Socio-Economic Impact Assessment of the Shell Waterton Complex

Submitted to:

Southwest Alberta Sustainable Community Initiative (SASCI)

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Acknowledgements

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- Pincher Creek and District Family and Community Support Services (FCSS)
- Pincher Creek Emergency Services
- Re/Max Southwestern
- Town of Pincher Creek

Executive Summary

Background

The Shell Waterton Complex is a sour gas plant and field located approximately 30 km southwest of the Town of Pincher Creek, Alberta. With a total operational workforce of 95 persons, and a design capacity of 3,500 thousand cubic metres per day, the facility produces methane, natural gas liquids (propane, butane, ethane), condensate, and sulphur.

In 2015, Shell publicly announced that, regardless of changes in economic conditions, the facility, which has been in continuous operation for over 60 years, is facing a likely decline in production and possible closure in the next 10 to 15 years (Pincher Creek Voice 2015, Pincher Creek Echo 2015). Recognizing the socio-economic value of the Waterton Complex to local communities, the Southwest Alberta Sustainable Community Initiative (SASCI), a not-for-profit multi-stakeholder community-driven group, engaged Nichols Applied Management Inc. (Nichols) to:

- carry out a socio-economic impact assessment related to current facility operations, and
- consider the potential effect of the facility's eventual closure on communities and residents in the Pincher Creek area.

Following standard socio-economic assessment practice in Alberta and elsewhere in Canada, Nichols set about determining the socio-economic effects using a variety of methods, ranging from extensive quantitative analysis (e.g., economic and demographic modeling) to qualitative approaches (e.g., stakeholder interviews). The following is a summary of the assessment results.

Current Operations

Shell's Waterton Complex is an important contributor to local communities. It supports local employment and business opportunities, contributes municipal taxes, and assists with local infrastructure and community initiatives. Specifically:

- Approximately three-quarters (72 persons) of the total operational workforce at the Waterton Complex (95 persons, including Shell employees and contractors), live in the study region. The facility supports an additional 193 full-time equivalent positions (FTEs) among regional suppliers and in the broader regional economy.
- Employment associated with the facility affects an estimated 350 households in the region. Approximately 820 people (485 adults and 335 children) reside in these households, representing roughly 12% of the total study regional population. These individuals are primarily located in the Town of Pincher Creek.
- Nearly half (40%) of the facility's annual operational budget is spent on labour and businesses in the region. The total economic effect of the Waterton Complex in terms of regional GDP and household income is estimated to be $34 million and $31 million annually, respectively. Facility operations are responsible for up to 10% of the estimated regional GDP.
- In 2016, the facility accounted for 22% of property taxes collected by the host municipality (M.D. of Pincher Creek), effectively meaning that the Waterton Complex contributed more than $1 out of every $5 in property taxes collected for municipal purposes (i.e., excluding education taxes).

- Shell annually donates approximately $100,000 to local programs and facilities in the region each year. Shell also supports the volunteer efforts of its employees and retirees through its Community Service Fund by awarding grants of up to $1,000 to non-profit organizations where Shell employees volunteer.

Closure

To enable a quantitative assessment of the potential effects of closure, it has been assumed that there will be a reduction in production, with an associated reduction in facility-related employment and expenditures, beginning in 2026, followed by complete closure of the facility in 2030.

Ultimately, there is considerable uncertainty surrounding the pace, nature, and timing of declining operations and closure. The remaining operational life of the Waterton Complex, and subsequent closure, is dependent on a number of factors including future technological advances, market activity, remaining reservoir capacity, cost of inputs, and prices for end-use products.

Based on the timing assumed above, the closure of the facility is expected to impact the surrounding region in a variety of ways, including:

- Loss of employment and business opportunities, both directly at the Waterton Complex (77 Shell employees and 18 contractors) and among suppliers to the facility and more broadly in the general economy (193 FTEs), representing roughly 8% of the study area's total labour force in 2016. Employment losses will be felt across the local economy, including in service-based industries, such as retail, accommodation and food services, which are more concentrated in the Town of Pincher Creek. Closure-related activities can only partially offset this loss locally and only for a short period of time.
- Loss of $34 million of local GDP, including local labour income of $31 million (not counting any partial short-term offset due to closure-related activities). As of 2017, this loss would represent a decrease of up to 10% of regional GDP.
- Reduced population, as many of those who lose their job will leave the region in search of employment opportunities elsewhere. For those who remain in the region, some will retire, some will work mobile or telecommute to jobs located outside the region, while others will take up employment opportunities that would otherwise have been filled by in-migrants to the region. Closure of the facility could reduce the regional population by roughly 650 residents in the years immediately following closure.
- Roughly 9% of the estimated total housing stock in the study region affected by the reduced population, which may have a dampening effect on local housing prices until the excess housing supply is addressed and the housing market returns to a more balanced state.
- Other effects on the community resulting from a reduced population, including:
    - reduced demand on most community infrastructure and services;
    - reduced volunteer base to support local organizations;
    - altered social relationships within the community; and
    - an accelerated shift towards an overall older and aging population with consequential increased pressure on social and health services and reduced local wealth generation and spending.
- The potential for some services, such as childcare and education, to face financial pressures or underutilized infrastructure, leading to potential reductions in the quality and/or quantity of service offerings. As an example,

closure of the Waterton Complex could lead to reduced school enrolment in the range of 200 students as compared to a scenario in which the facility remained open.

- Potential increased demand on some social and employment support services, as both workers and their families cope with the effects of changing employment status (e.g., unemployment, transitioning to other work arrangements).
- Loss of Shell community investment (i.e., donations), requiring service providers who typically receive these funds to seek out other public and private funding options.
- Loss of over 20% of municipal tax revenue following closure and decommissioning. This may result in increased tax rates and/or reduced services in the M.D. of Pincher Creek.

Despite these potential community effects, many service providers interviewed for this study felt confident in their ability, and that of the community, to adapt to the changing circumstances associated with facility closure. The community is believed to be well positioned to address closure-related effects based on:

- The region's relatively diverse economy and strong social cohesion, which has provided stability through past economic downturns. Although Shell is a sizeable contributor to the regional economy, there are a number of potential developments that could support future economic growth including provincial government investments in Castle Provincial Parks, installation of a fibre optic network, and continued investment in neighbouring regions in both renewable (e.g., wind, solar) and non-renewable (e.g., coal) energy that may benefit the Town or MD of Pincher Creek. This economic activity could drive population growth higher than projected in this study, thereby potentially buffering some of the potential adverse effects of the Shell closure.
- Reduced economic activity, and associated employment, from facility closure being at least partially offset in the short to medium term by closure-related employment. The closure-related workforce is expected to average between 85-120 FTEs annually for the first seven years following closure, before dropping to just 3-5 FTEs annually in less than 15 years after closure (i.e., after 2043).

Next Steps

SASCI's intention is to use the assessment findings to facilitate stakeholder dialogue to identify, assess, and select actions that can be taken for and by the community to ease the transition of the community from active facility operations to post-facility closure.

It is important that these discussions occur in the near-term in order to capitalize on the opportunity that the community currently has to pro-actively address potential adverse effects *before* they occur. Although it may appear that the community has considerable time to plan and act, this only holds true if the community moves forward in the near-term. The need for community action becomes even greater when considering that closure is inevitable and that depending on economic conditions and other factors, closure could, in fact, occur much sooner than the 10 to 15-year range previously stated by Shell.

1. Introduction

1.1 Background

Shell's Waterton Complex, a sour gas plant located approximately 30 km southwest of Pincher Creek, has been an important contributor to local communities for over half a century.[1] Through operation of the facility, Shell has created local employment and business opportunities, contributed municipal taxes, and supported local infrastructure and community initiatives.

In 2015, Shell publicly announced that, regardless of changes in economic conditions, the facility is facing a likely decline in production and possible closure in the next 10 to 15 years (Pincher Creek Voice 2015, Pincher Creek Echo 2015). The actual date of closure is not known at this time. The important consideration from a planning perspective is that closure is inevitable and could have serious impacts on the economic and social well-being of the community if not planned for. Further, depending on economic conditions and other factors, closure could, in fact, occur much sooner than the 10 to 15-year range previously stated by Shell, which would limit the amount of time the community has to plan for and manage the economic and social transition.

Recognizing the socio-economic value of the Waterton Complex to local communities, the Southwest Alberta Sustainable Community Initiative (SASCI), a not-for-profit multi-stakeholder community-driven group, engaged Nichols Applied Management Inc. (Nichols) to:

- carry out a socio-economic impact assessment (SEIA) related to current facility operations and,
- consider the potential socio-economic effects of the facility's eventual closure.

SASCI's intention is to use the assessment findings to facilitate stakeholder dialogue to identify, assess, and select actions that can be taken for and by the community to ease the transition of the community from active operations to post-facility closure.

1.2 Approach

1.2.1 Study Area

Shell's central gas plant is located just off Highway 6, roughly 30 km southwest of the Town of Pincher Creek. The geographic area of focus for this study (i.e., the study area) includes both the M.D. of Pincher Creek, in which the facility is located, and the Town of Pincher Creek, the closest service centre and residential community. The study area boundaries have been defined taking into consideration:

- the procurement patterns and worker residency associated with the Waterton Complex;
- existing distribution of service providers and infrastructure in the region;
- availability of statistical data to adequately measure the effects of the Project and cumulative activity; and
- the administrative boundary of the M.D. of Pincher Creek, the host municipality.

