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Alberta's Labour Market Needs to 2015

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PREFACE

The energy sector has been a dominant factor in Alberta's development and growth over the last half-century. The large capital investments and operating expenditures associated with finding and producing oil and gas have directly provided a major stimulus to the economy. But the indirect and induced impacts have been equally important. The development of many other industries supplying inputs to the energy sector, the generation of substantial export and government revenues, and the stimulus for large inflows of people have resulted in large 'multiplier' effects. In combination, these have also played a major role in shaping Alberta's 'character' which is generally distinguished by its highly educated, adjustable and entrepreneurial labour force, low unemployment and high labour force participation rates, strong work ethic and sense of self reliance, and its optimistic outlook.

In recent years the energy sector has become even more dominant and has increasingly made Alberta a key driver of the national economy. In a world with a rapidly growing demand for energy, having one of the largest concentrations of energy resources in the world might seem to translate into an assured, prosperous future. There is clearly huge potential associated with unconventional oil and gas, coal, remaining conventional resources and with alternative and renewable energy. However, translating this potential into reality will be daunting. Increasing constraints related to resource access, environmental impacts, infrastructure requirements, and availability of highly qualified people need to be addressed. Other challenges include the massive long-term investments in developing and implementing new technologies and making the right changes in the policy and regulatory framework. Indeed, the fact that relatively few nations have managed to convert resource wealth into high standards of societal welfare is a useful reminder of the magnitude of the challenges.

Alberta is in many respects at a crossroads. On the one hand complacency will almost certainly mean a dimming of the province's long-term prosperity. Declines in the conventional oil and gas sector will significantly dampen growth and prosperity. There are no other sectors of the province's economic base that could realistically expand sufficiently to offset significant declines in the dominant energy sector. On the other hand, visionary, strategic investments today can unlock non-conventional and other energy resources critical to securing a strong and prosperous long-term, sustainable future for the province.

It is in this context that ISEEE has undertaken a series of papers focused on Alberta's energy futures. The intent is to take a longer term look at the challenges, opportunities and choices and what they mean for Alberta's future.

Alberta's Labour Market Needs to 2015

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Since the return of higher oil and natural gas prices, Alberta's booming economy has been perceived as suffering from a shortage of skilled labour that is considered to be critical for the sustainability of the province's strong growth performance. For example, with declining conventional supplies of oil and natural gas, the development of the vast oil sands has been identified as a strategy for ensuring the future prosperity of Alberta. Large scale construction projects, booming residential and commercial building and the needs for government to install infrastructure have made the scarcity of the skilled building trades particularly acute adding to the overall costs of the development of the resource. Adding to the stress is the longer run issue for Alberta's skilled labour supply that arises with population aging and the expected brain drain from the Alberta workforce associated with the retirement of the baby boom generation. Over the next ten years, engineering expertise and corporate leadership are critical for the development of Alberta's non-conventional resource base, but over the next 10 years, the current cohort of corporate executives and senior engineers will begin to retire.

A popular estimate is that Alberta can expect a labour shortage (demand exceeding supply) of 100,000 workers by 2015. This would be equivalent to 5% of total employment in 2015. The Conference Board of Canada has recently estimated that the labour shortage could reach 350,000 workers in Alberta by 2025! Addressing the coming labour shortage by various avenues intended to increase the growth of labour supply is an important policy focus for the Alberta government and one that is broadly supported by Alberta employers.

The Canada West Foundation and Calgary Economic Development have indicated that the looming labour shortage is the most important economic challenge for

the province if it is to maintain its strong growth. For example, the Canada West Foundation reports that there are estimates that the current labour market tightness in Alberta will reduce GDP growth by a full percentage point as the labour shortages cause firms to turn business away.¹ The shortage of labour is a negative for the investment climate in Alberta as an inability to hire labour, or increased costs of hiring labour, reduces the rate of return to investment which will limit GDP growth. This could be particularly problematic with respect to resource development in the oilsands. As Denton and Spencer have argued, the development of energy resources can be seen as “urgent large-scale investment activity imposing additional demands on the economy to produce investment goods, and hence augmenting the demand for labour.”² Clearly, with declining conventional oil and natural gas production in the province, there is urgency for the development of the oilsands resource. With a labour shortage, or in a situation where labour supply growth is insufficient to keep pace with the growth in labour demand, it is difficult to support such resource development without crowding out other forms of investment or without reducing consumption levels in the economy. The recent complaints of firms in Alberta’s high tech sector would suggest that is a problem for investment in non-oil and gas sectors, but evidence of reduced consumption levels in Alberta has yet to emerge.³

¹ Todd Hirsch, “As Good As It Gets: Alberta Economic Profile and Forecast,” Canada West Foundation, 2006, page 12.

² Frank T. Denton and Byron G. Spencer, “On the Prospect of a Labour Shortage,” *Canadian Public Policy* IV(1) 1978, 103.

³ One example of reduced consumption attributed to the labour shortage is the delay in possession dates for new home buyers. Home builders facing construction labour in short supply are unable to build houses at a rate to meet the promises. On the other hand, one could question why home builders did not adjust the promised completion times knowing that they would face a shortage of labour. This would have allowed home buyers an opportunity to investigate alternative purchases that could have met the desired possession date, or it might have allowed home buyers to offer less for the purchase.

On the other side of the debate, the Alberta Federation of Labour views the labour shortage as a “myth”.⁴ The AFL’s recent study of labour shortages in the Alberta construction sector highlights that much of the labour market tightness has arisen due to the torrid pace of investment in the oilsands and much of the employment that this is generating is not going to last beyond a few years. In addition, the study highlights that the labour market tightness can be corrected by improving apprenticeship/training arrangements and by improving labour market certification and regulation to increase the in-mobility of Canadian construction workers to Alberta. Where employers have been calling on government to intervene in the labour market on the supply side to ease the labour shortage crisis via increased immigration levels or recruitment of temporary international workers, the AFL suggests that the regulation of labour demand may be the better approach. In particular the AFL recommends that the Alberta government should regulate the pace of development in the oil sands to alleviate the short term tightness in the labour market and extend the employment benefits of resource development over a longer period. They also recommend that the provincial government limit its infrastructure spending to periods of low labour demand in construction rather than its current approach of increasing capital spending when labour demand is extremely high.

Why is a labour shortage a problem for the economy? On the one hand, labour shortages are portrayed as short-term and benign influences on the economy. Todd Hirsch suggests that “labour shortages will act as a natural braking mechanism on the economy, preventing run-away economic growth that could be difficult to contain. It is questionable if real GDP growth of 7-10% is desirable given the probabilities of over-

⁴ Alberta Federation of Labour, *Beyond Chicken Little: Understanding the Need for Measured Reforms to Alberta’s System for Skills Training*, April 2006

strained infrastructure, inflation, severe housing shortages, and environmental degradation.”⁵ The braking mechanism arises from the labour shortage increasing labour costs that reduce the income/rate of return of capital. This reduced rate of return will lower the level of expected investment in the economy.⁶ While labour shortages will contain the growth of the overall economy, they are not necessarily bad for the standard of living. Martin Collacott refers to the conclusion arising from the 1985 Macdonald Commission that high levels of immigration will increase the size of the labour force, the level of investment in the economy and the size of the economy, but could cause real per capita incomes and real wages to fall.⁷ It would follow that a labour shortage would result in higher per capita incomes and real wages for labour while constraining the increase in the size of the economy and the level of investment. From this perspective, higher wages for labour eliminate the shortage and raise the standard of living of Albertans.

The appropriateness of a response from the Alberta government to deal with labour shortages depends upon the nature and cause of the economic problem. Governments should constrain their interventions to cases where there are market failures such as where coordination failures or other barriers to market adjustments preclude the expansion of training capacity in the province or the entry of skilled workers into the

⁵ Todd Hirsch, “As Good As It Gets: Alberta Economic Profile and Forecast,” Canada West Foundation, 2006, page 13.

⁶ In the case of a small open economy, the rate of return to capital is set by the global capital market hence in the long run, the influence of the labour shortage is to reduce the size of the capital stock in Alberta. There would be no change in the rate of return earned by capital in Alberta over the long run.

⁷ Martin Collacott, *Canada’s Immigration Policy: The Need for Major Reform* Public Policy Sources no. 64 (Vancouver: The Fraser Institute, 2002), page 7.

Alberta labour market.⁸ The Alberta government may also need to address short run labour shortages associated with a resource boom to eliminate the risk of a reduction in Alberta's standard of living over the long run arising from its resource wealth. For example, if labour shortages harm a dynamic sector like high tech, in which firms are a source of innovation and technical progress which is the only source of sustainable growth of per capita incomes for an economy, then the recent complaints of high tech firms that the booming oil and gas sector is rendering them non-economic in Alberta due in part to a scarcity of capital and labour is cause for concern.⁹ Another case would be where the labour shortage "crowds out" projects that would install capacity for forward processing of the natural resource. If such projects are constructed out of the province even due to short run labour market conditions, then this permanent loss of forward processing activity represents a long run cost for the provincial economy due to the labour shortage.

