the ability to set their own policies on what permissive exemptions they want to allow for each taxation year. Permissive exemptions are granted by municipal bylaw under sections 224 to 226 of the *Community Charter*.

- 1. General Exemptions - Section 224** — this section provides the authority for general permissive exemptions. A municipal council may offer exemptions for periods of up to 10 years to a wide range of properties, including property owned or held by another local government, or a charitable, philanthropic or not-for-profit organization. A general permissive exemption triggers an exemption from all property taxes, including municipal taxes and taxes for other public authorities (e.g. school, hospital, regional district, etc).
- 2. Partnering, Heritage, Riparian, and other Special Exemptions - Section 225** - this section provides the authority to exempt eligible property for any period set out in the exempting bylaw. Eligible property includes property under a partnering agreement plus heritage, riparian, or golf course property. Land held for a future cemetery or mausoleum may also be eligible for an exemption under this section.

The key to these exemptions is the ability to make agreements with property owners respecting the extent of the exemption and the conditions under which it will be offered. These agreements may require owners to satisfy conditions, such as placing a restrictive covenant on the property or repaying the exemption amount under specified circumstances.

A municipal exemption in relation to heritage and riparian properties triggers an automatic exemption from taxes for other public authorities (e.g. school, hospital, regional district, etc). However, in relation to cemeteries, golf courses and partnering agreements, this type of municipal exemption does not trigger an automatic exemption from taxes for other public authorities. In order to trigger these other exemptions, a municipality must request a Cabinet regulation in accordance with the Section 131 of the *School Act*. Cabinet will weigh the individual merits of each request when making its decision about granting a broader exemption.

3. **Revitalization Tax Exemptions - Section 226** - this section provides the authority to exempt land, improvements, or both from the municipal property value taxes for the purposes of encouraging various types of economic, social, or environmental revitalization within a community.

Revitalization tax exemption programs may apply broadly or narrowly to different:

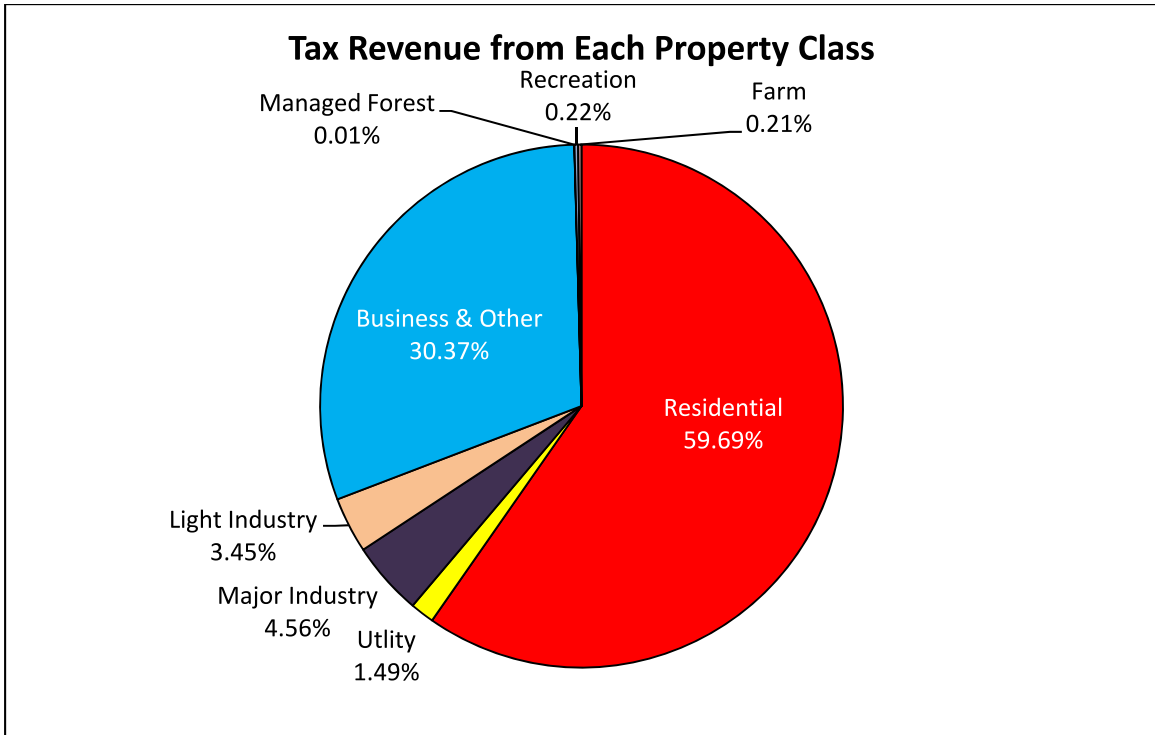
- geographic areas;
- types of property; or
- activities or circumstances related to a property.

Municipal revitalization tax exemptions do not qualify for exemptions from taxes for other public authorities (e.g. school, hospital, regional district, etc).

In addition to the above listed municipal permissive exemptions, there are parallel permissive exemptions for regional districts in sections 809 to 812 of the *Local Government Act*, which are generally applied in rural areas of the regional district.

#### Distribution of Tax Between Classes

In 2011, approximately 90% of all municipal property taxes in the Province were collected from Class 1 - Residential (60 %) and Class 6 – Business (30%). The remaining 10% was divided between Classes 2, 4 and 5 (Utilities, Major and Light Industry). Classes 3, 7, 8 and 9 (Supportive Housing, Managed Forests, Recreation/Non-Profit and Farm) are immaterial for most municipalities so they will not be discussed in this section.



Over the past decade there has been a trend to shift some of the municipal tax burden off the non-residential classes to the residential class. Residential has gone from representing 55% of the total municipal tax burden in 2002 to 60% in 2011, while non-residential taxes have dropped from 45% to 40%. This shift has been consistent across municipalities of all sizes and areas.

### **Historic Tax Issues (Residential versus Major Industry)**

Several studies over the last two decades have focussed on the property tax ratio between Residential (Class 1) and Major Industry (Class 4). Often these studies indicate a growing gap in the tax rates between these two classes as Major Industry rates increase relative to Residential rates. Over the past decade the ratio of Major Industry to Residential tax rates has increased from 5.5:1 to 7.1:1, with Major Industry tax rates reaching in excess of \$50 per 1,000 in 18 British Columbia municipalities. However, other studies point out that an examination of tax rates and ratios alone is only telling half the story. As discussed earlier in this paper, tax revenue is based on the following formula:

$$\text{Tax Revenue} = \text{Taxable Assessment} \times \text{Tax Rate}$$

A thorough study of tax revenue should examine both tax rates/ratios and property assessment. As discussed earlier in this paper there are multiple methods of assessing property. Residential properties are assessed on the basis of comparable sales, whereas industrial properties are assessed based on depreciated replacement costs. These replacement costs are based on industrial cost manuals

maintained by BCA called Major Industrial Properties (MIPS) Manuals. As facilities age, they depreciate. Standard depreciation rates for different types of industrial facilities are set by provincial regulation. Over the last two decades, residential properties values have increased dramatically, while industrial assessment has remained relatively static. Between 2000 and 2011 assessment for an average residential property increased by over 100% in 109 out of 154 British Columbia municipalities, including all the municipalities of Metro Vancouver and the CRD. Average residential assessments tripled in some major municipalities like Vancouver, Burnaby, Richmond and Victoria. Between 1988 and 2011, the total size of the Major Industry assessment base for all British Columbia municipalities increased from \$3.4 billion to \$4.2 billion (or 25%); whereas, over that same period of time, the residential assessment base increased from \$71 billion to \$690 billion (or 866%). The residential increase is due to a mix of price increases and new construction, whereas the industrial increases are almost exclusively due to new construction because existing buildings and improvements all depreciate (according to regulation).

Thus, the residential assessment base is dramatically increasing and the industrial base is declining. To recover the same amount of tax revenue for a rapidly increasing assessment base, a municipality would need to reduce its tax rate. Thus, residential tax rates have been declining while the actual tax burden has not.

The opposite is true for a declining assessment base. To recover the same revenue from a declining base, a municipality would need to increase its tax rate. Thus, industrial tax rates have been increasing while the total industrial tax burden has actually been declining. As industrial tax rates increase and residential tax rates drop, the ratio between the two tax rates will increase substantially because the tax ratio is simply the increasing industrial rate divided by the decreasing residential rate. Over the last decade, the Major Industry tax ratio increased from 5.5 to 7.1. This yields the paradox of increasing industrial tax ratios despite the tax burden falling increasingly upon the residential class. Between 2000 and 2011, the total portion of municipal taxes collected from Major Industry dropped from 7% to 4.6%, while the residential tax burden increased from 55% to 60%.

In fact, the average municipal tax rate for Major Industry has marginally dropped from approximately \$31 per \$1000 of assessment in 2002 to \$29 per \$1000 of assessment in 2011.

This is not to say there are no problems. There are pockets of extremely high tax rates in the Province; however, the general trend has been towards a declining tax burden for Major Industry.

### **Critical Risk to Small Resource Communities with Major Industry**

There are a number of communities that have become increasingly reliant on a few industrial properties to provide a large portion of their tax revenue. This poses potential risks for the community should the industry suffer a severe economic downturn resulting in a partial or total shut down. When this occurs, it can result in two concurrent shocks: dramatic reduction in the municipal tax base and large-scale layoffs.

When a municipality is too reliant on a single industry, it can be very difficult to reallocate the lost taxes onto the other property classes as it would result in substantial tax increases to residents and business owners, many of whom have likely been economically affected by the shut down.

This problem has become quite prevalent in the last few years with the forest product industry downturn. As a result, some communities are beginning to diversify their tax base by slowly shifting the tax burden away from Major Industry and onto other classes. Although it is a very slow process, this is an effective way to mitigate some of the risks associated with potential consequences of an industry slowdown.

Recently there have been many studies that have looked at the property tax ratio between residential property and industry, often indicating that there is a growing 'gap' between the tax rates that is causing industry to be over-taxed. In order to understand why there is a 'gap' in the tax rate ratios you must first look at how the assessment structures of both the residential and industrial classes differ.

Residential properties are assessed using market value and both the number of properties and their value have been steadily growing. In 2002, total residential assessment within municipal boundaries was \$250 billion representing 81% of the total tax base. In 2011, residential assessment has grown to be \$689 billion, now representing 85% of the total municipal tax base. On the other hand, industrial properties only have their land value assessed at market value, while the improvements (the largest part of the assessment) are assessed at cost less a prescribed rate of depreciation of between 2% and 6% per year. Besides, when new investment occurs, industrial property assessments are always declining. In 2002, major industrial assessment within municipal boundaries was \$3.5 billion representing 1.1% of the total tax base. In 2011, major industry assessments have grown to \$4.2 billion, but their share of the total tax base has dropped to only 0.5%.

The difference in assessment movement between the residential and industrial class means the tax rates needed to collect the same amount of revenue from each class and also move conversely. Keeping all other factors equal, with residential assessment rising, the residential tax rate would need to decline, whereas the industrial tax rate would need to be increased yearly to compensate for the depreciating assessment. Over time, this has allowed a gap to grow between the rates, even though the amount of taxation revenue, or the portion of taxation revenue coming from each class, would remain unchanged.

This can be seen by looking at the provincial average rates and ratios from 2002 to 2011. In 2002, the average residential tax rate was \$5.61 per 1,000 of assessment. By 2011, that rate had dropped to \$4.01 despite the increase in the amount of tax burden residential property is paying. For major industry, the provincial average tax rate went from \$30.87 in 2002 to \$28.62 which is consistent with a tax shift away from non-residential. The interesting thing to note is that over the same period the tax ratios between these two classes went from 5.50 to 7.14 which is a 30% increase in the ratio 'gap' in only 10 years. This isn't to say that there is something wrong with the current assessment system, but to simply explain how the underlying factors of the current assessment and taxation system work.

### **Recent Events Affecting Distribution**

There have been a number of communities that, over the years, have become increasingly reliant on a few industrial properties to provide a large portion of their tax revenue. This poses a high level of risk for the community in the event that industry suffers an economic downturn. When a community's main industrial taxpayer shuts down, it can cause their assessment to plummet and the municipality's ability to raise tax revenue can dramatically diminish. When a municipality is too reliant on that industry, it can be very difficult to reallocate the lost tax burden onto the other classes as it would result in very high tax increases for their citizens and business owners. This problem has become very prevalent in the last few years with the forest product industry downturn and it seems many communities have begun, or are beginning, to better diversify their tax base by slowly shifting the tax burden onto other classes. Although it is a very slow process, this is an effective way to reduce both their reliance on industry and risk.

## Cities 'grossly underestimating' money they receive, report says

Free-spending city governments are crying poor even as they lowball the revenues they have at hand.

BY VANCOUVER SUN FEBRUARY 24, 2014

<http://www.cfib-fcei.ca/english/article/5966-municipalities-are-richer-than-they-think.html>

Free-spending city governments are crying poor even as they lowball the revenues they have at hand.

That broadside is contained in a report being released Monday by the Canadian Federation of Independent Business, with business people in B.C. expressing the most outrage in the country about increasing property tax bills.

CFIB vice-president Laura Jones contends excessive municipal spending has resulted in property taxes climbing every year and, in Vancouver, the bulk of that burden is borne by business.

Businesses in the city pay 4.3 times as much as residential homeowners; for example, the annual tax bill on a \$1.37 million property results in a \$2,800 hit for a homeowner, more than \$12,000 for a business.

"This is a huge bill for a small business when you consider property taxes are profit insensitive, and only one of many taxes that have to be paid," Jones said.

The CFIB for several years now has highlighted what it calls "gross overspending" by municipalities, with Vancouver identified as being among the worst.

It traces the problem to plummy labour agreements, offering pay and benefits 36 per cent higher than for comparable private sector occupations, and too much staff. And it's hard to disagree with the business lobby when city budgets keep rising far faster than population and inflation. Between 2000 and 2011, Vancouver's population grew 15 per cent while inflation-adjusted spending ballooned by 50 per cent.

No wonder. Vancouver pays its city manager \$330,000, its parks board manager \$217,000 and its chief librarian \$171,582.

Further afield, the chief administrative officer in tiny Lillooet - population 2,322 - earns \$111,000.

This week, before a big-city mayors' meeting in Ottawa, the business lobby is publicizing its view that municipalities are "grossly underestimating" the cash in their coffers.

The CFIB says a long-standing assertion by city governments - including Vancouver city council in its 2014 Budget Outlook - that they receive just eight cents of every tax dollar, is false.



It overlooks revenues from transfer payments provided by the province and Ottawa, as well as cash from municipal fees like parking permits, pet licences, recreation, bus fare.

Traffic and other tickets rebate? -cjk

The CFIB contends cities more accurately receive 15 cents of every tax dollar.

"They do not have a revenue problem. They have a spending problem," Jones said. "It's one thing to ask for more money if it's needed, another to spend like it's going out of style and then cry poor."

The Business Council of British Columbia also has groused about municipal overspending, issuing a 2012 report identifying West Vancouver, New Westminster and the City of Vancouver as "the three biggest spenders in Metro." Council vice-president Jock Finlayson recommended cities start outsourcing some services, work harder to contain wage costs and boost productivity. Because cities do not generally receive the same scrutiny as more senior levels of government, their spending controls appear to be less rigorous.

Of course, cities would defend themselves by arguing they are being pressed to provide a growing list of services to more complex and demanding populations.

Let's face it, years ago, Vancouver did not have a formalized system of bike paths, regulation of streetside food trucks or a needle-exchange program.

That acknowledged, businesses do have a point. Taxes foisted on them by big-spending local governments threaten their competitiveness.

In B.C., this is an especially serious issue because businesses here already are disadvantaged by a PST requiring them to pay sales tax on business inputs. In HST jurisdictions, those inputs are salestax exempt.

Just as the provincial government worked to hold the line on spending in its budget last week, municipalities had better start doing the same.

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Written by HARIVE BARKER  
Monday, 24 March 2014 02:00 -

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We sometimes hear the word 'dialogue' used when two persons or 'sides' are trying to solve a problem or a disagreement. That process can be difficult; but some time ago I found a definition that, I think, is helpful in describing how each person or side can be guided in their thinking.

In his book, *The dialogical imperative*, David Lockhead wrote, "Dialogue is not a search for agreement. It is a search for understanding." I may come out of that dialogue still having to say that I believe there is a serious issue involved in another person's opinion.

But the dialogue issue is that I ought to be constantly striving to understand the other person's position, and not misrepresent it."

Christina Baldwin, in her book, *Storycatcher*, gives an example of how dialogue can work. The illustration is from the Public Conversations Project - a Boston-based, international, and non-profit organization whose aim is "to prevent and transform conflict driven by deep differences in identity, beliefs, or values - through dialogue."

