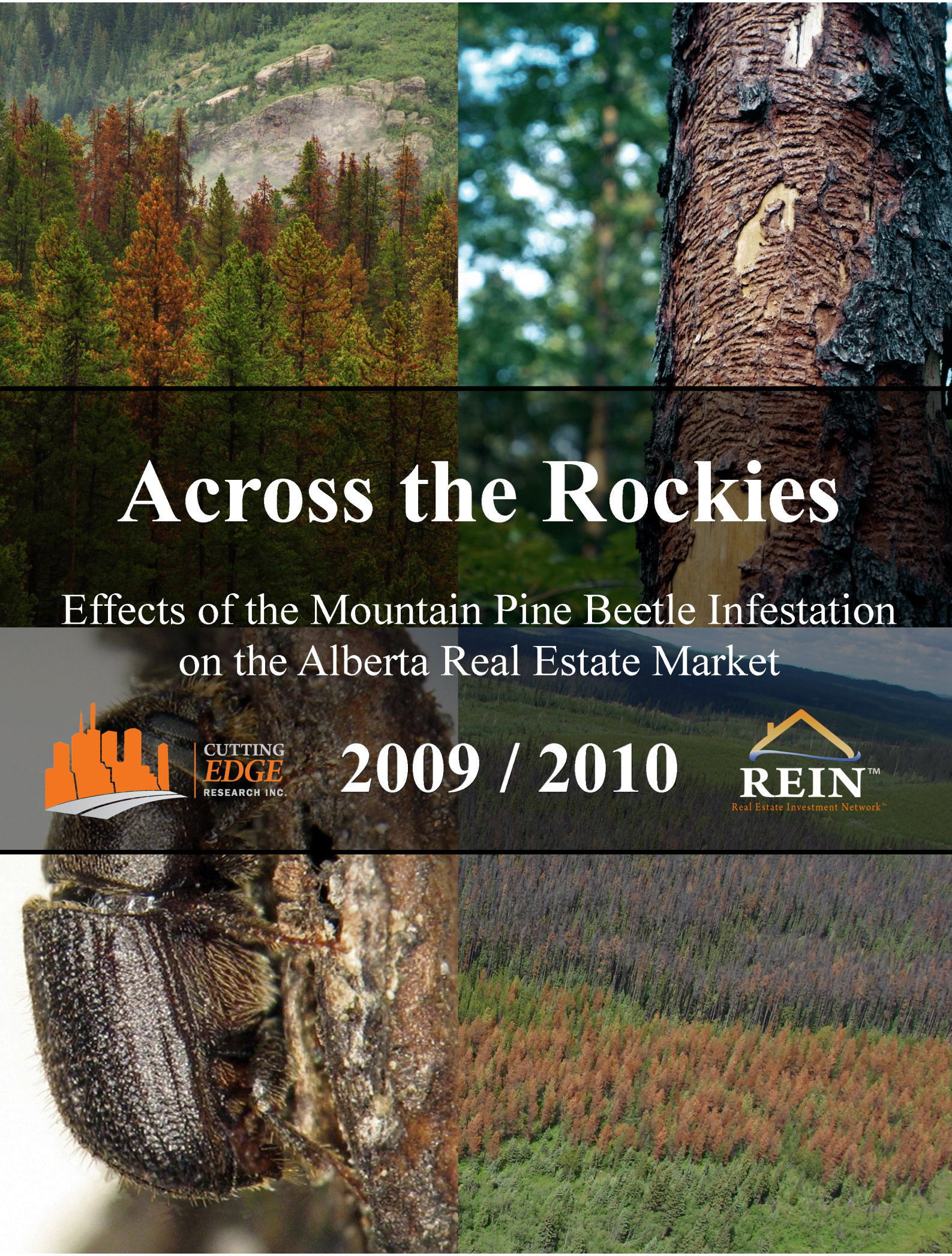

# Across the Rockies

## Effects of the Mountain Pine Beetle Infestation on the Alberta Real Estate Market

CUTTING EDGE RESEARCH INC.

## 2009 / 2010

REIN™
Real Estate Investment Network™

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# EXECUTIVE SUMMARY AND REPORT HIGHLIGHTS

- Canada is facing an unprecedented attack from the mountain pine beetle (MPB), *Dendroctonus ponderosae*. British Columbia has suffered the majority of the wrath from this tiny forest pest; however, Alberta is now facing the same epidemic.
- The beetles are not following historical behaviors and are attacking pines 50 years younger than usual. Therefore, economic analyses to date may underestimate impacts.
- The federal and provincial governments have committed monies to mitigate the impact of the beetle, but is it too little, too late?
- By 2019, the provincial Ministry of Forests predicts the mountain pine beetle will destroy 71 per cent of the marketable pine in the central and southern BC Interior forests. Half of the pine is already dead and analysis to date point to similar results for Alberta pine.
- Not every tree will be killed! Many pine forests consist of mixed stands and others have new trees coming up from the understory.
- Broken down by province, British Columbia is the leading exporter of forest products in Canada at $13.7 billion; Alberta exports roughly $5.1 billion
- Tough economic times coupled with pine beetle aggression have lead to the closure, both permanent and indefinite, of over thirteen mills across Alberta.

# ABOUT THE REAL ESTATE INVESTMENT NETWORK

Founded in 1992, the Real Estate Investment Network™ (REIN™) has grown over the years to become Canada's leading real estate research, investment and education organization. It serves more than 3,000 member clients who own more than 25,500 properties (valued at $2.85 billion) across the country. Members use the unbiased research and proven systems to invest in properties in economically strong regions across the country.

**REIN™ does not sell or market real estate to its members or the general public, but instead conducts objective and unbiased research, analysis and investor education**

The foundation of REIN™'s work is the research and analysis of current real estate trends and patterns. This information is then disseminated to members through regular private seminars in Toronto, Vancouver, Calgary and Edmonton, and via research reports that detail current and emerging trends.

REIN™'s primary purpose is to provide expert assistance to its members and other Canadians to assist them in making sound decisions about purchasing principal residences and investment/recreational real estate. This Gateway Report is one such educational report, as are Don R. Campbell's bestselling books *Real Estate Investing in Canada (Version 2.0), 97 Tips for Canadian Real Estate Investors,* and *51 Success Stories for Canadian Real Estate Investors.* 100% of all of Don Campbell's author Royalties are donated directly to Habitat for Humanity Edmonton and to date has raised over $411,000 for this worthy cause.

All research can be accessed at www.realestateinvestingincanada.com.

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# OVERVIEW TO THE MOUNTAIN PINE BEETLE REPORT

Our national forest industries are critical to many province's economies. This important and long standing industry is already under economic attack from the global recession, but in Western Canada there is further pressure… the Mountain Pine Beetle. The current pine beetle epidemic stands to be more devastating than current world forest economics that have already seen dozens of Canadian mill closures.

This report is designed to provide answers to the key questions from an objective, research-oriented point of view, as we do not sell real estate. This un-biased view will enable readers to see clearly how the pine beetle epidemic could affect their personal real estate portfolio today and in the future. This report will enable homeowners and investors to plan long in advance of the final outcome of the beetles' infestation and migration, and consider cities' long term plans and subsequent government and private industry interventions.

Devastation from the mountain pine beetle has heavily impacted the forests of B.C. and the beetles' presence is now well established in Alberta. The main discussion seems to centre around the environmental and economic impacts of this epidemic. Up to this point, one key component of this conversation has not been addressed in depth, even though it will have a direct financial impact on property owners in many communities throughout the province of BC and now Alberta. This question is:

## *How will this major epidemic affect residential property values in forestry based communities in the short, medium and long terms?*

For many residents of the province, a vast majority of their personal net worth is tied directly to the value of their homes and investment properties, so the answer to this question is very important. As with our previous reports and books, the goal of this research is not only to assist investors and homeowners in gaining knowledge about how a situation may affect their property values, but also to cut through the emotions and sometimes political debate that surround an issue that affects the fundamentals of a town's economy.

Although the majority of forest decimation has been centred in B.C., the epidemic has extended into Alberta and continues to spread.

### Peer-reviewed studies on the impacts of the mountain pine beetle

Underpinning our analysis is a synopsis of detailed studies conducted on the mountain pine beetle, its migration, habitat and patterns. Other examinations include economic analyses based on equilibrium models for the interior of B.C. and Alberta coupled with spread rate analyses, annual allowable cut (AAC) determinations by the chief forester, and climate projections extrapolated to pine beetle survival and expansion.

This research provides us with the ability to forecast what we can expect in terms of the impact on real estate prices in forestry based communities in the short, medium, and long terms.

# BACKGROUND: The Impact of the Mountain Pine Beetle

## The Beetles Are Here

British Columbia has faced, and continues to face, Canada's largest pine beetle epidemic ever recorded with Alberta now entrenched in the same battle. This tiny pest is not new to BC, or Alberta, but due to a number of factors the pine beetle has spread to areas historically beetle free. The B.C. Ministry of Forests now predicts the mountain pine beetle will destroy 71% of the marketable pine across the provincial land base by 2019[1]. Similar results are not out of the question in Alberta pine forests as the beetles continue to move east and north. However, it is important to note that only pine trees are attacked and not every pine tree will die. Landscapes may change, but British Columbia and Alberta will not be without forests.

## From the Pacific to the Atlantic, Pines are in Trouble

Right now there is ligitimate fear that the pine beetle will spread from the Lodgepole Pine dominated foothills of Alberta into the boreal forests or "northern" forests that extend across Canada. Boreal forests occupy 35% of the total Canadian land area and 77% of Canada's total forested land, stretching between northern tundra and southern grassland and mixed hardwood trees. Uncontrolled spread to boreal lands could be devastating to Canada on a number of levels.

Canadian forests are tremendously prolific, making Canada the world's largest exporter of forest products[2]. In 2007 the Canadian forest industry was worth $78.3 billion and contibuted $23.4 billion to Canada's trade balance[3]. Broken down by province, British Columbia is the leading exporter of forest products in Canada at $13.7 billion, followed by Quebec at $11.6 billion and Ontario at $8.4 billion[4]. When these numbers are considered, it puts into perspective the potential and current economic probelms that an attack from the mountain pine beetle (MPB), *Dendroctonus ponderosae,* can have on the country's economy.

The threat from the pine beetle comes from its ability to effectively attack and girdle healthy pine trees. The beetles rely on mass attack strategies to overcome tree defenses. Once a tree has been overtaken, the beetles burrow under the bark into the tree's vascular system (mainly phloem), effectively cutting off the flow of nutrients. To add to the attack, the beetle has a mutualistic relationship with a "blue stain" fungi. The fungal spores hitch a ride on the beetles and as the beetles burrow, the fungus also attacks the tree's vascular system and in the process turns the wood a blue hue. While the fungus is detrimental to tree health, no structural problems are associated with the lumber.

[1] Provincial Level Projection of the Current Pine Beetle Outbreak. Walton March 2009. BC Forest Service
2 Natural Resources Canada http://canadaforests.nrcan.gc.ca/quickfacts/ca/economy
3 Natural Resources Canada. http://cfs.nrcan.gc.ca/index/forestindustryincanada
4 Ibid.

Problems can arise when other countries view the wood as inferior, further compounding problems for lumber companies - how do they market the huge supply of beetle wood, and to whom, at a potentially lower cost? Some have decided to creatively market the blue-stained lumber as Denim Pine™ while governments have made a big push for bio-energy. With some forward thinking, options may exist to capitalize on this "tragedy".

British Columbia has suffered the majority of the wrath from this tiny forest pest; however, Alberta is now facing a similar epidemic as the beetles continue to spread. To date, an estimated 9.2 million hectares of forest land in B.C. have been affected since the start of the epidemic in 1994. Lodgepole pine, *Pinus contorta var. latifolia*, is a very important timber species for both Alberta and BC. In British Columbia Lodgepole Pine represents roughly 24% of the provinces growing stock while in Alberta this timber species accounts for 15% of the forested landbase[5] [6]. In 2005/2006, lodgepole pine made up 45% of the annual timber harvest – 60% in the B.C. Interior[7]. Lodgepole pine is also the primary host for the MPB.

The infestation of the mountain pine beetle in Western Canada is not a short term problem, but it is also not a new problem as we have seen this pest in the past. The difference with the present beetle attack is the fact that the beetles have expanded their range to areas previously beetle free and conditions remain ideal for sustained growth of the insects' populations. Western Canada has seen unseasonably warm winters along with hot and dry summers with the average temperature predicted to climb over the next few decades[8]. Such factors decrease beetle mortality in winter and increase tree stress due to drought in the summer leaving trees susceptible to attack. Further, beetles thrive on mature pine trees, over 80 years old, and a large portion of pines in Alberta and BC are 80 years or older leaving large stands of forests at risk of attack. This vast supply of mature susceptible pine makes a contiguous and seemingly endless food supply.

Continued advancements in forest-fire suppression, coupled with harvesting practices, mean the number of mature susceptible pine has increased threefold since 1900. Further, the trend toward a warming climate has expanded the beetle's range to places never visited before (both north in latitude and higher in elevation) making the possibily of seeing this pest in our boreal forests all the more plausible.

**Unfortunately, this is not just a forestry problem.**

This epidemic will certainly have effects on other economic sectors such as tourism and real estate for example, as well as the environment (aesthetics, wildlife habitat, erosion, water quality, etc.). The majority of BC forests are infested, many areas had peak beetle populations in 2004 and now Alberta faces the same predicament as the Eastern spread continues.