In the case of these "dynamic externalities", the Alberta government may want to consider strategies toward regulating labour demand in the province such as by limiting the number of approved oilsands projects, or by delaying public infrastructure investments until labour shortages ease off. The Alberta government may also want to reconsider the desirability of policies like royalty holidays that were introduced to stimulate oil sands development and hence construction labour demand at a time where labour supply in the Fort MacMurray area is tight. Such policies introduced in times of

⁸ For example, the Alberta Government should identify and address situations where long training times and limits to training capacity (especially if government imposed) results in an inability of the market on its own to increase labour supply.

⁹ High tech industries are often considered to be characterized by "external economies of scale" where the profitability of one firm in the sector is directly related to the number of firms in the sector in the local economy. Should Alberta lose even a few of these firms, the viability of the sector could be compromised which over the long run could harm the province's standard of living over the long run.

weaker labour demand merely add fuel to a fire that is apparently over-heating the economy. Finally, in order to support investment in forward processing and non-resource sectors thought to be vital for the sustainability of Alberta's standard of living beyond the short-lived benefits of a resource boom, the Alberta government may want to consider "province-building" strategies that include targeted subsidies, and perhaps even public investment.

In this paper, I discuss the economics of a labour shortage to identify how shortages can be measured and to identify the rationale(s) for government intervention that may exist. Second, I look at various indicators for the existence of a labour shortage to identify if shortages exist today and to 2015 and to identify if the current and expected shortages are specific to some occupations and skills or if they are a general condition for the Alberta labour market. Finally, policy options will be identified for addressing how Alberta can meet its labour needs to ensure a sustainable and prosperous economy.

1. The concept of a labour shortage –what does it mean and how is it measured?

While the concept of a "Labour Shortage" seems straightforward, Sue Richardson notes that the OECD states that there is no universally applied definition of labour shortages, and the US Department of Labor states that there are no objective measures or direct indicators of labor shortages.¹⁰ Denton and Spencer (1978) generally define a labour shortage as a situation where there is some level below which the quantity of labour supplied is inadequate. Arrow and Capron define a labour shortage as a situation where there is an existence of unfilled vacancies with salaries equal to those of skilled

¹⁰ Sue Richardson, *What is a Skill Shortage?* National Institute for Labour Studies, Flinders University, April 2005.

workers currently employed by the firm and performing equivalent service.¹¹ Richardson (2005) provides a basic definition of a labour shortage as a situation where the supply of workers is not sufficient to meet the demand at current rates of pay. The Alberta Government define a skills shortage as one where employers have difficulties finding qualified workers to fill available positions. The shortages arise “when the demand for workers with specific skills exceeds the supply at existing market conditions, including current wages and locations.”¹²

Other than the Denton and Spencer definition, it is important to note that labour shortages are defined as dis-equilibrium situations where demand exceeds supply because the price of labour has not increased (at least not sufficiently) to restore labour market equilibrium.¹³ The perceived existence of a labour shortage could also reflect that the labour market is in equilibrium but the adjustment to higher wages triggers complaints about labour shortages from firms with marginal profitability in the face of sudden and dramatic increases in labour demand.¹⁴ From this perspective, it would not be surprising

¹¹ Kenneth J. Arrow and William M. Capron, “Dynamic Shortages and Price Rises: The Engineer-Scientist Case,” *Quarterly Journal of Economics* 73(2) 1959, 305.

¹² Government of Alberta, Alberta’s Skill Shortages: Inventory Government of Alberta Initiatives. The Government document describes how shortages can be economy wide or limited to particular occupations or skill sets. Shortages may be occupation-based or skill-based.

¹³ There is a still another sense in which the term shortage is applied to the labour market that arises due to a deficiency in demand for skilled labour. For example, Arrow and Capron (1959, 307) give the example of where statements are made that there are not as many engineers and scientists as the economy should have to do all of the necessary activities to maintain rapid technical progress and to raise our standard of living. In other words, demand for skilled labour ought to be greater than it is. One could interpret this as the underlying views of those promoting changes to Alberta’s post-secondary education system in the 1990s. It was thought that too many Albertans pursued University education over college/vocational training, and that within universities, there were too few engineers, business school students and scientists. The CFIB and Conference Board of Canada have both recommended that the Alberta government encourage more students to pursue training in Trades. Emery, J.C. Herbert (2005) “Total and Private Returns to University Education in Canada: 1960 to 2000 and in Comparison to Other Postsecondary Training” in Charles M. Beach, Robin W. Boadway and R. Marvin McNinn eds., *Higher Education in Canada*. Kingston: John Deutsch Institute, Queen’s University.

¹⁴ Arrow and Capron give the example of the apparent shortages of household servants in World War II. As higher paying, opportunities arose for individuals who had been working as servants, they were lured into alternative occupations. Many households that had been employing servants found that they could no

to find Alberta employers complaining of shortages as they get used to the fact that the price of skilled labour has risen substantially due to changes in the supply of, and the demand for, that labour. Alberta's small high tech sector has complained of a lack of skilled labour as a cause of their increasingly non-competitive position in Alberta. On the other hand, their concomitant complaint about a lack of access to capital and government support in Alberta could also suggest that marginal firms cannot afford to pay the higher wages in Alberta. Paul Darby of the Conference Board of Canada makes this point when he points out that while wages in Alberta are already rising at a 7 percent annual rate, wages could go even higher to attract more labour to the province but "businesses don't necessarily like to do that. That can get to be expensive."¹⁵ The question remains as to whether the short run dis-equilibrium in the labour market is short-lived in real time so that is not important, or whether the new higher wage equilibrium in the labour market is harmful for the economy.

Arrow and Capron identified the difficulties associated with providing a clear operational definition for the term "shortage" as applied to the labour market. Often the notion comes from surveys of prominent employers who are asked if they are experiencing, or expect to experience, a shortage of labour. Arrow and Capron argue that respondents could interpret the concept of a skill shortage in their firm as one where there is an existence of unfilled vacancies with salaries equal to those of skilled workers currently employed by the firm and performing equivalent service. In other words, the concept requires a quantity dimension (job vacancies) and a price dimension (at the going

longer find anyone to work for them at the price that they had been paying for household help. According to Arrow and Capron, rather than admit that they could not afford to pay the higher wages necessary to keep help, many households found it opportune to complain of a shortage.

¹⁵ Geoffrey Scotton, "Alberta Worker Shortfall could hit 350,000 by 2025: Investment rates 'phenomenal', overwhelming", Calgary Herald Tuesday April 11, 2006, page D3.

wage/salary). There is also a “quality” aspect to a labour shortage situation as employers may choose to fill vacancies with workers who in the prior to the skills shortage would have been seen as under-qualified and unsuitable for doing the job. These notions are operationalized in Arrow and Capron’s preferred definition of a skills shortage:

“A shortage exists when the number of workers available (the supply) increases less rapidly than the number demanded at the salaries paid in the recent past. Then salaries will rise, and activities which were once performed by (say) engineers must now be performed by a class of workers less well trained and less expensive” ... By definition a shortage exists if the relative earnings of engineers have risen.¹⁶

Shah and Burke suggest that employers are likely to report a labour shortage in two distinct circumstances.¹⁷ First when they encounter a “skills gap” where job vacancies are filled but by workers considered by the employer to have deficient skills relative to what the employer desires. Second, employers will report shortages when they have difficulty recruiting despite a sufficient supply of qualified people. Richardson (2005) argues that there needs to be a distinction made between situations where there is no-one available to hire with the skills, and/or credentials, that are a minimum requirement for the job from one where such people are available, but for some reason are choosing not to apply to fill the vacancies. In the former case, firms will resort to “poaching” workers from other firms whereas in the latter case, the vacancy can be filled by locating and attracting workers who are not using the skill in short supply.

¹⁶ Arrow and Capron, “Dynamic Shortages and Price Rises,” page 305. This definition comes from David M. Blank and George J. Stigler (1957) *The Demand and Supply of Supply of Scientific Personnel* (New York: National Bureau of Economic Research).

¹⁷Chandra Shah and Gerald Burke, “Skills Shortages: Concepts, Measurement and Policy Responses,” *Australian Bulletin of Labour* 31(1) 2005, 44-71.