As Baldwin writes, "(One particular project), greatly distressed over violence, and the growing polarity of opinion, invited ten people who were adamantly opposed to abortion together with ten people who were adamantly for the right of women to choose.

"They established basic ground rules for an ongoing conversation: no opinions, just story (or examples from an individual's experiences); no attempts to change minds, just listening. The group met for three years. No one changed her mind about the issue, but everyone changed his mind about the people involved in the other side of the issue."

"Tensions decreased and tolerance grew for each person's stance because that stance was embedded in story. This tolerance was carried into the larger community."

Baldwin adds that "...story has the power to open the heart, even if the mind does not change. Story is empathy in action between people."

In the same chapter, she quotes William Isaacs who wrote, "Dialogue is a conversation with a center, not sides. It is a way of taking the energy of our differences and channeling it toward something that has never been created before. It lifts us out of polarization and into a greater common sense, and is thereby a means for accessing the intelligence and coordinated power of groups of people."

Thinking of our political system, particularly on the provincial and federal levels, it is difficult to imagine such dialogue taking place. In such settings, there seems to be little respect or desire to understand what opposing party members are saying.

But I believe there are many situations in life - whether between two individuals or among a group of individuals - where dialogue is possible. Even though we may differ in our points of view with another person(s), we can still seek to understand and respect them.

May it be so for us!

Harvie Barker is a retired United Church minister who resides in Penticton. This column appears every second Monday.

# AGENDA ITEM # 7a1

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# The Solar Envelope

by

**Ralph L. Knowles**

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"Nothing is experienced by itself, but always in relation to its surroundings, the sequence of events leading up to it, the memory of past experiences."

Kevin Lynch, *The Image of the City*

**Key Words:** mama-plane; solar access; solar architecture; solar envelope; solar zoning; urban design.

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## INTRODUCTION

The sun is fundamental to all life. It is the source of our vision, our warmth, our energy, and the rhythm of our lives. Its movements inform our perceptions of time and space and our scale in the universe.

Assured access to the sun is thus important to the quality of our lives. Without access to the sun, our perceptions of the world and of ourselves are altered. Without the assurance of solar access, we face uncertainty and disorientation. We may lose our sense of who and where we are.

The concept of solar access is an abstraction generalized from particular observations. The natural world appears to abound with examples of arrangements based in some measure on exposure to the sun.

More to the point, observations of the modern built world reveal that we have not usually followed nature's example in this regard. Our cities are non-directional. Our buildings are undifferentiated by orientation to the sun. They stand static, unresponsive to the rhythms of their surroundings.

Solar access has, over the past twenty-five years, come into focus as a topic of discussion in the USA. Beginning in the 1970's, we looked at the sun primarily as a source of energy, a replacement for uncertain supplies of fossil fuel. More recently, with deterioration of the urban environment, emphasis has shifted more to life quality. Whether for energy or for life quality, solar access remains a legitimate area of public policy in which the aim is to regulate how and when neighbors may shadow one another.

The solar envelope is a way to assure urban solar access for both energy and life quality (Knowles and Villecco, 1980). First conceived and tested by the author, working with Prof. Richard D. Berry at the University of Southern California (USC), the solar envelope regulates development within imaginary boundaries derived from the sun's relative motion. Buildings within this container will not overshadow their surroundings during critical periods of the day and year. Twenty-five years of design research in the USC Solar Studio have shown that, if generally applied as an instrument of zoning, the solar envelope will not only allow potential growth but will open new aesthetic possibilities for architecture and urban design.

## HISTORICAL PRECEDENTS

The idea of solar access is ancient. It was practiced in the colonial cities of Greece and in the United States it is evident in the patterns of such

early settlements as Acoma Pueblo (Fig.1). Located on a plateau about 50 miles west of modern Albuquerque, New Mexico, Acoma appears to have been continuously occupied for over a thousand years. Its rows of houses are stepped down to the south. Walls are of thick masonry. Roofs and terraces are of timber and reeds, overlaid with a mixture of clay and grass (Knowles, 1974).



Fig. 1. Acoma Pueblo, New Mexico. (Click image to enlarge)

The houses of Acoma are well suited to a high-desert climate (Fig.2). The sun's low winter rays strike most directly their thick masonry walls where energy is stored during the day, then released to warm inside spaces throughout the cold night. In summer, the sun passes high overhead and strikes most directly the roofs and terraces where the sun's energy is less effectively stored and transferred.

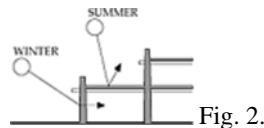


Fig. 2.

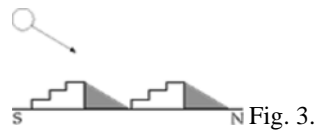


Fig. 3.

Houses do not shadow one another during the cold winter months and, by sharing side walls, they offer protection to each other in summer (Fig. 3). Their major exposure is southward toward the winter sun, not east and west where the summer sun would have a major impact. And the rows are spaced to avoid winter shadowing of terraces and heat-storing walls. It is this critical relationship of building-height to shadow-area that, in 1976, gave rise to the solar-envelope concept. But why the solar envelope rather than some other legal device?

## LEGAL BACKGROUND

Some legal experts in the United States have called for a clarification or change of laws or even the formulation of new laws if solar access is to be guaranteed. This raises an interesting question of legal precedents.

The most commonly cited law outside the United States is the English Doctrine of Ancient Lights but there are problems with its application (Thomas, 1976). Roughly, the doctrine states that if in living memory no one has overshadowed your property, they cannot now do so. However, this doctrine has been repeatedly disavowed in U.S. courts.

Some legal experts have suggested that American water law, especially the doctrine of prior appropriation, may offer a more useful precedent for sun rights (White, 1976). They point out that both sunlight and water are used rather than captured and sold; both may be consumed, but both are renewable. In addition, there is an equivalence between upstream and downstream in water law and the geometry of solar shadowing. But, like the Doctrine of Ancient Lights, there are problems with the application of water law.

The doctrine of prior appropriation is a formalization of the general practice among early Western settlers of appropriating available water according to who first put it to beneficial use. Simply put, "He who gets there first, gets the most." It was the American frontier's answer to the exigencies of pioneer settlement.

Prior appropriation is not likely to be applied to solar allocation in any simple way. Future access would not be assured for structures without present energy-conversion systems. Several permits acting on different, adjacent properties (as well as those on distant sites) may conceivably act to stop development completely on one of them. This point has been made abundantly clear in the writings of legal experts who point out serious weaknesses in any attempt to move directly from water law to solar law.

The difficulties in applying water law have led to arguments for straightforward zoning as a more appropriate approach to the problem (Hayes, 1979). First, it offers the possibility of more local administration of rules affecting the allocation of sunlight. Second, zoning is traditionally applied to all properties in a district thus assuring future access and bypassing the problems of preference based on prior use. Finally, existing zoning limiting heights and setbacks is already based on the concept of an envelope of buildable volume. These reasons have been found compelling and have led to development of the solar envelope.

## SPACE-TIME CONSTRUCT

The solar envelope is conditioned in space and time. First, it assures solar access to the properties surrounding a given site. The envelope accomplishes this by limiting the size of on-site buildings, thus avoiding unacceptable shadows above a boundary along neighboring property lines; these boundaries are called *shadow fences* (Kensek and Knowles, 1995).

The second condition is that the envelope affords the greatest potential volume within time constraints, called *cut-off times* (Knowles 1981). The envelope accomplishes this by defining the biggest container of space that would not cast shadows off-site between specified times of the day. Clearly, greater periods of assured solar access will reduce the solar envelope's size. Cut-off times that are specified very early in the morning and late in the afternoon will result in smaller volumes than would result from later times in the morning and earlier times in the afternoon.

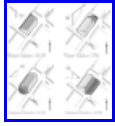


Fig. 4. Space-Time Constraints on Solar Envelope.

An example of how shadow fences affect the envelope can be seen in 1994 guidelines prepared for consideration by the L.A. Community Redevelopment Agency (CRA) (Fig. 4). In the example, shadow fences vary according to the street character as set forth in a proposal by the CRA for the downtown plan. Shadowing is allowed up to 10' along *alleys*, up to 20' along *paseaos* and *avenidas*, and up to 45' along *boulevards*. Such differentiation anticipates varied land uses and street qualities.

The same example shows how cut-off times influence the solar envelope. Winter, because sun angles are so much lower at that season, has the greater impact on volume; the cut-off times are 10AM and 2PM thus providing four hours of direct access to sunshine, the minimum generally considered useful for good passive solar design in Los Angeles. Summer, because sun angles are so much higher, has less impact on the envelope; the cut-off times are 8AM and 4PM, a longer period than winter but considered desirable in a mild, Mediterranean climate where people enjoy gardening and outdoor recreation.

## STREET PATTERNS

The solar envelope's size, shape, and orientation are greatly influenced by the street patterns of urban settlement (Knowles, 1981). In the United States, those patterns are usually comprised of orderly subdivisions of the U.S. Land Ordinance of 1785. Typically, throughout the midwest and the west, streets run with the cardinal points so that rectangular blocks extend only in the east-west and north-south directions. But in Los Angeles, where most of the solar-envelope research has been done, there are two street grids (Fig.5).



Fig. 5. Two Street Grids in Los Angeles.

Most of Los Angeles follows the U.S. Land Ordinance but some streets run 26 degrees off the cardinal points, following the older Spanish grid. This diagonal orientation, a 16th century adaptation to sea breezes, was ordered by the King of Spain. It now extends from the original pueblo over the land that is modern downtown Los Angeles.

## The Importance of Orientation

Before discussing the street grid's influence on the solar envelope, there should be some mention of the important seasonal differences of streets themselves resulting from orientation. A comparison of the United States and the Spanish grids serves to demonstrate qualities related to shadows.

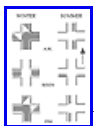


Fig. 6. Shadow Patterns Within Streets on the U.S. Land Ordinance.

During the winter, streets that run east-west in a built-up urban area are shadowed (Fig. 6). In Los Angeles at 34 N, they remain dark and cold. By contrast, streets that run north-south are lighted and warmed during the midday and are more pleasant during the busy noontime shopping period.

Summer presents an entirely different picture. Unlike winter, when the sun's rays come from the southern sky, the summer sun comes more directly from the east in the morning and the west in the afternoon. At midday, it is nearly overhead. Streets that run east-west receive a little shadow at midday, much less in the morning and afternoon --- a critical factor on a hot afternoon. Streets that run north-south will be shadowed in the morning and afternoon, but will receive full sun for a brief period at midday.

From the viewpoint of urban street quality, the United States grid leaves something to be desired. Its east-west streets are too dark and cold in winter, too bright and hot in summer. Its north-south streets, while pleasant in winter, lack any protective summer shadow at midday.



Fig. 7. Shadow Patterns Within Streets on the Spanish Grid.

In Los Angeles, the older Spanish grid has advantages regarding street qualities of light and heat (Fig. 7). During the winter, every street on the Spanish grid receives direct light and heat sometime between 9AM and 3PM, the six hours of greatest insolation. It is true that at midday, all streets have shadows; but because of their diagonal orientation, more sunlight enters than if they ran due east-west.

There is also a summer-time advantage to the Spanish grid. Shadows are cast into every street all day long, with the exception of a short period during mid-morning and mid-afternoon when the sun passes quickly over first one diagonal street and then the other.

These differences in street quality are felt, if only subconsciously, by people. They are even acknowledged by real-estate experts who are vitally concerned with commercial land values that vary with the favored pathways of shoppers. Unfortunately, street orientation is almost never considered as a basis for land-use planning decisions.

## The Influence of Street Orientation on the Solar Envelope.

Street orientation affects the solar envelope in two ways. The first of these has important consequences for development while the second relates more to issues of urban design.

The size of the solar envelope, and hence development potential, varies with street orientation. Generally, more envelope height is attainable at either of the two possible block orientations within the U.S. grid while somewhat less volume is possible within the Spanish grid. The street's gain in quality thus appears to be the developer's loss in bulk. This has made downtown Los Angeles an especially challenging problem from the viewpoint of solar zoning.

The urban design consequences of street orientation are important because they relate to what Kevin Lynch has called "the image of the city." Pathways, districts, and directions take on clear perceptual meaning when the solar envelope becomes a framework for urban development.



Fig. 8. Solar Envelopes Over Blocks At Three Different Orientations.

Cues to orientation come more readily if solar access is included as a development criterion (Fig.8). This assertion can be shown to be true by comparing three different block orientations. Immediately evident are not only variations of envelope size but shape as well. These differences will result in street asymmetries, district variety, and clear directionality along streets. Such differences tend to occur systematically, not randomly. They can thus serve as the sorts of definite sensory cues that Lynch says should come from the external environment (Lynch, 1960).

## REALIZATIONS

Most design studies of the solar envelope have been made in Los Angeles. A few have been undertaken in such far-flung settings as Hawaii and the Slovak Republic but the greater number have focused on a variety of urban sites closer to home. Often these studies have been made at the request of L.A. government officials, planning agencies, and even developers interested in trying out the concept. And a few, as for example the Park Mile of Wilshire Blvd, have been taken by planners as guides to actual development.

Since nearly all of the work has been done at USC in a studio setting, its primary aim has been educational, but always there has been a strong research motive as well. The research purpose of the work is to test the belief that a public policy of solar-envelope zoning will not inhibit, but will enhance development and design opportunities in urban settings. There are two assumptions underlying the work: first, that a public policy guaranteeing access to sunshine is essential to a future that is both high-quality and sustainable; and second, while there is presently no general requirement for solar access in Los Angeles, the assumption is that a zoning policy assuring sunshine to all properties has been enacted in the test area.

Within the primary research objective, design studies have shifted emphasis depending on site and building type. For example, some tests have emphasized development issues: trying for the highest densities possible while maintaining such energy-saving strategies as cross-ventilation, daylighting, and solar heating, especially for housing. Other tests have emphasized design aesthetics: the ability of sunlight to influence the rhythms and rituals of daily life, especially in public places. Consider first housing, an urgent problem in Los Angeles where densities and land values keep rising.

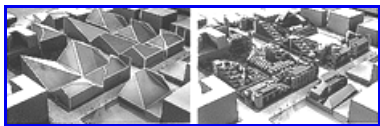
## Development Possibilities

Nearly all housing studies have involved 16-18 separate but contiguous land parcels, one for each member of a design studio. This has the pedagogical advantage of helping students to see and to deal with the real complexities of urban housing where actual buildings are never executed in a vacuum. Moreover, it advances research objectives by providing greater statistical reliability for such measures as density and floor-area ratios, both important for understanding whether the project is economically viable under given conditions of land-use and community values.

Two projects are selected to show housing capacities for the solar envelope. The first presses the envelope for the highest densities in an urban setting. The second looks at lower densities, but greater design choice in the suburbs. Both hint at limits that subsequent studies have verified.

### *Urban Prospects*

This first project, with resulting densities of 80-100 du/a, tests the solar envelope within the Spanish grid (Fig.9). Viewed from the east, the solar envelopes are crystal-like while existing buildings appear as rectilinear blocks. The envelopes are generated to provide four hours of sunshine in winter and eight hours in summer; they slope downward to a 20' shadow fence at property lines thus accommodating a base of street-front shops under housing. Tower-like shapes appear at some corners where shadows are allowed to extend into streets, but not onto surrounding properties.



Figs. 9 & 10. Southpark: Envelopes and Housing.

When buildings replace the envelopes, design elements appear that typify many subsequent urban-housing studies (Fig.10). For example, terraces occur where the rectangular geometry of construction meets the sloping envelope. Courtyards center many designs to achieve a proper surface exposure for light and air. Facades are elaborate, enriched by the porches, screens, clerestories, and other devices of solar architecture.

Buildings in the study meet each other gently, across sloping spaces, not abruptly across side-lines and alleys. The resulting spaces, not confining and dark but rather liberating and filled with light, allow view and the free flow of air through the city.

Although not central to this work, solar zoning turns out to be compatible with earthquake safety, an important design consideration in Los Angeles. The pyramidal shapes that often result from applying the solar envelope have the effect of shifting the building's center of gravity downward thus making it more stable under horizontal acceleration.

### *Suburban Prospects*

A second project replaces the typical suburban densities of 5-7 du/a with densities of 25-45 du/a under the solar envelope (Fig.11). Viewed from the south, the solar envelopes rise and fall with changes in street orientation and lot size. The envelope rules provide longer periods of sunshine than the first project: six hours on a winter day; ten hours in summer. They are generated to a 6' shadow fence across streets at neighboring front yards and at rear property lines, but they do not fall at property side-lines as in the first project.



Figs. 11 & 12. Subdivision: Envelopes and Housing.