[1] The Shell Waterton Complex consists of the main gas plant, numerous natural gas wells spread across the Waterton gas field, and pipelines connecting the wells to the main plant. There are also numerous access roads throughout the area which Shell manages and maintains in order to access its various wells and pipelines.

1.2.2 Temporal Considerations

To provide a reference for the assessment of key socio-economic issues and associated key indicators, the SEIA provides a summary of conditions at specific points in time. These snapshots include:

- Current conditions as of fall 2017. Information related to regional socio-economic conditions and the operation of the Waterton Complex were collected in mid to late 2017. These inputs were used to quantify the current effects of the facility on the local socio-economic environment.
- Anticipated conditions as of 2030. As noted in the Background (Section 1.1) above, the actual date of closure is not currently known. However, an assumed date of closure is needed in order to quantify the economic and community impacts that could occur. Therefore, for the purposes of this SEIA, closure of the Waterton Complex is considered in 2030. Further, it has been assumed that there will be a reduction in production, with an associated reduction in facility-related employment and expenditures, beginning in 2026. Additional details with respect to the closure scenario considered for this assessment are provided in Section 4.

1.2.3 Key Issues

The SEIA draws on the following sources for identifying the key socio-economic issues:

- discussions with representatives of Shell, SASCI, and local community and service provider representatives;
- review of recent SEIAs for other mining and large industrial projects; and
- the consulting team's nearly 30 years of collective experience conducting socio-economic assessments.

These sources indicate that the key socio-economic issues to be considered in this analysis fall into the following categories:

- employment effects;
- regional income effects, including changes in:
    - household income; and
    - gross domestic product (GDP).
- regional fiscal effects (i.e., municipal property taxes);
- population effects; and
- effects on regional infrastructure and services, including:
    - housing;
    - policing and emergency services;
    - health services;
    - social services; and
    - education services.

A detailed matrix that outlines key issues and indicators addressed in the SEIA is provided in Appendix A.

1.2.4 Methods

Socio-economic effects are determined using a variety of methods, ranging from extensive quantitative analysis to qualitative approaches. The following outlines the approach taken for the economic and social assessments. This approach is consistent with standard socio-economic assessment practice in Alberta and elsewhere in Canada.

Economic Assessment

Using the Alberta Finance Provincial Input-Output (IO) model, the study team generated high-level estimates of the current jobs, income, GDP, and municipal taxes associated with the facility and the anticipated effects should the facility close.

The IO model is a type of economic model that, conceptually, allows an analyst to quantify the economic and fiscal impacts of a particular activity or project as the spending (or reduction in spending) associated with the activity ripples through the economy due to the interconnected nature of various sectors and markets. The model aims to capture the interdependencies between industries by linking forward (sales) and backward (purchases) transactions across industries and with the final demand sector. Specifically, an IO model considers the:

- direct impacts of project expenditures on goods and services;
- indirect impacts of project expenditures as suppliers to the project and related industries expand their output to meet the needs of the project; and
- induced impact of the project as the additional income paid to employees of the direct and indirect sectors is circulated through the economy.

Further customization of the provincial level results was carried out using regional labour market and procurement information in order to estimate the direct, indirect, and induced impact at a regional level.

Together, the direct, indirect, and induced impacts constitute the full economic impact of a project or activity. The economic impacts for a particular activity are typically expressed using the following metrics:

- employment, expressed in terms of full-time equivalent (FTE) jobs;
- value added, expressed in terms of GDP;
- earnings, expressed in terms of employment income; and
- taxes paid to various levels of government.

The results are presented within the broader context of other economic activity in the region.

Social Assessment

The first step in the assessment process was to identify the nature of potential effects associated with existing facility operations and its eventual closure. This was done based on:

- data from Shell with respect to workforce size and community of residence, level of community investment, engagement with local government and other stakeholders, and on-site services (e.g., fire, health, security);
- linkages between the facility and local services as identified by stakeholders as part of the SEIA service provider interviews and/or Shell's ongoing consultation process; and
- the professional judgment of the study team based on past experience with similar industrial projects.

The assessment then determined the magnitude of these effects by considering:

- the estimated population effect associated with the facility within the context of current and anticipated future population levels in local communities. Population projections were developed using an integrated labour force and age-cohort survival model that layers the net migration associated with increased or decreased economic activity on top of the natural population growth driven by the region's demographics.
- existing and expected service levels of agencies responsible for addressing these effects. This was determined based on:
    - issues and concerns identified by stakeholders as part of the SEIA service provider interviews or Shell's ongoing consultation process; and
    - data regarding system capacity and historical performance (e.g., number of housing units, emergency department wait times, number and size of schools).

1.2.5 Study Limitations

As with any study, there were limitations in carrying out this assessment. Chief among these are:

- **Uncertainty with forecasting future conditions.** Estimating future economic activity, and associated population growth, is open to considerable uncertainty. A number of variables could alter the results, including:
    - changes in prevailing economic conditions (e.g., technological and process improvements leading to changes in workforce requirements, in both the public and service sector);
    - changes in proposed, planned, or underway industrial and commercial projects in the region;
    - changes in regional socio-economic conditions (e.g., investment in social infrastructure), making the region more or less attractive compared with other communities; and
    - continued natural growth (i.e., birth, deaths).

  Due to this uncertainty, forecasted future conditions should be treated as estimates only and not as certain outcomes.
- **Lack of details regarding the timing and nature of facility closure.** Because the closure of the Waterton Complex is not anticipated for several years (see Section 1.2.2), Shell has not yet undertaken any closure-related planning, including consideration of potential future plans for facility-related assets (e.g., repurposed, shutdown and reclaimed, sold). SEIAs of facility closures are often undertaken closer to the time of closure and with more certainty related to the nature and magnitude of closure activities. An approach to assessing the impact of closure activities is outlined in Section 4.1.
- **Limitations with the available data.** Data for small geographies is sometimes unavailable for reasons of confidentiality and coverage by Statistics Canada is not always complete. Where data are available for small communities, the comparability of the data over time can be challenged by changes in data collection, definition, and methodology.

1.2.6 Report Organization

The remaining sections of this report are as follows:

- **Section 2** provides an overview of current socio-economic conditions in the region in order to provide background for understanding the nature and magnitude of socio-economic impacts associated with the Waterton Complex.
- **Section 3** provides a socio-economic profile of the facility's current operations and its linkages to local communities (e.g., economic, fiscal, employment, population, infrastructure and services). These linkages are important to estimating the potential future effects of closure.
- **Section 4** provides an overview of potential effects associated with closure of the Waterton Complex. These effects are considered within the context of anticipated future socio-economic conditions in the region.

2. Current Conditions

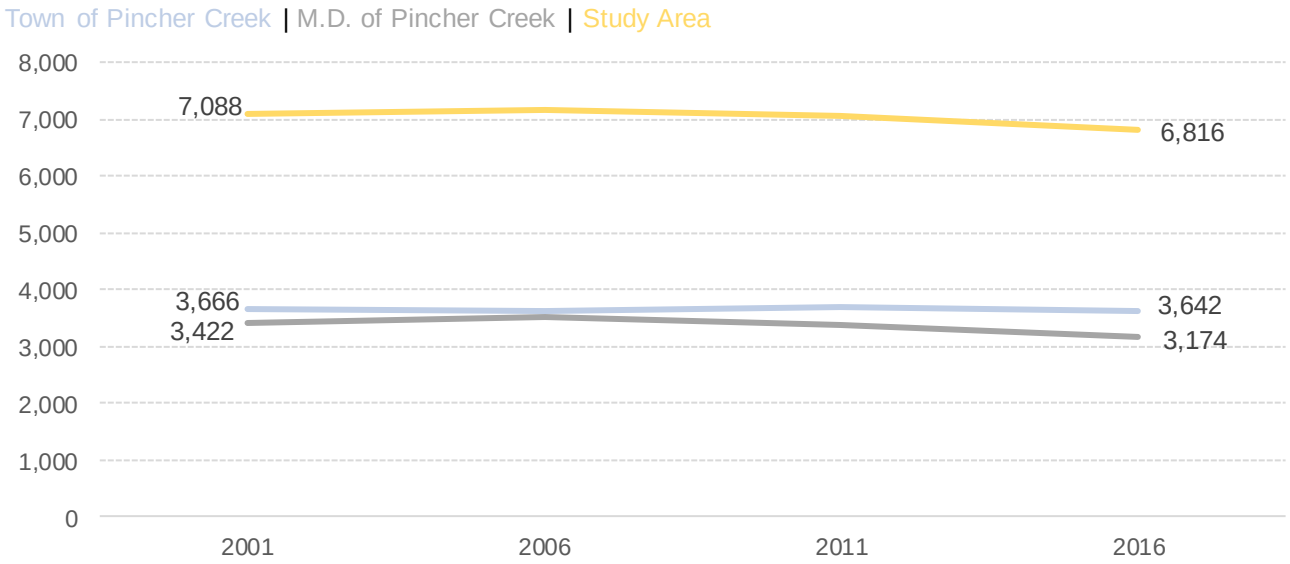
2.1 Regional Population

2.1.1 Current and Historical Growth

The 2016 population of the study area is estimated to be 6,816, with just over half (3,642) located in the Town of Pincher Creek and the remainder (3,174) distributed throughout the rural areas (2,651) and communities (523) of the M.D. of Pincher Creek, including Lundbreck (236), Cowley (209), Lowland Heights (43), Pincher Station (25), and Twin Butte (10) (Statistics Canada 2016).[2] The Town of Pincher Creek is the service centre in the region, acting as the hub of commercial activities and public services for the surrounding area.