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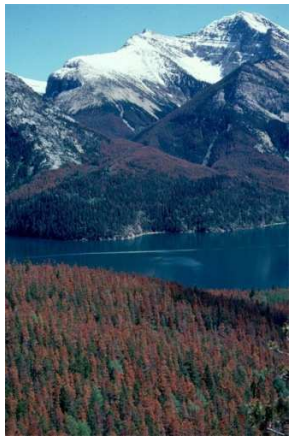
[5] Government of Alberta – Seeing Red in Alberta Forests 2007
http://alberta.ca/home/NewsFrame.cfm?ReleaseID=/acn/200707/21817DEF32192-D77C-CFA6-1806388E2D8CD8BC.html
[6] Western Economic Diversification BC Region 2001 Article
[7] Ministry of Forests and Range Revenue Branch. Table 9.3: Volume of all Products Billed in 2005/2006 by Species and Forest Region.
[8] Government of Alberta – Climate Change in Alberta. http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/cl11297

Many forestry towns saw, and are seeing, an economic boom as forestry companies increased their productivity to harvest the dying beetle wood. Employment soared at times, overtime shifts abounded, real estate values shot up and vacancy rates were down. However, beyond the short term, these fundamentals could not and cannot be sustained in regions where forestry is the single economic focus. Cities and towns whose primary economic base is logging and forestry will suffer economic hardships as jobs dwindle, unemployment increases and people eventually leave to find work in other regions. The impact from the beetle has only been compounded by the global economy and particularly the housing crisis in the US. **The potential for out-migration is high and will result in further over supply of housing and an even further down turn in real estate values if steps are not taken to diversify local economies at a faster pace.**

## Environmental Issues at Hand



Although this report focuses on the economic impact of the MPB infestation, it is important to note that there are also major environmental issues that this infestation may bring along with it. This could include increased flooding and land slides in areas where trees have died. In addition, we will witness a decrease in the ability of our forests to recycle and clean our airsheds across the province. Safety within our forests will also become an ongoing issue as these dead stands become fuel for forest fires.

## Alberta's Beetle Spread

Over the past few years the number of beetle killed pine across Alberta has grown exponentially. What started with a few thousand trees has ballooned to millions, with the pine beetle now having a strong presence across much of Alberta.

The spread of the beetle is being closely monitored by the Alberta Government[9]. According to their website, the beetle is on the move:

1997 – No infestations noted in southwestern AB; relatively high beetle activity in the foothills of the northern east slopes

1998 – MPB killed lodgepole pines were observed in Banff National Park

1999 - Few small patches symptomatic of MPB were found along Brewster and Healy creeks in Banff National Park

2000 - Populations continued to increase in Banff National Park. About 700 green-attack trees were found at four locations in this park. A new mountain pine beetle infestation was also found in Jasper National Park

2002 - Populations in Banff National Park appear to have reached epidemic proportions

[9] Government of Alberta – Sustainable Resource Development (Dec. 1, 2008). Mountain Pine Beetle. http://srd.alberta.ca/forests/health/conditionsmaps/mountainpinebeetle.aspx#historical.

2004 - A total of 401 green attacks by the mountain pine beetle were detected in the public and private lands of the province; new infestations were found in Willmore Wilderness Park, Canmore area and in Spray Lakes Forest Management Agreement (FMA) area. With large resident beetle populations in Banff National Park and along the border areas with BC there is a potential for continuing MPB attacks

2005 - Municipal authorities and private landowners removed 252 infested trees in the Canmore area. In the summer, additional beetle-infested trees were detected on some forested Crown land in Foothills and Smoky corporate areas, Willmore Wilderness Park and in Kakwa Wildland Provincial Park

2006 - MPB infestations are expected to occur further north and east than ever before in the province

2007 - Surveys confirm that the combination of a cold winter and ongoing control activities by SRD, the forest industry and municipalities resulted in a decreasing or static beetle population in the northern regions of Alberta. Additionally, there was not as large a distance dispersal event in 2007 as there was in 2006. The southwestern Alberta region is experiencing growing beetle populations. Its climate and the amount of highly susceptible pine in the region provide ideal habitat for beetle to thrive. Sustainable Resource Development (SRD) focuses on:

- containing infestations and minimizing the spread of MPB in all areas along the Eastern Slopes where infestations have been detected; and
- preventing MPB spread eastward into the Boreal forest through the hybrid lodgepole-jack pine and pure jack pine stands that stretch across the prairies and into central Canada.

2008 - The number of beetle-attacked trees has declined in the Leading Edge Zone around Grande Cache, Slave Lake and Whitecourt in areas where the Department focused beetle control efforts last year. However, the number of attacked trees continues to increase in the south. Management efforts will focus on southwest Alberta in 2008-09, and along the leading edge in Northeastern Alberta. Management of beetle infested trees will also continue in the Holding Zone in West central Alberta south of Grande Prairie.

The Alberta Government through SRD has pledged that in its 2008/2009 MPB Municipal Grant Funding Program that its priorities are to contain infestations and minimize the spread of the beetle north and south along the eastern slopes of Alberta and to prevent the spread eastward and into boreal forests with expansion into jack pine and jack pine hybrids[10].

For a detailed list of actions being take to mitigate damage, go to http://www.srd.gov.ab.ca/forests/pdf/MPB_action_plan.pdf.

[10] Government of Alberta – Sustainable Resource Development. Mountain Pine Beetle Municipal Grant Funding Program 2008/2009 Program Priorities. (2008). http://www.srd.gov.ab.ca/forests/pdf/2008_MPB_municipality_program_guidelines.pdf.

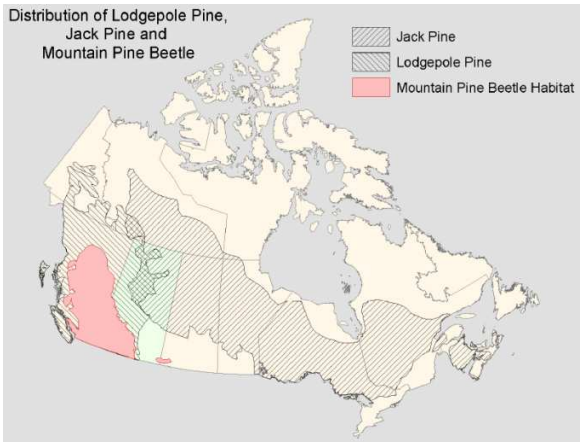
# THE MOVE INTO CANADA'S BOREAL FORESTS – CLIMATE CHANGE?

As mentioned previously, the fear among many is the potential spread of the pine beetle into Canada's boreal forests (see Figure 1). Whether northern Alberta is suitable for beetle habitat and further expansion remains to be seen, but one question appears to be answered – the pine beetle has been shown to reproduce successfully in jack pine/ lodgepole pine hybrids and these trees show lower defenses than regular lodgepole pine:

"Research suggests that trees in this novel habitat showed lower defensive capacity which may allow for rapid population increases"[11].

Despite the beetles' ability to successfully reproduce in jack pine and hybrid pines the question of climactic suitability is of concern. Based on the differing forest structure in boreal forests, age class distrubution, size and spatial distribution of host trees it has been postulated that these areas will not favor the same rate of spread nor the level of damage seen in lodgepole pine dominated areas of BC and Alberta[12]. However, with climate fluctuations and reports leaning towards higher average temperatures in BC and Alberta much of the unsuitable boreal forest may become more suitable in time.

Figure 1: Possible Range Expansion for the MPB: Alberta SRD




This gradual temperature change equates to certain areas simply not getting as cold as historically documented. Research done on the subject suggests that an increase in average temperature of 2.5ºC will facilitate MPB range expansion of 7º north in latitude[13]. Effectively, the beetles are expanding their range north as well as to higher elevations – the exact behavior we are currently seeing.

Temperature studies have noted an increase in minimum winter temperatures of +2.2 ºC to +2.6 ºC for much of the BC interior, (Figure 2). Alberta based studies predict an average temperature increase of 3-5 ºC by 2050[14]. Further, climate models project that the warming trend will continue, thus promoting further range expansion for the MPB as mentioned above[15].

[11] Alberta Sustainable Resource Development "Bugs and Diseases" 20:1 April 2009
[12] Canadian Forest Service "Risk assessment of the threat of mountain pine beetle to Canada's boreal and eastern pine forests" 2008 http://bookstore.cfs.nrcan.gc.ca/detail_e.php?recid=12588305
13 Logan, J. A., & Powell J. A. (2001). Ghost Forests, Global Warming, and the Mountain Pine Beetle (Coleoptera: Scolytidae). *American Entomologist*. 47:3 160-172.
[14] Government of Alberta – Climate Change in Alberta http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/cl11297
[15] Ministry of Forests. (2003). Timber Supply and the Mountain Pine Beetle infestation in British Columbia.

Temperature related mortality is not reliant on realized outdoor temperature, but instead the temperature under the bark. Winter temperatures may dip below the crucial minus 35-40ºC mark, but the beetles don't necessarily "feel" 40ºC below. Instead the temperature under the bark is often higher than the actual outside temperature[16]. Radiant heat from the sun or snow acting as an insulator can help keep temperatures under the bark above minus 40ºC thus promoting beetle survival despite harsh temperatures. Further, timing of cold weather also plays a role in beetle mortality. Extreme temperatures in early fall or spring can have devastating effects on beetle populations mainly because beetles are in susceptible states of development (not ready for winter). Visions of mass beetle death at minus 40ºC for the 2008/2009 Alberta winter were just that, visions and hopes. While 40ºC below temperatures were witnessed, ground surveys from the spring of 2009 show mortality was less than expected and hence the mass kill will not be realized once again.

Figure 2: Climate Change for BC

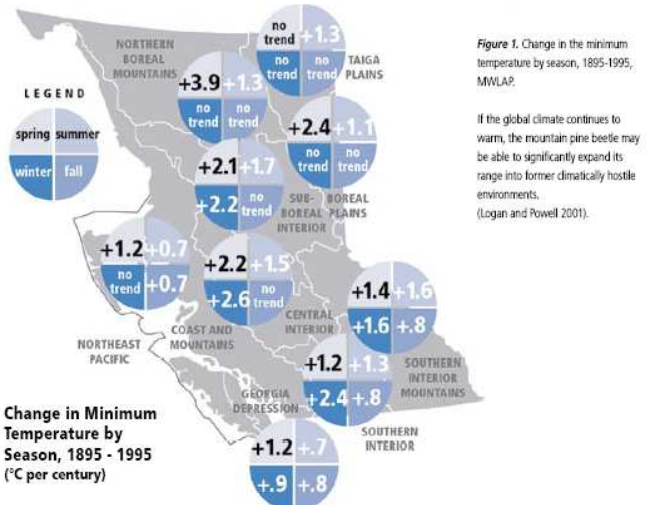



*Figure 1.* Change in the minimum temperature by season, 1895-1995, MWLAP.

If the global climate continues to warm, the mountain pine beetle may be able to significantly expand its range into former climatically hostile environments. (Logan and Powell 2001).

*Source: Indicators of Climate Change for BC 2002*

Further compounding the situation is the behavior exhibited by the beetles in much of British Columbia – they are simply attacking younger trees. Originally, the susceptible age class was believed to be 80 years, as these are the less vigorous trees with reduced capabilities in fending off beetle attack. However, in some areas the attack is/was so widespread and intense that the beetles are moving into younger age classes of pine[17]. Quesnel in particular, considered trees that are 60 years of age and older as susceptible trees. In many areas, trees as young as 30-35 have been attacked. With more beetle showing up in Alberta it is not unlikely that younger stands are at risk. If this is the case, one can foresee the amount of safe pine shrinking even further. This poses a problem for regeneration and could delay forest productivity from a harvest standpoint.

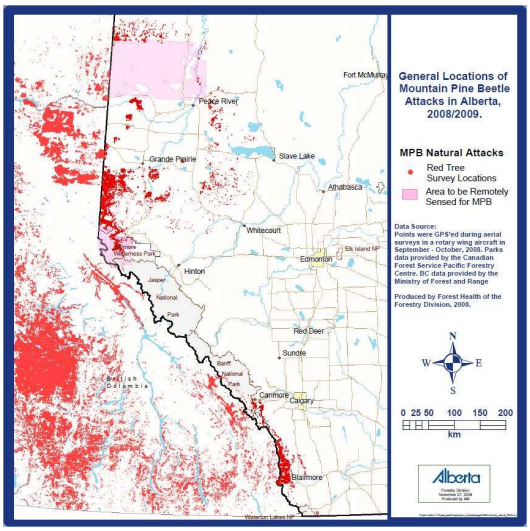
For a full report on the risks associated with Canada's boreal forests please see Natural Resources Canada "Risk assessment of the threat of mountain pine beetle to Canada's boreal and eastern pine forests" http://dsp-psd.pwgsc.gc.ca/collection_2009/nrcan/Fo143-2-417E.pdf

[16] Powell, J. M. (1967). A Study of Habitat Temperature of the Bark Beetle *Dendroctonus ponderosae* Hopkins, in Lodgepole Pine. *Agricultural. Meteorology*. 4: 189-201.
[17] Government of British Columbia. (2006). 2006 Summary of Forest Health Conditions for British Columbia. http://www.for.gov.bc.ca/ftp/HFP/external/!publish/Aerial_Overview/2006/Aer_OV_final.pdf

## Current Conditions

After years of attack BC is finally on the decline. The peak amount of area damaged in BC was seen in 2007 with roughly 10.1 million hectares followed by 7.8 million hectares under attack in 2008[18]. On the other hand Alberta attacks are continuing to climb with an estimated 3 million trees attacked in 2007 with further advances in the southern foothills and the northwest around Grande Prairie in 2008 (see Figure 3). To give you a feel for the amount of damage that has occurred in BC the volume of trees infested by the mountain pine beetle is roughly 582 million cubic metres of timber[19]. Note that the provincial harvest was 90.5 million cubic meters for 2005/2006, 66.1 million for the Interior forest region and 24.4 million for the Coast forest region[20]. Broken down, this equates to roughly 10 years worth of harvest for the Interior consumed by the beetle Or 29 year's worth of coniferous harvests for Alberta. However, we have yet to see the end of this epidemic as spread simulations suggest that roughly 80% of merchantable pine will be killed in BC by 2017[21]. Right now similar results may be realistic for Alberta pine forests (fewer trees in Alberta but there is still the possibility of losing 80%).

