

## **Re-sales Analyses - Lansink and MPAC**

### **Introduction**

Lansink Appraisal and Consulting released case studies on the impact of proximity to industrial wind turbines (IWTs) on sale prices for properties located near the Melancthon and Clear Creek wind turbine facilities in southwestern Ontario.

The conclusions presented in the Lansink study are based on the analysis of 12 properties that sold and resold between June 2005 and November 2012. In two instances in the Clear Creek study, initial sales date back to March 2004 and September 1995. On other properties in the Clear Creek area, the Lansink study uses MPAC's January 1, 2008 Current Value Assessment (CVA) as a proxy sale price in which to conduct the analysis. All five properties used in the Melancthon study area involved Canadian Hydro Developers (CHD) as the purchaser on the initial sale and the vendor on the re-sale.

The conclusions of the case studies indicate a 30-35% loss in price due to the proximity of the properties to an IWT, based on the sale and re-sale of the 12 properties.

In MPAC's review of the Lansink study, the appropriateness of the price change index is considered and another re-sale analysis is conducted using an alternative price index methodology in over 2,000 re-sales across Ontario.

### **Basic Methodology in Lansink Study**

Each sale and re-sale (or in the absence of an initial sale the 2008 CVA) is presented as a case study. The initial sale price and date are shown along with the Multiple Listing Service (MLS) average sale price for the month of sale. The re-sale price and date are shown along with the MLS average sale price for the month of the re-sale for the property. The MLS average sale prices are based on Canadian Real Estate Association (CREA) data as presented by the local real estate board.

The case study uses the percentage difference between MLS average sale prices to estimate price change over time in the marketplace. The initial sale is trended to the sale date of the re-sale. The difference between the trended sale price and the actual re-sale price is calculated as a dollar amount and a percentage. Any difference in price between the trended sale price and the actual sale price is attributed to the presence of the IWT and presented as a diminution of price.

Table 1 below provides a sample calculation that determines the loss in price in the Lansink case studies.

**Table 1: Lansink Case Study Methodology Sample Calculation**

	Sale Price	Sale Date	Average MLS Price @ Time of Sale	Percentage Change – MLS Average	Trended Sale Price	Diminution of Price
Initial Sale	\$100,000	October 2010	\$100,000	25.00%	\$125,000	(\$10,000)
Re-Sale	\$115,000	October 2011	\$125,000			-8.0%

In this example, using only 2 data points, the property initially sold for \$100,000 in October 2010. It sold again in October 2011 for \$115,000. The average MLS sale prices were \$100,000 and \$125,000 respectively at time of sale. This results in a 25% increase over a 12 month period. The initial sale price is trended by 25% (multiplier of 1.25) to produce a trended sale price of \$125,000. The Lansink study argues that without the nearby IWT, the property should have sold for its trended sale price and then calculates the loss in price as the difference between the trended sale price and its actual sale price. In the above example, the loss in price is (\$10,000) or -8.0%.

**Methodology Issues**

The first issue with the basic methodology is the use of the average MLS sale price as a proxy for market change. CREA statistics are board-wide and may not accurately represent the average sale price in the local area (i.e., neighbourhood). Some areas of the board will be above average, some will be below average and others will be average. The use of average sale prices that are more local may produce different results. Also, there is no comparison of the housing stock that sold during each time period. If the type of houses that sold each month differs, that could affect the average sale price and produce a misleading time adjustment.

The second issue is the use of only two data points to develop a trend. Two points always produce a straight line and don't give any information on what happened in between. Alternative time adjustment methods are available and used by appraisers using all available sales data and would produce a more reliable market trend<sup>1</sup>.

Two sales used in the Clear Creek study area uses re-sales 8 and 17 years apart. One assumption with re-sale analysis is that there are no physical changes between sales. Given the length of time between, it is difficult to imagine this assumption holds true. The remaining sales in the Clear Creek study area only have one sale and use the 2008 CVA as a proxy sale price as of January 2008. MPAC is not aware of any professional literature which states that assessments or appraised values maybe used in a re-sale analysis.