When buildings replace the envelopes, the result is remarkable innovation within harmony (Fig.12). The continuous envelopes result in a smooth flow of street facades. At the same time, building types range from town houses and courtyard clusters to apartments. Individual designers are clearly exploring separate formal ideas from one parcel to another. The consequence, if built, would be an enormous range of diversity and choice within a neighborhood.

The two projects shown are typical of completed housing studies in a variety of settings resulting in a range of 7-128 du/a. The highest density was achieved in a test using a solar-envelope protocol that allowed some overshadowing of a public park. Otherwise, for good solar access and cross-ventilation in a compact and continuous urban fabric, the more normal high figure turns out to be 80-100 du/a . This range can be accommodated in buildings of 3-7 stories, a scale familiar in some of the most admired cities in the world.

## Design Possibilities

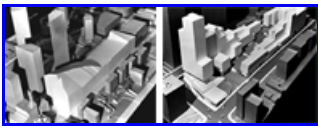
Most studies of the solar envelope have involved housing, but a few have included other building types that raise new possibilities for design. The foregoing exemplars have demonstrated that shadowing of neighboring properties is forestalled by the solar envelope, but the solar envelope is also an expression of the freedom to choose how and when to use the guaranteed sunshine. The designer, working within the envelope, must settle important issues: whether or not to shadow one's own buildings; how to develop the aesthetic potential of sunshine. Two projects are shown to demonstrate the design potential of working under the solar envelope.

### *Calling Forth Rhythm*

The first project, Bunker Hill, is a 9-acre site in a key downtown location. A preliminary program was made available to the USC Solar Studio by the CRA in the fall of 1979. A similar program became the basis for a competition among five invited developer-architect teams. A final selection from among the entries was made by the CRA based partly on their review of the solar-envelope projects at USC.

The properties immediately surrounding the site are extremely varied. Commercial buildings, 15-50 stories high, are concentrated at the southwestern end of the site. Housing is generally grouped on the site's long sides. The least certain part of the surroundings takes up the site's northeastern end. The presumed uses here are institutional, either a cultural facility or a county municipal building about 12 stories high.

The resulting solar envelope rises and falls in concert with the surrounding skyline (Fig.13.) Rules for the solar envelope make general distinctions in the magnitude of acceptable shadowing of surrounding properties: least shadow on housing and most on commercial office buildings that may be shadowed to 33% of their window-wall areas. The final envelope that emerges from these rules is of variable height from 100' to 500'.



Figs. 13 & 14. Bunker Hill Envelope and Mixed-Use.

A typical design does not fully use up the floor-area potential of the solar envelope; instead, the designer has made a trade-off (Fig.14). The solar envelope has a potential FAR in excess of 20 based on a floor height of 15'. With such a huge volume, the CRA's programmed FAR of 8-10 could easily be met by following standard development procedures. But the designer has chosen instead to split the project open along a favorable N-S axis. This maneuver combines the best qualities of both the U.S. and Spanish grids, thus providing ample sunshine to housing and to public open space within a mixed-use project. There is another quality that the designer has achieved by slicing through the design.

When viewed at an instant in time, the designer's model reveals a picture of compositional richness; but with observations over time, made with a heliodon or computer animation, the continuity and rhythm of urban events can be imagined . As the day passes, impressions of the whole site swing to and fro --- buildings and spaces go from light to dark, from warm to cool. If the designer's intentions had been carried through into construction, the pulse of human activity within the spaces would be reinforced by these light and heat cycles of buildings and spaces.

### *Rhythm As A Design Strategy*



The second project is a library. The actual program of required spaces was obtained from the Los Angeles library planners, but the spirit of the program was taken from observing the moving shadows of a wall.

Modern architects have generally defined space in opposition to change. They acknowledge that buildings may be transformed or deteriorate over time. Yet on the whole, their artistic idea of space is complete and static, the final product of many imaginative decisions.

By contrast, the Solar Studio advances the proposition that sunlight adds a dimension of time to our perceptions of architectural space. In other words, space is generated by flux itself. The notion of completion is antithetical to all our activities. Any execution is calculated as a measure of time, the whole as a consequence of daily and seasonal rhythms of sunlight. The proposition reached its greatest amplification and expression in the library project.

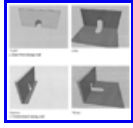


Fig. 15. Shadow Wall.

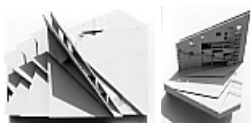
Design students were first asked to picture a free-standing wall with a gateway through it (Fig. 15). If the wall faces east and west, it will accentuate a daily rhythm; shadows will appear early on the west and later on the east, regardless of season. But if the wall faces north and south, moving shadows will emphasize a seasonal rhythm; they extend much farther northward in winter than in summer throughout most of the day. Finally, if the wall faces diagonally to the cardinal points, the accents will be complex and contrapuntal. These images of a wall were then extended directly into the design of the library.

The students were then asked to imagine a circumscribed wall that reaches to the upper boundaries of the solar envelope and that, when standing alone, can fill out the envelope's imaginary boundaries with shadow over time and seasons. The wall in sunlight can thus act as a generator, an allusion to invisible form. When the form is brought into concrete existence, sunlight replays a series of connections in space and time. The generating wall has been dubbed the *mama plane*. Its applications in the Solar Studio have sometimes been quite direct.



Fig. 16. Library. Designer, Anthony Reiter.

One design for a library develops a literal interpretation of the wall and gateway (Fig. 16). Beginning with the *mama plane*, a gateway opening through it allows sunshine to penetrate to a second plane where the lighted area is removed. After a prescribed interval of time, sunshine passes through both gateways to a third plane where the lighted area is again removed. The designer continues this process throughout the course of a simulated day, interval by interval, until the final design embraces the entire set of planes. The designer's intention is that this arrangement of gateways will not only generate a system of transverse spaces but, on all future days, will act in sunlight to recite the original sequence of connections with seasonal variations.



Figs. 17 & 18. Library. Designer, Gustavo Koo.

A second design for a library uses shadows cast from edges of the *mama plane* to create both the building and a garden (Figs. 17 & 18). The *mama plane*, with a diagonal orientation to the cardinal points, has been given thickness by the designer and serves as book storage, service, and circulation. To the south-west of the plane, morning shadows moving at intervals across the ground have been used to outline the terraces of a garden with parking below. To the north-east, afternoon shadows are used to define the shapes of floor plates: one set is generated on a winter day, alternate plates on a summer day. And as with the previous design, the creative process will be recited over time.

The intention of such studio projects is not simply to describe solar phenomena by architectural means; the purpose has more to do with rhythm as a mysterious fact of aesthetic experience. Rhythm as a design strategy, as a medium of the designer, can express our most delicate feelings and moods. It is toward this end that the USC Solar Studio has so exhaustively investigated the solar envelope.

## CONCLUSIONS

Without access to the sun, we cannot use it. The *solar envelope* is proposed as a zoning device to achieve solar access by regulating development within limits derived from the sun's relative motion. Buildings within its boundaries will not shadow surrounding properties during critical periods of the day and year. Assured solar access thus offers the chance to replace unreliable energy sources and to enhance the quality of urban life. Assured sunlight also suggests *rhythm* as a novel design strategy, as a way to bring us closer to a sense of nature in our buildings and urban

spaces.

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# STANDARDS FOR SHADOW STUDIES

August 2011

# STANDARDS FOR SHADOW STUDIES

Shadow Studies illustrate the impact of development in terms of sun and daylight access to the surrounding context including surrounding buildings, the public realm, public and private open space.

Shadow Studies may be required in support of development applications to demonstrate that the location and height of a proposed building if greater than 10.7m, will not cause undue shade on the subject lands, and on surrounding context including building facades, private and public outdoor amenity and open spaces, public parkland, sidewalks and other components of the public realm.

Shadow Studies and Analyses will be conducted for the following dates:

- **June 21**
- **September 21** (similar to March 21, and therefore, criteria for Sept. 21 are deemed to apply to March 21)
- **December 21**

At the following times:

- **Solar Noon (SN)**
- **Hourly intervals before and after Solar Noon (SN), up to and including 1.5 hours after sunrise and 1.5 hours before sunset**

**Hourly solar data are specified for each date**

See Tables 2, 3 and 4: Mississauga Sun Angle Data

Sun Angles:

Sun Angles are based on the latitude and longitude of the Mississauga Civic Centre at 300 City Centre Drive, Mississauga ON L5B 3C1

- Latitude: 43 deg. 35' 20" N
- Longitude: 79 deg. 38' 40" W

Time Zone: Eastern

Standard Time: UT - 5 hours

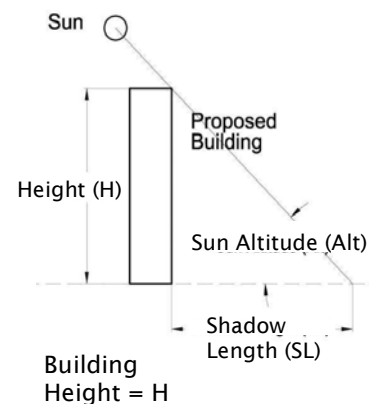
Daylight Time : UT - 4 hours

UT denotes Universal Time i.e. Greenwich Mean Time

Shadow Length (SL) = Building Height (H) x Shadow Length Factor (SLF). See Fig. 1



**FIG. 1: DETERMINING SHADOW LENGTH**



$$\text{Shadow Length Factor (SLF)} = 1/\tan(\text{Alt})$$

$$\text{Shadow Length (SL)} = H \times \text{SLF}$$

## Ensure Adequate sunlight on the following:

### 1. Residential Private Outdoor Amenity Spaces

To maximise the use of private residential amenity spaces during spring, summer and fall, shadow impacts from proposed developments should not exceed one hour in duration on areas such as private rear yards, decks, patios and pools of surrounding residential dwellings on each of the following dates:

- **June 21**
- **September 21** (Mar. 21 shadow patterns are similar but occur 14 minutes later)

This criterion is met if there is shadow impact for no more than **two consecutive hourly test times** within the space between the exterior wall of the dwelling that abuts the amenity space and the line of impact assessment (“**No Impact Zone**”).

The line of impact assessment shall be, a line 7.5m minimum from the rear wall or other appropriate exterior building wall of the dwelling that abuts the private amenity space. See Fig. 2 and 3

New shadows shall not result in less than 2 hours of direct sunlight. Where less than 2 hours of sunlight already exists within the “**No Impact Zone**”, no new shade may be added.

Balconies are not considered “residential private outdoor amenity spaces” unless they are the only outdoor living area available to the dwelling unit, are unenclosed, and project 4m or more from the exterior wall of the building.

FIG. 2: SHADOW IMPACT ON PRIVATE RESIDENTIAL OUTDOOR AMENITY SPACES (PLAN VIEW)

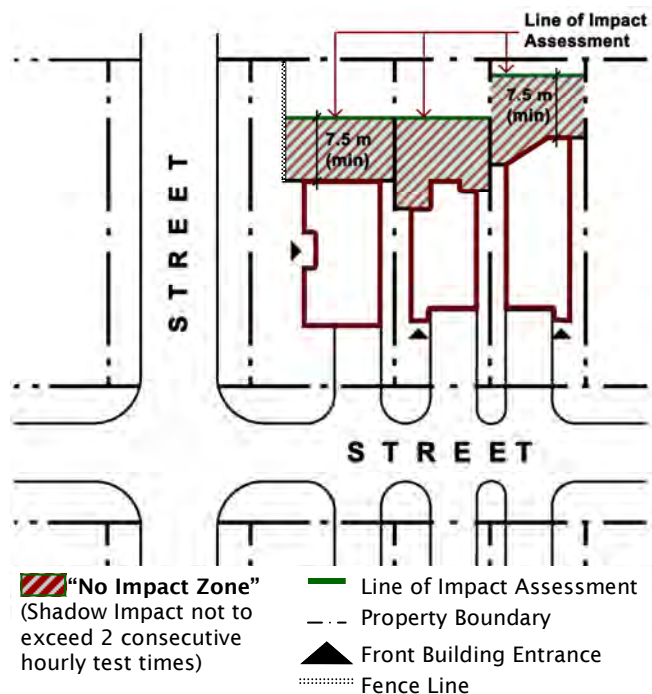
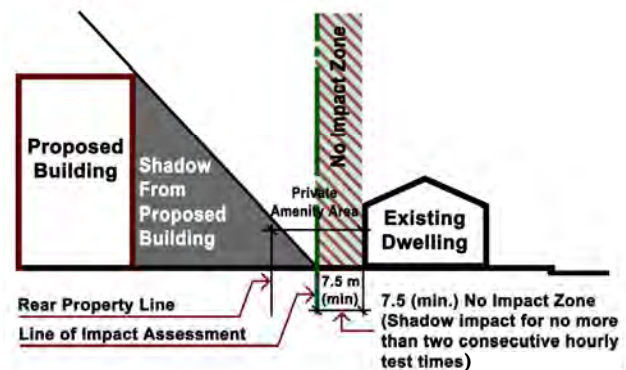


FIG. 3: SHADOW IMPACT ON PRIVATE RESIDENTIAL AMENITY SPACES (SECTION)



## Ensure Adequate sunlight on the following:

- 2. Communal outdoor amenity areas including, children’s play areas, school yards, tot lots, and park features such as sandboxes, wading pools etc., and outdoor amenity areas used by seniors and those associated with commercial and employment areas during spring, summer, fall and winter.**

Shadows from proposed developments should allow for full sun on the above places at least half the time, or 50% sun coverage all the time, on each of the following dates:

- **June 21**
- **September 21**
- **December 21**

This criterion is met if the “sun access factor” is at least 50% or 0.5 on each of the test dates ( $A_{s(ave)}/A_T = 0.5$  or more)

### See 2a for Calculation of Sun Access Factor

This criterion applies to public amenity areas and common outdoor amenity areas that are part of a proposed or existing development.

#### 2a) Calculating Sun Access Factor:

- Measure the total Area ( $A_T$ ) of the space or feature
- Measure the area in sunshine ( $A_s$ ) for each of the test times from 1.5 hours after sunrise to 1.5 hours before sunset both inclusive
- Find the average of the  $A_s$  values ( $A_{s(ave)}$ )
- Sun Access Factor =  $A_{s(ave)}/A_T$



- 3. Public realm including sidewalks, open spaces, parks and plazas to maximize their use during the shoulder seasons (spring and fall)**

#### a) Low and Medium Density Residential streets

Developments should be designed to allow full sunlight on the opposite boulevard including the full width of the sidewalk on September 21 as follows:

For a total of at least **4 hours** between **9:12 a.m.** and **11:12 a.m.** and between **3:12 p.m.** and **5:12 p.m.**

This criterion is met if there is no incremental shade from the proposed development at **9:12 a.m., 10:12 a.m. and 11:12 a.m.**, and at **3:12 p.m., 4:12 p.m. and 5:12 p.m.**

See Fig. 4, 5, 6 and Table 1.

**b) Mixed Use, Commercial, Employment and High Density Residential streets**

Developments should be designed to allow full sunlight on the opposite boulevard including the full width of the sidewalk on September 21 as follows:

For a total of at least 5 hours that must include the 2 hour period between 12:12 p.m. and 2:12 p.m., and an additional 2 hour period from either 9:12 a.m. to 11:12 a.m. or from 3:12 p.m. to 5:12 p.m.

This criterion is met if there is no incremental shade from the proposed development at 12:12 p.m., 1:12 p.m. and 2:12 p.m., and three consecutive times either 9:12 a.m., 10:12 a.m. and 11:12 a.m. or 3:12 p.m., 4:12 p.m. and 5:12 p.m.

**See Fig. 4, 5, 6 and Table 1 for angular planes that will achieve this criterion for Hurontario Street, Eglinton Avenue and streets with a similar alignment.**

**c) Public Open Spaces, parks and Plazas**

Developments should be designed to provide a sun access factor of at least 50% on public open spaces, parks and plazas on September 21.