2. Why do Albertans believe that there is a labour shortage?

With the booming Alberta economy and frequent media reports about labour market tightness, if not labour market shortages, it is commonly believed that Alberta is experiencing a shortage of labour that will worsen over the coming decade as its aging labour force reaches the normal age of retirement. There are reports of “rampant poaching” in the Alberta labour market.¹⁸ The Alberta Government has shown remarkable foresight and diligence in addressing the impending labour shortage beginning with its 2001 publication, *Prepared for Growth: Building Alberta’s Labour Supply*, and developing policies and plans to expand the supply of skilled labour in Alberta for the future. This government activity, in and of itself, creates the impression that there must be a problem to address. If that is the case, then it should be possible to find systematic evidence that there is a problem.

Is there a problem at present?

A common indicator for the existence of a labour shortage is the annual average unemployment rate. The government of Alberta Labour Force Planning Committee expressed the logic that “when demand for labour exceeds supply, the unemployment rate drops. When the unemployment rate moves below five per cent, the labour market is considered tight.”¹⁹ Unemployment rates of around 5% are considered reflective a balanced labour market, whereas unemployment rates of under 4.5% are thought to reflect “full-employment” in the economy, hence unemployment rates that are less than

¹⁸ Gina Teel, “Soaring wages create higher building costs,” Calgary Herald, April 17, 2006. Marty Hope, “Labour shortage worries builders,” Calgary Herald, April 17, 2006. Charles Frank, “Worker crunch looming larger,” Calgary Herald, April 22, 2006, page C1. Derek Sankey, “Poaching rampant in heated Calgary oilpatch,” Calgary Herald, April 29, 2006 Page I1.

¹⁹ Labour Force Planning Committee, Government of Alberta, *Prepared for Growth: Building Alberta’s Labour Supply* October 2001, Page 2.

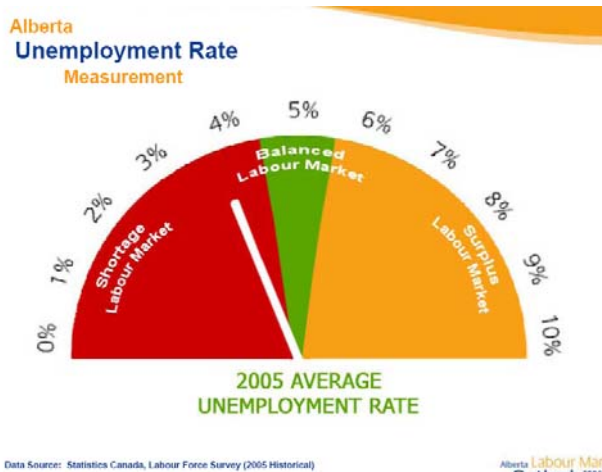
4.5% are considered indicative of a labour shortage. The relevance of the unemployment rate as a measure of labour shortages comes from its correlation with other indicators of a tight labour market such as an increase in unfilled job openings and pressure on wages.²⁰ The figures below from the Alberta Human Resources and Employment's "Labour Market Outlook for 2006" and from the Labour Force Planning Committee's *Prepared for Growth* show that this measure clearly suggests that Alberta is in the midst of a labour shortage. In 2001, the Alberta Government's Labour Force Planning Committee reported that Alberta's unemployment rate fell steadily from nearly 10% in 1993 to 5% in 2000. In 2001, the unemployment rate stood at 4% and today, Alberta's unemployment rate stands at around 3.5%.

The shortage conditions vary by occupation. In 2001, the provincial government's Labour Force Planning Committee found that 25 of 53 occupational groups had unemployment rates below 3%, but the AHRE reported in 2004 that only 24 of 53 occupational groups had an unemployment rate below three percent. By 2005, 32 of 53 occupational groups had unemployment rates under 3%. The overall picture is one where the labour market shortage, according to this measure has been in existence for many occupational groups such as health occupations, business, finance and administrative occupations and some skilled trades for at least five years, but outside of these occupational groups, there does not seem to be a general worsening of the situation.²¹

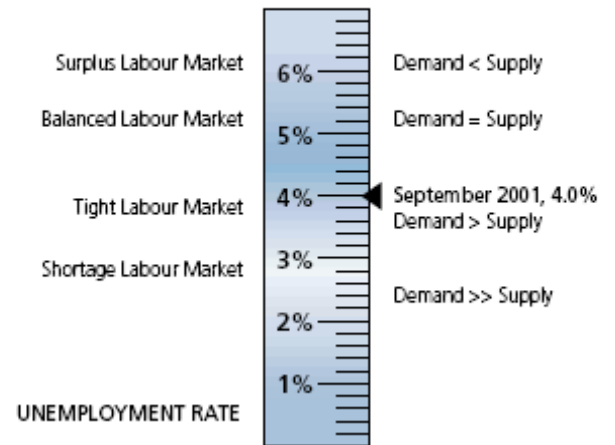
The extent of the shortage seems to still be well below global in nature.

²⁰ In 2001, the Labour Force Planning Committee reported that as the unemployment rate fell from 5.7% to 5% between 1999 and 2000, the help wanted index rose by about 25 per cent and average weekly earnings increased by 3.7 per cent.

²¹ Alberta Human Resources and Employment 2005. *Alberta Unemployment Rate by Occupation September 2004 to September 2005*.



Labour Market Thermometer



Despite the low unemployment rates in Alberta, prior to 2005, wage levels and wage growth are not remarkable which is not what one would expect if there is a labour shortage in Alberta. According to data from the Statistics Canada's Labour Force Survey, Alberta's average hourly wage rate increased from \$15.76 in 1999 to \$18.55 in 2004 where the average hourly wage rate for Canada increased from \$16.13 to \$18.50. Between 2003 and 2004, the average hourly wage rate increased 2.3% in Alberta and 2.5% in Canada.²² On the other hand, the 2003 and 2005 *Alberta Wage and Salary Surveys* show higher wage levels and higher wage growth than the Statistics Canada data. The Surveys show that average hourly wage rates in Alberta increased by 8.7% between 2003 and 2005 (from \$19.68 to \$21.39). Todd Hirsch reports that hourly wages in the province have increased a further 6.1% between February 2005 and February 2006, with the strongest wage gains coming for skilled labour groups and for occupations related to the oil and gas sector.²³ This increase in the average wage rate is almost double the 3.3% increase in average hourly wages in Canada overall. Merit Contractor's Association

²² Alberta Human Resources and Employment, 2004 Annual Alberta Labour Market Review, page 9.

²³ Todd Hirsch, *As Good as it Gets*, page 12.

reports that gross average hourly wage rates for all trades rose 6.3% in Alberta between January 2005 and January 2006 which is high relative to the typical range of wage increases of 2% to 5%.²⁴ The picture that emerges from wage data is that if there are labour market shortages, they are more likely to be specific to occupations and they are only apparent after 2005.²⁵

Another commonly reported indicator for labour market shortages are vacancy rates that are based on survey responses of employers. For example, the *Alberta Wage and Salary Survey* asks employers about hiring difficulties and job vacancies. AHRE in 2005 reported that the percentage of employers who indicated a “hiring difficulty” in one or more occupational groups had increased from 51.5% in 2003 to 56.3%. Between 2003 and 2005, the percentage of employers that had at least one position unfilled for over four months increased from 21% to 28%.²⁶ The highest rate of long-term job vacancies were reported in the Occupational group of “Other Professional Occupations in Physical Sciences” at almost 18%.²⁷ The remainder of the 10 occupational groups with the highest long-term job vacancy rates had rates between 7.7% and 13.2%. This could be interpreted as evidence that the labour shortage remains specific to some occupational groups and not a general condition for the labour market as presumably vacancy rates for the remaining occupational groups are not particularly high.

²⁴ Gina Teel, “Soaring wages create higher building costs,” *Calgary Herald*, April 17, 2006.

²⁵ The Top 10 Occupations by Wage Growth, 2003 -2005 for starting wages are Occupational Therapists, Carpenters, Data Administrators, Coaches, Other Medical Technologists and Technicians, Database Analysts and Data Administrators, Computer Engineers (except Software Engineers), Civil Engineers, Audio and Video Recording Technicians and Lawyers and Quebec Notaries. The Top 10 Occupations by Wage Growth, 2003 -2005 for wages after three years are Other Medical Technologists and Technicians, Carpenters, Professional Services in Business Services to Management, Social Policy Researchers, Consultants and Program Officers, Occupational Therapists, Chemical Technologists and Technicians, Call Centre Agents, Database Analysts, Personnel and Recruitment Officers, and Real Estate Agents and Salespersons. AHRE, 2005 Annual Labour Market Review, page 7.

²⁶ AHRE 2005 Annual Alberta Labour Market Review, page 8.

²⁷ The long-term vacancy rate is the number of job vacancies unfilled for four months or longer, divided by the number of currently employed plus the number of vacancies unfilled for four months or longer.