Figure 3: 2008/2009 Alberta Pine Beetle Attack




*Source: Alberta SRD*

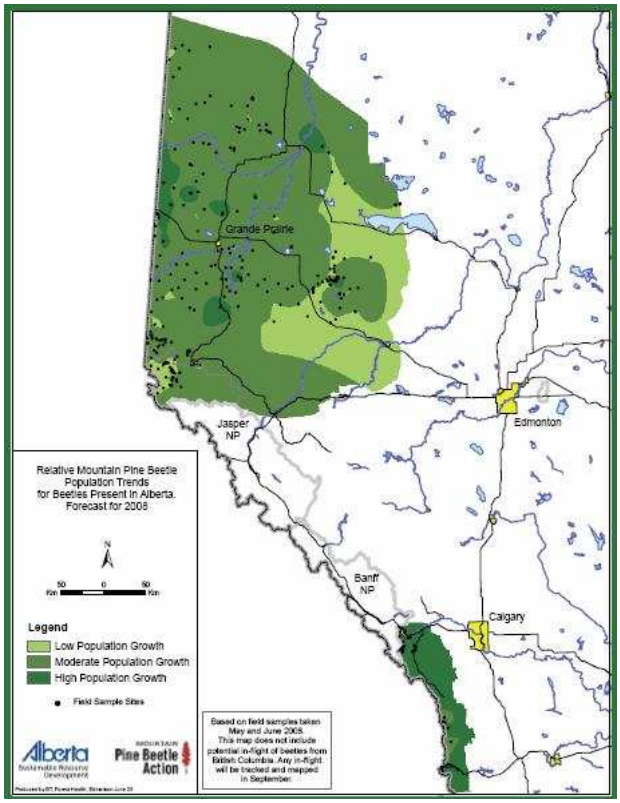
Currently, Alberta is at the leading edge of the pine beetle battle. Having the research and understanding from BC's past and current experience has pushed Alberta to be aggressive with this pest. Many forest companies have revised their harvest schedules to combat the beetle in a hope to remove susceptible pine, at least to a manageable level, in an attempt to halt the beetle's eastern and northern progress. To some of these companies this means cutting blocks of trees not scheduled to be harvested for a number of years. Part of the management plan for the province is to remove as much susceptible pine from the land base as possible – some call this the "pine strategy". The goal for the management in Alberta is to remove 75 percent of susceptible pine over the next 20 years. Despite efforts by the forest industry a recent report indicates that the pine strategy could not be effectively implemented, even if the beetle outbreak was delayed for 20 years[22]. Concerns over current annual allowable cut (AAC) have been raised and based on the study above there is a risk of long term timber supply collapse if the AAC is not recalculated.

Further, although low temperatures were reached across areas of Alberta during the winter of 2008/2009 the cold did not appear to decrease the beetle population enough, based on current

[18] British Columbia Forest Service "2008 Summary of Forest Health Condition in BC". http://www.for.gov.bc.ca/hfp/health/overview/2008.htm
[19] Ministry of Forests and Range. (2007). Information Bulletin Feb. 19, 2007.
[20] Ibid.
[21] Government of British Columbia – Ministry of Forests and Range. www.for.gov.bc.ca
[22] MPBP Project #7.30 "Modeling the effects of a mountain pine beetle outbreak and potential management responses in Alberta's eastern slopes" (March 31, 2009).

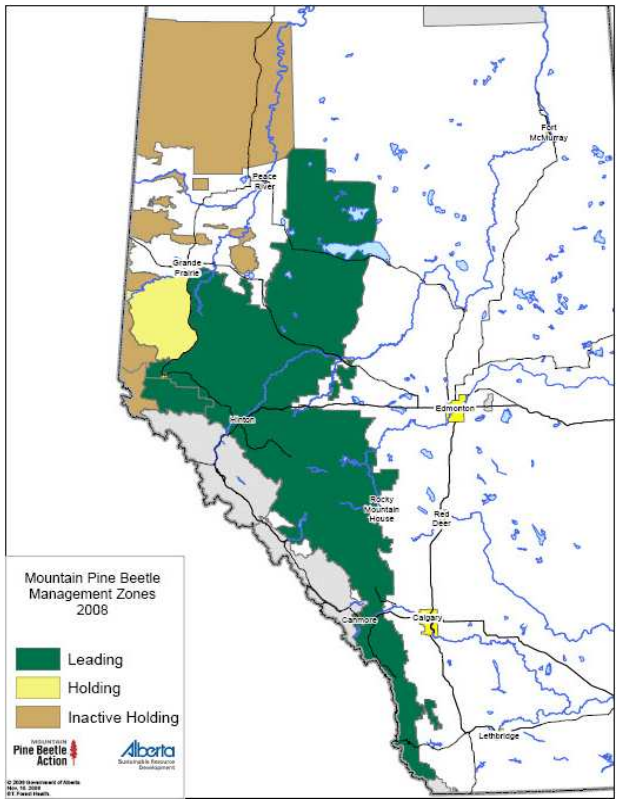
ground surveys, to slow the spread. There has been a consistent hope for harsh winter weather for the past few years but with the trend towards rising average temperatures leading to milder winters the pine beetle looks to be, in a sense, uncontrollable. Beetles continue to move into Alberta and populations continue to climb (see Figure 4). Alberta's aggressiveness may help slow the spread and for the 2009 year the priorities have been set (see Figure 5).

Figure 4: Pine Beetle Population Trends in Alberta 2008




*Source: Alberta SRD*

Figure 5: Alberta Pine Beetle Management Zones 2008




*Source: Alberta SRD*

For the full Alberta Pine Beetle Management Plan, please visit The Alberta Sustainable Resource Development website: http://srd.alberta.ca/forests/health/pestalerts/mountainpinebeetles.aspx

# DIRECT EFFECTS OF FORESTRY ON REAL ESTATE VALUES

Over the past seventeen years, our research has revealed that real estate values are driven both up and down by eight economic fundamentals, of which industry change (job growth and loss) is one of the most dramatic catalysts[23].

The basic theory in real estate is that the higher the demand for a specific location's real estate, the higher the value of the home. As the demand for homes in that area expands, the result is higher housing values. This location theory is often misunderstood, as location is not just a subjective desire (e.g., to be close to the beach), but is actually a combination of all eight fundamentals, each of which contribute to desirability. The key fundamental we are studying in this report is **future job sustainability** in forestry based communities in Western Canada and thus the demand on housing in the regions.

## A background on the Forest Sector in Alberta

Forestry, and the products it provides, has historically been a strong foundation in Alberta's economy. With forests covering 60% of the province, Alberta's primary forest industry manages and contracts the harvest of approximately 24.5 million cubic meters of timber from provincial forest lands. Forestry plays a pivotal role in driving the provincial economy by generating $10 billion a year as the third largest manufacturing sector. According to the Alberta Forest Industry, as of 2008, there were 150 companies providing goods and services in the forestry industry in Alberta. In addition, there are over 2,300 logging and hauling contractors working within this sector[24].

However, forestry has been playing a decreasing role in the overall economy over the years, as Alberta's economy continues to diversify and oil and gas continues to expand. Many pundits believe that the forest industry is broken and needs an overhaul in order to survive[25].

[23] Campbell, Don R. (2005) *Real Estate Investing in Canada* ISBN 0-470-83588-5 John Wiley & Sons Publishers: Toronto.

[24] Alberta Forestry Industry. (2008). A Workforce Strategy For Alberta's Forest Industry. http://albertaforestproducts.ca/Downloads/documentloader.ashx?id=10625

[25] Mah, B. (2009). "Healing the Alberta Forest Industry" in *The Edmonton Journal* (May 8, 2009). http://www.edmontonjournal.com/Business/Healing+Alberta+forest+industry/1576697/story.html.

**Alberta Forest Industry Five Sectors**

**Primary sector** – Companies that take a raw wood resource and produce a product through a primary breakdown manufacturing process. Product examples include logs, cants, pulp, newsprint, lumber, oriented strand board, plywood and fibreboard.

**Secondary/re-manufacturing sector** – Companies that re-manufacture primary wood products into secondary products. Product examples include door and window components, boards, decking, boxes, crates, pallets, trusses, pressure treated lumbers and other engineered building components (I-beams, finger-jointed lumber, I-joists, archribs and laminated lumbers).

**Tertiary sector** – Companies that manufacture architectural millwork and fine building products, which entail wood and often other composite materials. Product examples include moulding, furniture, cabinetry and specialty products.

**Harvest/reforestation sector** – Companies that harvest (and perform log hauling) and reforest tracts of forest or timberlands contracted and sustainably managed by the government or forest tenure holders, guided by Forest Management Agreements and quotas.

**Supply and service sector** – Companies that provide goods and services to all forest industry sectors. Examples include welding, fabrication, geomatics, engineering, software, forestry consulting, heavy equipment, processing equipment, chemicals, research and development, electrical, instrumentation, gears, bearings, blades, generators and piping.

**Source: Alberta Forest Industry.** ***A Workforce Strategy for Alberta's Forest Industry***

### The Forest Industry in Crisis

In addition to the plight of the MPB, the forest industry is export-focused and at the effect of the commodity market and declining commodity prices, the rise of the Canadian dollar, rising costs for labour, transportation and energy, increasing competition from offshore markets, the global economy generally and the US housing crisis specifically. Although the province has responded with amended harvest plans, mills have closed due to the lower commodity prices, which have been exacerbated by the beetle infestation.

Alberta Employment and Industry forecasts the situation will not improve in the immediate future. The annual employment growth is predicted at 0.4% per year until 2011. Further, the government predicts that logging machinery operators and forest workers will continue to be displaced between now and 2018 at a very high rate compared to other occupations in the province (if 1.0 is a balance between supply and demand, the number of logging machine operators is forecast at 0.786, indicating a much higher level of supply of workers than demand for this category). This is the highest supply of workers for the projected demand of ALL of the occupations categorized in the province. The chart below indicates that some regions are faring better than others[26].

[26] Government of Alberta – Employment and Immigration. (2008). Alberta Regional Occupational Demand Outlook, 2008-2012. http://employment.alberta.ca/BI/2762.html#forecast.

| Occupational Forecasts Alberta and Select Regions 2008 - 2012 | | |
|---|---|---|
| | **Growth** (2.5% considered average; 1.5% considered below average) | |
| **Region** | **Logging Machine Operators** | **Forestry Workers** |
| Province of Alberta | 1.2% | 2.1% |
| Athabasca/Grande Prairie/Peace River Economic Region | 0.5% | 0.47% |
| Banff/Jasper/Rocky Mountain House Economic Region | 3.0% | 4.8% |
| Calgary Economic Region | 2.5% | 5.8% |
| Edmonton Economic Region | n/a | 2.6% |
| Red Deer Economic Region | n/a | 3.8% |
| Wood/Buffalo/Cold Lake Economic Region | 3.1% | 3.0% |
| *Source: Government of Alberta – Employment and Immigration* | | |

As of 2005, the forest industry employs almost 54,000 people with an additional 15,000 individuals benefitting from supplier and service provider jobs indirectly related to the industry[27]. Forestry is the primary or only industry in over 50 Alberta communities. The list below contains 32 of those communities including 12 of which forestry is the ONLY industry.

| Alberta Communities with Forestry as the Primary Industry | | |
|---|---|---|
| **Forestry the ONLY Industry** | | |
| Trout Lake | High Prairie | Edson |
| Red Earth | Fort Assiniboine | Drayton Valley |
| Strachan | Manning | Fort McMurray |
| Sundre | Slave Lake | Rocky Mountain House |
| Blairmore | Hinton | Whitecourt |
| Nampa | High Level | Blue Ridge |
| Cowley | Grande Prairie | Grande Cache |
| Wanham | Boyle | Fox Creek |
| Hines Creek | Athabasca | |
| Calling Lake | Peace River | *Named the Forestry Capital of Canada in |
| Le Crete | Lac La Biche* | 2004/2005 by the Canadian Forestry |
| Eckville | Cochrane | Association |
| *Source: KPMG and Canadian Forest Service.* | | |

According to the Alberta Forest Products Association, during the fourth quarter of 2008, forestry companies saw a 9.94% decrease in shipped lumber, panelboard, pulp and paper, a loss of $62.2 million to $563.4 million, from the same period in 2007. Comparing 2008 to 2007, the overall value of Alberta forest products shipped to market fell by $324 million (11.79%) due to lower prices for lumber and panelboard products.

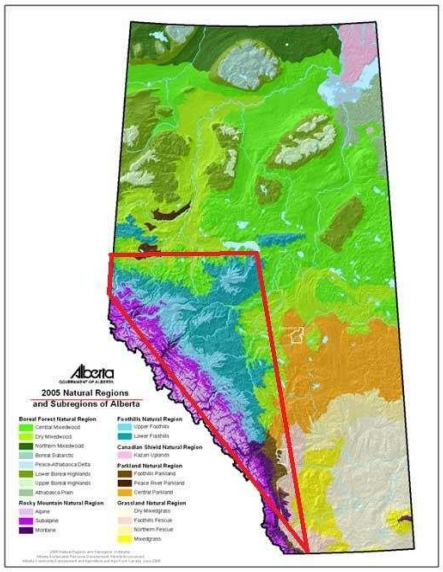
[27] Alberta Forest Products Association. (April 2005). The Alberta Forests Products Industry – Growing Alberta. http://www.albertaforestproducts.ca/Downloads/documentloader.ashx?id=10849.