As shown in Figure 2-1, the study area population has decreased slightly, by 272 people or by less than 4%, since 2001 (Nichols Applied Management 2017 and Statistics Canada 2006, 2016). Nearly all the population decrease has occurred in the M.D. of Pincher Creek, the population of which decreased by approximately 0.5% per year, as depicted in Figure 2-2. In contrast, the population in the Town of Pincher Creek has remained virtually unchanged.

Figure 2-1 Historical Population Growth (2001-2016)



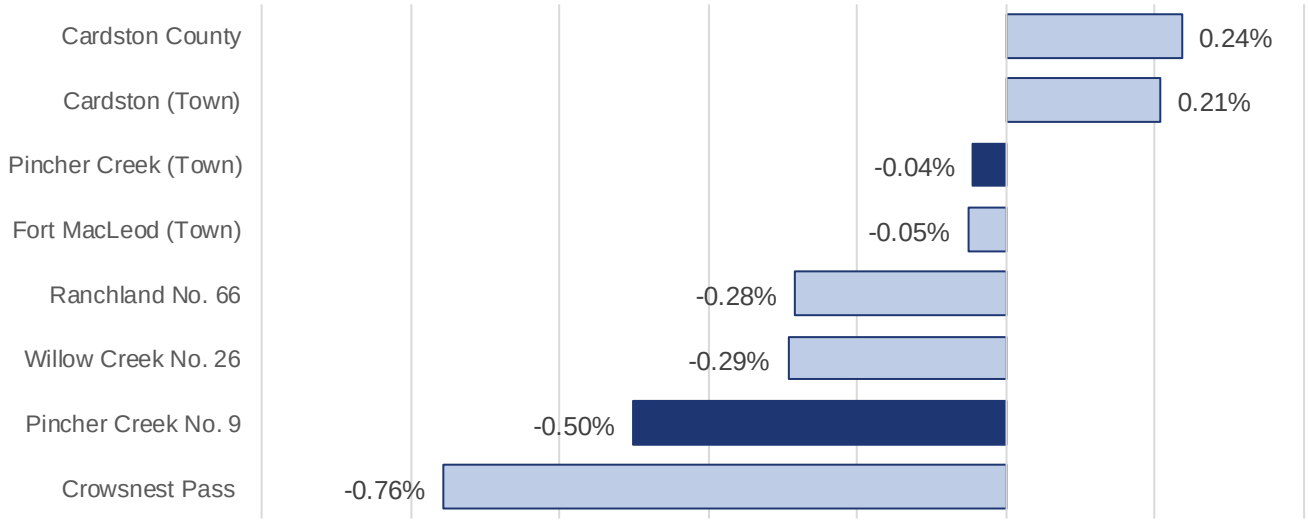
Source: Statistics Canada Census 2006, 2011 and 2016
Notes:

1) M.D. of Pincher Creek population totals include the Village of Cowley.

The 15-year average annual growth rates for the Town and M.D. of Pincher Creek are -0.04% and -0.5% respectively, well below the provincial average of 2.1% for the same time-period, but within the range of growth rates for many surrounding communities (see Figure 2-2). The declining population in the rural areas of the region is part of a general trend towards urban living depicted across much of Alberta and in other provinces.

[2] Though an estimate is not available, there is additional population in the region in the form of mobile workers for local industrial developments.

Figure 2-2 Average Annual Growth Rates for Selected Communities, 2001 to 2016



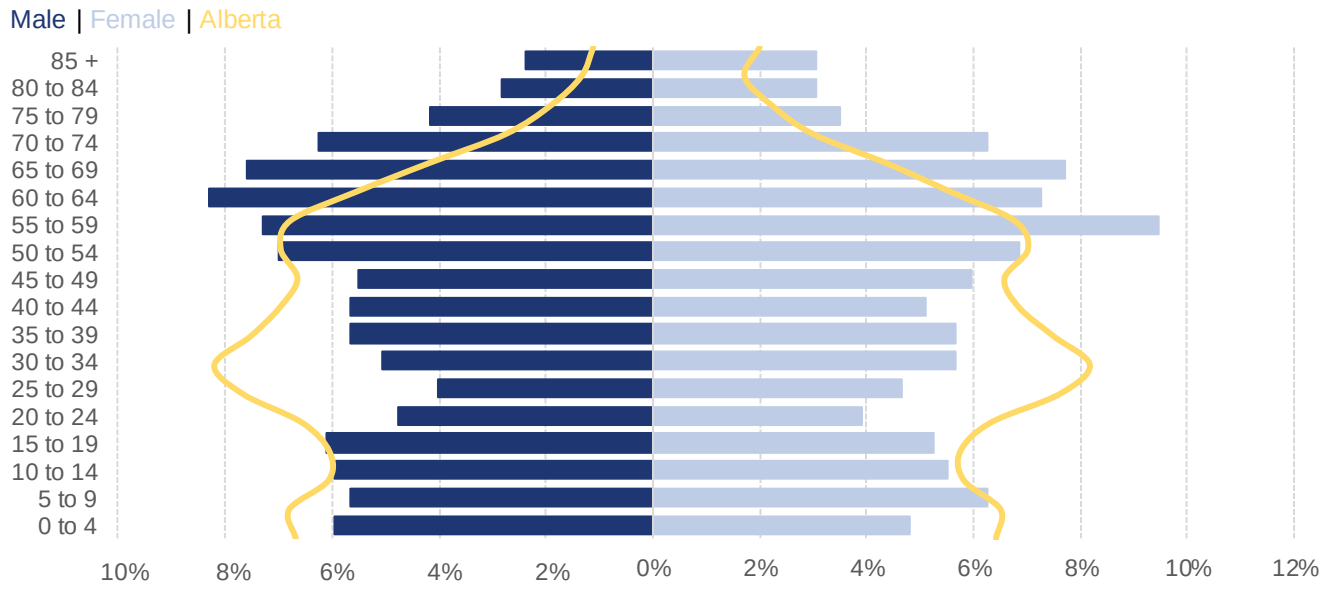
Source: Statistics Canada Census 2006 and 2016. Note that though Crowsnest Pass changed status from a Town to a Specialized Municipality in 2008, the boundaries have not changed since 1995.

2.1.2 Demographics

The population in the study area is also considerably older than the population of the province overall (Statistics Canada 2011, Environics 2014). The median age[3] in the study area is roughly 46.1, well above the provincial measure of 36.7 (Statistics Canada 2016). As shown in Figure 2-3, the proportion of the study area population aged between 20 and 49 is considerably lower than the province overall and a disproportionately higher percentage of the population is aged 50 and older.

[3] The median age is the age which divides the population in half.

Figure 2-3 Age Distribution by Gender



Source: Statistics Canada Census 2016

The median age in the region has also been increasing over time, from approximately 41.4 in 2001 to 46.1 in 2016. During this same timeframe, the provincial median age increased only from 35.0 to 36.7, largely due to the aging baby boomer generation. Although the in-migration of relatively young workers and their families into the province helped to keep the median age from substantively increasing in the province, this was not the case in the Pincher Creek area. Many younger adults are likely leaving the region to pursue employment and education opportunities elsewhere, while those moving into the region are often older (e.g., those who have sold their farms in the surrounding area and are settling 'in town', or those who previously left the community to pursue employment/education opportunities and are now returning to the community). Over the past 15 to 20 years, Pincher Creek has seen growth in the number of empty nesters, early retirees, and seniors, while correspondingly seeing a decline in the number of families with children (Housing Strategies Inc. 2016).

Although the general trend is towards an older and aging population in the region, the Town of Pincher Creek has experienced an increase in more recent years in some younger age groups. For example, the number of residents aged 5 to 9 and 35 to 44 has increased by 15% and 18%, respectively. The increase in the number of residents aged 35 to 44 is potentially related to former residents who left the region for employment/education opportunities elsewhere now returning to the community or to residents of the surrounding area moving into Pincher Creek in order to take advantage of employment opportunities available in the local service industry (e.g., retail, accommodation, public sector).

2.1.3 Indigenous Population

There are no First Nation reserves or Métis settlements in the study area. However, the Piikani Nation has a relatively large reserve (Piikani Reserve 147) that borders the M.D. of Pincher Creek to the northeast. Just over 1,500 people live on the reserve, some of whom draw on amenities and services in the Town of Pincher Creek. In the study area itself, approximately 9% (525 people) identify themselves as Indigenous, which is above the

provincial average of approximately 7%. Of the 525 people identifying as Indigenous, just over half identify as First Nations and the balance as Métis (Statistics Canada 2016).