In a survey of its members, the Canadian Federation of Independent Business (CFIB) found that in Alberta in 2005 the long-term vacancy rate was 5.3%, up from 3.6% in 2004.²⁸ 44% of businesses surveyed reported at least one long-term vacancy in 2005, up from 28% in 2004. The labour shortage problem is particularly acute for small and medium size firms (<50 employees) as they had long-term vacancy rates between 5.4% to 12.2%. This likely reflects that firms of these sizes are not as able to match the pay increases offered by larger employers. The situation seems to be worsening as a 2006 report by the CFIB showed that the percent of their members reporting hiring difficulties had increased from 41% in 1999 to 73% in 2005.²⁹ In 2002, 67% of Alberta respondents in a CFIB survey indicated that the biggest problem that they faced in hiring was a lack of candidates with the required education, experience and/or skill set. 30% indicated that they lacked the resources to pay higher salaries and benefits.³⁰ In 2005, 65% of respondents indicated that an inability to pay higher salaries/benefits was a reason for hiring difficulties.³¹ Perhaps what is most interesting is that with respect to the most common suggestions for policy changes, culture/language barriers, recognizing out-of-province or immigrant credentials was not reported to be a problem by less than 6% of respondents. In response to their hiring difficulties, 56% of Alberta respondents reported hiring under-qualified individuals, 39% passed tasks on to other employees, and around 30% reported that they had improved salaries/benefits, hired temporary help, increased use of overtime shifts and functioned with fewer employees.

²⁸ Andrea Bourgeois and Aneliese Debus, "Help Wanted: Long-term vacancies a major small business challenge," CFIB Research April 2006, <http://www.cfib.ca/research/reports/rr3018.pdf>. Long-term vacancies are positions in firms that remain unfilled for four months or more.

²⁹ CFIB, "Alberta's Growing Shortage of Qualified Labour," Canadian Federation of Independent Business, January 2006

³⁰ CFIB, "Labour Pains"

³¹ CFIB, "Alberta's Growing Shortage of Qualified Labour."

In 2004, the Canada West Foundation surveyed 76 industry associations in western Canada and asked them whether their members perceived that they faced some, to severe, labour shortages.³² 16 of 19 respondents in health care fields indicated the existence of shortages, particularly amongst nurses, doctors and surgeons, pharmacists, and laboratory technologists. Industry associations for the trades, transportation and equipment operators also had a high response rate (14 of 17) that their members faced labour shortages. Respondents generally indicated that they expected shortages in labour in their occupations by 2010 even if they were not currently reporting a shortage situation. Within Alberta, 18 of 22 industry associations surveyed reported some or a severe shortage of labour in the province, and all 22 reported that they expected that they would face some or a severe labour shortage by 2010. This growing extent of the shortage problem leads to observations such as Hirsch's that what had been shortages specific to some occupations in 2004 has quickly developed into a general labour shortage.³³

Finally, in surveys of employers and industry representatives, in addition to the labour shortages at this time being specific to certain occupations and sectors, it seems that the shortage is not a shortage of people but a shortage of skilled, or qualified, people.³⁴ The CFIB found that 73% of Alberta respondents to their survey in 2005 expressed a concern over the shortage of qualified labour.³⁵ The CFIB found that 52% of Alberta respondents felt that their hiring difficulties was reflective of both a skills

³² Todd Hirsch, Ben Brunnen and Kristina Molin, "Willing and Able: The Problem of Skills Shortages in Western Canada," Canada West Foundation, Building the New West Project Report #32, May 2004, pages5-6.

³³ Todd Hirsch, "As Good as it Gets," page 11.

³⁴ Todd Hirsch, Ben Brunnen and Kristina Molin, "Willing and Able: The Problem of Skills Shortages in Western Canada", Canada West Foundation Building the New West Project Report #32, May 2004, page 1.

³⁵ CFIB, "Help Wanted: Long-term vacancies a major small business challenge," April 2006.

shortage and a labour shortage, while another 29% responded that the problem was solely a skills shortage.³⁶ Hiring difficulties were reported to be most severe the construction, transportation, manufacturing, resource and retail industries.³⁷

What about the future?

While it would appear that whatever labour shortages currently exist in Alberta are specific to some occupations and skills, there is clearly an expectation that the shortage of skilled labour will worsen and move towards being a general shortage of labour. This is the expected outcome of slow labour force growth associated with an aging Alberta workforce and population and slowing in-migration to the Province as the labour shortage problem is global in nature.³⁸ From this perspective, it would seem that we are on the brink of a long-term and persistent challenge for the Alberta economy to ensure that it has the necessary supply of skilled labour to allow the economy to continue to grow. How big is the expected shortage going to be? A common estimate of the aggregate size of the shortage is that by 2010, there will be a shortfall of 100,000 workers relative to what is going to be demanded in Alberta, representing 5% of the expected size of the workforce. The Conference Board of Canada forecasts that if current trends in the economy continue, Alberta will have an annual shortfall of 332,000 workers by 2005.³⁹

³⁶ CFIB, "Labour Pains: Results of CFIB Surveys on labour availability and training," April 2003.

³⁷ CFIB, "Alberta's Growing Shortage of Qualified Labour," Canadian Federation of Independent Business, January 2006. 72 percent of firms surveyed by Merit Contractors Association in 2005 reported that they were experiencing a shortage of labour. "Soaring wages create higher building costs," Calgary Herald Monday April 17, 2006

³⁸ Manpower Inc., "Confronting the Coming Talent Crunch: What's Next?", A Manpower White Paper, 2006). Conference Board of Canada, "Canada's Demographic Revolution: Adjusting to an Aging Population," Publication 181-06, 2006.

³⁹ Alicia Coughlin, "Alberta's Labour Shortage: Just the Tip of the Iceberg," Conference Board of Canada Publication 010-07, 2006.

Where do these forecasts come from? In the case of the Conference Board of Canada forecast, the 332,000 worker shortfall in 2025 arises from a macroeconomic model that forecasts trends in labour demand and labour supply. Labour supply forecasts are based on Alberta's demographic trends, which are dominated over the next 20 years by Alberta's aging population resulting in a slower growing labour force. Labour demand forecasts reflect the number of workers that would be needed for Alberta to produce its "potential" (highest non-inflationary) level of Gross Domestic Product assuming that labour productivity growth remains at current levels and that there is consequently no wage inflation or substitution toward capital. The Conference Board publication recognizes that these assumptions amount to a presumption that markets do not adjust to the shortage of workers and that this situation is unlikely to occur over the long run. Wage inflation and substitution toward capital to conserve on labour needs, or the investment in productivity enhancing technologies would eventually balance labour supply and labour demand. From this perspective, the shortfall of 332,000 by 2025 "highlights the degree to which Alberta's labour market will be increasingly strained" rather than an absolute shortage of labour.⁴⁰

Sue Richardson and Yan Tan indicate that many OECD economies, including Canada, use computable general equilibrium models of their economies that can be used to project employment by quite detailed levels of skill. These models are complex, large and dynamic but it has been assessed that while these models are useful for predicting aggregate trends, they have been more limited in their usefulness for forecasting

⁴⁰ Alicia Coughlin, "Alberta's Labour Shortage," page 2. The study notes that in either case, whether the market adjusts via higher wages to balance labour supply and labour demand, or if an actual shortage of labour occurs, the outcome will lower rates of GDP growth in Alberta.

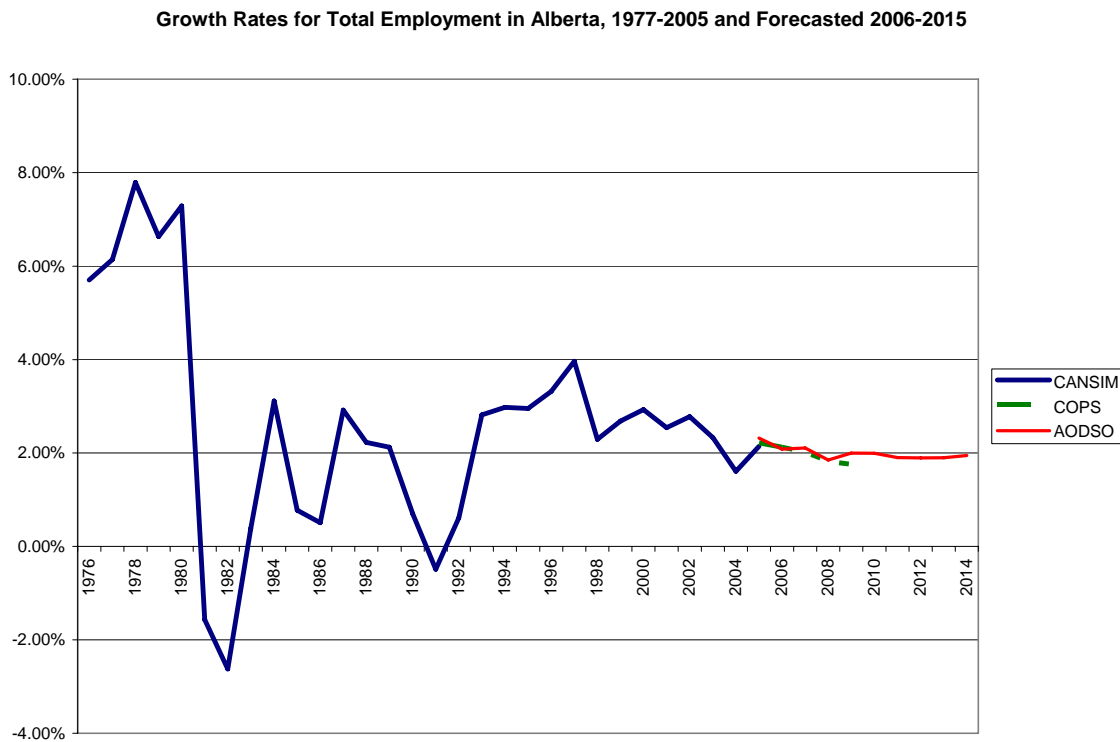
accurately growth in specific occupations. Richardson and Tan indicate that the forecasts are often inaccurate by 10 to 20 percent within only a few years.⁴¹