**The Mountain Pine Beetle Marches into Alberta**

Forestry is a large and diverse industry, so when discussing the mountain pine beetle infestation, it is critical to examine the timber species that support each region's economic reliance.

Unlike BC where the majority of forests are comprised of coniferous species (with 25% Lodgepole Pine) Alberta harvests a large portion of deciduous species as well. Lodgepole Pine is still an important timber species which covers roughly 6 million hectares of Alberta forest land representing 15% of the forested land base[28]. The majority of Lodgepole Pine in Alberta is found in the upper and lower foothills regions, Figure 6 – south western edge of Alberta north towards Grande Prairie. Forest companies located within the foothills regions harvest large amount of Lodgepole Pine which represents a potentially challenging scenario for these companies regarding future timber supply. Lodgepole Pine is a commercially important species and its uses include framing, paneling, posts, corral poles, utility poles, railroad ties and pulpwood. LP also provides major tree cover in many scenic and recreational areas and on critical watersheds[29].

Figure 6: Natural Regions of Alberta (Lodgepole Pine Areas Highlighted




The substantial increase in wood availability from beetle attack results in a temporary flurry of economic activity and demand on certain real estate markets. For the short term, many of the areas mentioned previously will see a boom in the forest sector as the companies harvest as much pine as they can before it loses value (becomes economy grade lumber – blue stain) or unusable. Further compounding the problem is the glut of pine already on the market from BC. However, once the merchantable wood has been harvested, the mid to long term timber supply will be reduced. Mills may have to bring their raw materials in from longer distances or reduce operations.

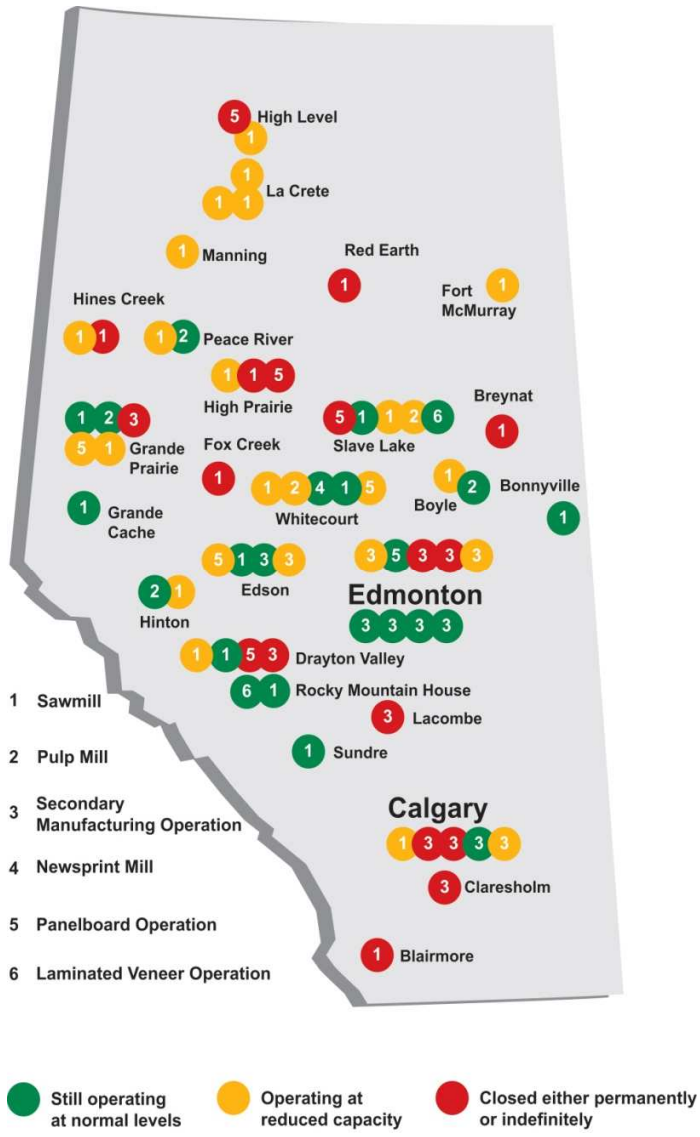
A decreased timber supply leads to possible mill closures, job losses and subsequent out-migration to more stable communities. Of course, this will then lead to less demand in the real estate markets, both for rentals as well as for primary home purchases. This will further lead to decreases in values and increases in vacancy rates. There is no past research that can help predict how low property values might go, but forest dependant areas of BC and Alberta will certainly feel an impact.

We have witnessed other regions around North America where major industries, whether mining or manufacturing, leave an area and property values dropped to less than half as supply dramatically outstripped demand. Only when these regions find ways in which to create new job bases do they see a resurgence in their real estate markets. This should be seen as an absolute need for government

[28] Government of Alberta – Seeing Red in Alberta Forests 2007.
http://alberta.ca/home/NewsFrame.cfm?ReleaseID=/acn/200707/21817DEF32192-D77C-CFA6-1806388E2D8CD8BC.html
[29] http://www.na.fs.fed.us/pubs/silvics_manual/Volume_1/pinus/contorta.htm

intervention to help secure the economic future of impacted communities. Right now the Alberta government is fully aware of the situation for many forest dependent communities, the question becomes can they diversify and weather the storm?

Figure 7: Status of Mills Across Alberta




*Source: Alberta Forest Products Association*

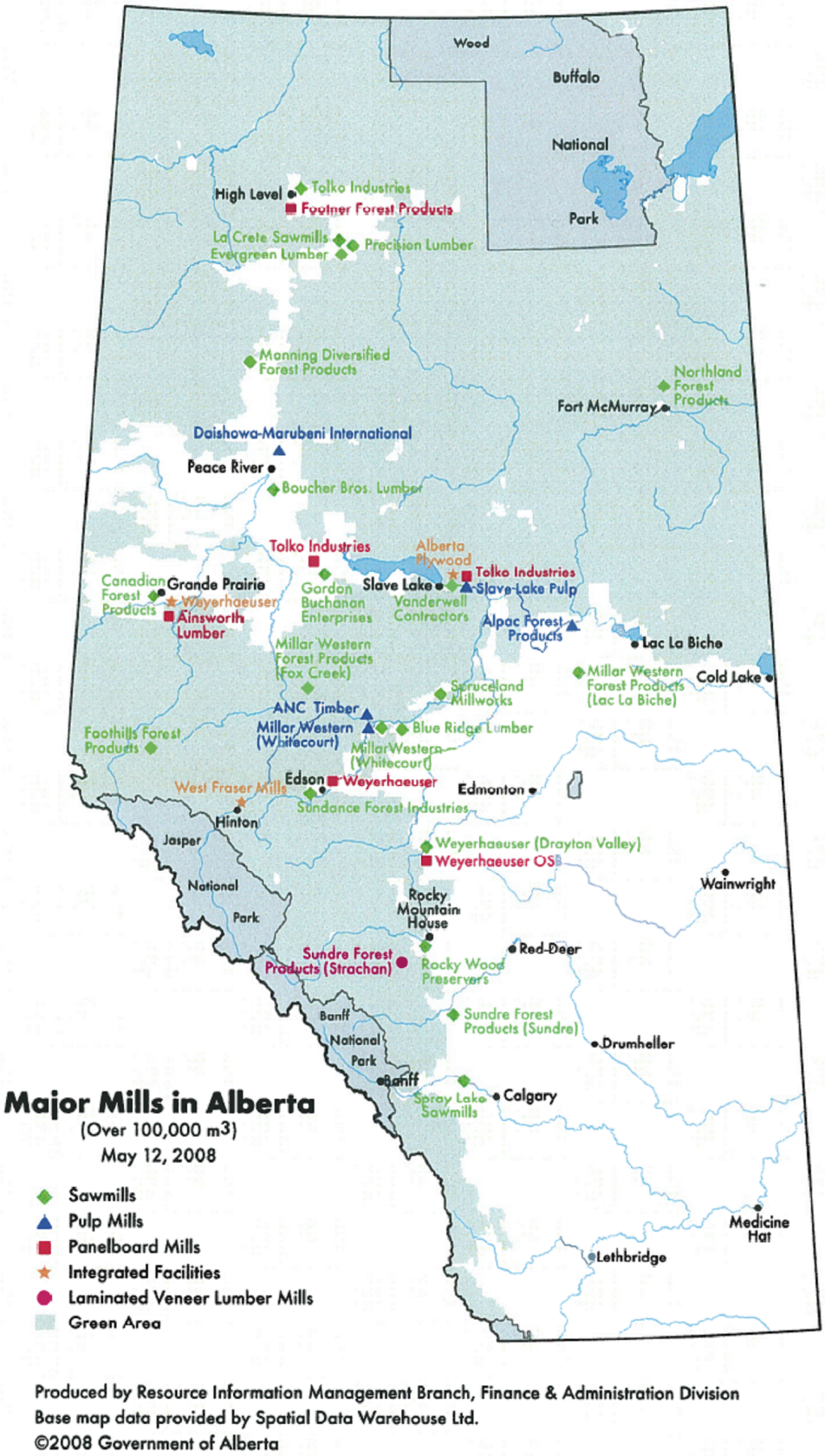
Already, close to 4,000 Albertans have been laid off from the forest sector over the past two years[30]. Further, due to conditions discussed previously, Alberta has also seen a number of mill closures over the past three years with other mills simply reducing operating capacity (see Figure 7).

A report released in June 2007 warned of over-cutting related to salvage logging in the B.C. interior. Instead of focusing on areas where salvage operations are feasible, companies are clear cutting mixed stands further depleting inventory for future timber harvest. The report outlines the fact that while pine harvests have increased dramatically over the past few years, harvesting of other timber species has remained primarily unchanged. "Clearly, elevated logging of pine forests has not been mirrored by reduced logging of mixed forests. In short, Interior forests are being "unnecessarily over-cut"[31]. Many Alberta companies have shifted their harvesting plans to focus on pine dominated areas, but for many, "business as normal" will have to continue to maintain profitability – i.e. continuing to harvest other timber species.

Issues for the forestry sector are mounting; the impact during the transition years could be substantial for a number of communities.

[30] Alberta Forest Products Association. (May 7, 2009). Situation Critical. http://www.albertaforestproducts.ca/about/SituationCritical.aspx
[31] Parfitt, B. (2007). Over-Cutting and Waste in B.C.'s Interior: A Call to Rethink B.C.'s Pine Beetle Logging Strategy http://policyalternatives.ca/documents/BC_Office_Pubs/bc_2007/bc_overcutting_woodwaste.pdf

Figure 8: Major Mills in Alberta 2008




Produced by Resource Information Management Branch, Finance & Administration Division
Base map data provided by Spatial Data Warehouse Ltd.

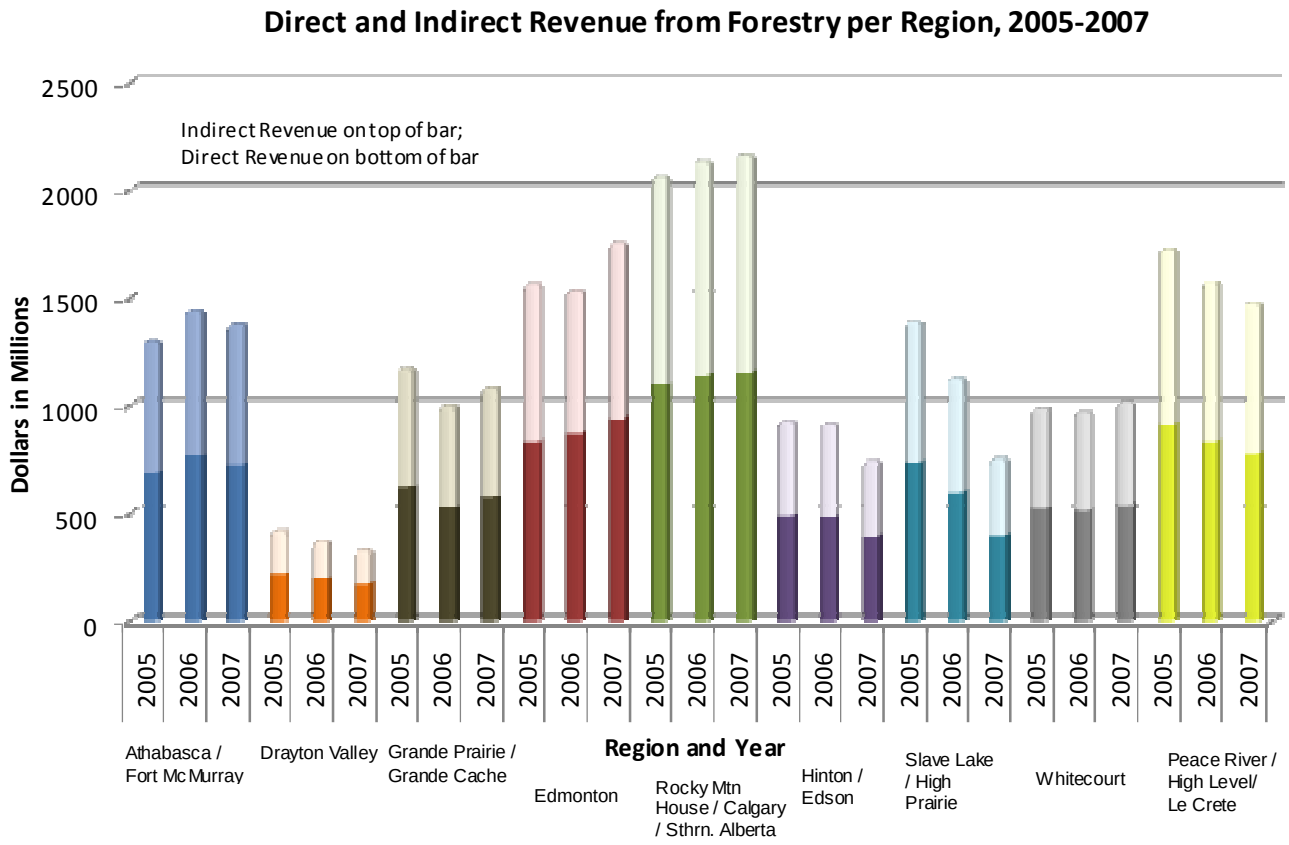
# IMPACT OF THE MOUNTAIN PINE BEETLE AND THE ECONOMY ON REGIONS IN ALBERTA

The majority of Alberta towns are somehow linked to the forest industry, whether directly or indirectly. Presently, over thirteen mills have shutdown either permanently or indefinitely with many more reducing capacity across the province. It is estimated that due to closures and curtailments, the Alberta forest industry is losing out on $2.2 million a day. For the period of 2004-2008 the market value of Alberta's forest products has fallen a drastic 44%, representing a $1.9 billion loss to companies across the province[32].