2.2 Regional Economy

2.2.1 Major Industries

The Pincher Creek region has a relatively diverse economy, which has provided stability even through the recent economic downturn (Everts, pers. comm.). The region is well-situated, being close to Highway 3 and rail transportation, as well as to the border with both British Columbia and the United States. Major industries in the Pincher Creek region include:

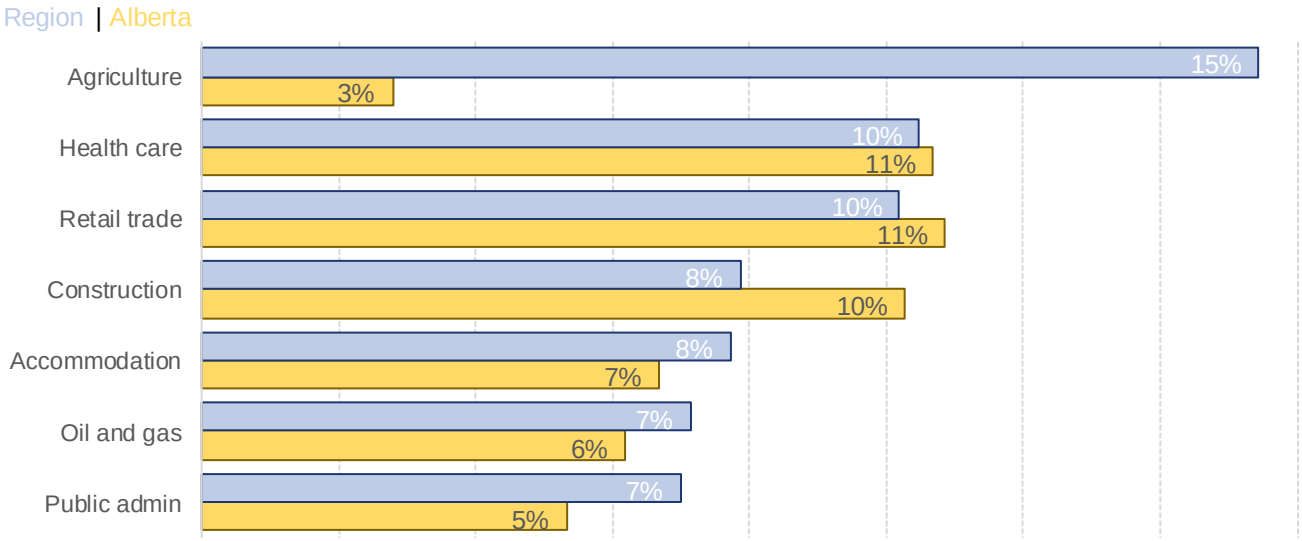
- **Agriculture**. Agriculture has long been a staple of the local economy. According to Statistics Canada, the M.D. of Pincher Creek was home to approximately 440 farms in 2016, just over half (54%) of which were beef cattle ranches, including feedlots. The remainder of farms were comprised of crop and grain farming (17%), hay farming (16%), and raising animals other than cattle (e.g., horses) (14%) (Statistics Canada 2018). The agriculture industry also boasts a greater share of the regional labour force as compared to the overall provincial labour force (see Figure 2-4).
- **Wind energy**. The Pincher Creek area is home to several wind energy projects due to the strong Chinook winds coming off the eastern slope of the Rockies. Beginning with the recently decommissioned Cowley Ridge Wind Farm in the early 1990s, the industry has grown substantively over the past 25 years with approximately eight wind energy projects currently operating and another five in the planning stages (Town of Pincher Creek 2018a). Although this industry continues to feature prominently in the region, the majority of the economic activity created by wind farms occurs in the construction stage and, given the large land base requirement and vista impact of wind farms, some regional residents are reassessing the future development path of this resource.
- **Tourism**. The Town and M.D. of Pincher Creek are a gateway to a number of provincial and national parks including Waterton Lakes National Park, Castle Provincial Parks, the Oldman River Reservoir, and Beauvais Lake Provincial Park. This proximity drives employment in a variety of tourism and service-type industries in the area (e.g., retail, food services, accommodation).
- **Natural resource development**. Nearby oil and gas extraction, coal mining, and forestry have implications for the region in terms of employment and traffic through the region.

Along with the aforementioned industries, the Town of Pincher Creek also acts as a regional service centre for much of the outlying area, including the Piikani Nation, the Crowsnest Pass, and towns in southeast British Columbia, offering nearby residents a number of retail and public sector (e.g., health, education) amenities and services.

2.2.2 Labour Force

The prominent role of agriculture in the regional economy is reflected in the composition of the labour force resident within the area (see Figure 2-4). The 2016 federal census reveals that 15% of the regional labour force (mostly in the M.D. of Pincher Creek) works in agriculture, substantively higher than the provincial average of 3%. A number of other prominent employment sectors in the region, including health care, retail trade, accommodation and food services, and public administration, are reflective of the influence of the tourism industry and the Town's role as a regional service centre.

Figure 2-4 Top 7 Labour Force Categories in the Region



Source: Statistics Canada Census 2016

Major employers in the area include both municipal and provincial public administration, the local school division, Alberta Health Services, Walmart, Shell, and TransAlta (ISA 2015, Everts, pers. comm.).

Table 2-1 compares recent changes in the unemployment rate in the region and the province overall. While the Alberta unemployment rate increased substantively from 5.8% to 9.0% over the 2011 to 2016 timeframe, the unemployment rate in the study area was relatively stable, only decreasing by roughly 0.7%. Within the study area, the unemployment rate is higher in the Town of Pincher Creek as compared to the M.D. There are a number of possible reasons for this rate differential, including that the town might attract job seekers from the M.D. and other nearby communities.

Although the unemployment rate in the region would imply there is labour supply available (i.e., workers seeking employment), interviews with service providers in the region indicate that labour shortages do exist for some service-related sectors, including local retail and accommodation.

Table 2-1 Unemployment Rate

Location	2011	2016	Change
Study Area	7.8%	7.1%	-0.7%
M.D. of Pincher Creek[1]	6.8%	6.2%	-1.1%
Town of Pincher Creek	8.7%	8.1%	-0.6%
Alberta	5.8%	9.0%	3.2%

Source: Statistics Canada 2011 National Household Survey 2011 and 2016 Census
Notes:
2) Including the Village of Cowley

Along with the unemployment rate, it is important to consider the labour force participation rate, as it gives perspective to the unemployment rate and measures the level of engagement of regional residents in the broader economy. Specifically, the labour force participation rate refers to residents 15 years and older who are either employed or actively looking for work (i.e., in the labour force) relative to the total population 15 years and older. The participation rate in the study area was 70.0% in 2016, slightly below the provincial average of 71.8% (see Table 2-2). Between 2011 and 2016, the participation rate in the study area declined by 2.6 percentage points, whereas the provincial average declined by just 1.4 percentage points. The decline is most pronounced in the Town of Pincher Creek where the participation rate dropped by 6.1 percentage points. There are a number of possible reasons for this decline, including workers exiting from or delaying entry to the labour force in order to start a family, workers in the region retiring, or new residents to the region who are already retired (i.e., moving to the Town of Pincher Creek).

Table 2-2 Labour Force Participation Rates

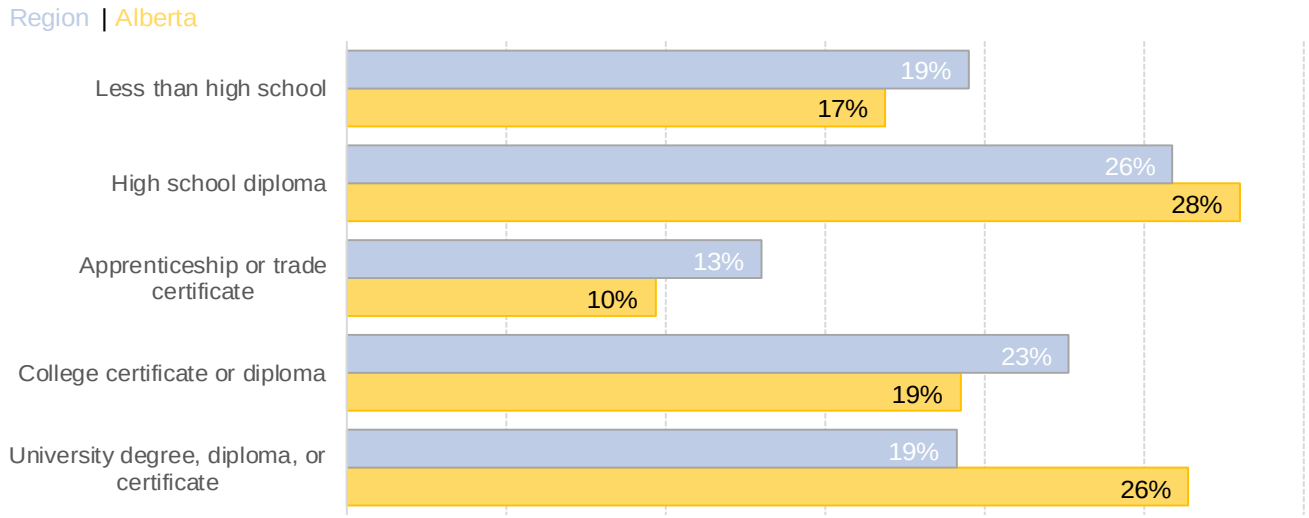
Location	2011	2016	Change
Study Area	72.6%	70.0%	-2.6%
M.D. of Pincher Creek	73.6%	69.7%	-3.9%
Town of Pincher Creek	68.2%	62.1%	-6.1%
Alberta	73.2%	71.8%	-1.4%

Source: Statistics Canada 2011 National Household Survey 2011 and 2016 Census

2.2.3 Educational Attainment

Figure 2-5 illustrates the education levels of the population in the study area as compared to the provincial average. As shown, a higher proportion of the population in the study area than the province overall has less than a high school diploma, an apprenticeship or trades certificate/diploma or a college certificate or diploma. A much lower proportion of the population in the region has a university certificate, diploma or degree than the province overall. These levels of educational attainment are consistent with the distribution of the labour force across industries (see Figure 2-4) and the educational requirements of these industries.