Alberta Human Resources and Employment (AHRE) has developed the Occupational Demand and Supply Outlook Models.⁴² These models have been used to project demand and supply for 140 different occupations and for 14 industries in Alberta for the period 2005-2015 as well as for all occupations overall; combining the two components can calculate imbalances between supply and demand, and, forecast potential shortages and surpluses in certain sectors. The Alberta Occupational Demand Outlook Model (AODOM) has economic and occupational components. The economic component forecasts the performance of Alberta's economy. Based on that forecast, the occupational component calculates the employment that is required to maintain the projected growth. For a given industry, the model uses employment coefficients developed from 2001 Census data and updated with data from the Labour Force Survey to represent the share of employment for each different occupation within that particular industry. The total employment for this industry is then multiplied by each coefficient to obtain estimates of employment for each occupation within this industry. Aggregating the employment demand for a specific occupation across all industries yields the total employment demand for that occupation. The Alberta Occupational Supply Outlook

⁴¹ Sue Richardson and Yan Tan, "Forecasting Future Demands: What We Can and Cannot Know", National Institute Of Labour Studies, Flinders University, August 2005, page 6.

⁴² Alberta Human Resources and Employment, Alberta's Occupational Demand and Supply Outlook, 2005-2015, November 2005. See Appendixes A and B for details on the model methodologies. The Government of Alberta also uses forecasts of future labour market conditions by detailed occupational group with the Canadian Occupational Projection System (COPS) from Human Resources and Development Canada. The COPS compares a demand model where $\text{New Openings} = \text{Expansion} + \text{Replacement}$ to a supply model that where $\text{Supply} = \text{School Leavers} + \text{Immigrants} + \text{re-entrants}$. In the COPS, excess demand, or a labour shortage, would be a situation where $(\text{Supply} + \text{unemployed}) - \text{New Openings} < 0$, and a labour surplus if > 0 .

Model (AOSOM) makes occupational supply projections with a series of transformations that begin with a demographic outlook and end with occupational supply for 140 occupations. The model has three major components: demographic, education and replacement demand. Education has a central importance in this model because of its role in training the labour force.



The AODSO projections are based on conservative forecasts of 2% annual growth in employment to 2014. In the figure above, the forecasted growth rate for total employment in Alberta is low compared to the last five years but in line with the average for the past two decades. The AODSO suggests that in aggregate in 2005, Alberta has a surplus of labour of 63,000 workers. This would support the view that whatever labour shortage that Alberta currently faces is specific to some skills and/or some occupations. The Alberta economy will not experience a general labour shortage, according to these

forecasts, until 2014. Perhaps more interesting is the forecast for 2015 that the shortage of labour will number 17,000 workers, or less than one-fifth of the widely reported forecast of 100,000 workers and will likely remain well below the enormous 350,000 worker shortage forecast by the Conference Board of Canada.⁴³ The forecast shortage in 2015 will be less than 1% of total employment in the Alberta economy at that time. This would suggest that whatever solutions to labour shortage problems that may exist can be solved with policies aimed at the development of the existing and expected labour supply for skills in short supply. Policies aimed at increasing the growth rate of Alberta's population and labour force, such as encouraging higher levels of immigration, should not be necessary.

It is interesting to see, however, that these same numbers are being used to portray the risk of a serious shortage. AHRE (2005, 3) forecasts from the AODSO that there will be "An increase of nearly 400,000 jobs in the labour market is projected between 2005 and 2015, as the overall occupational demand increases at an annual average of 1.9%. A net increase of 314,400 workers will join the labour force, as occupational supply increases at an annual rate of 1.6%." This widely reported estimated shortage of 100,000 overstates the size of the shortage by 14,000 workers and it ignores the current 63,000 surplus of workers in Alberta, hence the 100,000 shortfall overstates the extent of the problem if one in fact emerges. Calgary Economic Development has used AHRE's regional occupation forecast that one-third of all new jobs in Alberta will be located in Calgary over the period 2004 to 2010. Employment in the Calgary Economic Region is expected to climb from 643,400 in 2004 to 733,700 in 2010, an increase of over 90,000

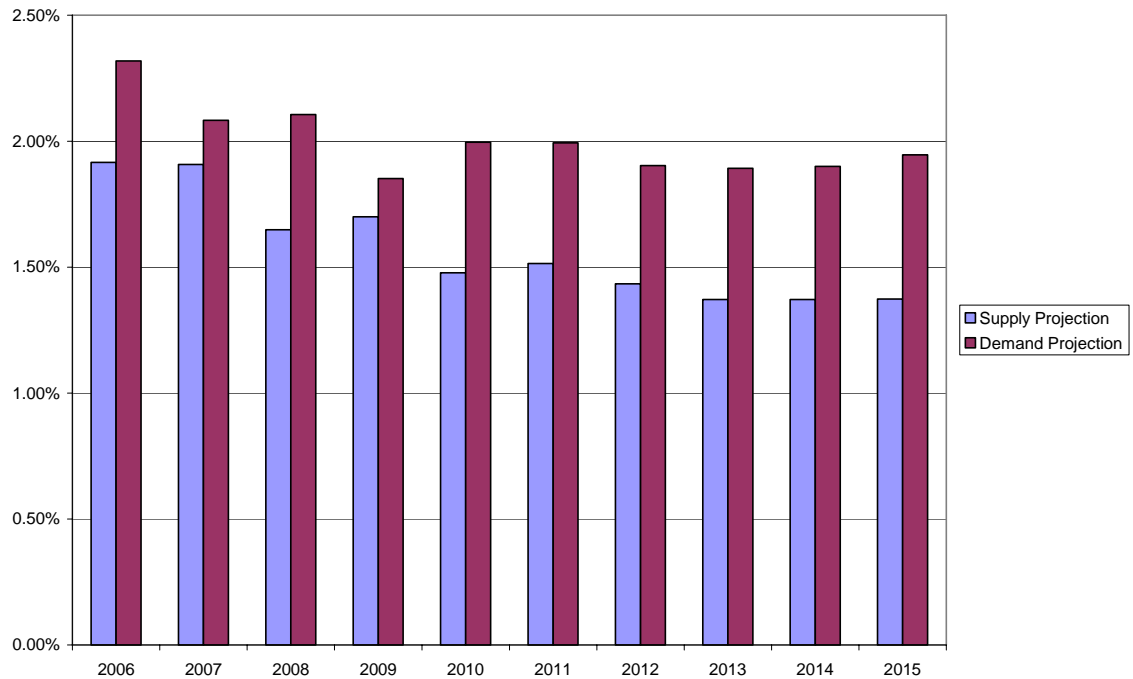
⁴³ All Information found from: *Human Resources and Employment, Alberta's Occupational Demand and Supply Outlook, 2005-2015, Nov. 2005.* http://www3.gov.ab.ca/hre/lmi/pdf/occ_demand_supply.pdf

jobs. The forecast annual rate of employment growth is 2.2%, but Calgary Economic Development notes that over the same period, total population for Calgary is only expected to increase by 1.2% per year and this could overstate the growth of labour supply as the workforce is aging and in-migration to the city is expected to decline steadily over the next five years. Thus the expected growth in labour supply is not expected to meet these employment demands.⁴⁴

Calgary Economic Development's forecast of a serious labour shortage reflects the current level of labour supply is not considered nor is an explicit consideration of labour supply growth as opposed to population growth. Suppose that we consider the forecasted annual growth rates in labour supply and labour demand for the province as representative for the City of Calgary. This would mean that against employment growth of 2% per year, labour supply will grow at over 1.5% until 2010. This reflects the baby boom echo cohort will be entering the labour force over the next five years, and the oldest baby boomers will only reach age 65 in 2010. So the effects of an aging population will be offset by an increase in young workers entering the labour force in the near term, and the withdrawal of aging workers will not be at its peak until 2025. Perhaps a reasonable forecast of the average annual increase in labour supply to 2010 is closer to 1.7% per year which in combination to the general surplus of labour in Calgary, suggests that problems of Calgary's impending shortage will remain specific to certain skills and occupations.