In 2005, Canfor closed its doors in Hines Creek at their lumber plant, Atlas Lumber in Blairmore went under, West Fraser Timber Co Ltd (Seehta Forest Products Ltd) shut down in Red Earth Creek and Swan Wood Products shut down in Drayton Valley. 2006 continued with NEWPRO shutting down their particleboard plant in Wanham and Weyerhaeuser closing their lumber mill in Grande Cache. 2007 saw Ainsworth close their High Level OSB plant along with Weyerhaeuser shutting down their Claresholm I beam plant and their Drayton Valley OSB plant. Ainsworth's Grande Prairie OSB plant and Tolko's OSB mill shut their doors in High Prairie in 2008. And 2009 has already seen the closure of Tolko's sawmill operations out of High River and their engineered wood plant in Slave Lake.

| **Alberta Mill Closures** |
|---|
| 2005 Canfor (lumber) – Hines Creek |
| 2005 Atlas Lumber – Blairmore |
| 2005 West Fraser Timber Co Ltd. (Seehta Forest Products Ltd.) – Red Earth Creek |
| 2005 Swan Wood Products – Drayton Valley |
| 2006 EWPRO (Particleboard plant) – Wanham |
| 2006 Weyerhaeuser(lumber mill) - Grande Cache |
| 2007 OSB closures - Drayton Valley |
| 2007 Ainsworth (OSB) - High Level |
| 2007 Weyerhaeuser (I beam manufacturing) - Claresholm |
| 2008 Tolko - High Prairie |
| 2008 Ainsworth Lumber Co Ltd. (OSB) – Grande Prairie |
| 2009 Tolko (Engineered Wood) - Slave Lake |
| 2009 Tolko sawmill – High River |
| **Source: Alberta Forest Products Association[33]; Forest Talk[34]; The Strong Group[35]** |

[32] Alberta Forest Products Association. (April 2009). "Turning It Around: Alberta's Forest Industry Needs Your Help" http://www.albertaforestproducts.ca/Downloads/documentloader.ashx?id=11096
[33] Ibid. (2006). 2005 Product Values Down $546 Million – Outlook Gloomy. http://albertaforestproducts.ca/home/?id=345
[34] Forest Talk. (Feb. 13, 2009). Tolko Closes Slave Lake Plant Indefinitely. http://foresttalk.com/index.php/2009/02/13/tolko-closes-slave-lake-plant-indefinite
[35] The Strong Group. (2006). The State of Canada's Mill Closures 2005-2006. http://www.thestrongroup.org/media/Canadian_mill_closures.pdf




Revenue created directly and indirectly from forestry both increased and decreased from 2005 – 2007 depending on the region. As demonstrated in the graph, the largest centres have reaped the most revenue and have been relatively insulated from the effects on the industry. Edmonton and Calgary areas increased their direct and indirect revenues over the period; wherein other regions have seen declines. Grande Prairie witnessed a slight uptick in both types of revenues and Whitecourt has remained relatively stable.

It is important to note that not all towns/areas mentioned in this report will necessarily feel any impact from the pine beetle. Many forestry areas in Alberta have a relatively limited reliance on lodgepole pine; other timber species dominate the landscape of various forest management areas such as white spruce, black spruce, trembling aspen and poplar. However, while some areas may not be specifically impacted by the beetle, forest economics overall will have a damaging effect on all forest based towns, potentially for the next few years. This report aims to highlight the risk associated with small town investment focusing on boom bust cycles and the cyclical nature that can make real estate investment highly risky. We will look at each area in particular to address population concerns and general pine reliance.

## Athabasca / Fort McMurray

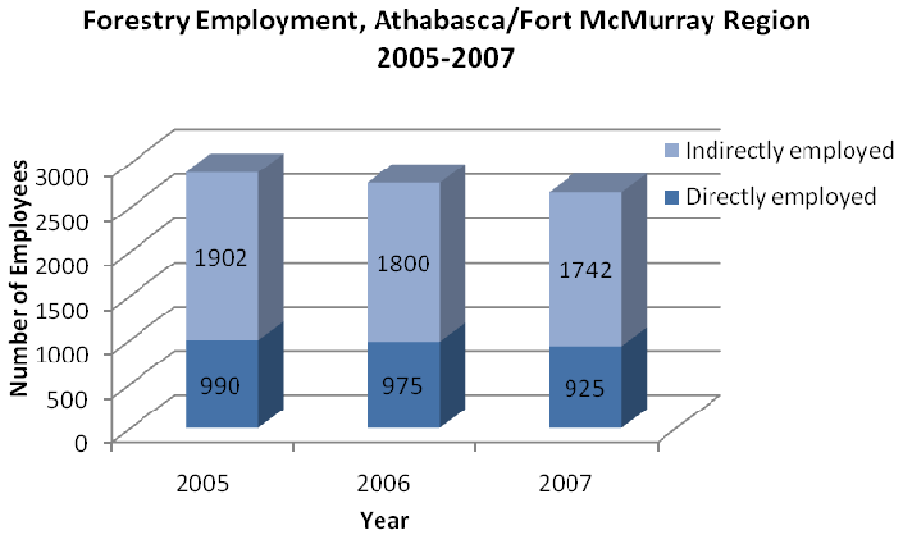
Located in the Athabasca River valley, the Town of Athabasca is 150 km north of Edmonton on Highway 2. The local economy builds upon a strong small-business sector and its two largest employers are Athabasca University and Alberta-Pacific Forest Industries. Al-Pac operates the largest

single-line, bleached kraft pulp mill in North America, operating within a 5.8 million hectare forest management area in northeastern Alberta; it employs 450 full time workers.

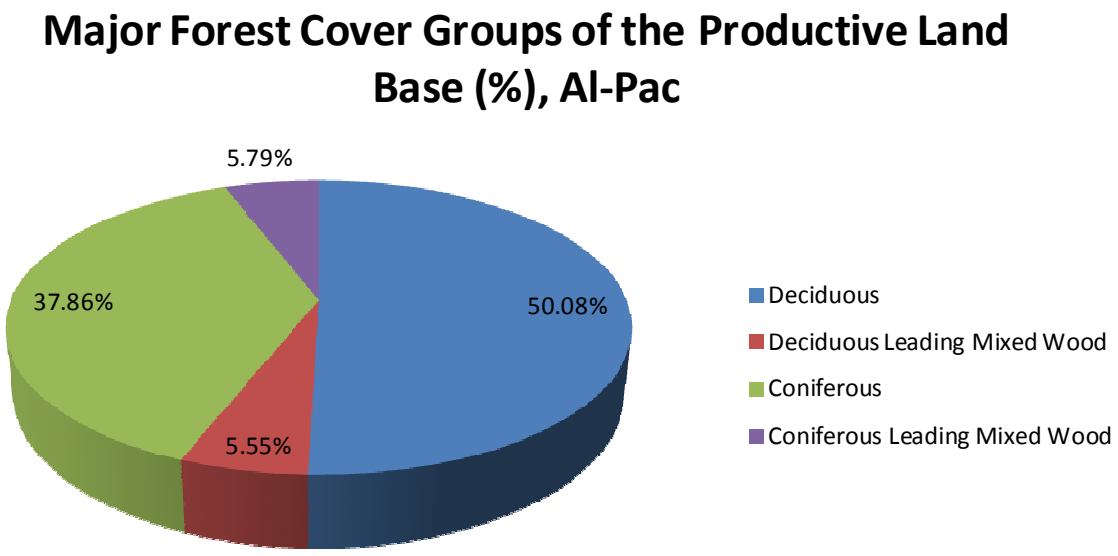
Fort McMurray is 435 kilometres northeast of Edmonton on Highway 63, about 60 kilometres west of the Saskatchewan border, nestled in the boreal forest at the confluence of the Athabasca River and the Clearwater River. Fort McMurray is at the heart of Alberta's oil and gas industry; however, forestry plays a role in the economy. Forestry companies in the Wood Buffalo region include Northland Forest Products Ltd, Alberta Pacific Forest Industries, and Millar Western Forest Products. Fort McMurray has one sawmill operating at reduced capacity.

The population of the Athabasca region increased 6.6% from 2001 to 2006 with a population of 2,734 people in 2008. The median household income is approximately $58,418, $5,500 below the provincial median. In Fort McMurray, the population increased a whopping 31.3% in 2006 with a population of 65,400 in 2007 due to the dramatic growth of the Oilsands projects. The median household income is significantly higher than the provincial median by nearly $60,000. Fifty percent of the population makes over $122,422 a year.

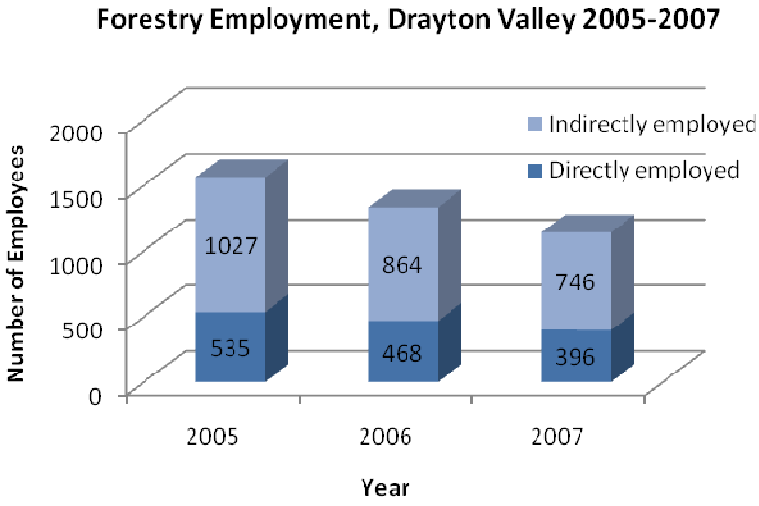
The region's economy has been the steadily decreasing reliance upon direct and indirect employment in the forestry sector (shrinkage of approximately 6.6% for direct employment and 8.4% for indirect employment) for a number of years. However, having said that, revenue has increased from 2005 to 2007 with a growth of 5.6% to $732 million in direct revenue and 5.7% to $646 million for indirect revenue[36]. Decreased reliance on forestry for economic and job growth will help the region weather the current forestry downturn. Despite forestry ties, the overall impact from the pine beetle alone will be very limited, primarily because pine is not the sole dominant timber species in the region. Much of the timber harvested is deciduous aspen and poplar, with spruce also making up a large component. The Graph below shows that slightly over 50% of the timber on productive lands is deciduous in this region (not susceptible to pine beetle). Further, the pine beetle has not moved into this area yet and it is unknown if climactic conditions will support beetle population growth. The overall poor global economy which is affecting the forest sector will still play a role in this region with potential to displace members of the work force.




[36] Alberta Forest Products Association. (2008). Athabasca Region. http://www.albertaforestproducts.ca/Downloads/documentloader.ashx?id=11212




## Drayton Valley




Drayton Valley is located 133 km south-west of Edmonton. The primary economic base in the Drayton Valley area is oil and gas and it is home to many local oilfield supply and service firms. Forestry has also been a major industry in Drayton Valley. Weyerhaeuser, the world's largest lumber company, had operated both a sawmill and an OSB plant which at one point providing solid employment. Weyerhaeuser closed its Drayton Valley oriented strand board mill in 2007 due to declining housing markets; the saw mill is still operational, with an annual production capacity of 180 million board feet.