Figure 2-5 Educational Attainment



Source: Statistics Canada Census 2016

2.2.4 Income

Household Income

Statistics Canada reports the median total income for private households in 2015 to be $78,251 in the M.D. and $68,864 in the Town, approximately 20% and 36% lower than the provincial average, respectively (Statistics Canada 2016 Census). Between 2011 to 2016, the median total income for private households in the M.D. and Town increased by approximately 1% and 10%, respectively, whereas the provincial increase over that same time frame was closer to 20%. Income levels in the region are generally reflective of the distribution of the labour force across industries (see Figure 2-4). A relatively high proportion of the labour force is engaged in the comparatively low-wage sector of agriculture, which contributes to a lower median income in the region as compared to the province overall.

Family Income

Table 2-3 shows the median income of families in the region, based on tax filings.

Table 2-3 Median Family Income, 2015[1]

Geography	Couple Families	Lone-Parent Families	Persons Not in Census Families
Town of Pincher Creek	$90,600	$50,440	$31,700
Village of Cowley	$85,710	Not reported	$32,490
Alberta	$109,270	$47,990	$37,420

Source: Statistics Canada 2017. Small Area Taxfiler Data, 2015.
Note: 1) Data was not available for the M.D. of Pincher Creek.

With regards to the regional population, the table shows that:

- For the Town of Pincher Creek, incomes are below the provincial average by approximately 21% for couple families and approximately 18% for unattached single persons. Likewise, for the Village of Cowley, incomes are below the provincial average by approximately 27% for couple families and approximately 15% for persons not in census families. In contrast, incomes of single parent families in the Town of Pincher Creek are above the provincial average by approximately 5% (Statistics Canada 2017). Income data for lone-parent families in the Village of Cowley are not available from Statistics Canada due to small sample size.
- The median income for couple families in the Town of Pincher Creek is approximately 1.8 times higher than for lone-parent families, whereas in Alberta, the median family income for couple families is 2.3 times higher than lone-parent families.

2.3 Housing

2.3.1 Housing Stock

There were an estimated 3,342 private dwellings in the study area in 2016, up slightly (6%) from 2006; just over half of the increase in the number of dwellings has accrued to the M.D. of Pincher Creek. This marginal growth is significantly less than the growth in the province overall (24%) during that same timeframe (Statistics Canada 2016). Like many smaller urban centres in Alberta, characteristics of the local housing stock include the following:

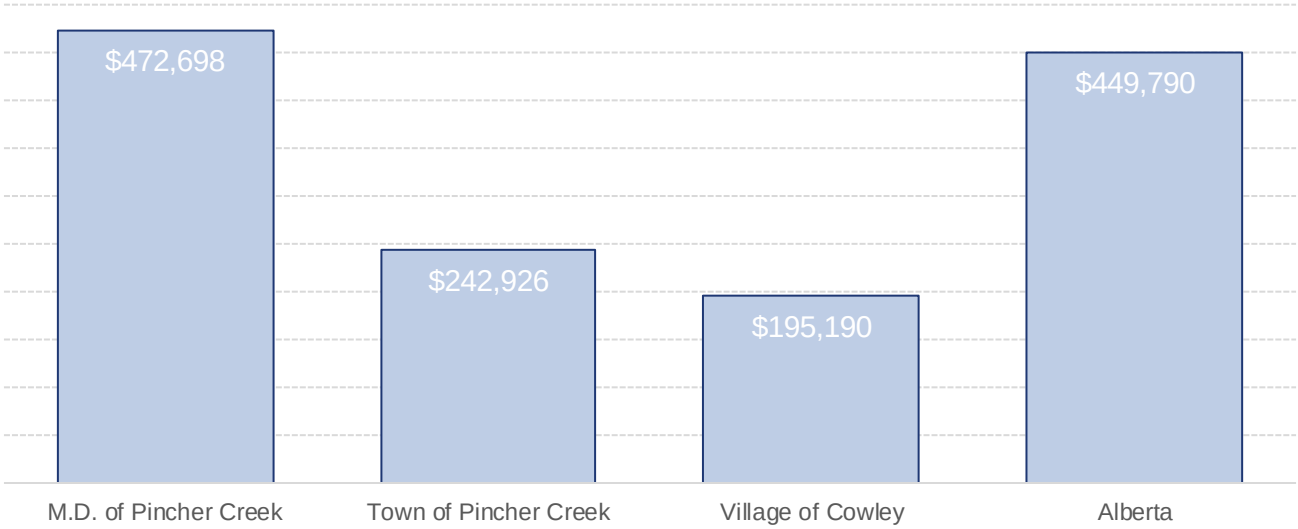
- The vast majority (82%) of dwellings are single-detached houses, well above the provincial average of 62%. Single-detached houses as a proportion of the total housing stock has dropped slightly (85% in 2006).
- Most dwellings (82%) are owner-occupied, higher than the provincial average (72%). The remaining dwelling units in the region are rented (18%).
- Housing is generally older as compared to the province overall, with just over 60% of dwelling units built before 1980, as compared to the provincial average of 40% (Statistics Canada 2016; Everts, pers. comm.).

2.3.2 House Prices

Owned

In 2016, the average house value in the M.D. of Pincher Creek ($472,698) exceeded that of the province overall ($449,790), whereas house values in the Town of Pincher Creek ($242,926) and the Village of Cowley ($195,190) were substantially lower than the provincial average (Figure 2-6).

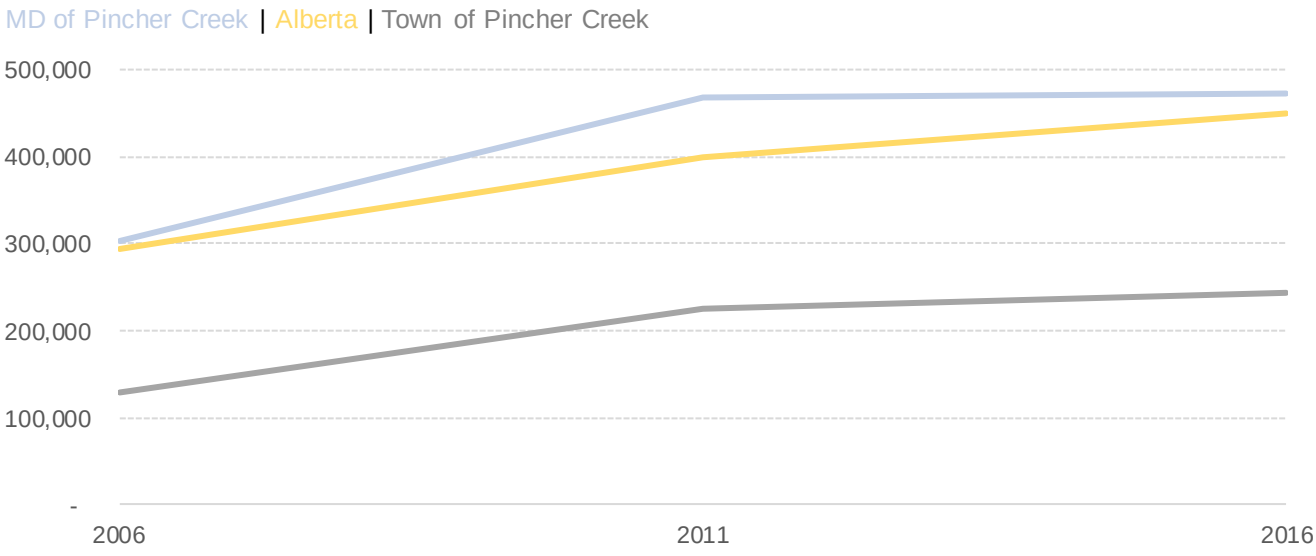
Figure 2-6 Average Value of Dwellings



Source: Statistics Canada Census 2016

As shown in Figure 2-7, house values in the area increased substantially between 2006 and 2011, before moderating in more recent years (2011 to 2016). The changes in house values in the region follows a similar trend seen elsewhere in the province. Between 2011 and 2016, house values also show a similar trend with median household income, as the increase in the Town was smaller (10%) than the increase in the province overall (20%).