⁴⁴ Calgary Works (Calgary Economic Development), Workforce Development Initiative: From Consideration to Implementation, 2005.

AODSO Annual Growth Rates in Labour Supply and Demand for Alberta, 2006-2015



While the AODSO projections to 2015 do not suggest that emergence of a serious general labour shortage in Alberta, it could still be the case that specific skills and occupations are in short supply. Table 1 shows the size of labour shortage for the 15 occupations projected to have the fastest growing shortages between 2005 and 2015 and the surpluses for the 15 occupations with fastest growing surpluses over the same period. Part of what explains the overall balance forecast for the Alberta labour market over the next decade reflects that the size of the shortages in the table are more than offset by the number of workers in surplus in other occupations. The other 110 occupations not listed in Table 1 collectively generate a shortage of 25,000 workers by 2015. It is critical to recognize that the forecasted surpluses and shortages for these occupations are “disequilibrium” forecasts. Over the next 10 years, if wages for the occupations adjust to reflect the surplus/shortage situation for the occupation, then occupational supply may be

responsive to changing market conditions to the point that the labour market has balanced supply and demand for the occupations.

From a policy perspective, however, it will be necessary to ensure that workers can be moved between occupations in surplus to occupations facing a shortage. It is unlikely that individuals currently employed as judges and lawyers who are forecast to be in surplus can be transformed into plumbers and carpenters, occupations forecast to be short of labour in 2015. The more likely channels will involve directing young workers to train for occupations forecast to be in shortage over choosing to train for occupations with a surplus of labour.

What happened to the dire consequences of the aging Alberta workforce that was to worsen the labour shortage? AHRE found that certain occupations and industries in Alberta may face skill shortages due to an aging population but a widespread skill shortage due to an aging labour force is unlikely.⁴⁵ Industries such as Agriculture, Management, Administration and Other Support, and Educational Services as well as specific occupations such as Registered Nurses, Transit Operators and various Senior Managers, do face older age structures that may make them more susceptible to skill shortages but with the size of the expected shortage, it should be possible with appropriate policies for training and retention of aging workers to offset the effects of an aging workforce. Where there are more individuals in these fields retiring than there are entrants to replace them, the shortages may not be as severe as forecasted in cases where training times for these occupations are short and entry barriers to the occupation are low.

⁴⁵ Alberta Human Resources and Employment, "Alberta's Aging Labour Force and Skills Shortages", August 2005.

Table 1: Occupations with the Fastest Growing Shortages and Surpluses (Supply – Demand), 2005-2015

Supply-Demand	2005	2006	2010	2015
All Occupations	62848	56815	35364	-16853
<u>Occupations with the Fastest Growing Shortages</u>	2005	2006	2010	2015
Machine operators & related workers in textile processing	81	96	14	19
Transportation officers & controllers	-368	-313	-531	-677
Technical occupations in libraries, archives,	0	-125	-411	-493
Other transport equipment operators & related workers	-186	-113	-383	-496
Technical Occupations in dental health care	-162	-173	-673	-760
Electrical trades and telecommunications occupations	91	-325	-1629	-3595
Fishing vessel masters & skippers & fishermen	2	3	-10	-11
Masonry & plastering trades	-46	-423	-911	-1409
Cashiers	1566	765	-2264	-5432
Plumbers, pipefitters & gas fitters	629	278	-572	-1679
Facility operation & maintenance managers	1364	1664	-230	-727
Carpenters & Cabinet Makers	341	-281	-1463	-3077
Occupations in food & beverage service	2398	1987	-2118	-5957
Machinery & transportation equipment mechanics	-231	-500	-2013	-3917
Metal forming, shaping & erecting trades	788	195	-890	-2633
Total for 15 Occupations	6267	2735	-14084	-30844
<u>Occupations with the Fastest Growing Surpluses</u>	2005	2006	2010	2015
Managers in art, culture, recreation & sport	222	384	379	450
Contractors, operators & supervisors in agriculture	3773	6235	8646	13702
Psychologists, social workers, counsellors,	106	46	1587	3505
Judges, lawyers & Quebec notaries	179	389	1180	1972
Managers in communication (except broadcasting)	35	-28	222	259
Sales, marketing & advertising managers	1004	1623	1956	2591
Announcers & other performers	-62	-45	21	26
Librarians, archivists, conservators & curators	28	-24	285	483
Managers in financial & business services	391	79	1720	1789
Managers in protective service	-21	-38	66	122
Agriculture & horticulture workers	216	46	1985	2956
Legislators & senior management	-307	-1331	1145	2245
Secondary & elementary school teachers	1019	-7	4014	6761
Policy & program officers, researchers & consultants	186	60	1288	2065
Managers in other services	-59	0	346	366
Total for 15 Occupations	6710	7389	24840	39292

Source: AHRE, Alberta's Occupational Demand and Supply Outlook, 2005-2015, Appendix D

In situations where wages do not adjust sufficiently to “clear the market”, then there is a role for policy to improve the situation. For example, AHRE notes that in some of the occupations with projected surpluses of labour such as teachers, the surplus reflects the rising enrolment and graduation rates in post secondary institutions in Alberta. In these cases, the government may want to consider limiting enrolment in these programs to divert students into programs identified to be in short supply. Of course, provincial governments did this in the late 1980s and 1990s to deal with the projected surplus of physician manpower and we are consequently trying to deal with the labour shortage it caused.

The Alberta Federation of Labour has recently challenged the perception of a labour shortage in the construction trades using a different set of employment projections generated by the Alberta Construction Workforce Development Forecasting Committee, a construction employer - government partnership. The Alberta Federation of Labour finds that these forecasts suggest that demand for the building trades will soon peak in 2008 and fall precipitously in 2009. 60% of the total value of construction projects in the province are associated with oil sands development. The overall demand for skilled construction workers in major projects (over \$2 million in value) is forecast to decline from a peak of 24,000 in 2008 to 8,800 in 2009. In contrast to the Alberta Government’s AODSO forecasts for building trades which suggest a decline in employment growth from 2008 to 2009, after which time employment growth for the province is forecast to return to closer to 2% per year, the CWDFC forecast suggests a decline of over 60% in the level of trades employment following several years of 10% growth in construction employment. If the CWDFC forecast proves accurate, then there will be 15,000 skilled

construction workers available for work in the province that had not been anticipated in the AODSO forecast. CWDFC forecasts for 15 construction trades for 2005 to 2009 shows that even during the highest period of labour demand, 2005-07, there were predicted shortages for Alberta in only 4 trades, and these shortages will be gone by 2008. The AFL concludes that what has been described as a labour shortage is instead just a very tight labour market and the tight labour market conditions will be gone as early as 2009.⁴⁶ If we also consider that after 2010 there will likely be a post-Olympic construction slump in BC, then there will be a much larger potential supply of construction labour for Alberta.⁴⁷

3. What does the Alberta government need to do?

The appropriateness of a response from the Alberta government depends upon the nature and cause of the economic problem. Governments should constrain their interventions to cases where there are market failures such as in the case of the dynamic effects of labour shortages harming a dynamic sector like high tech, or where coordination failures or other barriers to market adjustments preclude market responses to expanding training capacity in the province.

The Case for Doing Nothing

There is a strong case that can be made that the Alberta government should not do anything to deal with the perceived labour shortage. Shah and Burke point out that in a competitive labour market there will always be unfilled vacancies, some of which may be

⁴⁶ Alberta Federation of Labour, *Beyond Chicken Little: Understanding the Need for Measured Reforms to Alberta's System for Skills Training*, April 2006, pages 4-7.

⁴⁷ David A. Green, *Olympic Impacts: Should we expect an employment boom?* Canadian Centre for Policy Alternatives – BC Office, February 2003.

“hard to fill”. Even when the number of unfilled vacancies reaches an “intolerable” level, this situation may be socially optimal and part of a necessary adjustment process in the labour market. As such, public intervention that interferes with labour market adjustment merely adds to the costs of adjustment being borne by the market.⁴⁸ This point needs to be considered when one evaluates policy suggestions like lowering tax burdens for firms so that firms have more resources for hiring, training and retention, or encouraging students to pursue trades.⁴⁹ Consider that in the context of Alberta, if the current energy boom is expected to be followed by a bust, then implementing policies to increase labour supply will allow the economy to get too large in the short run and will make the inevitable crash worse. This point is extremely important if much of the short run employment stimulus is in sectors such as construction where there may be limited scope to encourage labour into other occupations or sectors once the construction boom is over. Mansell and Percy argue that the severity of the crash of the Alberta economy in the 1980s was in part the consequence of the high levels of employment in construction that were driven by oil and gas.⁵⁰

Todd Hirsch suggests that “labour shortages will act as a natural braking mechanism on the economy, preventing run-away economic growth that could be difficult to contain. It is questionable if real GDP growth of 7-10% is desirable given the probabilities of over-strained infrastructure, inflation, severe housing shortages, and

⁴⁸ Shah and Burke, *Skills Shortages*, page 63.