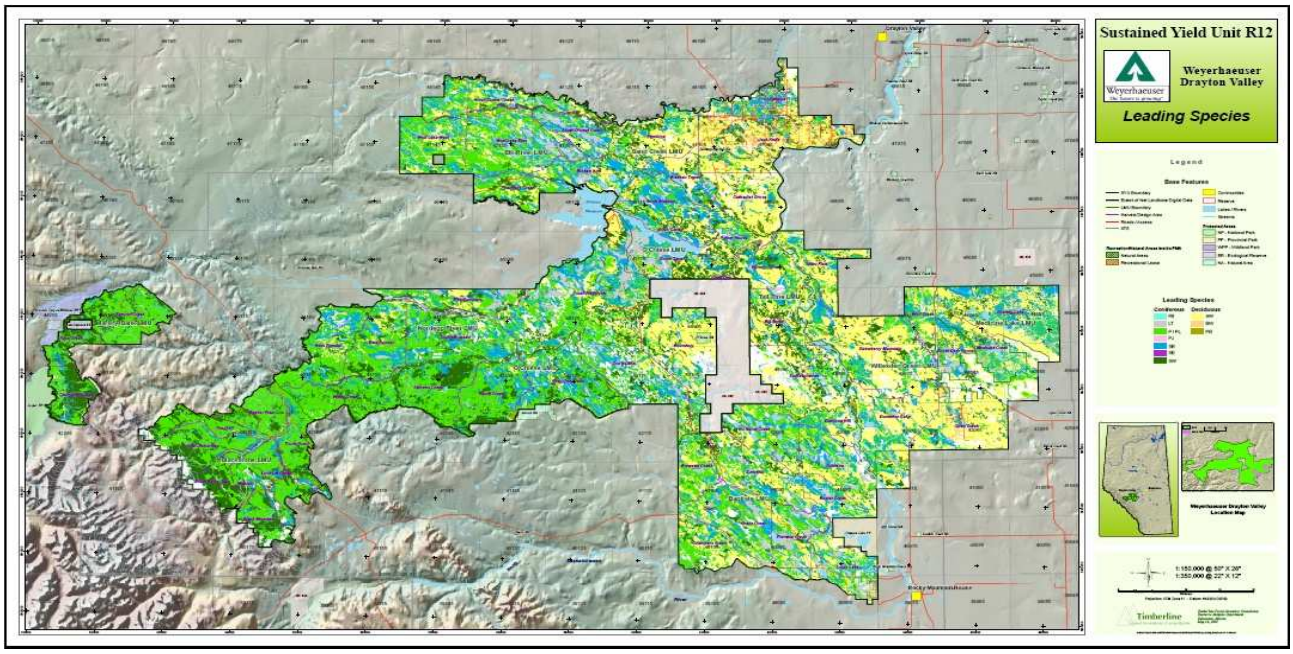
Drayton Valley's population increased 13.2% to 6,090 people according to the latest Canadian Census numbers, and has a median household income of $76,309, well above the provincial median by $12,000.

Drayton Valley experienced a 21.5% decrease in direct revenues from forestry to $175 million in 2007 and a 21.8% decrease of indirect revenue to $154 million[37]. It also experienced the loss of 26% and

[37] Alberta Forest Products Association. (2008). Drayton Valley.
http://www.albertaforestproducts.ca/Downloads/documentloader.ashx?id=11213

27.4% of direct and indirect forestry employees respectively. Although Drayton Valley has more than one industry supporting its economy, it will continue to feel the effect of the forestry downturn.
This area has potential for pine beetle related issues as pine is an important timber species for a number of the forest management areas (FMA's). Weyerhaeuser's Drayton Valley FMA has pine covering approximately 52% of the gross land base, of which 14% have a Rank 1 or Rank 2 susceptibility rating – this makes them moderately to highly susceptible to MPB infestation[38]. Due to the small population size, overall reliance on forestry and potential pine beetle impact it is recommended that the reader keep up to date on trends for this area, your investments should have a risk premium built in (cash flow should be at least double that of more stable centers).

Map: Weyerhaeuser FMA: Leading Species



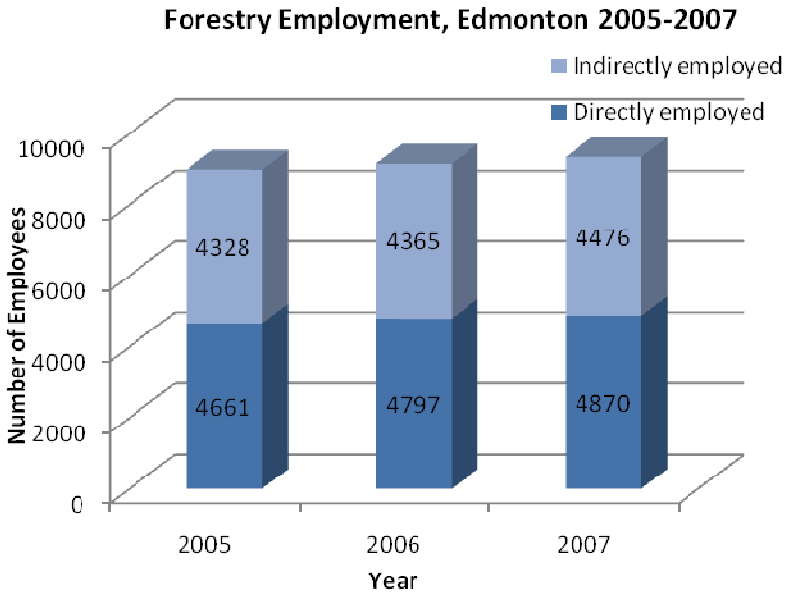

Source: Government of Alberta: Sustainable Resource Development
http://www.srd.gov.ab.ca/forests/pdf/weyerhaeuser/Map1-6_Leading_Species.pdf

## Edmonton

Edmonton has been insulated by the negative impacts on forestry due to its size and diversity of jobs and income streams. Not only has it experienced increases of 4.5% and 3.4% in direct and indirect employment over the three year period, Edmonton has also experienced over 12% in increase of revenue from both the direct and indirect forest economies[39].

[38] Government of Alberta Sustainable Resource Development. Weyerhaeuser Company Ltd Forest Management Plan http://www.srd.gov.ab.ca/forests/managing/plans/weyerhaeuser.aspx
[39] Edmonton. http://www.albertaforestproducts.ca/Downloads/documentloader.ashx?id=11214

The population of the CMA increased by 10.4% to 1,034,945 people according to the last national census. From Economic Development Edmonton, the population as of 2008 was 1,102,891 with a net increase projected to be over 13,000 persons per year. The median household income of $63,024 is right at the provincial median.




Edmonton has four secondary manufacturing operations running at standard levels, but has reduced the output of two others and has closed the sixth and seventh plant. The size of the region and diversity of the economy will cushion the negative effects of the forest industry (as evidenced by increased employment and revenues) but investors are still cautioned to monitor their investments.

Larger centers, such as Edmonton will not directly feel the effect of the forestry downturn or the pine beetle impact due to the diverse economic support. This is one of the reasons why real estate investments in larger centers are less volatile.

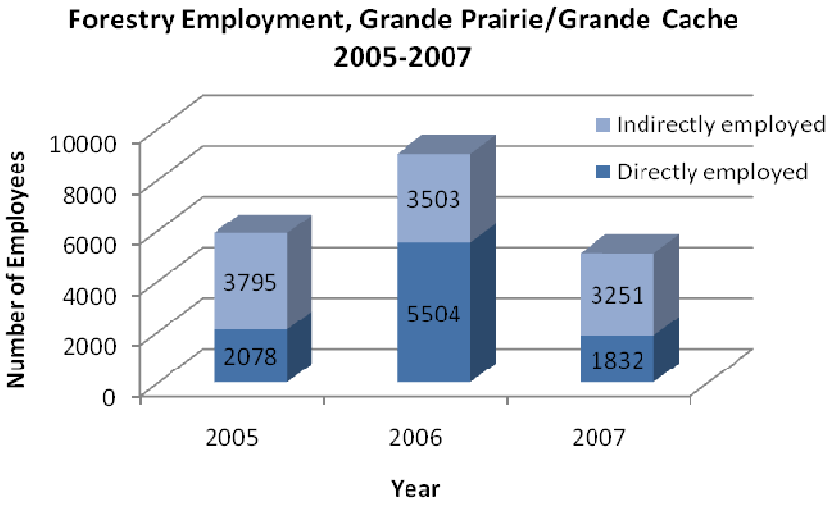
## Grande Prairie/Grande Cache

Grande Prairie is located 465 km northwest of Edmonton on the way to the Alaska Highway. To the south of the city, it is mostly a vast boreal forest with aspen, tamarack, lodgepole pine, jack pine, and black spruce extending well into the foothills of the Canadian Rockies. Major industries include oil and gas, agriculture, forestry, and food services.

Grande Prairie boasts four major forestry companies located in or within a 15 minute drive of city centre including: Weyerhaeuser Canada Ltd. (kraft pulp mill and one of GP's major employers with 700 employees); Canadian Forest Products Ltd. (saw mill and lumber year operations); Ainsworth Lumber Co. Limited (oriented strand board); and Risley Manufacturing (forestry machinery). Currently, the city has witnessed the closing of a secondary wood manufacturing operation and a sawmill and panel board operation running at reduced capacity.

The diversity and size of the Grande Prairie will help cushion the blow from the pine beetle fall-out; however, the city's real estate market will continue to be cyclical, and not for the faint of heart as the other main industry (gas exploration) is also feeling a downturn. With pressure on two major economic centers, gas and forestry, rents have been pushed downward making cash flow tight for some investors.

Grande Prairie's population increased at one of the highest rates in the country. With a population in 2006 of 47,076, the population increased nearly a third (27.3%) in the five year period. It also boasts a high median household income of $77,071 ($13,000 higher than the provincial median).




Grande Cache is located in west-central Alberta, is located 90 km northwest of Hinton and 435 kilometres west of Edmonton. The town suffers a boom-bust cycle due to the dependence on a major employer that depended on a single commodity: coal.

To reinvent the town, additional industries were encouraged to relocate to Grande Cache in order to diversify and re-invigorate the economy. This included Corrections Canada and a wood chip plant. Forestry is represented through timber harvesting and a lumber mill operated by Foothills Forest Products, which employs 175 people. There are plans to expand the wood pellet production, as well as potential expansion for power generation and the value-added forest products operation. The pine beetle infestation should not dramatically affect the ability of these projects to continue.

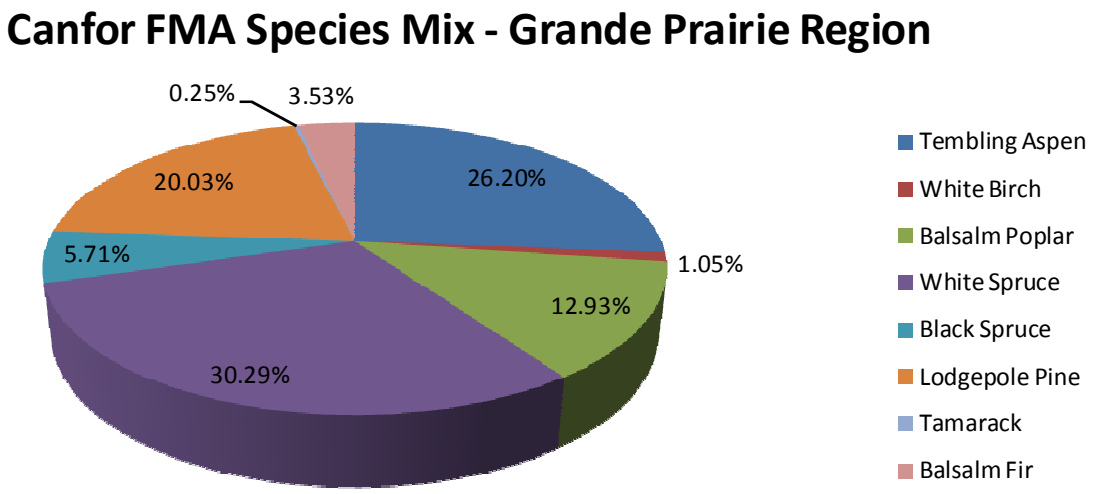
Grande Cache, however, experienced a decrease in population of 1.2% for a total population of 3,783 in 2006. However, a municipal census conducted in 2008 indicates that the population has returned and increased 11% in two years.

To show how cyclical these towns have been, this region has experienced a huge decline in employment, especially from 2006 to 2007, in the direct forestry industry. However, it experienced nearly the same increase from 2005 to 2006 as the decline in the following year[40]. It has also seen direct and indirect revenues decline from 2005 to 2007 by 7.5% and 7.6% respectively.

Pine does play a role for the timber companies operating in this region. Canfor in particular holds the coniferous license for the FMA with other companies licensed for deciduous operations. White spruce is the dominate conifer in the area, closely followed by lodgepole pine, along with other areas dominated by trembling aspen (See Chart below). Looking at the big picture, pine is not the only species on the land base in this region, as it is in many places in BC; this will help limit impacts from pine beetle damage. Deciduous species and spruce will certainly aid the mid-term timber supply helping to shelter this area to a degree. Further, while the beetle has reached this region over the past few years, climactic conditions remain unpredictable - it is not clear if population increases as seen in BC are feasible. Based on pine reliance, population size and economic diversity, the Grande Prairie region would be considered 'mild beetle impact'. In addition, the growth of the use of waste wood for

[40] Alberta Forest Products Association. (2008). Grande Prairie – Grande Cache. http://www.albertaforestproducts.ca/Downloads/documentloader.ashx?id=11215

pelletizing and power production should help insulate the region. Grande Cache, on the other hand, may feel a larger impact due to smaller population size, higher degree of pine reliance and potential for beetle population growth based on its more southern location.




Source: Government of Alberta Sustainable Resource Development
http://www.srd.gov.ab.ca/forests/pdf/canfor/Canfor%20DFMP%20A%20to%20E%20Sections.pdf

## Hinton/Edson

Located between Edmonton and Jasper National Park, Edson's economy is based on natural resources. Fifty years ago, the area was propelled by the petroleum industry and a decade later was revitalized by the launching of two coal mines. The forestry industry now plays an integral part to the local economy and is currently a major employer in both Edson and Hinton. Agriculture and petroleum are also important mainstays in the surrounding region.