Figure 2-7 Change in House Values, 2006 to 2016

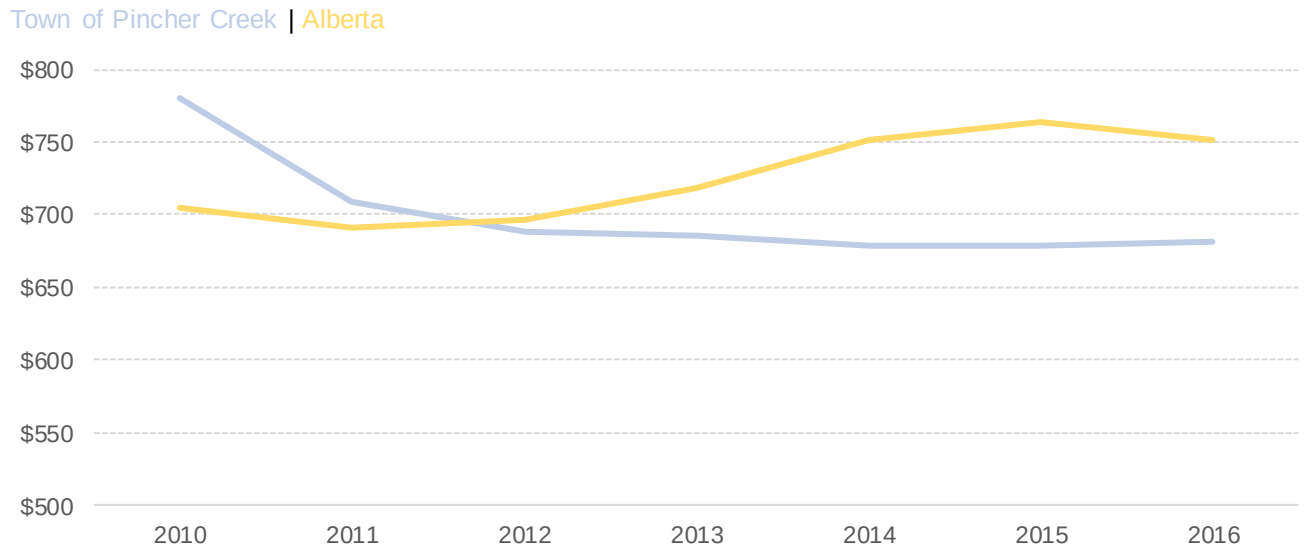


Source: Statistics Canada Census 2016

Rental

The average rent for a one-bedroom unit in the Town of Pincher Creek in 2016 was approximately $681. This was below both the provincial average ($751) and the average for the nearby community of Cardston ($750), but above the average for the nearby communities of Fort MacLeod ($652) and Crowsnest Pass ($592). As shown in Figure 2-8, the average rent of a one-bedroom unit dipped below the provincial average in 2012, and then remained relatively steady to 2016 while the provincial average increased over that same time period.

Figure 2-8 Average Rent, 1 bedroom, 2016 dollars



Source: GoA 2016

Vacancy rates in the Town of Pincher Creek have fluctuated year-to-year but have generally remained below rates for the province overall and neighboring communities (GoA 2016).

2.3.3 Affordability

There is no consensus on the definition of 'affordable housing' – the concept has different meanings for different communities. To measure the concept of affordability, this report uses the shelter-cost-to-income ratio from Statistics Canada. This ratio refers to the proportion of average total income of household which is spent on shelter costs (e.g., mortgage payments, property taxes, rent, utilities). Based on these data for 2016:

- Roughly 18% of households in the region are spending more than 30% of their income on shelter costs. In comparison, approximately 24% of households in Alberta spend more than 30% of their income on shelter costs.
- Roughly a third of tenant households (i.e., those who rent) in the area spend more than 30% of their income on shelter costs, largely in line with the provincial average for tenant households but well above owner-occupied households (14%).

There are many in the community who feel that housing affordability, especially for those who are unemployed or work in service-based industries (e.g., retail, hospitality), remains an ongoing challenge. There is a need for

additional multi-family accommodation options (e.g., row housing, condominiums, apartments) for those making relatively lower wages in the service-based industries and for seniors moving into the town from outlying areas (Maloff, Green, pers. comm.). In response, the Town of Pincher Creek recently updated its local housing needs assessment and is in the process of assessing future actions to address this need (Everts, pers. comm.).

Although Pincher Creek does not appear to have non-market affordable housing options, the Pincher Creek Foundation does manage some rent-geared-to-income housing for low-income families with children, as well as affordable living options for seniors (e.g., the recently constructed Crestview Lodge) (Town of Pincher Creek 2016, Pincher Creek Echo 2017d).

2.4 Social Infrastructure and Services

Social infrastructure includes a diverse range of human services and infrastructure including health, education, social, policing, and emergency services. Social infrastructure is important to a community as a means of:

- supporting the functioning of the community by sustaining the well-being of its residents and building social cohesion; and
- sustaining economic growth by making the community more attractive to those considering investing in or relocating to the region.

The area has a well-developed social infrastructure system. The majority of infrastructure and services are located in the Town of Pincher Creek, which also services residents of the M.D. of Pincher Creek and surrounding area (e.g., Crowsnest Pass, Piikani First Nation). Table 2-4 presents a high-level summary of health, education, and emergency services and infrastructure in the study area along with key issues identified through stakeholder interviews and a review of relevant planning documents, studies and reports.

Table 2-4 Overview of Regional Social Infrastructure

Service Area	Overview
Health Services	**Infrastructure/Services** • The Pincher Creek Health Centre provides a range of services to the surrounding communities including a 24-hour emergency department, intensive and continuing care, obstetrics, surgery and palliative care. The facility consists of 16 acute care beds, three continuing care beds, a physician clinic and three long-term care beds (Frey, pers. comm.). There are currently 132 staff at the health centre with an additional 12 staff working out of the community health services office (Frey, pers. comm.). • Alberta Health Services operates a community-based health facility primarily focussed on addiction and mental health, and also provides home care services in the region. • Approximately 10 physicians operate out of the Associate Clinic specializing in rural care and other medical services (Town of Pincher Creek 2017). • Assisted and supportive living options in the region include the Whispering Winds Village (approximately 77 apartments) and the Vista Village facility (85 supportive living beds) (Wilgosh, Frey, pers. comm.).

Health Services (cont'd)	**Issues/Conditions** • The region, and southern Alberta more generally, tends to see a higher proportion of chronic diseases than the rest of Alberta. This coupled with an aging population generates a higher demand on the health facilities and services (Frey, pers. comm.). There is also a relatively higher demand for addictions and mental health services in the region (Frey, pers. comm.). • The general trend at Alberta Health Services is to place a greater emphasis on community and outpatient services than on inpatient acute care (Frey, pers. comm.). The goal is to minimize hospital visits, and instead aim to treat people closer to their home.
Social Services	**Infrastructure/Services** • A broad coverage of social programs is also offered in the region, including counseling, education and income support services, the food bank, and programming for a variety of needs, including youth, families, and persons with disabilities. • A number of provincial government services are available in Pincher Creek via the local provincial government building. Alberta Supports helps individuals access more than 30 different provincial programs and numerous community services for seniors, employment, financial needs, youth, people with disabilities, and others. • Through a funding partnership between the Government of Alberta (GoA) and municipalities, the Pincher Creek and District Family and Community Support Services (FCSS) also supports communities in designing and delivering preventive social programs to promote and enhance well-being among individuals, families, and communities. With an annual budget of just under $300,000, the FCSS supports roughly 14 agencies in the region offering a broad range of supports and services (e.g., counseling services, victim services, youth services, childcare). Each of these agencies relies on volunteers and seeks matching grants/funding from other organizations and levels of government. • Along with FCSS funding, local social service agencies can apply for municipal funding from the Town and M.D. of Pincher Creek via the joint council funding pool. **Issues/Conditions** • Provincial government services in Pincher Creek are reasonably well-funded and resourced. • Many community agencies in the Pincher Creek area rely on volunteers. Although attracting volunteers can be challenging, there is a solid commitment to volunteerism among many residents in the area, recognizing that the volunteer base does skew towards older residents.

Social Services (cont'd)	• The Town recently created a position for a Community Grant Specialist. Local social service agencies will be able to draw on this resource to increase their grant funding. With increased grant funding, it is hoped that volunteer-supported community groups can then redirect volunteers towards other activities. • Several community groups in the region have benefited from Shell's direct social investment, as well as Shell's support of volunteerism among its workforce.

Education Services	**Infrastructure/Services**
	• Schools located in the area include (Town of Pincher Creek 2018b):
	  • Canyon Elementary School for kindergarten to grade 6;
	  • Matthew Halton High School for grades 7 to 12;
	  • St. Michael's School for grades kindergarten to grade 12;
	  • Livingstone School for grades kindergarten to grade 12
	• The community offers a variety of early childhood education programming including Better Beginnings, Brighter Futures, Children's World Day Care and Parent Link Family Center (Town of Pincher Creek 2018b).
	• Post-secondary programming is offered at the Chinook Educational Consortium facility, or by correspondence from Athabasca University (Town of Pincher Creek 2018b).
	Issues/Conditions
	• Enrolment in these schools over the past 5 years has remained relatively stable with a total population of between 1,100 and 1,150. Between the 2016/2017 and 2017/2018 school years, these schools saw a total enrollment increase of approximately 3.4%, which is largely attributed to an increase in enrolment at the Livingstone School.
	• While nearby First Nations communities have their own federally-funded education systems, some students choose to attend schools in the Pincher Creek area (Livingstone 2017, Driscoll et al., pers. comm.).
	• Given the smaller size of schools in the area, it can be a challenge providing diversity in programming options for students (Driscoll et al., pers. comm.).
	• Modernization of the St. Michael's School was completed in 2017 (Alberta Government 2018; Pincher Creek Voice 2014; Pincher Creek Echo 2017a).
	• Physical school assets in the area are generally in good condition with adequate capacity to handle current demands (Driscoll et al., pers. comm.). The Livingstone Range School Division is set to engage the community in late 2019 in a discussion regarding modernizing schools in the Pincher Creek area (Livingstone 2017).