**See 2a for calculating Sun Access Factor**

Please note the following:

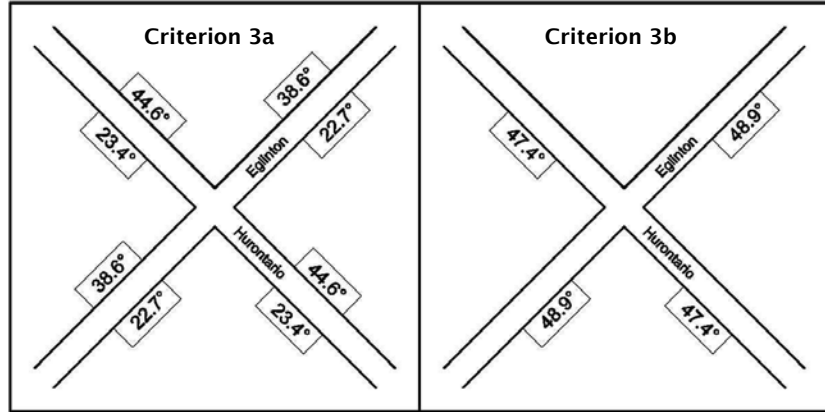
- **Solar Noon in Mississauga on September 21 is 1:12 p.m.**
- **Shadow Patterns for September 21 and March 21 are similar**
- **Criteria for September 21 are deemed to apply to March 21**

| TABLE 1   | Criterion 3a<br>Low and<br>Medium<br>Density<br>Residential<br>Streets | Criterion 3b<br>Mixed use,<br>Commercial,<br>Employment<br>and High<br>Density<br>Residential<br>Streets |
|---|--|--|
|   | Maximum<br>Angular Plane   | Maximum<br>Angular Plane   |
| <b>Eglinton Avenue</b>                              |  |  |
| Proposed building on north side of Eglinton Ave.    | 38.6 degrees   | –  |
| Proposed building on south side of Eglinton Ave.    | 22.7 degrees   | 48.9 degrees   |
|   |  |  |
| <b>Hurontario Street</b>                            |  |  |
| Proposed building on west side of Hurontario Street | 23.4 degrees   | 47.4 degrees   |
| Proposed building on east side of Hurontario Street | 44.6 degrees   | –  |

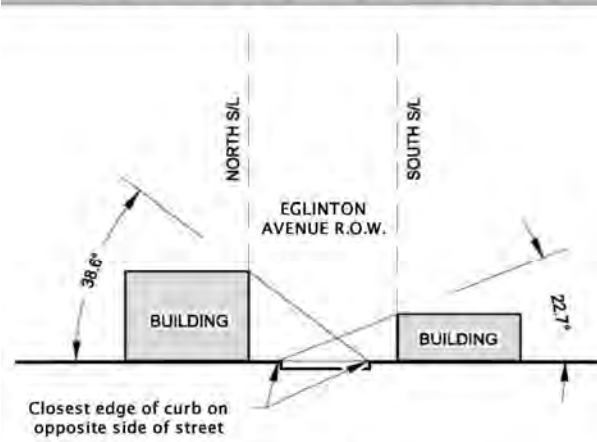
**NOTES:**

1. Angular planes given above apply to the alignment of Eglinton Avenue and Hurontario Street and streets with equivalent orientation.
2. Angular planes are measured from the closest edge of the opposite curb (see Fig.5).
3. Angular planes are measured beginning at grade.
4. Angular planes are measured perpendicular to the street.
5. See Figures 4, 5, 6 for graphical representations of the angular plane limits.

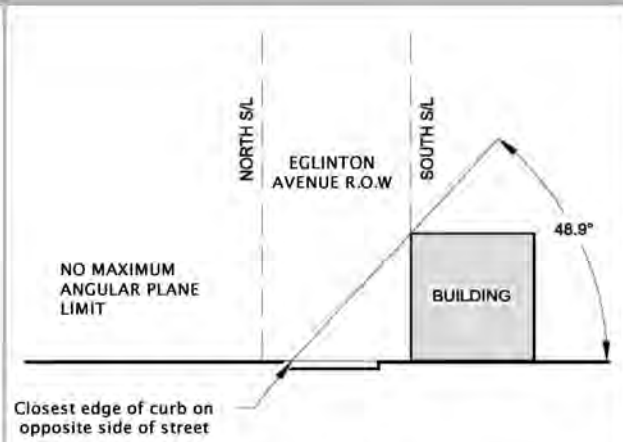
**FIG. 4:  
MAX. ALLOWABLE ANG.  
PLANES TO PROTECT  
OPPOSITE BOULEVARDS  
AND SIDEWALKS**



**ANGULAR PLANE SECTION VIEWS**

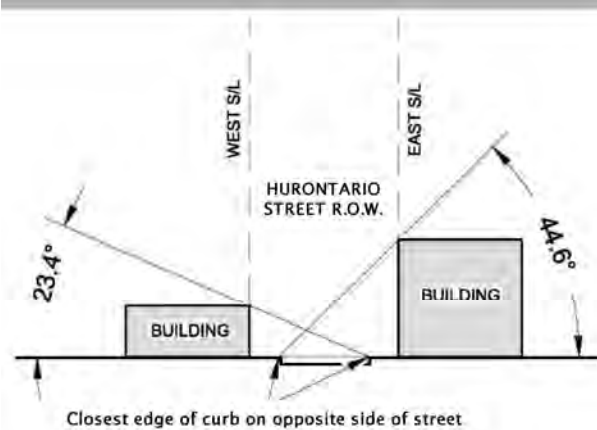


**Criterion 3a**  
low and medium density residential streets

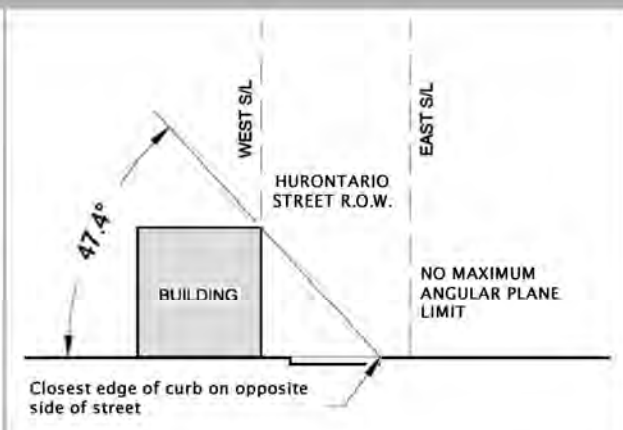


**Criterion 3b**  
mixed use, commercial, employment and high density residential areas  
with pedestrian traffic

**FIG. 5: EGLINTON AVENUE**



**Criterion 3a**  
low and medium density residential streets



**Criterion 3b**  
mixed use, commercial, employment and high density residential areas  
with pedestrian traffic

**FIG. 6: HURONTARIO STREET**



## Ensure Adequate sunlight on the following:

### 4. Turf and flower gardens in public parks

Proposed developments should allow for adequate sunlight during the growing season from March to October by allowing for a minimum of **6 hours of direct sunlight on September 21**.

This criterion is met if full sun is provided on any **7 test times** on September 21, from 1.5 hours after sunrise to 1.5 hours before sunset.



### 5. Building faces to allow for the possibility of using solar energy

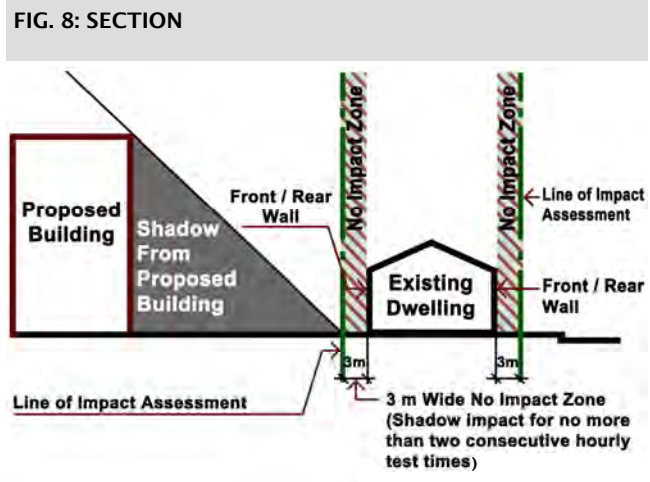
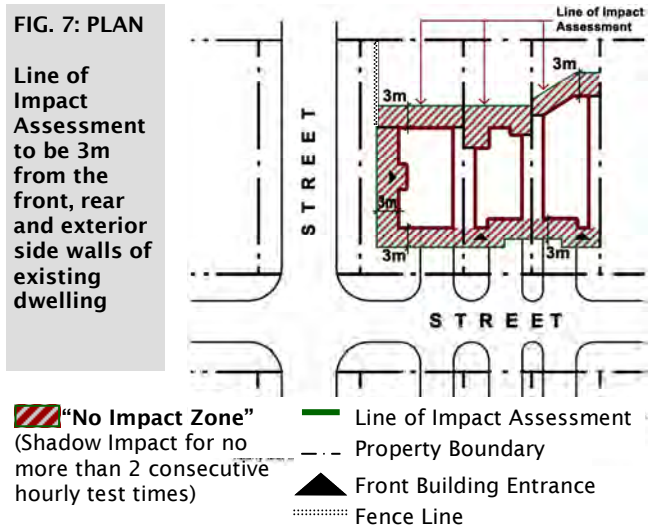
Shadow impacts from proposed developments should not exceed **one hour** in duration on the **roofs, front, rear and exterior side walls** of adjacent **low rise** (one to four storeys) residential buildings including townhouses, detached and semi-detached dwellings on **September 21**.

The line of impact assessment shall be a line at grade, 3m from the front, rear and exterior side wall of the adjacent low rise residential building.

This criterion is met if there is shadow impact for no more than two consecutive hourly test times in the “No Impact Zone” i.e. the space between the front, rear and exterior side walls of the adjacent low-rise residential buildings and the respective lines of impact assessment.

See Fig. 7 and 8

Incremental shadows do not necessarily represent adverse or undue impacts, and each proposal will be assessed on its own merits.



## Material to be submitted with Development Application:

1. Complete set of shadow drawings for the dates and times shown in **Tables 2, 3, and 4: Mississauga Sun Angle data, from 1.5 hours after sunrise to 1.5 hours before sunset**
2. Base mapping must include a minimum coverage area as follows:
  - a) 4.0 times the building height to the north, east and west
  - b) 1.5 times the building height to the south
3. Shadow drawings may be based on 2D mapping or air photos showing shadows from only the proposal, or they may be based on 3D mapping and include shadows from the proposed building and all buildings within the coverage area.
4. Shadow drawings shall include the following:
  - a) North Arrow and scale bar
  - b) Reference bearing for at least one street adjacent to the subject site
  - c) A scale suitable to show the entire shadow coverage area
  - d) Existing and incremental shadows differentiated by hatching or colour
  - e) Approved but not yet constructed buildings identified in contrasting colour.
  - f) The name of the individual who has prepared the shadow drawings
5. Shadow drawings must be submitted with a written analysis which shall include the following information:
  - a) Confirmation of site latitude and longitude used in shadow drawings
  - b) A statement describing how astronomic north was determined
  - c) Origin/source of base plan
  - d) Description of all locations/uses of areas not meeting the shadow impact criteria (include a key plan for reference)
  - e) Quantification and assessment of the impact in the areas listed in 5(d)
  - f) Summary outlining how the shadow impact criteria have been met and describing any mitigating features that have been incorporated into the site and building design
- 6) The shadow drawings and reports shall be prepared by individuals qualified and/or experienced in this field.

**Additional study times and analyses may be required to properly determine the degree of impact.**

**The intent and objectives of the Standards For Shadow Studies are as interpreted by the Development and Design Division of the Planning and Building Department.**

**TABLE 2: MISSISSAUGA SUN ANGLE DATA (JUNE 21)**

| DATE: JUNE 21  | SHADOW DIRECTION AND LENGTH |                              | COMMENTS        |
|----------------|-----------------------------|------------------------------|-----------------|
|                | Az (deg)                    | SLF<br>(ratio length/height) |                 |
| LOCAL TIME EDT |                             |                              |                 |
| 5:37           | 235.73                      |                              | Rise            |
| 7:07           | 250.48                      | 4.1230                       | Rise + 1.5 hr.  |
| 7:20           | 252.58                      | 3.5045                       | SN - 6 hr.      |
| 8:20           | 262.02                      | 2.0048                       | SN - 5 hr.      |
| 9:20           | 272.04                      | 1.3106                       | SN - 4 hr.      |
| 10:20          | 283.79                      | 0.8976                       | SN - 3 hr.      |
| 11:20          | 299.52                      | 0.6203                       | SN - 2 hr.      |
| 12:20          | 323.67                      | 0.4375                       | SN - 1 hr.      |
| 13:20          | 0.00                        | 0.3670                       | Solar Noon (SN) |
| 14:20          | 36.32                       | 0.4375                       | SN + 1 hr.      |
| 15:20          | 60.47                       | 0.6203                       | SN + 2 hr.      |
| 16:20          | 76.21                       | 0.8975                       | SN + 3 hr.      |
| 17:20          | 87.96                       | 1.3105                       | SN + 4 hr.      |
| 18:20          | 97.98                       | 2.0047                       | SN + 5 hr.      |
| 19:20          | 107.42                      | 3.5042                       | SN + 6 hr.      |
| 19:33          | 109.41                      | 4.0852                       | Set - 1.5 hr.   |
| 21:03          | 124.27                      |                              | Set             |
|                |                             |                              |                 |
|                |                             |                              |                 |
|                |                             |                              |                 |

**TABLE 3: MISSISSAUGA SUN ANGLE DATA (SEPT. 21)**

| DATE: SEPTEMBER 21 | SHADOW DIRECTION AND LENGTH |                              | COMMENTS        |
|--------------------|-----------------------------|------------------------------|-----------------|
|                    | Az (deg)                    | SLF<br>(ratio length/height) |                 |
| LOCAL TIME EDT     |                             |                              |                 |
| 7:05               | 268.27                      |                              | Rise            |
| 8:35               | 284.22                      | 3.6329                       | Rise + 1.5 hr.  |
| 9:12               | 291.23                      | 2.5132                       | SN - 4 hr.      |
| 10:12              | 304.14                      | 1.6445                       | SN -3 hr.       |
| 11:12              | 319.68                      | 1.2181                       | SN -2 hr.       |
| 12:12              | 338.54                      | 1.0011                       | SN -1 hr.       |
| 13:12              | 0.00                        | 0.9329                       | Solar Noon (SN) |
| 14:12              | 21.45                       | 1.0022                       | SN + 1 hr.      |
| 15:12              | 40.28                       | 1.2205                       | SN + 2 hr.      |
| 16:12              | 55.79                       | 1.6495                       | SN + 3 hr.      |
| 17:12              | 68.68                       | 2.5255                       | SN + 4 hr.      |
| 17:48              | 75.63                       | 3.6493                       | Set - 1.5 hr.   |
| 19:18              | 91.46                       |                              | Set             |
|                    |                             |                              |                 |
|                    |                             |                              |                 |

**TABLE 4: MISSISSAUGA SUN ANGLE DATA (DEC. 21)**

| DATE: DECEMBER 21 | SHADOW DIRECTION AND LENGTH |                              | COMMENTS        |
|-------------------|-----------------------------|------------------------------|-----------------|
|                   | Az (deg)                    | SLF<br>(ratio length/height) |                 |
| LOCAL TIME EST    |                             |                              |                 |
| 7:49              | 302.37                      |                              | Rise            |
| 9:19              | 319.05                      | 4.8874                       | Rise + 1.5 hr.  |
| 10:17             | 331.25                      | 3.1643                       | SN -2 hr.       |
| 11:17             | 345.21                      | 2.5293                       | SN -1 hr.       |
| 12:17             | 0.00                        | 2.3589                       | Solar Noon (SN) |
| 13:17             | 14.79                       | 2.5293                       | SN + 1 hr.      |
| 14:17             | 28.75                       | 3.1644                       | SN + 2 hr.      |
| 15:15             | 41.06                       | 4.9172                       | Set - 1.5 hr.   |
| 16:45             | 57.63                       |                              | Set             |
|                   |                             |                              |                 |

**Standards for Shadow Studies August 2011**

Adopted by Council on November 23, 2011

Resolution No. 0266-2011

**City of Mississauga**

Planning and Building Department, Development and Design Division

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# Toward More Prosperous Cities

*A framing essay on urban areas, planning, transport and the dimensions of sustainability*

<http://demographia.com/towardmoreprosperous.pdf>

*by Wendell Cox*

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*(A framing essay on urban areas, planning, transport and the dimensions of sustainability)*

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originally published in

[\*World Streets: The Politics of Transport in Cities\*](#)

17 December 2012

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## Cover Illustration

[Hartford, Connecticut](#)

[\*World's Most Affluent Major Metropolitan Area: 2012\*](#)



# Toward More Prosperous Cities

By Wendell Cox

I appreciate Eric Britton's gracious invitation to contribute my views on cities and urban transport to *World Streets*. Obviously, many readers will disagree with all or part the article. Nonetheless, the state of knowledge is never complete and progress [continues to depend on open minds and civil discussion of perspectives](#) among people of good will. There is extensive use of "hyperlinks," which provide direction to greater detail for any interested. The article begins with the public policy context, then follows with urban policy, urban transport and sustainability.