⁴⁹ CFIB, “Alberta’s Growing Shortage of Qualified Labour,” page 3.

⁵⁰ Robert Mansell and Michael Percy, *Strength in Adversity: A Study of the Alberta Economy* (Edmonton: University of Alberta Press, 1990) page 17; the authors estimate that one-half of construction activity in Alberta was related to oil and gas. The AFL estimates that 60% of major construction projects in Alberta at the current time are associated with oil sands development.

environmental degradation.”⁵¹ The braking mechanism arises from the labour shortage increasing labour costs that reduce the income/rate of return of capital. This reduced rate of return will lower the level of expected investment in the economy.⁵² The Conference Board of Canada also points out that the effect of “intensifying labour pressures facing Alberta over the next two decades” will likely result in lower GDP growth.⁵³

While labour shortages contain the growth of the overall economy, they are not necessarily bad for the standard of living. Martin Collacott refers to the conclusion arising from the 1985 Macdonald Commission that high levels of immigration will increase the size of the labour force, the level of investment in the economy and the size of the economy, but could cause real per capita incomes and real wages to fall.⁵⁴ It would follow that a labour shortage would result in higher per capita incomes and real wages for labour while constraining the increase in the size of the economy and the level of investment. From this perspective, higher wages for labour eliminate the shortage and raise the standard of living of Albertans. Denton and Spencer (1978) suggest that rather than thinking in terms of a shortage, what matters is under what conditions a larger or more rapidly growing labour force is desirable for an economy.

Identify and address long term training and education needs and capacity

Denton and Spencer (1978) distinguish between two situations that could constitute a labour shortage; one of excess labour demand versus one of excess demand

⁵¹ Todd Hirsch, “As Good As It Gets: Alberta Economic Profile and Forecast,” Canada West Foundation, 2006, page 13.

⁵² In the case of a small open economy, the rate of return to capital is set by the global capital market hence in the long run, the influence of the labour shortage is to reduce the size of the capital stock in Alberta. There would be no change in the rate of return earned by capital in Alberta over the long run.

⁵³ Alicia Coughlin, “Alberta’s Labour Shortage,” page 1.

⁵⁴ Martin Collacott, *Canada’s Immigration Policy: The Need for Major Reform* Public Policy Sources no. 64 (Vancouver: The Fraser Institute, 2002), page 7.

for labour in specific sectors, industries, occupations or skills. In the former case, the shortage would be expected to be temporary as wages and prices adjust to restore equilibrium to the labour market. The authors suggest that this notion would generally apply to a time horizon of five to ten years into the future. In contrast, where excess demand for specific types of labour exists, there is also an excess supply of other types of labour. For a labour shortage to exist, it must be the case that either relative wage rates do not adjust sufficiently due to labour market inflexibility, or production processes are insufficiently flexible to allow for the substitution of abundant for scarce types of labour. These situations are characterized as structural problems and the result of the temporary failure of market mechanisms to equilibrate supply and demand. In these cases, there may be considerable scope for manpower policies to have an effect.

Sue Richardson argues that in a situation where there are few people with the essential technical skills for a job who are not already using them, and there is a long training period to acquire the skills and there limits to training capacity in organizations, the shortage of labour will be a severe obstacle to expanding firms, the appropriate policy response would be one towards long term planning of the training system in terms of anticipating skills needs and ensuring that the training capacity exists.⁵⁵ In cases, where training periods are short and where organizations can expand the capacity to train, then labour market adjustment should be able to solve the shortage problem. Similarly, where many people have the skills in demand and who are not currently using the skills but are not willing to apply for the jobs under current conditions, or where employers can hire people with the essential skills but who lack some qualities that employers think are important are not cases where it is obvious that a public policy response is warranted.

⁵⁵ Sue Richardson, "What is a skill shortage?"

A common example of where labour market adjustment may not work well for addressing manpower issues in a timely fashion is that of physician manpower. Training capacity is limited, costly to expand and training periods are lengthy. Thus, to address a manpower shortage medicine through an expansion of education capacity could take up to a decade to have a substantial impact. But as Sue Richardson points out, physician manpower is also an example of how these “body count” measures of labour supply (the number of physicians) is a poor proxy measure of the true size of physician manpower in the province. Physicians vary in the number of hours that they work; some physicians no longer practice medicine having gone into politics, administration or other careers.⁵⁶ It is also the case that the current organization of medical services delivery may not fully employ physician skills, hence the effective pool of physician manpower in Alberta could be increased if tasks not requiring physician skills could be delegated to other types of medical professionals such as nurses.

Enhance labour mobility of skilled labour to Alberta

In its proposals for addressing the labour market tightness in Alberta construction, the AFL highlights the low prevalence of Red Seal qualified tradespersons in Canada and the high non-completion rates of apprenticeships. With the Red Seal program, apprentices who have completed their programs and have become certified journeymen in their home province can complete Interprovincial Standards Examination to obtain their Red Seal Endorsement on their Certificates of Qualification and Apprenticeship. With the Red Seal Endorsement, tradespersons can practice their trade in any province

⁵⁶ Chan BTB. From Perceived Surplus to Perceived Shortage: What Happened to Canada’s Physician Workforce in the 1990s? Canadian Institute for Health Information; 2002.

that designates their trade as a Red Seal trade without having to write further examinations, or have the credentials checked further. For workers without Red Seal certification, they can either write the Red Seal exam or receive apprenticeship credit for their current qualifications developed in provinces other than Alberta. The intent of the Red Seal program was to encourage the standardization of provincial apprenticeship training and certification programs and to provide greater mobility of tradespersons across Canada. Most construction trades are Red Seal trades in all 10 provinces. The AFL reports that of 1.15 million Canadian skilled workers in Trades occupations, only 185,000 (16%) are Red Seal Certified.⁵⁷ The AFL makes a strong case that policies by the Alberta government that increase the proportion of Red Seal qualified tradespersons in other provinces would go a long way towards increasing the supply of skilled tradespersons in Alberta. The AFL also highlights the large number of trades apprentices who do not complete their training. In December of 2004, there were 40,283 registered apprentices in Alberta but only one in four can be expected to successfully complete the program. Policies aimed at encouraging higher completion rates of apprenticeship programs could provide a substantial boost in the pool of skilled labour in the province. With both of these avenues for increasing the supply of skilled workers in Alberta, the boost to labour supply could occur relatively quickly and would not necessarily require any further expansion of training programs.⁵⁸

⁵⁷ AFL, *Beyond Chicken Little*, Table 4.

⁵⁸ The CFIB and the Conference Board of Canada both provide similar policy suggestions for the Alberta government to enhance interprovincial labour mobility. The Conference highlights the recent agreement between Alberta and British Columbia that allows for recognition of credentials across the border for a number of industries. Both organizations call for government to improve access to training, allow for more flexible labour laws. Alicia Coughlin, "Alberta's Labour Shortage", pages 5-5; CFIB, "Alberta's Growing Shortage of Qualified Labour," page 4.

Regulate the demand for labour

Another broad class of government policies would be of the sort that regulate/limit, if not reduce the growth and/or level of labour demand in Alberta. This could be done in a variety of ways. In the 1970s, part of the motivation behind saving public resource revenues in the Heritage Fund was to pull capital out of the economy to cool off its inflationary tendencies. This reflected the foresight that a slowdown was inevitable, hence it was desirable to limit how bad the slowdown might be. Moving forward, this policy direction would see the Alberta government opt to save and invest its energy revenues external to the Alberta economy. This could also mean that despite high demand for infrastructure investment in the province, the government should not be engaging in large scale construction projects at this time with the effect of competing up labour demand. The province could also consider eliminating policies that serve to inflate labour demand. The royalty regime used for the oilsands was created to encourage investment at a time when energy prices were lower and the demand for labour was not so strong. At this time with the extraordinary growth in labour demand and investment, it might be advisable to remove the subsidy to investment in the oilsands so as to let market forces determine the level of labour demand. The current royalty regime is fuelling the investment level. Other more radical moves on the part of the government would be to stop approving new projects in the oil sands until existing projects have their facilities and capital installed to a point that they are in a production phase rather than a construction phase. The primary beneficiaries of policies of this sort would be existing projects and producers. Of course, the obvious alternative to government regulation is to

let the labour market adjust through higher wages and higher prices which will regulate the pace of oilsands development with high cost, but balanced, labour market.