To demonstrate that Canadian Hydro Developers paid market value when they initially purchased the five properties near the Melancthon wind farm, the Lansink study calculated the median sale price per square foot for two groups of properties. Group A was 20 properties northwest of Shelburne and to the northeast and southeast of the IWT's. Group B was four of the five sales purchased by CHD. Because the two groups had similar sale prices per square foot, the Lansink study concluded that the CHD purchase prices represent fair open market prices. One of MPAC's major concerns with this approach is that Group B is made up of only 4 sales. This is a very small sample.

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<sup>1</sup> Mike Wolff, Adjusting Market Value over Time, The Appraisal Journal, Fall 2010

Another issue with one of the sales in Group B is that it has an indicated living area in MPAC’s database of 900 square feet as opposed to the 1,800 square feet recorded by the Lansink study. The property in question appears to be a raised bungalow with a basement walkout. According to the Appraisal Institute of Canada, finished basements are generally not included in total gross living area. Total gross living area being defined as finished above grade residential space<sup>2</sup>.

Other articles state that above grade and below grade finished areas should be distinguished between one another. Below grade is generally defined as space on a level with earth adjacent to any exterior wall<sup>3</sup>. MPAC has recorded 563 square feet of finished area on this basement walkout level.

Inclusion of unfinished basement area as total living area by the Lansink study is incorrect. The question is should finished area below grade be included as total living area used to determine the sale price per square foot. This difference is important and significant because of the small size and its impact on the median sale price per square foot for these four properties. If 900 square feet is used, the median and average sale prices per square foot increase to \$248.11 and \$257.94 respectively. If the finished area below grade is included and 1,463 square feet of living area is used, the median and average are \$219.87 and \$225.34.

Also, the sample used in Group A is a subset of the available sales in the area. These sales come from four of MPAC’s homogeneous neighbourhoods. Homogenous Neighbourhoods are defined to capture the influence of a particular location within a given market area.

When all 113 sales in these four neighbourhoods are looked at, the following values per square foot are indicated:

	Number of Sales	Median Sale Price/ SF (\$)	Mean Sale Price / SF (\$)
Unused Sales	91	176.64	187.90
Group A Sales	18	212.37	206.16
Group B Sales	4	248.11	257.94
<b>Overall</b>	<b>113</b>	<b>194.88</b>	<b>194.28</b>

Two of the sales included in the Lansink study were coded as builder sales by MPAC and were not included in MPAC’s sales database. For this reason, there are 18 sales from Group A included in the above table.

Upon further review, MPAC noted that three of the four CHD purchases (Group B) occurred in one homogeneous neighbourhood (A67). Ten of the 20 Group A sales occurred in this neighbourhood. For this reason MPAC looked at all the sales in this homogeneous neighbourhood separately using 900 square feet for the sale in question.

<sup>2</sup> The Appraisal of Real Estate, 3<sup>rd</sup> Canadian Edition, (Appraisal Institute of Canada), 2010, p.11.7

<sup>3</sup> Dianna LeBreton, How to measure and calculate residential square footage, Canadian Property Valuation Volume 53, Book 1, (Appraisal Institute of Canada), 2009

	Number of Sales	Median Sale Price/ SF (\$)	Mean Sale Price / SF (\$)
Unused Sales	11	200.00	200.38
Group A Sales	10	210.25	213.24
Group B Sales	3	231.25	255.60
<b>Overall</b>	<b>24</b>	<b>210.25</b>	<b>212.64</b>

These figures indicate there may be a difference between the sale prices paid by CHD and the typical sale prices in this area, albeit on a very small sample. If 1,463 square feet are used for the sale in question, the median and average sale price per square foot drops to \$208.48 and \$212.13, respectively. This highlights the volatility of using small sales samples.