Hinton is located on the eastern edge of Jasper National Park, 280 km west of Edmonton and 80 km east of Jasper. Hinton Wood Products (A Division Of West Fraser Mills Ltd) began in the 1950's and continues today, harvesting and processing trees from the foothills.


As of the last Federal census, Edson experienced a 6.8% population growth to 8,098 people from 7,585 in 2001 (below the 10.6% growth for the province during the same period). The median household income was $73,647, which was approximately $10,000 above the provincial

median. The population of Hinton increased 3.5% to 9,405 during that same period. The median income of $77,539 is about $13,000 higher than the provincial median.

This region has experienced declines in both forest revenue and employment. In 2007, 21.6% and 25.2% fewer people were employed directly and indirectly in forestry from 2005. This job loss had a direct effect on the real estate markets as people left town to find employment. Additionally, just less than 20% of revenue was lost in both sectors during the same period[41].

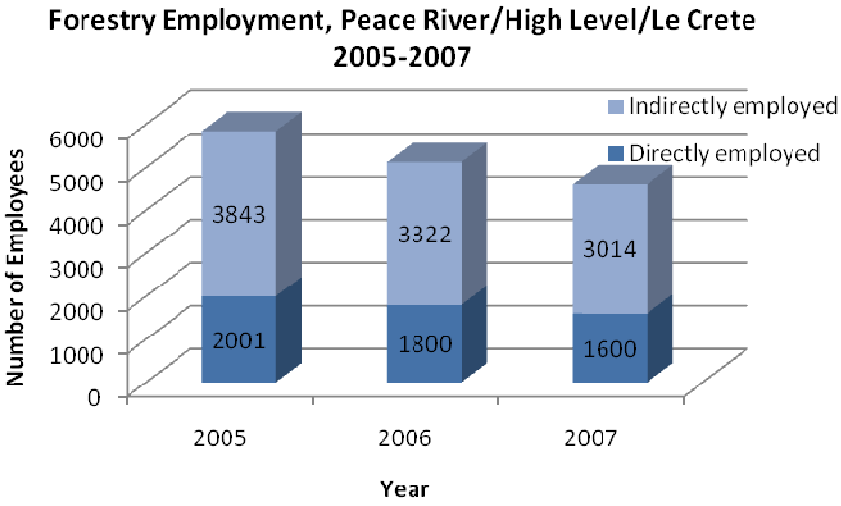
Hinton has one sawmill operating at reduced capacity and one pulp mill operating at normal levels. Edson has one sawmill and one secondary manufacturing facility operating at reduced capacity and a secondary manufacturing facility and panel board operation functioning at standard levels. In January 2009, Weyerhauser gave 140 employees at its OSB plant 60 day notice that layoffs were possible[42]. It is important to watch this area for further reductions in jobs and revenues due to its limited economic diversity and reliance on the forest industry as the trend that began in 2006 continues.

Pine also plays a role in this area as a dominate timber species. Other species do exist, such as spruce and some deciduous species, but pine is more prevalent here than in areas like Athabasca or Grande Prairie. Due to the geographic location of these areas the chance for pine beetle spread is elevated and could see sizable tree mortality this year and the next few years depending on climate. As both areas have a relatively small population it is important to watch the economics surrounding the forest industry as well as the beetle's movement.

## Peace River/High Level/Le Crete

This region does not rely on pine for the majority of its forestry jobs (that's the good news), the other side of that is that the region relies heavily on forestry as a whole to produce long-term high-paying jobs to support the surrounding economy. Due to the major downturn in the world economies and the impact it has had on forestry as a whole, the area will feel this negative impact quite strongly.

High Level is located in the Northwestern region of Alberta on the Mackenzie Highway eight hours north of Edmonton. The economy of High Level is centered on forestry, oil and gas, tourism and hospitality, retail and service, and agriculture. The Tolko dimensional lumber mill processes the majority of the harvested coniferous timber in the region, making High Level the main service and processing




[41] Ibid. (2008).Hinton – Edson. http://www.albertaforestproducts.ca/Downloads/documentloader.ashx?id=11216
[42] Forest Talks. (January 2009). Weyerhauser warns of possible layoffs in Edson. http://foresttalk.com/index.php/2009/01/07/weyerhaeuser-warns-of-possible-layoffs-i.

centre for the region's logging industry. In addition, Footner Forest Products Ltd, the world's largest oriented strand board press, process almost a million cubic meters per annum of the large aspen reserves of the region, employing 175 people on a full time basis.

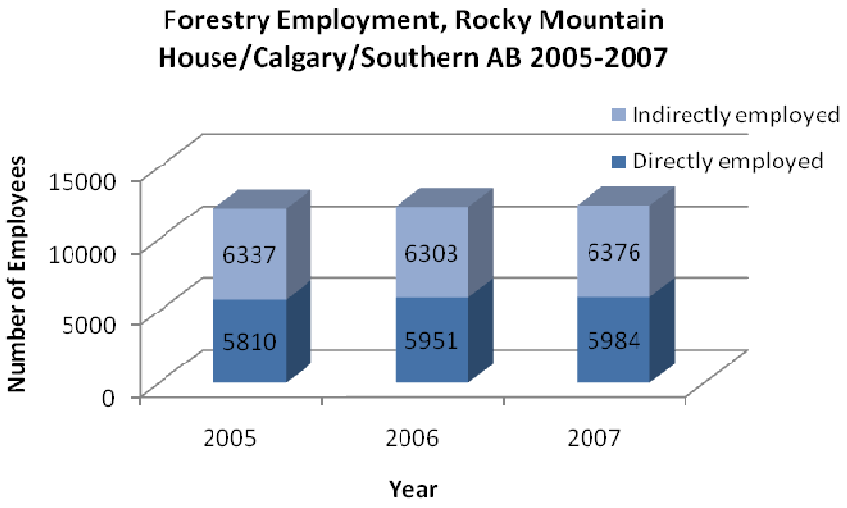
The Town of Peace River is located in northwestern Alberta along the banks of the Peace River Valley, near the confluences of the Peace, Smoky and Heart Rivers, 486 km northwest of Edmonton and 195 km northeast of Grande Prairie. The major economies are forestry and to a lesser degree oil sands exploration. Daishowa-Marubeni International Ltd.'s Peace River Pulp Division employs approximately 350 people, with another 600 seasonal contractors. Hardwood species such as aspen and balsam poplar (unaffected by the pine beetle) are utilized from the surrounding region where sufficient volumes are available to sustain the pulp mill on a long-term basis.

Peace River experienced a very slight increase in population (1.2%) from 2001 to 2006 for a total of 6,314 people with a median household income of $68,952. High Level had a population increase of 12.9%; however, given the small population, this resulted in only an additional 443 people in five years for a total population of 3,887. High Level has a median household income of $80,547, $16,500 higher than the provincial median.

The area around La Crete has three sawmills operating at reduced capacity, Peace River has one and High level also has one; High Level has witnessed the permanent closure of a panel board operation. The region has seen a decline of 20% of employees directly working in the forestry sector and a decline of 21.6% of employees working indirectly in the industry[43]. There is a possibility of further negative effects to the jobs and the surrounding economy in this region. This is important to keep in mind when considering real estate as an investment opportunity, because as jobs diminish, residents move elsewhere, resulting in high vacancies and lower real estate values.

## Rocky Mountain House/Calgary/Cochrane

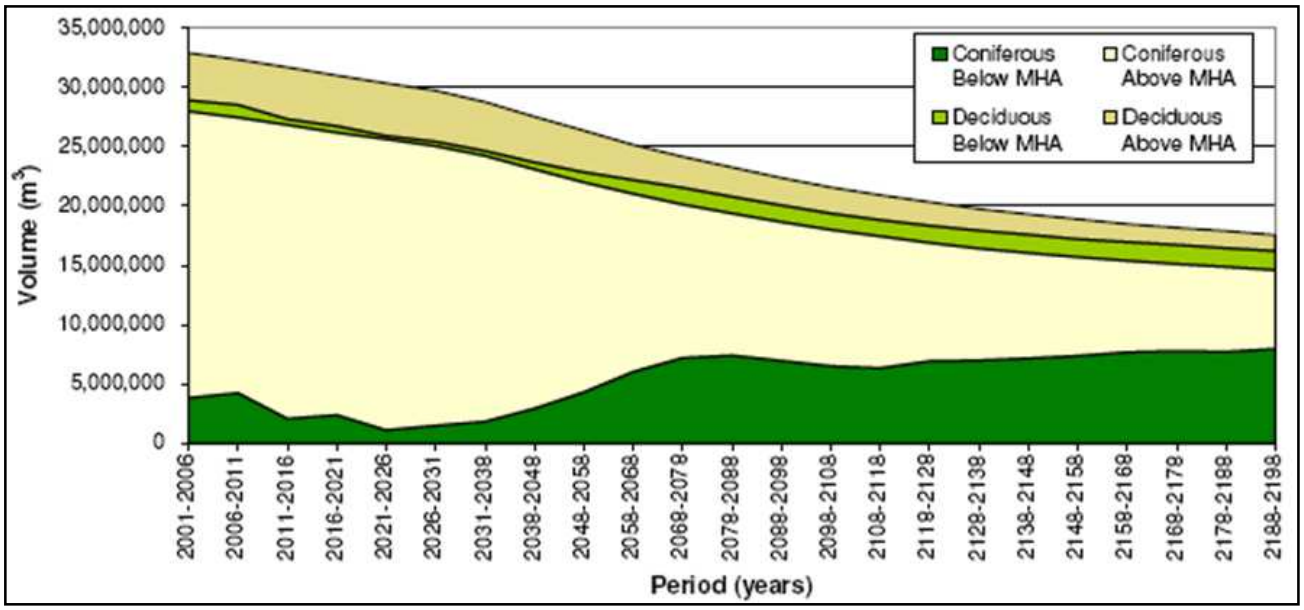
Cochrane is located along the banks of the Bow River, just 20 minutes west of downtown Calgary. Cochrane experienced a 14.3% population increase from 2001 to 2006 for a total of 13,760 people. The 2008 municipal census indicates that the population continued to increase to 14,653 people. The median household income in the area is very high, $83,003 - $19,000 above the provincial median.




[43] Ibid. (2008). Peace River – High Level. http://www.albertaforestproducts.ca/Downloads/documentloader.ashx?id=11217

One of Cochrane's main employers is the Spray Lake Sawmill which employs 150 workers and harvests most of its timber on crown land from the foothills of the Rocky Mountains. Its main products are Fence Posts, Wood Chips & Treated Lumber and Timber. Spray Lake FMA is highly dominated by lodgepole pine with roughly 80% of the FMA showing a strong pine presence[44]. Other species are present such as spruce and some deciduous species, but due to location, the pine in this region most likely will continue to face pressure from the beetle.

**Spray Lake Standing Inventory Volume Summary**




Source: Government of Alberta Sustainable Resource Development
http://www.srd.gov.ab.ca/forests/managing/plans/spraylakesawmills.aspx

The health of the pine forests, currently under attack from the pine beetle infestation, could have a dramatic medium and long term effect on the forestry industry in this region. That is why we are witnessing a forceful offence against the pine beetle from the Alberta government here. To compound the issue this area is also not immune to the negative forestry economics witnessed across Canada.

Located west of Red Deer, Rocky Mountain House shares the provincial median household income of $63,974. Its population as of 2006 increased 10.7% to 6,874 people. Rocky Mountain House continues to operate a laminated veneer operation and sawmill at normal levels. The town of Lacombe (to the east of Red Deer); however, closed a secondary manufacturing facility indefinitely while Claresholm saw a secondary wood manufacturing operation close and Blairmore lost a sawmill, all due to the forestry downturn. The loss of these higher paying jobs has had an effect on the real estate market and the underlying economics of the towns.

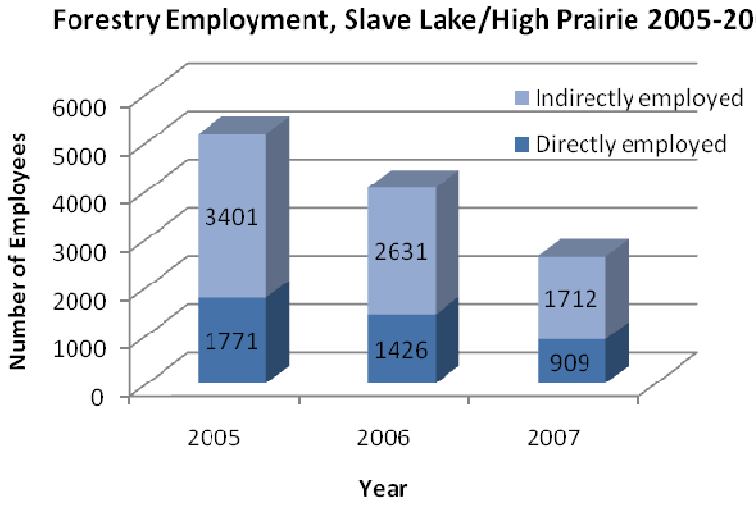
Calgary's population increased 13.4% to 1,079,310 people at the latest Federal Census. The city expects to add 25,000 people per year for the next decade. The median household income in the Census Metropolitan area is just above the provincial median at $68,579. It closed two secondary manufacturing plants and is operating one at reduced capacity; it also has one sawmill operating at reduced capacity.