Child Care	**Infrastructure/Services** • Based on a recently completed day care needs assessment, there are two licensed daycares with an estimated 147 child care spaces and two licensed out-of-school care programs with an estimated 93 out-of-school care spaces in Pincher Creek (Motivention 2016). • One of the day cares in the region, the Children's World Day Care centre, was offering childcare services in the region to approximately 84 children aged 0 to 12 years (Mecklebourg, pers. comm.) However, the centre announced in June 2018 that their facility would be closing as of August 31, 2018. The Mayor of Pincher Creek has indicated that a licensed childcare facility would be opening in early September in order to minimize disruption in child care services (Pincher Creek Voice 2018). **Issues/Conditions** • Some residents in the region feel that families in the area do not have access to adequate child care services (Motivention 2016). • In 2016, directors with both day cares in the Pincher Creek area indicated that all spaces were full and additional requests are being added to the waitlist (Motivention 2016). In fall 2017, a representative with the Children's World Day Care centre noted that since the economic downturn, the number of parents accessing childcare services has decreased, which has in turn reduced the funding available to the day care to provide services (Mecklebourg, pers. comm.). • Based on the day care needs assessment, there are challenges in attracting and retaining qualified staff, as well as in offering flexible child care options (Motivention 2016). • Issues with child care in the area are similar to those faced by other rural Alberta communities (Motivention 2016).
Emergency Services	**Issues/Services** • The Pincher Creek RCMP detachment provides policing services to the Town and surrounding communities (Town of Pincher Creek 2018c). • In addition, the Pincher Creek District Citizens on Patrol has 58 members who patrol the Town and Municipal District (Town of Pincher Creek 2017). • The Town also employs two Community Peace Officers who are tasked with enforcing Town bylaws (Town of Pincher Creek 2018c). • Integrated fire and ambulance services are provided by Pincher Creek Emergency Services. Services include a volunteer fire department (led by a full-time chief and deputy chief), professional ambulance services and medical first response (Town of Pincher Creek 2017).

Emergency Services (cont'd)	• Search and rescue is provided by a separate volunteer organization (Pincher Creek Search and Rescue). • There are three fire/ambulance stations located in communities throughout the region (Pincher Creek, Lundbreck, Beaver Mines). Mutual aid agreements are in place with many neighbouring communities. **Issues/Conditions** • Over the past five years (2011-2016), the crime severity index (CSI) - which takes into account both the volume and the seriousness of crime – has increased in the Pincher Creek area by roughly 2.4% per year, below the provincial average of 3.2%, but above the nearby communities of Crowsnest Pass (-0.2%) and Cardston (-1.5%). • Achievement of response time targets for fire/ambulance are in the 90th percentile (Cox & Neumann, pers. comm.). • The vast majority of workload for the integrated fire/ambulance service is related to medical calls (Cox & Neumann, pers. comm.). • As with many rural communities, there are challenges with finding volunteer firefighters to cover daytime shifts (often due to work commitments) (Cox & Neumann, pers. comm.). • The adequacy of space at the existing fire/ambulance stations is an issue (Cox & Neumann, pers. comm.). • Alberta Municipal Affairs recently completed a review of the Pincher Creek Emergency Services Commission and found that the commission model (i.e., agreement between the Town and M.D. of Pincher Creek to provide joint fire and ambulance services) was working well (Global News 2017).

2.5 The Social Environment

Discussions with key stakeholders in the region, as well as a review of background reports and planning documents, identifies several key elements of the region's current social environment, including:

- **Relatively strong social cohesion.** The rural nature of the area, and focus on the agricultural sector, informs both the structure and cohesion of the region; rural areas tend to exhibit more tight-knit social connections and long-standing relationships, which are often considered central aspects of the social environment.
- **Relatively stable communities.** Although the region does experience population mobility (i.e., residents moving in to/out of the region), the size of regional communities has remained largely stable over the past 15 years (see Figure 2-1). Those interviewed for this study often attributed this stability to the relatively diverse economy (see Section 2.2.1).
- **An overall older and aging population.** The population in the study area is older than the population of the province overall (see Section 2.1.2). Since 2001, the median age in the region has increased from 41.4 to

46.1, while the provincial median age has only increased from 36.0 to 36.7. This is likely a reflection of several factors, including younger adults exiting the community in search of both education and employment opportunities, as well as older residents from nearby rural areas moving into the region to access senior-related housing and services. This aging population will influence the need for future amenities and services in the community (e.g., seniors housing, transportation, and health services).

- **Growth in some younger age groups.** In spite of an overall shift to an older population, the Town of Pincher Creek has recently experienced growth in some younger age groups, including those aged 5 to 9 and those aged 35 to 44. This has implications for services in the region including education, out-of-school care, and family supports. The growth in this demographic is potentially attributable to former residents returning to the region after obtaining education/work experience elsewhere, and residents from surrounding areas moving into the region to take advantage of employment opportunities in the local service industry.
- **Shifting employment opportunities.** Those interviewed for this study indicated that a shift in available jobs has occurred over time in the region, from relatively high-paying positions requiring post-secondary accreditation, such as those often associated with resource-based industries, to relatively lower paying positions in agriculture and service-based industries, such as retail. This shift would influence local social conditions as workers in lower-paying jobs are more likely to draw on social supports and services, including affordable housing.
- **Gaps in local amenities and services.** Several of those interviewed for this study indicated that a lack of affordable housing options, adequate childcare, and available transportation options (e.g., public transit) were creating hardships for local residents, especially those working in the relatively lower-paying service industry and seniors with limited financial and social supports. This lack of adequate amenities and services places additional financial costs (e.g., increased cost for housing, transportation, childcare) and social pressures (e.g., stress, lack of self-sufficiency) on local residents and their families. It also makes it more difficult to attract and retain workers in the region.
- **Residents working outside the region.** A number of service providers interviewed for this study indicated that there are community members accessing work outside the region while remaining residents of the region. These people are making use of fly-in/fly-out (FIFO) arrangements to access employment opportunities in the natural resource industries, especially the oil sands.[4] Such arrangements have positive and negative impacts on participating workers and their families; for example, although it requires the worker to be gone for extended periods of time, often putting stress on other family members, it also allows the worker and their family to maintain existing social and family connections in their home community.

[4] It was also raised through interviews that some residents might be making use of other options (e.g., working remotely, telecommuting) in order to work outside the region while maintaining their residency in the area.

3. Impact of Shell Operations

The Shell Waterton Complex has had a long-standing, prominent presence in the community, primarily through:

- Direct employment, as the complex has been one of the region's major industrial employers;
- Operational expenditures, which support a number of local businesses and generate additional employment opportunities in the region;
- Social investment (i.e., donations), as Shell has directly supported a number of community initiatives in the region; and
- Tax payments to the M.D. of Pincher Creek, which support municipal services and infrastructure for local residents.

3.1 History

3.1.1 Background

Initial work at Shell's Waterton Complex began in 1957 with the drilling of the first well to process sour natural gas (Shell Canada 2018a). Over the next 60 years, Shell has drilled more than 340 wells and built a facility with a design capacity of 3,500 thousand cubic metres per day which, at full operation, could meet the natural gas needs of over 650,000 households (Shell Canada 2018b). End products of the facility include:

- Methane, which is used primarily for heating and electrical generation;
- Natural gas liquids, including:
    - propane, which is used for crop drying, auto fuel and petrochemical feedstock;
    - butane, which is used as a gasoline blending component and as a fuel in products such as butane lighters and curling irons; and
    - ethane, which is used in the manufacturing of a variety of chemicals and plastics;
- Condensate, which is used by refineries as a feedstock to convert crude oil into various finished petroleum products, or for use as a diluent that thins heavy crude oil so that it will pump or move down a pipeline; and
- Sulphur, which is used to make a wide range of products from fertilizers to fabric to pharmaceuticals.

These products are shipped most often by pipeline to distributors, refineries, and chemical plants across North America. Sulphur is moved by rail.

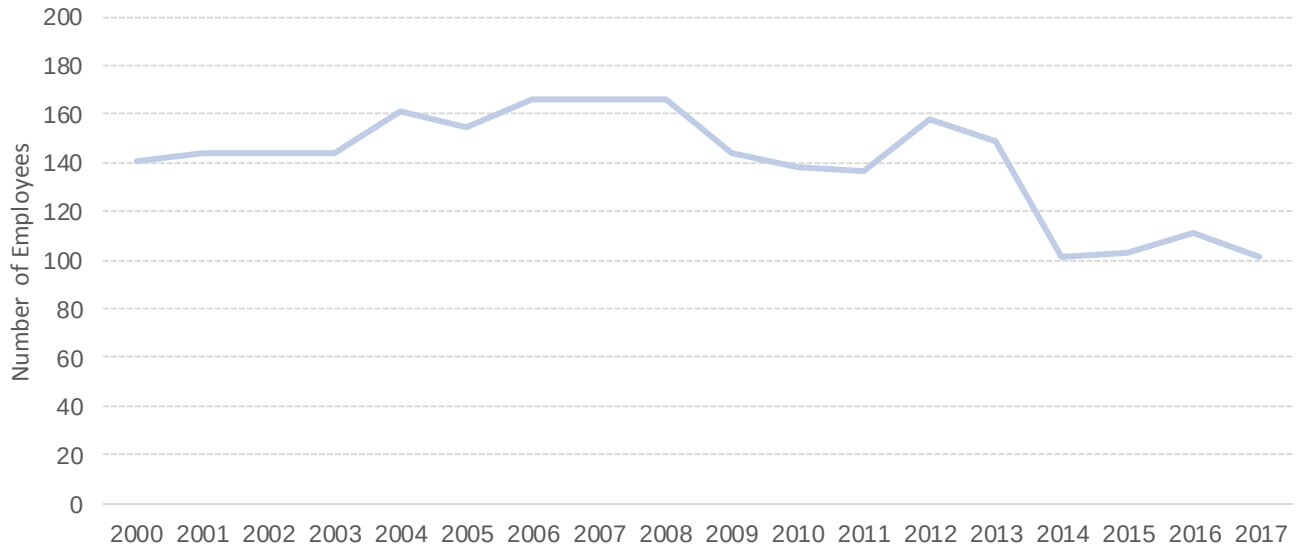
3.1.2 Previous Workforce Reductions

Although the facility has supported operations employment in the region since the 1950s, workforce reductions have taken place at the site over the past decade. As depicted in Figure 3-1, from 2008 to 2017, the direct workforce decreased from 166 employees and contractors to roughly 100; a 40% decrease, or an annual average decrease of approximately 5%.[5] Although the bulk of employment reduction occurred in the late 2013/early 2014 timeframe, there were reductions in staff in 2008/09 and 2012/13. A number of local service providers interviewed for this study indicated that the relatively gradual decline in employment provided time for communities and

[5] Some of the workforce reductions related to attrition (e.g., reduction in employment through retirement).

businesses in the region to adjust to associated socio-economic effects. Employment gains in other sectors of the economy (e.g., agriculture, retail) during this same timeframe also helped offset the impact of Shell's employment reduction on local communities.