One final issue with the sales used in the Lansink study was that the second sale price was consistently lower than the first sale price despite the fact the time frame being analyzed was one of inflation. The absence of variability in the study make them suspect.

### **MPAC's Re-Sale Analysis**

MPAC identified over 2,000 re-sales of properties within the database used to conduct its Assessment to Sale Ratio (ASR) analysis, as part of its own study on the impact of IWT's for the 2012 CVAs.

A re-sale analysis using similar logic to the Lansink study was conducted using the Time Adjustment Factors (TAFs) developed as part of MPAC's analysis for each residential market area to prepare and quality check the 2012 CVAs prior to being placed on the assessment roll. Residential time trends can be determined using one of five accepted methods. Paired sales methods and re-sale analysis methods are generally limited to fee appraisal and often too tedious for mass appraisal work. Mass appraisal time trend methods include tracking the sale price per unit over time, sales to assessment ratios over time or including time variables as a variable in the valuation model (i.e., Multiple Regression Analysis (MRA) model). Including time variables in the valuation model is MPAC's preferred approach to developing time trends and TAFs.

The advantages of including time variables in the MRA model is that the effect of time is isolated because the model controls the other value influences as part of the equation and all available sales within each market area can be used. Time trends may be straight-line (constant rate of change and direction over time) or non-linear (different rates of change and direction over time). Non-linear trends require additional terms to be added to the analysis to adequately capture market change.

For valuation purposes, MPAC bases the midpoint of the TAF's on the legislated valuation date of January 1, 2012.

The following is a sample calculation of a time trend:

Coefficient for (Months x Total Living Area) = \$0.833

Average Living Area = 1,500 square feet

Average Sale Price = \$200,000

Average Increase per month =  $0.833 \times 1500 = 1249.5$

Time Trend (r) =  $1249.5/200,000 = 0.62475\%$  per month

Once the monthly rate is established, a table of Time Adjustment Factors can be calculated for each month using the formula  $(r \times \text{Months}) + 1$ .

Table 2 below, provides a sample table for the sales period, from July 2010 to December 2011, a period of 18 months.

To centre the time adjustment factor on a desired month, simply divide the time trend for the desired month by each monthly time trend. To centre the time adjustment on December 2011, divide 1.1186 by each monthly trend.

The ratio of the monthly TAFs will provide the percentage change in the market between the sale dates.

**Table 2: Sample Time Adjustment Factor Table**

Sale Date	Month Number	Time Trend	Time Adjustment Factor
July 2010	1	1.0062	1.1117
August 2010	2	1.0125	1.1048
September 2010	3	1.0189	1.0979
October 2010	4	1.0252	1.0911
November 2010	5	1.0316	1.0843
December 2010	6	1.0381	1.0776
January 2011	7	1.0446	1.0709
February 2011	8	1.0511	1.0643
March 2011	9	1.0577	1.0577
April 2011	10	1.0643	1.0511
May 2011	11	1.0709	1.0446
June 2011	12	1.0776	1.0381
July 2011	13	1.0843	1.0316
August 2011	14	1.0911	1.0252
September 2011	15	1.0979	1.0189
October 2011	16	1.1048	1.0125
November 2011	17	1.1117	1.0062
December 2011	18	1.1186	1.0000

To conduct its re-sale analysis for this study, MPAC time adjusted the initial sale of each property to that of the second sale using the ratio of monthly TAFs. This produces a trended sale price as of the re-sale date. Table 3 provides an example using the same data as Table 1 above.

**Table 3: MPAC’s Re-Sale Analysis Sample Calculation**

	Sale Price	Sale Date	TAF to Jan 1, 2012	TAF Ratio	Trended Sale Price	Percentage Difference
Initial Sale	\$100,000	October 2010	1.0911	1.078	\$107,800	
Re-Sale	\$115,000	October 2011	1.0125			6.68%

In the example, the property initially sold for \$100,000 in October 2010. It sold again in October 2011 for \$115,000. The TAF from October 2010 to January 1, 2012 is 1.0911, indicating an overall increase of 9.11% over the time frame. The TAF from October 2011 to January 1, 2012 is 1.0125, indicating an overall increase of 1.25% over the time frame. The ratio of the TAFs is 1.078 (1.0911/1.0125), which indicates a 7.8% increase the 12 months between sales. The initial sale price is trended by 7.8% (multiplier of 1.078) to produce a trended sale price of \$107,800.