For background, I was appointed to three terms on the Los Angeles County Transportation Commission (LACTC) by Mayor Tom Bradley and was the only non-elected member. LACTC was the ultimate policy authority for both mass transit and highways in the nation's largest county (then 7.5 million). I had entered transport policy to advance urban rail in Los Angeles, because I believed would reduce traffic congestion. While on LACTC, I chaired two American Public Transit Association national committees (Governing Boards and Policy & Planning).

In an August 1980 special meeting, and on the "spur of the moment" I introduced a amendment to establish and fund the Los Angeles urban rail system. This became a part of "Proposition A," which was enacted by the electorate and provided much of the funding for the early rail lines. To my disappointment, it later became clear that urban rail's potential for reducing traffic congestion had been grossly oversold (See "The Limits of Mass Transit," below).

I also served as a visiting professor of transport at the Conservatoire National des Arts et Metiers in Paris, where I depended on the Metro and walking for local travel.

## 1. THE PUBLIC POLICY CONTEXT

Economics has been and must continue to be the foundation of human progress.

### Means and Ends

The objective should be to achieve wide-spread affluence and eradicate poverty around the world. . Beyond the rule of law and security, these may be the most important public policy objectives. Greater affluence means maximizing real household discretionary incomes (incomes after deduction of taxes and the costs of basic necessities, especially housing, food and clothing).

Cities, urban policy and urban transport are means to facilitate these objectives. However, they are not ends themselves. I advocate neither "sprawl" nor "automobiles." My interest is the objectives of broadening affluence, not urban form or means of transport.

### **The Necessity of Economic Growth**

Economics is a history of poverty. University of Rochester (NY) Economist Steven Landsburg [put it this way](#):

*Modern humans first emerged about 100,000 years ago. For the next 99,800 years or so, nothing happened.... Almost everyone lived on the modern equivalent of \$400 to \$600 a year, just above the subsistence level.*

Data compiled by the late OECD economist Angus Maddison estimates the world gross domestic product per capita (GDP) at approximately \$1100 in 1820 (2010\$ purchasing power adjusted). Netherlands was the most affluent, with less than \$3100 per capita, similar to the present levels of India and Nicaragua.

Since 1820, the world population has increased substantially (5.5 times), but the economic pie has expanded far more. The world [\(GDP\) product grew 70 times](#) (inflation and purchasing power adjusted), approximately 13 times population growth. Yet, much (too much) of the world continues to live in poverty.

### **The Importance of Public Stewardship**

Public financial resources need to be spent efficiently, a sense indicated in the mission statement of my original website, "[publicpurpose.com](#)," (1995): *To facilitate the ideal of government as the servant of the people by identifying and implementing strategies to achieve public purposes at a cost that is no higher than necessary.* The need for government efficiency has become more imperative, as high income nations have obligated themselves beyond their capabilities. There is, at least as yet, no politically acceptable roadmap out of these difficulties. Yet, as I learned within my first 30 days on LACTC, governments tend to operate on the assumption that the answer to every question is more money. When too much is spent to produce an amount of any public service, such as mass transit, less service can be provided, and/or money that could be creating jobs is taken unnecessarily from people.

## 2. URBAN POLICY

The framework for this discussion is cities.

### **The Rise of Urbanization:**

By 2010, the majority of the world's population was urban, rather than rural, for the first time. As late as 1800 the world's urban areas accounted for 10% or less of the population. [Only Beijing had a population of more than 1 million](#). Other cities had reached that figure before, but none retain it.

Large urban areas are a product of the 19th and 20th centuries. By 1900, there were at least 15 cities of more than 1 million population. Only London had more than 5 million residents. New York became the world's first megacity (more than 10 million) by 1930. Now there are approximately 450 urban areas with more than 1 million population, 70 above 5,000,000 and 26 megacities. Tokyo is the largest, with over 35 million. There has been an important association between urbanization and economic growth.

### **Defining the City**

As research by the [Santa Fe Institute](#) suggests, cities are like elephants --- they are organisms. They tend to become more productive as they become larger ([the research finds no density relationship](#)). The urban organism takes two forms, the functional and the physical. The functional urban organism is the metropolitan area (the labor market or economic unit). The urban organism can also be defined as the physical urban form --- the extent of continuous urbanization. The urban area contains no rural land. The metropolitan area encompasses the urban area as well as surrounding rural areas. The extent of rural land in high income world metropolitan areas virtually always exceeds the urban land by a wide margin.

The urban core (usually defined as the [historic core municipality](#), such as the ville de Paris or the city of Chicago), often receives disproportionate policy attention, but is only part of the urban organism. The urban core is *part* of the elephant, *as are the suburbs and exurbs* (within the metropolitan area).

The distinctions are illustrated by Paris. The Paris metropolitan area ("aire urbaine") covers [17,200 square kilometers](#) with a population of 12.1 million (2008 census). More than 80% of the metropolitan land area is rural, rather than urban. The Paris urban area (unité urbaine) covers 2,850 square kilometers, with a population of 10.4 million. It contains the ville de Paris [411](#) additional municipalities (communes). The ville de Paris covers less than 1% of the metropolitan land area, less than 4% of the urban area, and comprises approximately 20% of the population.

Urban policy needs to be directed at the city as an urban organism, not skewed toward the urban core. Thus, the term "city," as used in article refers to the metropolitan area or the urban area.

### **The Purpose of Cities**

Cities are economic entities. Cities have drawn rural residents principally because of economic aspiration, as people have abandoned rural poverty for the hope of a better life in the city. They did not flock to the city "for the fountains" or for "good" urban planning. Cities that facilitate achievement of aspirations are likely to attract residents, while those that do not tend to stagnate or shrink. Former World Bank principal planner Alain Bertaud (2004) characterized the [purpose of cities](#): *Large labor markets are the only raison d'être of large cities.*

### **The Evolving Urban Form**

Throughout history, and especially during the past two centuries, the most successful cities have added population and they have naturally (organically) expanded their physical size. Both of these trends have been accelerated by greater affluence and faster transport.

Despite perceptions to the contrary, spatial urban expansion is not limited to the United States. It can be observed virtually everywhere where it is not blocked or densification policy (also called compact cities policy, urban containment, urban consolidation, smart growth, growth management, etc.). The most extreme examples of densification policy constraints may be London, Vancouver and Sydney. However, policy can also induce the opposite --- artificially greater urban area expansion. The mechanism has been maximum density regulations in urban areas like [Atlanta and Boston](#) ([each less than one third the population density of Los Angeles](#)).

One of my principal interests is the evolution of cities. For some years I have published [Demographia World Urban Areas](#), with estimates of population, urban land area and densities for all identified urban areas with 500,000 or more population. I also write the [Evolving Urban Form](#) column in [newgeography.com](#), now with more than 30 entries, such as [Tokyo](#), [London](#), [Jakarta](#), [Manila](#) and [Shanghai](#).

Generally, the greatest population growth has been in suburban and exurban areas, while urban cores have grown more slowly (or lost population), which illustrates the *tendency of cities to become less dense as they become larger*, especially those retaining above automobile-oriented densities. At the same time, many urban cores in the US, Western Europe, Japan and even the developing world have declined in density.

## **Cities and Densification Policy (Compact Cities Policy, etc.)**

This raises the issue of urban spatial expansion --- pejoratively called urban sprawl --- which urban planning has virtually defined as inherent evil. Densification policy is offered as the antidote. More recently densification policy has been proposed as a principal strategy for reducing greenhouse gas (GHG) emissions. There are also concerns that urbanization crowds out agricultural land. However, [Angel](#) (New York University) replies that there are *adequate reserves of cultivatable land sufficient to feed the planet in perpetuity*.

Densification policy attempts to stop urban spatial expansion through urban growth boundaries and other measures that prohibit building on land on or beyond the urban periphery. Densification policy also seeks to reduce personal vehicle use, substituting mass transit, walking and cycling. Indeed, there is a view among densification policy advocates that the city should be designed for mass transit. This places the "cart before the horse" to the second degree. Urban transport should serve the city and the city should serve its residents by facilitating higher incomes and less poverty.

There is an assumption that increasing densities will increase transit use. However, as [Statistics Canada](#) research indicates, people in higher density housing use cars at a rate similar to those in nearby lower density housing in areas more than 10 kilometers from the central business district (CBD). [McCloskey, Birrell and Yip](#) further indicate that higher rail corridor densities in Melbourne have failed to increase mass transit commuting materially, because most jobs are not within walking distance of rail stations. It is hard to find a US urban area with a lower mass transit market share than San Jose (California), [yet its density exceeds that](#) of the New York urban area, which accounts for 40 percent of US mass transit use.

There is also a view that travel demand can be reduced by establishing a "jobs-housing balance" within parts of the urban organism. Bertaud, however, says that the economic efficiency of the city requires [avoiding any spatial fragmentation of labor markets](#). Attempts to establish sub-city jobs – housing balances are likely to fail, since the location preferences of people and businesses are beyond the knowledge of planners. Understanding the city as an economic entity means a job-housing balance at the metropolitan area level, but not below.

There is also an assumption that more dense housing is associated with reduced GHG emissions. Much of the research, however, excludes common GHG emissions (from lifts, common area lighting, space heating and air conditioning, etc.) in large multi-unit buildings, usually because data is not available. Research in Sydney found [that town houses and detached housing](#) produced

less GHG emissions per capita than higher density housing when common GHG emissions are included. Moreover, housing sustainability research is often based on static, rather than dynamic analysis, ignoring future improvements (some of which are required by law).

### **Densification Policy: Fundamental Flaws**

There are substantial difficulties with densification policy. For example:

#### ***1. Higher densities mean greater traffic congestion***

Higher population densities are associated with [higher traffic volumes](#). The only way to avoid this is, in effect for no new residents to use cars. A density calculator developed using [Sierra Club](#) data associates a doubling of population density with a 60% increase in driving. A meta-analysis by [Ewing and Cervero](#) associates a doubling of density with only a modest (approximately 5%) decline in per capita personal vehicle use. In other words, traffic densities rise almost as fast as population densities.

Higher traffic densities also mean greater traffic congestion. As traffic slows and operates in "stop and go" conditions fuel efficiency is reduced. [Transport Canada research](#) indicates that fuel consumption per kilometer (and thus GHG emissions) rise nearly 50% as arterial street traffic conditions deteriorate from stable to unstable. Strategies to reduce vehicle travel miss the point, because GHG emissions are a function of fuel combustion, not distance traveled. Gains from less driving can be lost in reduced fuel efficiency. Further, greater traffic congestion increases local air pollution in the immediate area, [with negative health impacts](#).

All of this is in addition to the costs imposed by greater traffic congestion, which interfere with broadening affluence and eradicating poverty.

#### ***2. Densification policy is associated with materially higher house prices,***

The urban containment strategies (such as urban growth boundaries) of densification lead to higher house prices higher relative to incomes. Because housing is the largest element of household expenditure, this increases the cost of living, which reduces affluence and increases poverty.

Former Governor of the Reserve Bank of New Zealand, Donald Brash wrote: *The affordability of housing is overwhelmingly a function of just one thing, the extent to which governments place artificial restrictions on the supply of residential land* in the [introduction](#) to our *4th Annual Demographia International Housing Affordability Survey* (2008). Former Monetary Policy Committee of the Bank of England [Kate Barker](#) also found a strong relationship between unaffordable housing prices and densification policy in reports commissioned by the Blair government.

When the supply of any good is artificially constrained, such as land for development, costs will tend to rise excessively. Brookings Institution economist Anthony Downs stressed that land regulation should be sufficiently flexible to preserve a "[competitive land supply](#)." Without a competitive land supply, land prices tend to rise, just as artificial constraints on the world oil supply (such as by OPEC) are associated with higher prices. The land supply constraints lead to [greater speculation](#), which drives house prices even higher.

Densification policy has destroyed the competitive land supply in many cities, and house prices have escalated well beyond historic norms. In the six nations covered by the [Demographia International Housing Affordability Survey](#), the Median Multiple, the median house price divided by the median household income, has risen from 50% to more than 200% in the metropolitan areas with the most extreme densification policy. Examples are all major markets in the United Kingdom, Australia and New Zealand, some in the United States (especially coastal California, Portland and Seattle), Toronto and Vancouver (which had the most unaffordable housing outside Hong Kong in last year's *Survey*).

California experienced the greatest house price escalation during the US housing bubble and set off the worldwide Great Financial Crisis. Yet, during the period, California experienced *weak* underlying demand. More than a net 1.5 million Californians moved to other states in the 2000s. In Dallas-Fort Worth, Houston and Atlanta, house prices remained at or near historical norms in spite of extraordinary demand (net domestic in-migration exceeding 1.0 million. Housing affordability was also retained in virtually all markets that have avoided densification policy.

In California, [where land prices had been similar to the rest of the nation](#), experienced an up to 13 times increase (inflation adjusted) as densification policy was implemented. Land prices in markets without densification policy stayed virtually the same in relation to construction costs (see [Demographia Residential Land and Regulation Cost Index](#)). Raw land prices per hectare with planning permission have escalated to 10 times across the street prices (across the urban growth boundary) in [Portland](#) and [Auckland](#). [Cheshire \(London School of Economics\) found an up to 700 times increase](#) in prices for land rezoned from agricultural to residential in the United Kingdom

[Angel](#) cautioned that the lack of sufficient land for urban expansion can extinguish "any hope that housing will remain affordable, especially for the urban poor." He decries the notion that "cities should simply be contained and enclosed by greenbelts or impenetrable urban growth boundaries" as "uninformed and utopian" because it makes sustainability "an absolute end that

justifies all means to attain it." He says that other strategies should be used to achieve environmental sustainability.

Econometric research also identifies [an association between slower economic growth and densification policy](#). For example, Saks (US Federal Reserve Board) found that where housing supply is more constrained by regulations, employment growth is generally lower than expected. Nandwa (University of Dubai) and Ogura (Grand Valley State University) found that US metropolitan areas with strict land-use regulation tend to have slower than expected productivity growth. Vermeulen (Netherlands Bureau of Economic Analysis) and Van Ommeren (VU University) associated slower employment growth in the Randstad, with its more stringent housing supply limitations.

Densification policy's fatal flaw is that it reduces affluence and expands poverty by pushing up house prices relative to incomes.

### **The Way Forward: Urban Policy**

Urban policy should be directed toward broadening affluence and eradicating poverty and policies that interfere with these objectives (such as densification policy) should be rejected.

## **3. URBAN TRANSPORT**

The transport system is the arteries of the urban organism, both for people and for goods.

### **Mobility and Economic Growth**

[Greater mobility improves](#) the economic performance of cities and thus broadens affluence and reduces poverty. This is illustrated in research by Prud'homme and Lee (University of Paris), Hartgen and Fields (University of North Carolina-Charlotte), Cervero (University of California) and others, who have shown that economic growth is greater where more jobs in the metropolitan area can be reached in a particular period of time (such as 30 minutes).

In all major cities of Western Europe, the United States, Canada and Australasia the overwhelming majority of passenger travel (in passenger kilometers) is by personal vehicles (cars, personal trucks, sport utility vehicles and motorized 2-wheelers). Even in a number of developing world cities, more personalized motorized transport, sometimes 2-wheeler and sometimes more flexible, less formal minibus and shared-ride taxi systems also carry the majority of motorized travel. At the same time, world's larger cities have become too spatially expansive for walking and cycling to compete with the automobile and its associated economic growth. Virtually all of the [nearly world](#)



[850 world urban areas](#) with 500,000 or more population exceed the 20 square kilometer walkable urban area defined by [Ausubel and Marchetti](#).

### **The Strengths of Mass Transit**

Nonetheless, mass transit plays a crucial role in the inner areas of some cities. From 50% to more than 75% of commute trips to the CBDs in Paris, London, Tokyo, Toronto, Montréal, Sydney, Melbourne and Vancouver are by mass transit. [Even in the United States](#), transit provides a similar share to the CBDs of New York, Brooklyn, Chicago, San Francisco, Boston and Philadelphia. This high level of mass transit use challenges the notion of an American "love affair with the automobile."

In Western Europe, the United States, Canada and Australasia mass transit tends to be automobile competitive for travel to the largest and most dense CBDs. Mass transit is also automobile competitive in some broader urban cores, especially in Western Europe. Where mass transit is competitive with the automobile, people use it, even those with automobiles, whether in Europe, the United States or elsewhere.

### **The Limits of Mass Transit**

However, transit is not and cannot be competitive with the automobile for most trips in western metropolitan areas. The modern metropolitan area has decentralized well beyond the CBD and the urban core. As population and spatial growth has occurred, jobs have followed residences. CBDs have become less dominant. In the United States, [the average CBD has approximately 10% of metropolitan employment](#). In Canada, CBD employment [averages 14% of metropolitan employment](#), while in Western Europe CBD employment is less than 20%. Mass transit's strength is in providing rapid service to the most concentrated employment centers. It cannot compete effectively to most other areas because of time-consuming transfers (rapid radial service to everywhere would be prohibitively costly) and the longer walks required to reach destinations (the last kilometer problem). As a result, mass transit takes much longer to non-core destinations than travel by car and many trips cannot even be made.