Protect against the “Resource Curse”

There is another dynamic perspective that would raise labour shortages in the Alberta economy as a critical problem. Jeffrey Sachs and Andrew Warner show that over the last 35 years, economies that are dependent on natural resource exports have grown slower than resource scarce economies. Sachs and Warner have dubbed this observation the “curse of natural resources”.⁵⁹ Sachs and Warner suggest that the curse arises from the way in which natural resource exploitation crowds out activity x, where activity x drives growth over the long run. There are many candidates for activity x, but Sachs and Warner observe that natural resource intensive economies have had smaller contributions from exports of manufactures to overall GDP growth and natural resource intensive economies tend to have high price levels. Manufacturing is considered to be the sector in which technical progress, which sustains growth, is most likely to occur. Thus crowding out of manufacturing is the way in which natural resource exploitation harms the economy. In these “Dutch disease” models, positive wealth shocks from the natural resource sector drive up demand for non-traded products which drives up non-traded prices, including non-traded input costs and wages.⁶⁰ This in turn reduces profits in traded activities such as manufacturing that use those non-traded products as inputs, and where producers are price takers in the world market. If the manufacturing sector is characterized by

⁵⁹ Jeffrey D. Sachs and Andrew M. Warner, “The curse of natural resources,” *European Economic Review*, 45 (2001) 827-838.

⁶⁰ Dutch Disease was a name chosen because of the reduction in manufacturing witnessed in Britain and Holland after the discovery of oil in the North Sea. See Peter J. Neary and Sweder Van Wijnbergen, *Natural Resources and the Macroeconomy*, Oxford: Blackwell (1986).

competitive, constant returns to scale production, then a contraction in the size of that sector due to natural resource exports would not necessarily be harmful for the economy. The harm to the economy arises if the manufacturing sector is characterized by external economies in production, increasing returns to scale, or higher rates of productivity growth than the resource sector.⁶¹ In these cases, not only is the growth rate of the economy slower because of natural resource abundance, in the long run, the level of per capita income will be lower than it would have been in the absence of the natural resource sector.

Natural resource wealth can also reduce future income levels by crowding out human capital formation in the short run. It has been documented that public expenditures on school and school enrolment rates are inversely related to natural resource abundance.⁶² In Alberta, males are opting to “drop-out” of high school to work in the oilpatch during the recent boom.⁶³ Their basic logic could be extended to other variables considered relevant to growth. Natural resource abundance could crowd-out entrepreneurial activity or innovation, if wages in the natural resource sector rise enough to encourage potential innovators and entrepreneurs to work in the resource sector.

Thus, while Alberta is currently experiencing strong growth, there is a longer run risk that the increased wealth today may leave us poorer in future. As noted above in the discussion of the resource curse, sectors of the economy have different contributions to the long run standard of living for the province. For example, high tech firms are a source

⁶¹ (Internal) economies of scale describe situations where a single firm increasing its output results in lower unit costs of production. External economies of scale are situations where an increasing number of firms in a sector or industry results in lower unit costs of production in that location.

⁶²See Thorvaldur Gylfason, Tryggvi Thor Herbertsson, and Gylfi Zoega (1999), “A Mixed Blessing: Natural Resources and Economic Growth,” *Macroeconomic Dynamics* 3, June, 204-225. Thorvaldur Gylfason, (2001) “Natural Resources, Education, and Economic Development,” *European Economic Review*, 45. 847-859.

⁶³ David Howell, “Dropouts flock to the oilpatch,” *Calgary Herald* April 23, 2006, E1, E5.

of innovation and technical progress which is the only source of sustainable growth of per capita incomes. If this is the case, then the recent complaints of high tech firms that the booming oil and gas sector is rendering them non-economic in Alberta due in part to a scarcity of capital and labour is cause for concern. High tech industries are often considered to be characterized by “external economies of scale” where the profitability of one firm in the sector is directly related to the number of firms in the sector in the local economy. Should Alberta lose even a few of these firms, the viability of the sector could be compromised which over the long run will harm the standard of living. A second way in which the labour shortage could have long run consequences concerns the nature of the projects which are “crowded out” of the Alberta economy due to the high labour costs. In addition to the high tech sector, Husky Oil has indicated that it may not be building its upgrader for its \$10-billion Sunrise oilsands project in Alberta due to the high labour costs in the Fort McMurray area.⁶⁴ If such projects are constructed out of the province even due to short run labour market conditions, then this permanent loss of forward processing activity represents a long run cost for the provincial economy due to the labour shortage.⁶⁵

In cases of “dynamic externalities” that may be important for the long run standard of living in Alberta, the government may be justified in engaging in a return to

⁶⁴ Charles Frank, “Worker crunch looming larger,” Calgary Herald April 22, 2006.

⁶⁵ On the other hand, it is not obvious that building outside the province is the only margin for adjustment. PetroCanada indicates that the labour cost consideration will result in them building their new project in Edmonton rather than Fort McMurray. Lisa Schmidt, “Petro-Canada grappling with costs for upgrader: Firm avoids pressures of Fort McMurray,” Calgary Herald, April 26, 2006. High oil prices and rising labour costs are leading Canadian Natural Resources Ltd. to reduce its natural gas drilling. Record drilling activity and a limited number of rig hands have sent costs soaring to the point where Canadian Natural has decided to reduce its drilling program and switch its expenditure focus towards heavy oil, which it says is more profitable given crude's run to \$70 US a barrel. A contentious point in this strategy with organized labour in Alberta is that CNR Ltd. is employing foreign workers which is alleged to violate labour laws. Paul Haavardsrud Unions protest CNRL practices: Canadian Natural Resources cuts back drilling activities, Calgary Herald May 5, 2006.

“province building”. To the extent that high-tech firms, and a vibrant high-tech sector, in Alberta are seen as vital for the long run prosperity of the province, if the current resource boom creates difficulties for the viability of these “footloose” firms in Alberta due to a shortage of labour and capital, then the government could engage in forms of direct support to the sector via subsidization. The logic would be that this targeted “infant sector” needs short term support until either the resource boom cools off or the sector becomes viable in the presence of high labour costs. For this policy direction to be reasonable to pursue, there must be a case made that the high-tech sector is a source of technical progress in the economy and that there are positive spillovers for the Alberta economy associated with this sector.

Conclusions

Is Alberta suffering from a labour shortage and, if so, is it a problem that the Alberta Government can, and should, address? This paper has shown that it is not obvious how to define a labour shortage, or measure one. Perhaps the best way to summarize this point is to quote from Arrow and Capron that:

The frequent and loud complaints of a shortage of engineers and scientists heard over the past eight years or so might be taken as indicating a failure of the price mechanism and have frequently been joined with (rather vaguely stated) proposals for interference with market determination of numbers and allocation. It is our contention that these views stem from a misunderstanding of economic theory as well as from an exaggeration of the empirical evidence. (Arrow and Capron, 1959, page 292).

In contrast to the widely cited forecasts of large labour shortages by 2015, a careful reading of the same data used for those forecasts reveals that the forecast shortage in 2015 will be less than 1% of total employment in the Alberta economy at that time. This would suggest that whatever solutions to labour shortage problems that may exist can be

solved with policies aimed at the development of the existing and expected labour supply for skills in short supply. Policies aimed at increasing the growth rate of Alberta's population and labour force such as encouraging higher immigration levels should not be necessary. Whatever shortages currently exist are specific to occupations, and/or skills. The primary challenge for the Alberta government in this case is to ensure that training capacity is sufficiently responsive to market signals so that labour market adjustment occurs as smoothly as possible. Where barriers to employment or to the expansion of training capacity exist, the government may want to consider policies aimed at lowering, if not removing those barriers.

The greater risk to that Alberta economy from the current tightness of the labour market arising from the recent resource boom is that the escalation in wage costs over the short run will crowd out economic activities that are vital for the long run sustainability of the standard of living. It is inevitable that growth associated with natural resource exploitation will slow and the level of income in the long run may be no higher than if the resource had never been exploited. In the long run, the standard of living in the resource economy will be determined by the productivity of the non-resource sector so if the resource boom kills off the other "dynamic sectors", then Albertans will be poorer in the long run. The challenge for the Alberta government is to recognize the finite nature of the economic rents that are generated from the resource sector and if those rents are used effectively, they may be a tool by which the non-resource sectors of the economy are developed, or at least maintained, through the resource boom. In other words, with the vast resource wealth in Alberta at this time, the Government may want to abandon its "market forces" development strategy where the market will dictate greater specialization

in natural resource production to return to the dis-credited approaches of “province building” pursued by the governments of Peter Lougheed and Don Getty.