[44] http://www.spraylakesawmills.com/

The region experienced a 3% increase in employees from 2005 to 2007 to 5,984 working directly in forestry and 0.6% to 6,376 people working indirectly in the field[45]. Direct and indirect revenues increased 4.8% from 2005 to 2007. This area has been cushioned by the adverse changes in forestry due to its size and the diversity of the sectors within the industry. However, given the vast geographic area covered, it is necessary to watch the region carefully for effects at a micro level. Smaller communities within southern Alberta are more affected than the city of Calgary. Investors need to be diligent in monitoring their real estate and the market.

## Slave Lake/High Prairie

High Prairie is 365 km northwest of Edmonton and 120 km northwest of Slave Lake following Highway 2. With its very small population of 2,750 in 2006, High Prairie experienced a negligible increase of 0.5% (103 people in five years). Its median income of $49,435 is $14,500 below the provincial household median.




Its economy is dominated by agriculture, forestry and oil and gas. Built in 1995, Tolko OSB Mill was one of the larger employers in the area with approximately 170 staff. It produced 500,000,000 sq ft (46,000,000 m2) of OSB (oriented strand board) each year. However, Tolko closed its plant indefinitely in February of 2008, putting most of its employees out of work. It has closed a panel board operation and is operating a sawmill at reduced capacity.

The Town of Slave Lake lies at the eastern end of Lesser Slave Lake, 250 km northwest of Edmonton. Slave Lake experienced a 1.6% population growth in 2006 for a total of 6,703 people. A municipal census conducted in 2007 put the town at 7,031 people. The town's median household income is $78,246, about $14,000 higher than the provincial median.

Slave Lake's economy is based on a combination of oil and gas and forestry. In February, 2009 Tolko Industries Ltd. closed its engineered wood plant in Slave Lake indefinitely, affecting 112 employees.

The mill closures will have a big impact on the median income in the next census, pulling the dollar amount down significantly given the small number of people residing in each of the towns. This dramatic drop in income and jobs will also have a negative ripple effect on the real estate markets in these towns, unless other industries are able to replace these well paying jobs.

[45] Ibid. Rocky Mountain House – Calgary – Southern Alberta.
http://www.albertaforestproducts.ca/Downloads/documentloader.ashx?id=11220

The pine beetle may have limited impact in this area thanks to decreased pine reliance/dominance and geographic location, similar to the Athabasca chart seen earlier. It will be important to watch both areas for job loss from potential mill closures.

Forestry in the region has lost nearly 50% of its employees working directly and indirectly in the sector[46]. As for the local economy, just less than 46% of direct and indirect revenue was lost between 2005 and 2007. With no jobs, these people are likely to leave town to find work, resulting in an ugly downturn in the local real estate market.

## Whitecourt

Whitecourt, an oil, forestry, and agricultural town located at the confluence of the McLeod River and Athabasca River is 177 kilometers northwest of Edmonton. Whitecourt jumped 7.6% in population from 2001 to the latest Federal census for a total population of 8,971. The municipal census conducted in 2008 shows a continued increase in population to 9,202 people. It also has a high median household income of $78,516.


The town is the site of three mills: Blue Ridge Lumber Sawmill / Ranger Board MDF (owned by West Fraser, 250 employees); Millar Western Sawmill / Pulp Mill, (owned by Millar Western Forest Products, 120 employees); and Alberta Newsprint Company Pulp & Paper Mill (211 employees). Whitecourt is operating a sawmill, pulpmill, and panelboard operation at reduced capacity. It continues to operate a newsprint mill and sawmill at standard capacity. Employees in the direct and indirect forestry industry declined 2.1% and 4.0% from 2005 to 2007[47]. Revenues declined just under 4% for the same period.

Pine harvest and manufacturing plays a role in the Whitecourt economy (in the sawmills but not the pulp or newsprint mills) so the pine beetle will have an additional negative effect on the city's industries and job base. Pine represents roughly 25% of the harvestable timber in this region, but white spruce, black spruce, balsam poplar and trembling aspen also add heavily to the mix. It is important for investors in this region to pay close attention to the beetle outbreak and the remediation programs that are being enacted to battle it.

[46] Ibid. Slave Lake – High Prairie. http://www.albertaforestproducts.ca/Downloads/documentloader.ashx?id=11218
[47] Ibid. Whitecourt. http://www.albertaforestproducts.ca/Downloads/documentloader.ashx?id=11219.

## The Outlook

Despite a grim outlook presented by the facts and figures, many factors will contribute to the overall impact of the MPB epidemic. There is certainly a chance for other economic sectors to step up thus ameliorating some fall off from the forestry sector. Further, community groups are in place and are working with government agencies to strategically plan for the future. However, environmental issues should be looked at as well, as the suggested surge cuts may prove detrimental to many aspects of the forest. Heavy tree mortality alone will affect the forest ecosystem with these effects being amplified by increased logging activity. Stream flow regulation/flooding, water quality, erosion, and wildlife habitat are a few concerns stemming from the beetle epidemic.

Our examination of the beetles' impact on the BC market predicted the short term upswing in some of the affected local economies as the government increased the annual allowable cut and forestry companies ramped up their activities in an effort to salvage as much pine beetle wood as possible. Mills worked overtime and money poured in to the communities; even real estate was affected as prices increased and vacancies went down. However, poor economic conditions brought negative effects on the real estate market as jobs diminished and people left town seeking stable work. As we predicted, the short term frenzy ended in a very sharp down turn in the economy and the real estate market and the outlook for mid to long-term timber supply in these areas might not be bright. Only towns and cities that made drastic attempts to diversify their economies and attract new employers and industries to the area are able to weather this storm.

Only time will tell how devastating and far reaching the effects from this tiny forest pest will be in Alberta and beyond. The depth of the winters and the strength of the government offense will be major factors in containing this infestation.

With roughly 4,000 jobs lost in the forest sector in Alberta over the past two years, measures must be taken to support this valuable industry, the communities it supports and the families it employs.

From a real estate investment prospective the forest based areas of Alberta that may experience pine beetle related hardships are as follows:

Tier 1: These areas must be watched closely – Hinton, Edson, Grande Cache, Rocky Mountain House and Drayton Valley. These areas have relatively small populations, some degree of pine reliance and are geographically located in areas more susceptible to beetle attack. If investing in these areas a risk premium is necessary – at least double the cash flow seen in other areas.

Tier 2: Grand Prairie, Whitecourt, Athabasca, Slave Lake, High Prairie and Cochrane. Out of these areas Cochrane will see the largest impact from pine mortality due to location, but other factors for the area should help shelter the region to a degree. Grande Prairie is currently getting hit on two fronts, low natural gas prices and tough forestry conditions – it may be a bumpy ride for investors, but the long term outlook is still strong. Slave Lake, Athabasca and High Prairie have small population bases and will be subject to market volatility from poor economic conditions, but the pine beetle overall should have limited impacts in these areas.

It is important for all investors to be aware of small town volatility in general and with current forest economics as they stand most of the small forestry towns mentioned will see pressure on real estate markets both in price and vacancy rates.

## On a Positive Note

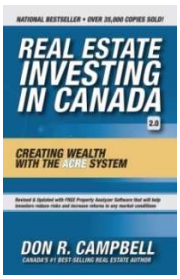
The Alberta government has promised to improve its marketing of its forest products globally by overhauling the four decade practice in which timber is allocated to companies for harvest and helping diversify the sector into bio-products and bio-energy[48]. The government has pledged $9 million over three years for a new Alberta Bio-Materials Development Centre to support this end. Ted Morton, the Sustainable Resource Development Minister believes "If the forecasts being made 12 months ago hold true, there will be a doubling of GDP in the next generation and the world is short of fibre"[49].

Amidst these crises, the Alberta Forest Industry predicts a strong outcome for certain components of the forest industry. They forecast that "when British Columbia can no longer salvage mountain pine beetle-killed wood, the amount of harvest in British Columbia will drop, followed by another predicted drop when the Annual Allowable Cut is recalculated for post mountain pine beetle wood flows. The reduction in North American wood supply is likely to happen just as the United States housing inventory clears up and the risk-averse mortgage industry starts to heal. It is likely that within three years markets will be strong to very strong for solid wood and panel products"[50].

Finally, not every tree will be destroyed. Lodgepole has come under heavy attack and forests dominated by this species will certainly change in the wake of the beetle. However, many areas consist of mixed stands representing hope for the future timber supply, followed by new trees planted by the forest sector for generations to come. Based on climactic conditions, government and industry aggressiveness, forest composition and other factors Alberta will weather the storm.

[48] Mah, B. (2009). "Healing the Alberta Forest Industry" in *The Edmonton Journal* (May 9, 2009). http://www.edmontonjournal.com/Business/Healing+Alberta+forest+industry/1576697/story.html.
[49] Ibid.
[50] Alberta Forest Products Association. (April 2005). The Alberta Forests Products Industry – Growing Alberta. http://www.albertaforestproducts.ca/Downloads/documentloader.ashx?id=10849.

# ABOUT THE AUTHORS

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Don R. Campbell is a Vancouver-based national real estate educator, researcher, author and investor. He is president of the Real Estate Investment Network™, Canada's leading real estate education program, and is an authority on all aspects of Canadian real estate.

Back in 1985, Don made his first investment into residential real estate and hasn't looked back since, amassing a significant portfolio of investment properties. Don is also author of the best-selling Canadian real estate book Real Estate Investing in Canada. Published in May 2005, Real Estate Investing in Canada has just been updated to "Version 2.0" and with over 50,000 copies sold, it is the all-time best-selling real estate book in Canadian history. He is also the author of 97 Tips for Canadian Real Estate Investors, released in April 2006 and 51 Success Stories from Canadian Real Estate Investors, released in 2007. He is highly sought by national, regional and local media to provide expert opinions on current topics and trends in real estate. Don shares his analyses and strategies through the Real Estate Investment Network (REIN) and entertaining and informative presentations have been attended by thousands of real estate investors across North America and in Australia and Ireland.

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Ray Reuter has been employed as a research analyst with the Real Estate Investment Network since 2006. Ray has a Bachelor's of Science degree in entomology with a minor in horticulture from the University of Kentucky. Ray's Masters work was done at the University of California Riverside regarding the chemical ecology of wood boring beetles in Southern California and is currently finishing up his thesis requirements. During his residence in California he also participated on projects centered around bark beetle ecology, Cerambycid chemical ecology (both long range pheromones and short range contact pheromones) and forest species competition. He is a published author in the Journal of Chemical Ecology. Ray also provides advice on house hold pests for REIN™ members with past presentations on Bed Bugs and future materials concerning "common pests encountered by tenants". Ray continues to invest in real estate.

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**Manager of Research, Cutting Edge Research Inc.**

Melanie joined REIN™ in 2006 as a research analyst and has contributed in many areas including Top Investment Towns; the Impact of Transportation Improvements on the Lower Mainland, Calgary, Edmonton and Greater Toronto and the Hamilton region; grow-ops and methamphetamine labs in rental housing and crime prevention through environmental design. Melanie holds a Master's Degree in Criminal Justice from California State University, San Bernardino and a Bachelor's Degree in Criminology from Simon Fraser University. She has worked with law enforcement agencies in southern California on many projects including a methamphetamine task force and Community Oriented Policing initiatives.

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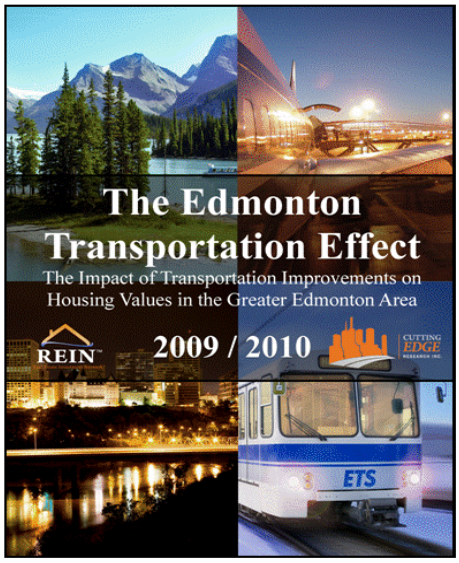


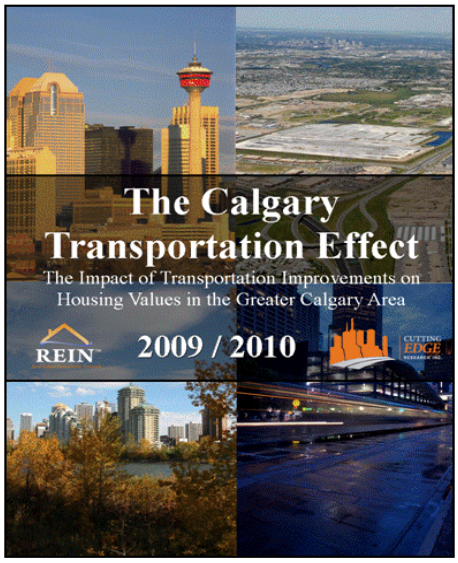


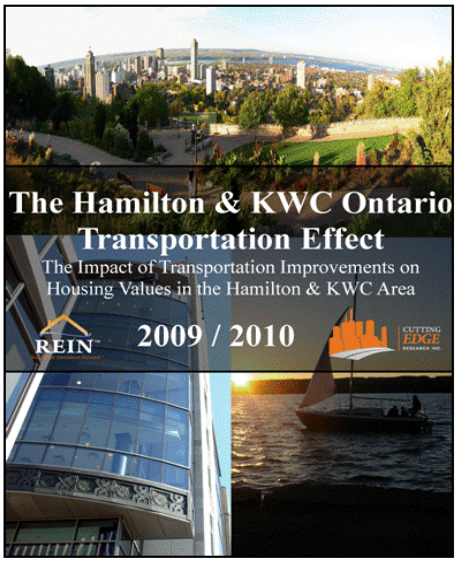


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