The great advantage of personal vehicles is their ability to provide the most rapid travel between the overwhelming share of addresses in metropolitan areas.

This is illustrated in the United States by [Brookings Institution research](#). Among the six metropolitan areas with the highest overall and CBD mass transit market shares (New York, Chicago, Boston, San Francisco, Philadelphia and Washington), more than 80% of workers live within walking distance of the mass transit system.

Yet, proximity to transit does not equal access. The average worker can reach only 10 percent of the metropolitan area jobs within 45 minutes by mass transit. In these six metropolitan areas --- among the most congested in the nation --- an average of 56% of drivers reach work in 30 minute or less, compared to 18% for mass transit.

[Even Paris](#), with arguably the most comprehensive mass transit system in the West, exhibits a similar problem. Cars can reach 84% of the jobs in the Ile-de-France (roughly comparable to the Paris metropolitan area) within one hour from the suburban new towns served by RER regional Metro service. Only 41% of the jobs can be accessed in an hour by mass transit.

### **The Impossibility of Automobile Competitive Mass Transit**

Automobile competitive mass transit would is unaffordable throughout the urban organism. Indeed, virtually no regional planning agency in the West has ever tabled a plan for an automobile competitive mass transit system to serve an entire large urban area.

[Professor Jean-Claude Ziv Conservatoire National des Arts et Metiers\) and I](#) estimated that from nearly 20% to nearly 80% of metropolitan GDPs would be required annually for operating, capital and financing costs for automobile competitive mass transit systems that would fully serve large urban areas.

We also estimated the average urban population density that would be required to support an automobile competitive mass transit system at the highest GDP percentage in the world spent on mass transit (Berlin). This ranged from 45,000 per square kilometer in the lowest developed world city to 640,000 in the highest developing world city. The lowest densities are similar to Dhaka (the world's most dense largest area), while the highest density is achieved only in the most dense shantytowns. Both are beyond achievement.

In a previous examination of a smaller US urban area (modeled on Portland), I estimated that it [would take more than 100% of the annual GDP](#) to build, finance and operate an automobile competitive mass transit system.

### **The Improving Automobile**

At the same time, personal vehicles are becoming less GHG intensive. The US 54.5 mile per gallon new car standard (4.3 liters per 100 kilometers) is likely [to reduce personal vehicle GHG emissions](#) at least 35% by 2035 despite a strong increase in driving. Already, cars are well on their way to equaling mass transit GHG emission efficiency in the United States. This is even before considering the fact that the overwhelming majority of trips cannot be practically replicated by mass transit.

Traffic congestion will remain, but it can be made less intense by allowing cities to expand, dispersing commercial activities, and providing sufficient roadway capacity where the expansion occurs. Greater employment dispersion is associated with shorter commute times ([Gordon and Lee](#)) and [lower densities are associated with less traffic congestion](#). Beyond that, self – drive cars, such as are being developed by Google, could substantially increase the capacity of existing roadway systems further easing traffic congestion.

### **Mass Transit's Perennial Fiscal Crisis**

Mass transit suffers from pervasive cost escalation, both capital and operations.

There are has been a policy [bias](#) toward expensive urban rail systems. Rail systems have been plagued by optimism bias both in cost and ridership projections, as found by [Flyvbjerg, Bruzelius and Rottengatter](#) (and others). Metros are certainly justified in the most dense urban cores, such as in Paris, London, Tokyo, New York and elsewhere. On the other hand, the market too small for high capacity rail in most other urban areas. Light rail systems, especially in the United States, are extravagantly expensive and transit service can generally be maximized by relying on busways instead.

The dynamics of urban politics (especially the incentive structure in which management and trade unions operate) have driven costs up substantially. Some cost relief has been achieved by [successful conversions](#) to market based, yet publicly sponsored services, through competitive tendering. Some of the best examples are [London Buses](#), Stockholm, Adelaide, San Diego, [Denver](#) (where I drafted the initial state legislation) and elsewhere. In each of the cases, there have been substantial savings, which have facilitated service expansion. However, mass transit interests have strongly resisted such reforms, not only in the United States and Canada, but also in Europe, where the largest systems have been largely exempted from competition requirements.

Higher than necessary costs have severely limited mass transit's ability to serve people in the cities of Western Europe, the United States, Canada and Australia. This failure has provided incentives for increased automobile use. Japan, Hong Kong and Singapore have been more successful. There, systems rely more on commercial revenues for capital and operations and much larger market shares have been retained.

### **Prioritizing Urban Transport Projects**

Urban transport investments need to be focused on minimizing travel delay, to improve mobility, which facilitates greater economic growth. Alan Pisarski and I recommended the

distribution of public funding for urban transport on a *least cost per reduced hour of travel delay* in our [Atlanta Blueprint 2030](#).

At the same time, funding decisions should not be distorted theoretical "social costs." Great caution is required, both because costs cannot be reliably determined outside the market (Nobel Laureate Frederick Hayek), and because the costs of intervention can exceed the cost of the externality (Nobel Laureate Ronald Coase).

### **The Way Forward: Urban Transport**

Today's urban areas are far larger in population and geographical expanse and more affluent than ever before. Addressing the objectives of broadening affluence and poverty eradication requires transport that maximizes mobility and minimizes travel times. This is accomplished principally by car travel, with an important contribution by mass transit to the most dense core areas (in urban areas where they exist).

## **4. DIMENSIONS OF SUSTAINABILITY (Pre-requisites to Environmental Sustainability)**

The dominant one-dimensional emphasis on environmental sustainability could work to prevent its achievement, because it ignores other *prerequisite* dimensions of sustainability.

### **Cost Effective Sustainability**

Cost effective sustainability is required. The Intergovernmental Panel on Climate Change (IPCC) estimated that sufficient GHG emission reductions can be achieved at \$20 to \$50 per metric ton. Yet, most urban plans do not even make the calculation. Worse, some suggest "across-the-board" reductions by sector, ignoring costs. This would be economically distortive, destroy jobs, reduce affluence and increase poverty

### **Economic Sustainability**

Economic sustainability is also necessary. GHG emissions reductions must be achieved without material harm to the economy. Harvard University economist Benjamin Friedman concluded that continued economic growth is required to sustain social stability ([The Moral Consequences of Economic Growth](#)).

### **Political Sustainability**

Political sustainability (political acceptability) may be the most important pre-requisite. The widespread demonstrations against austerity measures throughout the West indicates the limited appetite for sacrifice.

At the same time, it is naive to presume that the developing world will accept continued poverty to achieve environmental sustainability. All governments ultimately require the consent of the governed, who are unlikely to accept economic monasticism. More to the point, [mass transit plans that focus on the single dimension of environmental sustainability](#), rather than on broader affluence and poverty eradication are themselves likely to be unsustainable.

A similar political reality was illustrated by [IPCC Chair Rajendra Pachauri](#), who noted that India "has no choice but to use coal." It is immoral to expect the developing world to live at poverty levels not shared by the developed world. Poverty eradication is at the very heart of sustainability, as indicated by the 2012 Rio +20 conference declaration: [Eradicating poverty is the greatest global challenge facing the world today and an indispensable requirement for sustainable development](#).

Finally, a growing body of research indicates that densification policy is ineffective in reducing GHG emissions. Nearly all of the projected GHG emission reductions projected for 2050 from a baseline "business as usual" case in the Transportation Research Board report, [Driving and the Built Environment](#) is from improved vehicle technology, not densification policy. United Kingdom researchers Echenique, Hargreaves, Mitchell and Namdea [concluded that](#) densification policy *should not automatically be associated with the preferred spatial growth strategy*.

In the United States, the [McKinsey Company and the Conference Board](#) found that sufficient GHG emission reductions can be achieved without reducing driving or living in denser housing. Two automobile manufacturers ([Volkswagen](#) and [Audi](#)) could soon be making cars (two separate designs) achieving a 10 times improvement in fuel economy and GHG emissions. Technological strategies [hold the greatest potential](#) for reducing GHG emissions. *There is no need to sacrifice broadened affluence and poverty eradication to achieve environmental sustainability*.

## 5. CONCLUSION

There is no going back. No amount of wishing, hoping or planning will bring back the compact urban areas of the 19th or early 20th century. Nor can mass transit, cycling or walking ever materially reduce the demand for automobile travel in a modern world of economic aspiration. Telecommuting and online shopping are substituting for some travel, though the extent of ultimate contribution is unclear.

Densification policy is inappropriate because it retards household affluence and increases poverty by increasing traffic congestion and raising the cost of living (by raising housing costs).

Public policy should facilitate the objectives of broadening affluence and eradicating poverty, without which environmental sustainability cannot be achieved.

## **ABOUT THE AUTHOR**

Wendell Cox is principal of [Demographia](#), a St. Louis (Missouri-Illinois) based public policy consultancy. He was appointed to three terms on the Los Angeles County Transportation Commission by Mayor Tom Bradley, where he was the only member who was not an elected official. He chaired the Service Coordination Committee and served on the Finance Review and Rail Transit Committees. He also chaired the Governing Board Members Committee and the Policy and Planning Committee of the American Public Transit Association.

He was appointed by Speaker of the US House of Representatives Newt Gingrich to the Amtrak Reform Council, to complete the unexpired term of New Jersey Governor Christine Todd Whitman.

He served nine years as a visiting professor at the Conservatoire National des Arts et Metiers (a national university), at its campus in the core of Paris (3rd Arrondissement). He is Vice President of CODATU, an international organization dedicated to the improvement of mobility in developing world cities (headquartered in Lyon).

He has completed consulting projects around the world. He is co-author of the [Demographia International Housing Affordability Survey](#) (9th annual edition published in 2013), which rates housing affordability in more than 300 metropolitan areas in the United States, the United Kingdom, Canada, Australia, Ireland, New Zealand as well as Hong Kong. He is author of [Demographia World Urban Areas](#) (8th annual edition published in 2012), the only regularly published compendium of coordinated population, land area and density data for world urban areas with 500,000 and over population. He was also an author (with lead author Joel Kotkin) of [The Rise of Post-Familialism: Humanity's Future?](#) (published by the Civil Service College of Singapore). He is a frequent commentary contributor to such publications as *The Wall Street Journal*, *The Daily Telegraph* (London), *The Los Angeles Times*, *The Orange County Register*, *The National Post* (Toronto), *The Montreal Gazette*, *Apple Daily* (Hong Kong), *The Atlanta Journal-Constitution*, *The San Diego Union* and the *San Francisco Chronicle*.

He is contributing editor of [newgeography.com](#) and author of its [The Evolving Urban Form](#) series.

# AGENDA ITEM 8a)i

## News-Clips ~ March 17<sup>th</sup> to April 6 2014

'Huge demand' for tiny rental units the size of large closet.pdf  
7- storey mid-rise pitched for W.1st.pdf  
April2 Ironworkers bridge closure.pdf  
B.C. auditor general warns province isn't adequately prepared.pdf  
Big changes for recycling in Metro - 27 Mar 2014 - Page #12.pdf  
Bill would ease rules for taking some land out of B.C.pdf  
Black-Bears-back-roaming-North-Shore-neighbourhoods.pdf  
Blue box 'fix' will add to consumer costs.pdf  
By now.pdf  
Capilano on-ramp drives us into danger.pdf  
Climate change expert sees 'brighter, smarter' future for planet.pdf  
Close up the 'North Vancouver divide'.pdf  
Community planning must include input from younger people.pdf  
Council halts Seymour projects.pdf  
Court ruling curtails Metro's power to veto municipalities' decisions.pdf  
dealing-with-differences-of-opinion.pdf  
Delbrook court closure slammed.pdf  
Densification must include livability.pdf  
Developers cram more into smaller spaces.pdf  
Edgemont fire caused by roof repairs.pdf  
Emergency-preparedness-means-upgrading-all-public-buildings.pdf  
Evidence points to lack of North Vancouver spill protection.pdf  
From the ground up.pdf  
Getting down to zero waste.pdf  
Gold-rush mentality afflicts North Vancouver developers.pdf  
Governments could soften blow of high home prices.pdf  
Grab a shovel\_ Vancouver urged to get planting if it wants to become world's greenest city.pdf  
Homes near rail lines face exposure to harmful emissions\_ study.pdf  
Is music noise.pdf  
Kicking butts - Editorial.pdf  
Law Day 2014 Flyer.pdf  
law-discourages-designated-drivers.pdf  
Legislative history to be available online.pdf  
Lynn Valley mall towers headed to public hearing.pdf  
Marpole has its say.pdf  
miller-get-cracking.pdf

Mixed-use projects near transit benefit everyone, developers say.pdf  
Money, ecology trouble political waters.pdf  
Most-don't-intend-to-avert-climate-change-but-adapt.pdf  
move-forward-or-fall-behind.pdf  
Nature not luxury is North Shore's draw.pdf  
new-bc-recycling-program-should-be-trashed-say-critics.pdf  
new-recycling-program-ad.pdf  
North Van busker has noise tickets tossed out.pdf  
North Vancouver council censures mayor.pdf  
North Vancouver Harbourside hearing heated..pdf  
North Vancouver's identity crisis is ludicrous.pdf  
OUT WITH THE OLD - 27 Mar 2014 - Page #1.pdf  
out-with-old-and-big-changes-for-recycling.pdf  
public hearing notice regional context statement.pdf  
public-hearing-notice-95units-dollarton-hwy.pdf  
Recycling program threatens papers.pdf  
Report says B.C. lacks earthquake readiness.pdf  
Saving the news, a sexy script at a time.pdf  
Share the Road signs abound in Seymour.pdf  
Small grants aim to engage neighbours.pdf  
summerland-council-calls-for-corrections.pdf  
Support views on Lynn Valley density with accurate information.pdf  
The withering of secrecy\_ Technology reveals your life on social media.pdf  
too-much-going-in-camera.pdf  
Trash this monster of a recycling plan.pdf  
Vancouver houses to stay out of reach unless you inherit.pdf  
Wait to hit 'send'.pdf  
Where danger lurks on the Shore.pdf  
You have a choice about gridlock at ballot box.pdf  
'No cars' tower targets young professionals.pdf

# AGENDA ITEM # 8a)ii

[Government of NS](#) > [Service NS](#) > [Municipal Services](#) > [Municipal Finance and Statistics](#) > [Municipal Indicators](#) > Performance Indicator Definitions

## Performance Indicator Definitions

### Financial - Revenue

#### 1.1.1. Taxes as a % of Total Revenue

Shows the amount of taxes as a percent of total revenue. A low percentage may indicate a reliance on transfers from other governments. A high percentage indicates that a municipality is more self sufficient. This indicator is calculated by dividing total taxes including special assessments, business taxes, area rates and deed transfer taxes by total revenue.

#### 1.1.2. Transfers from Other Governments

This indicator measures the reliance of a municipality on revenues from other levels of government (i.e. Equalization Grant). It is calculated by dividing transfers from other governments by total revenue. A high ratio probably indicates an over-reliance on transfers as compared to property tax revenue.

#### 1.1.3. Residential Tax Burden (RTB)

This indicator shows the average cost, to each dwelling unit, of municipal government services. When comparing municipalities, it is a more accurate reflection of residential property taxes than tax rates. It is calculated by dividing total residential property tax revenue, excluding area rates, by the number of dwelling units in the municipality. A high RTB may indicate that a municipality is reaching a ceiling on tax rates. A low RTB may indicate that a municipality has a relatively large commercial tax base to share the tax burden. While this indicator provides information on the cost of municipal government per dwelling unit, care must be exercised in comparing municipalities. Municipalities with user charges for services such as garbage collection will tend to have lower RTB's than municipalities that fund all services through tax revenue.

#### 1.1.4. Uniform Assessment per Dwelling Unit

This indicator provides broad information on a municipality's ability to fund municipal services. It is calculated by dividing uniform assessment by dwelling units. A high Uniform Assessment per Dwelling Unit may indicate that the municipality is relatively well off compared to other municipalities.

### Financial - Expenditure

#### 1.2.1. Mandatory Expenditures

Shows the amount of expenditures that council has little or no control over as a percent of total expenditures. It is calculated by dividing the sum of education, assessment, corrections, housing, debt charges, library and social services by total expenditures. It may be argued that debt charges are controlled by councils, however once the decision to incur debt is made, future debt payments become a legal liability and future councils may not reduce or eliminate them. In addition to these items there are other expenditures that limit what could be termed "discretionary expenditures" of current councils. Union contracts, leases and other legal liabilities combined with mandatory expenditures limit the flexibility of councils to deal with



expenditure pressures and revenue declines. Municipalities, because of differing conditions, would define "non-discretionary expenditures" differently. Therefore an indicator for discretionary expenditures is not calculated here. Municipalities are encouraged to complete the exercise of calculating a "discretionary expenditures" indicator for themselves.