An examination of the differences between the trended sale price and the actual sale amounts reveals the actual market change indicated by the re-sales as compared to the market change indicated by the entire market area. In other words;

- A difference of 0% would indicate that the market change as shown by the re-sales is exactly the same as that indicated for their respective market areas.
- A difference above 0% means that the re-sales are indicating greater inflation in value than their respective market area.
- A difference below 0% means that the re-sales are indicating greater deflation in value than that of their respective market areas.

In the sample calculation above, the re-sale of the subject property at \$115,000 is 6.68% greater than the trended sale price in the market area of \$107,800.

Table 4 provides the median percentage change for the 2,051 re-sales in MPAC’s sales database using the previously defined distance groupings.

**Table 4: Summary of MPAC’s Re-sale Analysis**

Distance Grouping	Number of Sales	Median Percentage Difference	Minimum Percentage Difference	Maximum Percentage Difference	Number of Sales Less than 0%	Number of Sales Greater than 0%
Within 1km	12	2.84	-15.36	30.61	4	8
1km to 2km	52	6.35	-14.29	63.00	16	36
2km to 5km	150	-0.57	-18.90	88.10	77	73
Outside 5km	1,837	2.05	-28.16	127.02	680	1,157
<b>OVERALL</b>	<b>2,051</b>	<b>1.96</b>	<b>-28.16</b>	<b>127.02</b>	<b>777</b>	<b>1,274</b>

The results in Table 4 indicate that re-sales of properties closest to wind turbines are experiencing greater market increases than their respective market area. In terms of individual re-sale market increases, re-sale's with market shifts greater than 0% outnumber re-sales with market shifts less than 0% by approximately 2 to 1 for properties within 2 km of an industrial wind turbine. This result would indicate no loss in price due to proximity to the IWT.

### **Summary of Findings**

MPAC's own re-sale analysis using a generally accepted methodology for time adjustment factors indicates no loss in price based on proximity to the nearest IWT. This analysis using similar logic to that used in the Lansink study confirms the previous results from MPAC's report on the impact of wind turbines on 2012 CVAs and is contrary to the conclusions of the Lansink study.

Of the 2,051 sales used in MPAC's re-sale analysis, 2,002 had higher second sales, nine sold for the same price twice and 40 sold for less the second time. Of the 40 that sold for less the second time, 39 are outside 5km of an IWT, 1 is within 2 to 5km of an IWT and none are within 2km. That means 97.5% of these properties sold for more the second time. It is possible that some selection bias may exist in the Lansink studies. MPAC has attempted to prevent this by using all available re-sales in its analysis.

MPAC previously applied the same re-analysis logic to another study conducted by Lansink Appraisal and Consulting on the potential impact of existing or proposed gravel pits on neighbouring residential properties<sup>4</sup>. The gravel pit study followed the same methodology as the Lansink Wind Turbine Study.

Similar to this study, 13 of the 19 properties used had resale prices that were lower than the initial sale used in the study. Of the remaining six sales, one sold for the same price twice, one sold for \$1,000 more than five years after the initial sale and one had 20 years between sales. The Lansink Gravel Pit study concluded a potential diminution in price (if any) of approximately 22%. MPAC's internal analysis indicated no loss in price in the study area using the same re-sale analysis process.

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<sup>4</sup> Ben Lansink, "Case Studies: Diminution / Change in Price (if any) on Residential Real Estate Located in the Vicinity of an Existing or Proposed Ontario Pit or Quarry," Lansink Appraisals and Consulting, July 2013