### **1.2.2. Expenditures per Dwelling Unit**

Shows the amount that is spent on municipal services per dwelling unit. It is easily comparable across municipalities. It is calculated by dividing total expenditures by the number of dwelling units. The reasons for a high or low expenditure per dwelling unit should be explored before any conclusions are reached. Services may be more expensive to deliver in one municipality as opposed to another. For example, snow clearing costs are higher for a municipality with hilly terrain than a municipality that is relatively flat and has fewer roads.

## **Financial - Operating Position**

### **1.3.1. Liquidity Ratio**

This indicator measures the short-term ability of a municipality to meet its current obligations. It is calculated by dividing short-term operating assets by short-term operating liabilities.

### **1.3.2. Deficits Last 5 years**

Indicates the ability of a municipality to meet operating expenditures with revenues. Continuing deficits may indicate that there are ongoing budgetary problems that should be addressed through the budget process. This indicator is expressed as a number from zero to five for the number of operating deficits incurred in the last five years.

### **1.3.3. Uncollected Taxes**

Indicates the ability of taxpayers to pay taxes on time and may indicate the strength of collection policies in place and the economic strength of a municipality. It is calculated by dividing total uncollected taxes at year end by total tax levy.

### **1.3.4. Reserves as a % of Expenditures**

May indicate the relative health of a municipality and council's willingness to "put money away for a rainy day". Generally, municipalities that have higher levels of reserves than average are considered financially healthier and may be more advanced in their strategic planning. A low indicator here may not necessarily indicate a financially weak municipality. It may simply reflect council policy to keep tax rates at a minimum rather than building reserves. This indicator is calculated by dividing equity of reserves by total expenditures.

## **Financial - Debt**

### **1.4.1. Debt Service Ratio**

Indicates the amount of the current operating expenditures incurred for debt servicing and therefore not available for other services. It is calculated by dividing total long term debt servicing costs including lease payments, temporary financing and other debt charges by total own source revenue. Total own source revenue is total revenue less transfers. Care must be used in evaluating this indicator. A high debt service ratio may indicate a municipality that has taken on too much debt but it may also indicate that the municipality has taken an aggressive approach to debt repayment and is paying down their debt quickly to avoid interest costs. Similarly, a low debt service ratio could indicate a municipality is strong financially and can

finance most capital projects through their operating budget. It may also indicate that a municipality is financially weaker and has deferred capital projects and allowed important infrastructure to deteriorate. Debt Service Ratio is a key indicator currently used by Service Nova Scotia and Municipal Relations prior to recommending Ministerial approval of Temporary Borrowing Resolutions.

#### **1.4.2. Debt Outstanding/ Uniform Assessment**

This indicates the level of total outstanding long term debt as a percentage of a municipality's ability to pay. Typically a growing municipality with new development has a greater need for new infrastructure and will therefore incur higher capital costs. This indicator is calculated by dividing long term commitments by uniform assessment.

### **Financial - Capital**

#### **1.5.1. Capital from Revenue**

Indicates a municipality's investment in capital infrastructure through the operating fund. A high percentage may indicate financial strength. It is calculated by dividing the total amount of current capital expenditures funded through the operating budget by total expenditures.

#### **1.5.2. Total Capital From Operating**

Indicates the total amount of operating budget funds dedicated to past, present or future infrastructure of the municipality through debt charges (past capital), capital from revenue (current capital) and future capital (transfers to capital reserve). It is calculated by dividing the sum of capital expenditures funded through the operating budget, debt charges for capital projects and transfers to capital reserves by total expenditures.

### **Community - Economic**

#### **2.1.1. Increase in Uniform Assessment**

Indicates the increase in a municipality's ability to pay over the last three years and may reflect the change in economic well-being of the municipality. Calculated as current U.A. minus U.A. of three years ago divided by U.A. of three years ago. This indicator should also be viewed in combination with the increase in uniform assessment for the province as a whole because uniform assessment is used in cost sharing and equalization grant formulas. For example, a higher than average increase in U.A. may indicate that expenditures for cost sharing programs will increase.

#### **2.1.2. Commercial/Total Assessment**

Shows the relative strength of the municipality's tax base. A higher percentage indicates higher revenue raising ability because commercial tax rates are higher than residential tax rates and therefore generate more tax revenue. This is calculated by dividing total taxable commercial assessment including business occupancy assessment and machinery and equipment assessment by total taxable assessment.

### **Community - Social**

#### **2.2.1. Average Household Income (AHI)**

Indicates average household income that may be available to pay taxes in a municipality. A comparison across municipalities may indicate the relative economic well-being of residents.

This information is obtained from Statistics Canada.

### **2.2.2. Residential Tax Burden/ Average Household Income (RTB/AHI)**

This indicates the percentage of household income that is used to pay municipal property taxes. It is calculated by dividing residential tax burden by average household income. It expands on the RTB indicator to give a picture of the relative ability of taxpayers in a municipality to pay taxes.

## **Community - Demographic**

### **2.3.1. Change in Population**

Shows the changes in population over the past four years. It is calculated by dividing the difference between population estimates of the current year and four years ago by current year's estimated population. Continual decreases in population may indicate serious structural problems in the economy of the municipality.

### **2.3.2. Age Profile**

These three percentages show the percentage of the population of a municipality that is 0 - 19 years of age; 20 - 65 years of age; and over 65 years of age. The three percentages may indicate where expenditure pressures for a municipality will be. For example a young population may demand more playgrounds and ballfields while an older population may want more resources invested in police services and walking trails.

## **Governance - Governance**

### **3.1. Voter Turnout**

This indicator is the percentage of voter turnout for an election. It is intended to indicate the level of citizen interest in the electoral process at the municipal level. It is calculated by dividing the actual voter turnout by the total eligible number of voters. A high voter turnout could mean either a high level of citizen interest in the affairs of the municipality or a high level of dissatisfaction. A low voter turnout could mean either a high level of satisfaction with municipal government or voter apathy. It may also indicate the election of a candidate by acclamation.

### **3.2. Municipal Elections Candidates**

This indicates the willingness of residents to serve in an elected capacity. Municipal Councils need individuals with leadership skills to provide overall direction and to serve the interests of the community. Contested elections provide opportunities for important issues to be debated in public. This indicator is calculated by dividing the total number of election candidates by the total number of council seats.

### **3.3. Training Costs per Employee**

This indicator calculates the investment of the municipality in its most important asset, human capital. A high indicator shows the municipality recognizes that training and development are important in maintaining a capable and motivated workforce. This indicator is calculated by dividing the total training and development expenditures by total full time equivalent staff.

### **3.4. Succession Planning**

Municipalities today recognize demographic trends and that staff turnover will become a greater

issue. When staff leave the organization a certain amount of corporate history is lost and with it some efficiency and effectiveness. Succession planning can minimize the losses the organization experiences when staff leave. This indicator is calculated by dividing the number of full time positions with a succession plan by the number of full time equivalent positions.

### **3.5. Strategic Planning**

The environment that municipalities face today is ever changing. This indicator identifies which municipalities have recognized this fact and have developed plans that recognize their strengths and weaknesses while taking into consideration their opportunities and threats. This is a yes or no indicator. Either the municipality maintains a strategic plan or it doesn't.

## **Performance - General Government Services**

### **4.1.1. Documentation**

This measure will indicate yes - all documentation was received by the Department by the deadline for submission or no - not all documentation was received by the Department, by the stipulated date. Timely reporting and submission of reports to Councils and the provincial government is a sign of an efficient municipal administration. It provides stakeholders, including taxpayers, with important information on the well-being and plans of the municipality. Reports and submissions required by Service Nova Scotia and Municipal Relations are: 1. Estimates Forms 2. Capital Budgets 3. General Return 4. Financial Statements including Auditor's Report 5. Management Letter

### **4.1.2. Legislative/Capita**

This indicator shows the amount that a municipality spent for legislative services per capita. This can be compared to a municipality's previous years' spending on this service or can be compared to other municipalities of similar size and structure.

### **4.1.3. Administration/Capita**

This indicator shows the amount that a municipality spent for administrative services per capita and measures the efficiency of administration. It is calculated by dividing general administrative services less tax rebates and expenses related to properties acquired at tax sales by population. It can be used to compare with previous years and with similar municipalities. A high indicator may indicate high expenditures in this area or higher service levels. A low indicator may indicate efficient operations or an insufficient number of qualified employees.

## **Performance - Police**

### **4.2.1. Police Services/\$1,000 Assessment**

This indicates the efficiency of police services. It is calculated by dividing total costs of police services by thousands of dollars of assessment. Assessment less business occupancy is used as a measure because part of police services mandate is to protect property. Police services in Nova Scotia are delivered by a municipality's own force, the RCMP or a combination of both. Differences between municipalities should be researched before conclusions are made, service levels may be different.

### **4.2.2. Police Services/Capita**

This indicates the efficiency of police services. It is calculated by dividing total costs of police services by population. Population is used as a measure because part of police services

mandate is protection to people. Police services in Nova Scotia are delivered by a municipality's own force, the RCMP or a combination of both. Differences between municipalities should be researched before conclusions are made, service levels may be different.

## Performance - Fire

### 4.3.1. Fire Services/\$1,000 Assessment

This indicates the efficiency of fire services. It is calculated by dividing total costs of fire services by thousands of dollars of assessment. Assessment less business occupancy is used as a measure because part of fire services responsibility is to protect property. Fire services in Nova Scotia are delivered by a municipality's own force, volunteer fire departments or a combination of both. Differences between municipalities should be researched before conclusions are made, service levels may be different.

### 4.3.2. Fire Services/Capita

This indicates the efficiency of fire services. It is calculated by dividing total costs of fire services by population. Population is used as a measure because part of fire services responsibility is protection of people. Fire services in Nova Scotia are delivered by a municipality's own force, volunteer fire department or a combination of both. Differences between municipalities should be researched before conclusions are made, service levels may be different.

## Performance - Transportation

### 4.4.1. Roads and Streets

This indicator measures the efficiency of road and street maintenance services per kilometre of roads owned by the municipality. Costs included in this measure are operating costs for roads and streets, sidewalks, snow and ice removal, bridges, street lighting, traffic services and parking. A higher or lower indicator for this indicator may have many different explanations. For example, municipalities that have hilly streets or more annual snowfall may have a higher "Roads and Streets" indicator.

## Performance - Wastewater

### 4.5.1. Storm and Wastewater/Km

This indicator measures the efficiency of storm sewer and sanitary sewer systems. It is calculated by dividing storm and sanitary sewer collection and treatment expenditures by total kilometres of sewer line. A high result may indicate old, deteriorating sewer lines. A low indicator may be the result of new or updated sewer lines.

### 4.5.2. Sewer Main Backups/Km

Municipal wastewater management practices prevent environmental and human health hazards. This indicator measures the efficiency of the sewer system. It is calculated by dividing the number of sewer main backups in a year by the kilometres of sewer line. A sewer main backup is defined as an obstruction or hydraulic overload in a municipal system (separated sanitary and storm sewer systems as well as a combined sanitary/storm system) which results in a backup of wastewater which may enter a house. This should be distinguished from an obstruction in a lateral line from a house to the sewer main. Included are municipal system flushing activities which cause a backup in residential basements. Sewer lines on private

property are not measured.

## Performance - Solid Waste Resource Management

### 4.6.1. Solid Waste Collection/Ton

This indicator measures the efficiency of municipal solid waste collection services. A municipality with large collection areas such as counties may have a higher solid waste collection cost per ton indicator than a town that has a shorter collection route.

### 4.6.2. Solid Waste Disposal/Ton

This indicator measures the efficiency of municipal solid waste disposal services. It is calculated by dividing the costs of disposal including landfills and incinerators less revenues received from other municipalities by total tons collected. A high indicator may be the result of the higher costs of running a second generation landfill. A low indicator may result from a higher than average recyclables diversion rate.

### 4.6.3. Recycling Costs/Ton

This indicator measures the efficiency of municipal solid waste recycling services. The definition for operating costs for recycling applies to material collected from all property classes which are diverted for recycling or composting.

## Performance - Water

### 4.7.1. Water Treatment & Distribution

This indicator measures the efficiency of municipal water treatment and distribution services. It is calculated by dividing operating costs for water including: source of supply, pumping, water treatment, transmission and distribution, administration, depreciation and taxes by millions of litres of water treated.

### 4.7.2. Water Tests

This indicator measures the percentage of water test results that showed adverse water quality or exceeded maximum concentrations as prescribed. This effectiveness measure indicates whether water is safe and meets local needs. It is calculated by dividing the number of adverse water quality tests by the total number of water quality tests.

### 4.7.3. Water Main Breaks/Km

This indicator measures the effectiveness of the water main system in the municipality. It is calculated by dividing the number of breaks in water mains in a year by the total number of kilometres of water main pipe.

### Appendix C-17: Anatomy of Two Conversations

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**ANATOMY OF A CONVERSATION GONE WRONG**

**Panel 1:** Man: "I'M FOR 'W' ALL THE WAY" / Woman: "ARE YOU SERIOUS?! THAT SEEMS STUPID."

**Panel 2:** Man: "IT'S NOT STUPID TO SUPPORT THE PRESIDENT AND OUR TROOPS!" / Woman: "NICE SOUND BITE. NO SUBSTANCE."

**Panel 3:** Man: "MY FAMILY'S SAFETY IS SUBSTANCE TO ME! PERIOD." / Woman: "EXACTLY! NOW OUR KIDS ARE DYING IN IRAQ, AND THE U.S. IS LESS SAFE."

**Panel 4:** Man: "WHY BOTHER EVEN TALKING TO HIM?" / Woman: "PEOPLE LIKE HIM DON'T UNDERSTAND ANYTHING."

**ANATOMY OF A CONVERSATION GONE RIGHT**

**Panel 1:** Man: "I'M FOR 'W' ALL THE WAY!" / Woman: "REALLY?! WHY ARE YOU SO INTO BUSH?"

**Panel 2:** Man: "9/11 SCARED ME TO DEATH, AND I'M STILL AFRAID." / Woman: "I DIDN'T KNOW YOU FEEL THAT WAY. I DO, TOO."

**Panel 3:** Man: "WAIT, I THOUGHT YOU ... UH, WHAT WORRIES YOU?" / Woman: "TERRORISM, JOBS, SCHOOLS, THE ENVIRONMENT, IRAQ."

**Panel 4:** Man: "'W' HAS THE STRENGTH WE NEED. BUT U.S. ISOLATION WORRIES ME." / Woman: "ME TOO. WHAT PRESIDENTIAL STRENGTHS COULD HELP US RECONNECT WITH OTHER COUNTRIES?"

**PRINCIPLE:** Ask questions out of genuine interest.

**PRINCIPLE:** Speak from personal experience before exploring positions.

**PRINCIPLE:** Examine your assumptions by checking with others.

**PRINCIPLE:** Explore your doubts as well as your certainties.

Written by Jim Taylor

<http://www.pentictonherald.ca/local-columnists/law-discourages-designated-drivers.html>

Saturday, 08 February 2014 02:00 -

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Consider this hypothetical scenario: a bride and groom choose an idyllic location in a rural area for their wedding reception. Consider this hypothetical scenario: a bride and groom choose an idyllic location in a rural area for their wedding reception.

They recognize some guests might imbibe a little too liberally at the free bar. They could call taxis to get those guests home safely. But the area's only taxi company has just two vehicles. And the guests would still have to come back the next day to pick up the cars they had left behind.

So the couple has a brilliant idea. They approach, say, the local Rotary club for volunteers to drive the wedding guests home in their own cars. The drivers receive no compensation -- thus avoiding the need for professional insurance coverage -- but the bride and groom offer to make a substantial contribution to a local charity.

It seems like a win/win situation. The inebriated guests get home safely. The owners' insurance covers the use of their cars by another adult driver. Rotary members live up to their motto, "Service above self." And the charity gets a much-needed donation.

Would I volunteer as one of those drivers? Not a chance.

That's because Justice Anthony Saunders of the B.C. Supreme Court has ruled that designated drivers are not protected by third-party insurance.

Here's the background. In 2006, Marnetta Lynn Felix was driving her boyfriend Kevin Hearne home after a soccer tournament. Kevin had celebrated well, but not too wisely. So Marnetta drove his car.

Along the route to their home in Chilliwack, Kevin reached across the car and grabbed the steering wheel. Marnetta lost control. The car left the highway and rolled. The accident killed him, and left her severely injured.

Five years later, she was awarded \$863,000 in damages and compensation. She expected it would come from his auto insurance. ICBC disagreed. The case went to court. And on Monday, Saunders sided with ICBC.

The wording of the law, Saunders ruled, only covers liability for passengers who do something that causes injury to a person outside the vehicle - like popping open a car door as a cyclist passes by. It does not cover injuries to persons inside the car.

Saunders admitted his ruling "could be a powerful disincentive to anyone acting as a designated driver." To deprive such drivers of a means of compensation when injured through the negligence of an inebriated passenger is to shift the risk of loss to them entirely.

Let's put that into less legal terminology. If I were driving some of those wedding guests home, and a grateful rider's effusive kiss caused me to swerve into oncoming traffic, perhaps crippling me for life, that's just my tough luck.

The possibility would make me think twice about driving anyone anywhere. Unless I could confine my guest to a far corner of the back seat, in handcuffs.

Operation Red Nose has supplied designated driver services for over 30 years. Nationally, Red Nose has used more than one million volunteers. In B.C., it serves 13 communities; 4,347 volunteers have provided 7,768 safe rides home.

"This is very disappointing," said Chris Wilson, on behalf of the B.C. branch of Operation Red Nose.

"It's a bit of a wake-up call for people who are doing what they think is a good deed," agreed Andrew Murie, CEO of Mothers Against Drunk Driving in Canada.

Canada does, in fact, have "Good Samaritan" laws that are supposed to protect people doing a good deed. Generally speaking, it's a legal principle that protects a rescuer who has voluntarily



## Law discourages designated drivers - Penticton Herald

Written by Jim Taylor

Saturday, 08 February 2014 02:00 -

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helped a victim in distress from being sued for wrongdoing.

Laws differ from province to province. In B.C., the Good Samaritan Act (1996) states, "A person who renders emergency medical services is not liable for damages for injury to or death unless that person is grossly negligent."

In other words, if Kevin Hearne had lived, he could not have sued Marletta Felix, because she was performing a Good Samaritan service.

But the law as it stands prevents Good Samaritans from receiving any compensation if they're injured while helping the victim.

To his credit, Saunders recognized this anomaly. The law, he noted, "would potentially leave an injured designated driver without any means of obtaining compensation... The consequence of this interpretation is one that some may find disturbing. This is a matter for consideration by the government."

The province responded a few days later. Transportation Minister Todd Stone said he and Attorney General Suzanne Anton would review Saunders' decision. They didn't say they would change the law. But they should.

Because if Saunders is correct, the law as it stands confirms the opinion of Mr. Bumble, in Charles Dickens' *Oliver Twist*: "The law is an ass."

Jim Taylor is an Okanagan Centre author and freelance journalist. Email: [rewrite@shaw.ca](mailto:rewrite@shaw.ca).

**AGENDA ITEM # 8b)ii**

**IN THE SUPREME COURT OF BRITISH COLUMBIA**

Citation: *Greater Vancouver (Regional District) v. Langley (Township)*,  
2014 BCSC 413

Date: 20140312  
Docket: S136194  
Registry: Vancouver

Re: In the Matter of an Application for an Order Pursuant to s.262 of the *Local Government Act*, RSBC 1996, c.323 and the *Judicial Review Procedure Act*

Between:

**Greater Vancouver Regional District**

Petitioner

And

**The Corporation of the Township of Langley and Alan Hendricks**

Respondents

And

**Trinity Western University**

Intervener

Before: The Honourable Madam Justice Sharma

**Reasons for Judgment**

Counsel for the Petitioner:

G.H. Cockrill and  
S.S. Manhas

Counsel for the Respondent, Alan Hendricks:

N.J. Baker

Counsel for the Respondent, The Corporation of the Township of Langley:

P.A. Hildebrand  
and M.M. Giltrow

Counsel for the Intervener, Trinity Western University:

K. Boonstra

Place and Date of Hearing:

Vancouver, B.C.  
January 13-15, 2014

Place and Date of Judgment:

Vancouver, B.C.  
March 12, 2014

## I. INTRODUCTION

[1] This petition was heard at the same time as *Greater Vancouver Regional District v. The Corporation of the Township of Langley and Peter Wall*, No. S-135127 (the “4947 Bylaw Petition”). Both petitions are brought pursuant to the *Judicial Review Procedure Act*, R.S.B.C. 1996, c. 241 and the *Local Government Act*, R.S.B.C. 1996, c. 323 (“*Act*”) and challenge bylaws enacted by the Corporation of the Township of Langley (“Langley”). The planning documents and statutory provisions at issue in these petitions are the same but the facts and bylaws are different. The bylaw at issue in this petition is the Langley Official Community Plan Bylaw 1979 No. 1842 Amendment (Rural Plan) Bylaw 1993 No. 3520 Amendment (Hendricks) Bylaw 2011 No. 4875 (“Bylaw 4875”).

[2] This Court can set aside all or part of a bylaw for illegality (*Act*, s. 262). The GVRD alleges Bylaw 4875 is illegal because s. 866(4) of the *Act* requires that any amendment to Langley’s regional context statement be submitted to the GVRD for “acceptance” and that was not done here. In the alternative, the GVRD says that contrary to s. 866(3) of the *Act*, Bylaw 4875 creates inconsistency between Langley’s official community plan and its regional context statement.

[3] This petition focuses on the designation of an area of land owned by, among others, Mr. Hendricks, known as the “Hendricks Site. The Hendricks Site is located within the Agricultural Land Reserve (the “Reserve”).

[4] Today, I dismissed the 4947 Bylaw Petition. The relevant legislation and planning documents in the two petitions are identical; the issues and legal differ only with regard to the differences in the bylaws. Because of these similarities, the reasoning from my judgment in 4947 Bylaw Petition applies here and I dismiss this Petition.

[5] At paragraphs 7 to 20 of the Bylaw 4947 Petition judgment, I review the statutory regime for land use planning in British Columbia, and at paragraphs 21 to 31, I review the particular planning documents at issue in both petitions. Those reviews are directly relevant to this Petition and I adopt those paragraphs.

## II. FACTS

### **Bylaw 4875**

[6] In July 2013 Langley adopted Bylaw 4875 that replaced the designation “Comprehensive Rural Estates” with “Rural Residential”. The adoption of Bylaw 4875 also designated the Hendricks Site as Rural Residential. Prior to this it was designated “Small Farms/Country Estates” and not Comprehensive Rural Estates. It is important to understand how these three designations relate.

[7] Prior to the adoption of Bylaw 4875, Comprehensive Rural Estates was a designation that could not apply to any land within the Reserve but could apply to land adjacent to the Reserve (Rural Plan ss. 5.8.1). When land adjacent to the Reserve was designated Comprehensive Rural Estates there was a requirement for it to be “developed in a manner compatible with the [Reserve]” by imposing buffer requirements, larger lot sizes, greater setbacks from Reserve land, or the “preservation of natural features, open space and environmental areas adjacent to [Reserve] boundaries” (Rural Plan s. 5.8.1). The Comprehensive Rural Estates designation also imposed a

maximum density of 0.65 units per acre, a minimum lot size of 0.20 hectares, and required that all developments would be provided full urban services.

[8] The replacement of Comprehensive Rural Estates with Rural Residential, pursuant to Bylaw 4875, altered some of these characteristics. Primarily, it allowed land within the Reserve to be designated Rural Residential, removed any maximum density or minimum lot size and allowed for the possibility of site specific exceptions to the requirement for full urban services. It did maintain the requirement for development adjacent to Reserve lands to be developed in a manner compatible with the Reserve.

[9] The provisions in both the Comprehensive Rural Estates and Rural Residential designation regarding developments adjacent to Reserve lands reflect Langley's urban/rural interface policies. Section 5.1 of the Rural Plan states that "an important issue in Langley is treatment of the urban/rural interface...The plan provides a number of approaches that can be used along this interface to reduce conflicts". In particular, the Rural Residential designation reflects the approaches of "increasing the lot size with distance from the urban boundary" and the "provision of larger and deeper lots on the urban side of the interface", two of the many measures designed to serve as buffer treatments along the urban/rural interface (s. 5.11.1(e) and (f)).

[10] In contrast, the designation Small Farms/Country Estates provides for agricultural uses and required a minimum lot size of 1.7 hectares "subject to the approval of the Agricultural Land Commission", (Rural Plan, s. 5.6.2). While the Small Farms/Country Estate designation does not appear to apply to the urban/rural interface, the Rural Plan acknowledges that the Small Farms/Country Estates designation "does provide for some additional smaller parcels" and that development of these parcels "will mainly be in the form of infill in existing areas of smaller lots" (s. 5.1). There is a requirement that "the design of new subdivisions" within the Small Farms/Country Estates designation give "attention...to ensuring a usable land area on each lot and preventing the creation of long narrow lots" (Rural Plan, s. 5.6.3).

[11] The Hendricks Site, 4.46 hectares of land, approximately 690 meters long and 65 meters wide, located at 216 Street and 44 Avenue in Langley, is located within the Reserve and the Green Zone. Because it is located within the Reserve, the Hendricks Site could not have been designated Comprehensive Rural Development and is subject, in addition to the land use management bylaws of Langley, to the authority of the Commission.

[12] Mr. Hendricks bought his property in 1989 and built a family home on it, but shortly thereafter the lands directly across the street (to the north) were redeveloped. As noted by his counsel, that development altered the character of the land for Mr. Hendricks because the view from his home was of a residential development instead of open land. In addition, apparently a portion of his land was being subjected to "dumping". Consequently, he has applied numerous times over the last 10 years to have the Hendricks Site removed from the Reserve, but the Commission has refused all of the applications and it remains within the Reserve.

[13] However in 2010, the Commission determined the subdivision into 21 residential lots, all fronting on to 44 Avenue and being approximately 65 meters deep, would "not impact agriculture" and could be "consistent with the objective of the *Agricultural Land Commission Act* to preserve agricultural land". In particular the commission found that:

### **Assessment of Agricultural Suitability**

... The Commission believes there are external factors that render the land of very limited suitability for agricultural use. They are encroaching non-farm development and the extremely shallow depth of the properties.

### **Assessment of Impact of Agriculture**

The Commission also assessed the impact of the proposal against the long term goal of preserving agricultural land. At present, the [Hendricks Site] and the adjoining farmland to the south are subject to dumping from the residential area through the treed areas along the length of the shallow subject lands. The proposal would eliminate the potential for dumping on the farmlands to the south, thus the Commission believes the proposal could have a positive impact on existing or potential agricultural use of adjoining lands.

[14] The Commission concluded that its approval “in principle [of] the subdivision of the [Hendricks site is] on the understanding that the Township of Langley is in favour of the type of edge planning proposed for this application”.

[15] The reference to edge planning is an acknowledgment that the Hendricks Site is at the edge of the Reserve and is part of the urban/rural interface between the urban area to the north, known as Murrayville, and more rural areas of Langley. As noted above, the use of the Hendricks Site to accomplish edge planning indicates that it should be designated Rural Residential and not Small Farms/Country Estates, which is what Bylaw 4875 did.

### **III. ISSUES:**

[16] Because they are directly applicable, I adopt paragraph 38 to 48 of my judgment in the 4947 Bylaw Petition and apply it to this Petition. Those paragraphs address standard of review and the interpretation of the word “consistent” as used in s. 866(3) of the *Act*. The standard of review in both petitions is “reasonableness”. With regard to the consistency, the approach is to ask if a reasonable council, informed by all applicable factors, could determine the regional context statement is consistent with the rest of the official community plan then s. 866(3) has not been violated.

[17] The GVRD alleges that Bylaw 4875 is invalid because it amounts to an unauthorized amendment of the regional context statement contrary to s. 866(4). In the alternative, the GVRD argues it creates an inconsistency between the regional context statement and the rest of Langley’s official community plan contrary to s. 866(3)

#### **Unauthorized Amendment**

[18] The arguments made by the GVRD in support of its position on this issue are identical to those it made in the Bylaw 4947 Petition. For the same reasons I rejected the argument in the 4947 Bylaw Petition (at paragraphs 65 to 74), I also reject the GVRD’s arguments here. I find that Bylaw 4947 did not amend the regional context statement and therefore it was not required to be submitted to the GVRD for acceptance. Section 866(4) was not violated.

#### **Inconsistency**

[19] Bylaw 4875 changed the designation of the Hendricks Site from “Small Farms/Country Estates”, which imposed a minimum lot size of 1.7 hectares, to Rural Residential, which has no minimum lot size. The GVRD says

this has created an inconsistency between s. 5.8 of the Rural Plan (which is part of the official community plan) and the regional context statement that includes “setting minimum lot sizes to preserve a land base for agricultural production” as an example of how it protects the Green Zone.

[20] As Langley points out the Commission determined the development “could have a positive impact on existing or potential agricultural use of adjoining lands”. The Commission has a statutory mandate to preserve and encourage farming on agricultural land, and to encourage local governments to accommodate farm use of agricultural land. The Commission’s conclusion was due, in part, to the likelihood that the development of the Hendricks Site would prevent the dumping on rural land that was taking place. Langley relies on the Commission’s conclusion in support of its decision that Bylaw 4875 is consistent with the preservation of a land base for agricultural production, and thus cannot be seen as contrary to its goal of protecting the Green Zone.

[21] I agree with Langley. I cannot accept that a development could simultaneously have a potential positive impact on agricultural land and detract from agricultural viability. Consequently, Bylaw 4875 does not erode the protection of the Green Zone.

[22] Furthermore, the minimum lot size specified in the Small Farms/Country Estate designation is qualified “subject to the approval of the Agricultural Land Commission.” This qualification recognizes the expertise of the Commission. The Commission noted that allowing smaller lots sizes in the context of this particular development has the possibility to benefit agriculture. In these circumstances it was entirely reasonable for Langley to place great reliance on the Commission’s conclusion.

[23] In all other respects, the arguments raised by the GVRD were identical to those raised in the 4947 Bylaw Petition. For the reasons discussed at paras 49 to 65 of my judgment in that case, I reject the GVRD’s argument. Bylaw 4875 does not create an inconsistency between the regional context statement and the rest of the OCP so it is not illegal and s.866 (3) of the *Act* has not been violated.

### **III. CONCLUSION:**

Bylaw 4875 is valid. It does not create an inconsistency between the regional context statement and the official community plan and is not an amendment to the regional context statement. Section 866(3) and (4) has not been violated.

“Sharma J.”



## NEWS RELEASE

For Immediate Release

March 25, 2014

### British Columbians at Risk if Catastrophic Earthquake Occurs

VICTORIA – Auditor General Russ Jones’ latest report, *Catastrophic Earthquake Preparedness*, states that British Columbians are at significant risk if a catastrophic earthquake were to occur today.

The audit found that Emergency Management BC (EMBC), the organization tasked with preparing government’s response to such an event, is not adequately prepared for a catastrophic earthquake. The audit also found that neither the Province nor EMBC has made preparing for one a priority.

The Office reached similar conclusions in its 1997 report on emergency management. Over the last 17 years, EMBC has not made significant progress. The report outlines numerous areas for improvement in EMBC’s preparedness from risk analysis, plans and procedures and integration of stakeholders, to training and public education.

“Successive governments have decided to allocate scarce public resources to meet more immediate pressing demands, rather than to adequately prepare the province for a catastrophic earthquake that may or may not occur,” explains Jones. “EMBC’s current operating budget for emergency activities is approximately the same as it was in 2006. In addition, EMBC staff is busy with daily emergencies such as floods and fires so catastrophic earthquake planning is done as a side-of-desk activity.”

The report also highlights the need for EMBC to report publically on its level of preparedness so British Columbians can understand the extent of their vulnerability and make informed decisions as to their own level of readiness.

“British Columbians need to take responsibility and prepare for a catastrophic earthquake to protect themselves and their families,” says Jones. Jones identified that preparing for such an event is a shared responsibility, and urges everyone to look at their own situation and ask themselves whether they are ready.

EMBC appears to have taken the report quite seriously and is working to develop and implement strategies to address the deficiencies noted in this report.

The full report is available on the Office of the Auditor General website at [Catastrophic Earthquake Preparedness \(www.bcauditor.com/pubs\)](http://www.bcauditor.com/pubs). Auditor General Russ Jones will answer questions pertaining to the report via a news conference and in-person should a visual be required after the news conference.



OFFICE OF THE  
**Auditor General**  
of British Columbia

*News Conference Date: Tuesday, March 25, 2014*

*Time: 1 p.m. (Pacific time)*

*Dial-in Information:*

*From Vancouver: 604 681-0260*

*From elsewhere in Canada and the USA: 1 877 353-9184*

*Participant Pass Code: 44848#*

*During question and answer period, to ask a question: Press 01*

*During question and answer period, to exit the question queue: Press #*

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Catastrophic Earthquake Preparedness - [www.bcauditor.com/pubs](http://www.bcauditor.com/pubs)

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