Figure 3-1 Historical Workforce at Shell's Operations



3.2 Current Effects

3.2.1 Economic

Geographic Distribution of Plant Expenditures

Generally, operational expenditures at the Waterton Complex can be categorized as follows:

- labour, including staff costs and contractors;
- materials and equipment, including rentals; and
- fuel and utilities, including chemicals.

These items are procured from suppliers located within the region and beyond. As an example, in 2017 nearly half (40%) of annual operations spending accrued to labour and businesses in the region. Spending in the region related in large part to staff costs and the procurement of local services, such as excavation, fluid movement, well servicing and equipment maintenance. The remaining operational expenditures were spent on suppliers in the rest of Alberta (43%), in the rest of Canada (12%), and even outside of Canada (5%).

Along with regular ongoing maintenance – covered in the operations spending estimate above – larger sustaining capital projects are periodically undertaken at the facility in order to maintain production levels and plant efficiency. As an example, turnaround projects are undertaken at the facility roughly once every five years and

typically take about one month to complete.[6] The number and nature of these sustaining capital projects fluctuates, potentially increasing spending in the tens of millions of dollars in any given year.

Local Economic Impact

The local operational expenditures associated with the Waterton Complex constitute income for local contractors, suppliers and workers. These primary recipients, in turn, spend a portion of this income on goods and services, thus circulating the expenditures throughout the local economy and compounding the economic effect (the so-called indirect and induced effects). The effects of the re-spending of direct income is captured by input-output tables for the provincial economy and the economic multipliers that are derived from them.

Table 3-1 provides estimates of the effect of the facility in terms of local GDP and household income based on 2017 operational spending and published multipliers from Alberta Finance (2017). The direct GDP impact of operating expenditures is estimated to be $34 million annually in the region, $31 million of which constitutes labour income. Facility operations are responsible for up to 10% of the estimated regional GDP.

Table 3-1 Impact on Local GDP and Household Income ($ Millions)

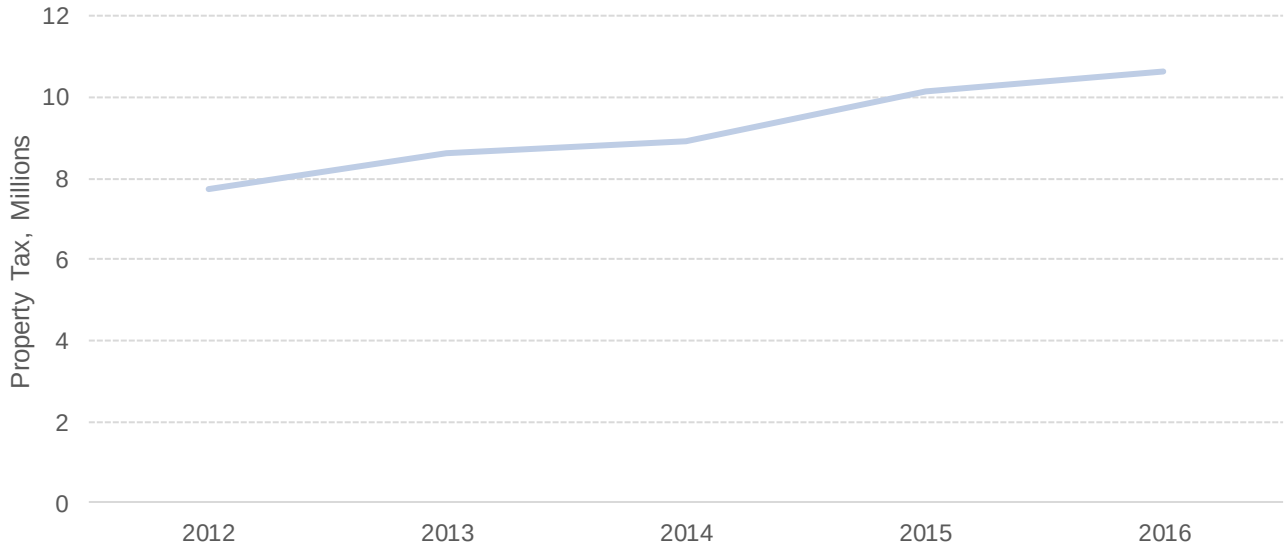
Geography	Effects on GDP	Effect on Household Income
Regional	$34	$31

3.2.2 Fiscal

Property taxes are a source of revenue for municipalities and come from residential and non-residential land and improvements, machinery and equipment, linear property, railways and farm land. As shown in Figure 3-2, property taxes collected by the M.D. of Pincher Creek to fund municipal programs and services were approximately $10.6 million in 2016, an increase of roughly 36% over the past 5 years.

[6] Turnaround projects, sometimes referred to as shutdowns, are scheduled events where an entire process unit of an industrial plant is taken off-stream for an extended period to allow for maintenance-related activities including cleaning, inspection, and repair.

Figure 3-2 Property Tax, M.D. of Pincher Creek



The Waterton Complex is an important contributor to the financial health of the M.D. of Pincher Creek. In 2016, the facility accounted for 22% of property taxes collected by the municipality, effectively meaning that the Waterton Complex contributed more than $1 out of every $5 in property taxes collected for municipal purposes.

3.2.3 Employment

Direct Employment

Shell's current operational workforce is estimated at 95 persons; the large majority of which (roughly 80% or 77 persons) are Shell employees, with the remainder being contractors. The key characteristics of this employment are as follows:

- it is generally full-time,
- it is relatively well-paying, and
- it requires some post-secondary education.

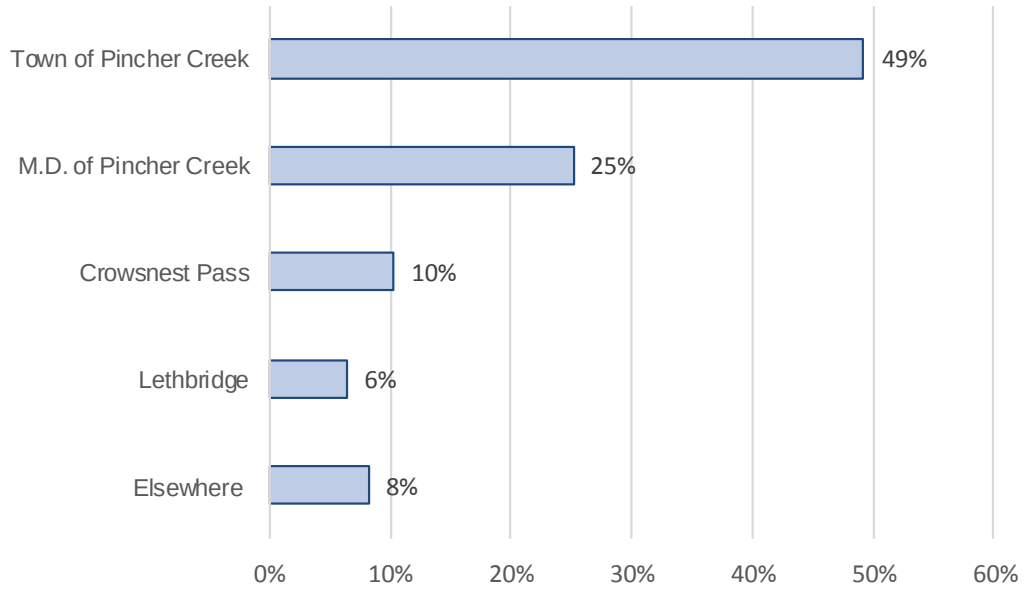
A breakdown of the Shell employee positions (77 of the total 95 positions) is provided in Table 3-2. The contractor positions (18) are largely related to maintenance activities.

Table 3-2 Shell Employment Breakdown

Position	Number of Full-time Employees	Percent of Total
Management/supervisory	6	8%
Administration	3	4%
Operator	44	57%
Trades	14	18%
Other	10	13%
Total	77	100%

As shown in Figure 3-3, roughly three-quarters (72 persons) of the total operational workforce at the facility (95 persons), live in the region, with nearly half (47) residing in the town of Pincher Creek. The remaining workforce (23 persons) reside elsewhere in southern Alberta (e.g., Crowsnest Pass, Lethbridge).

Figure 3-3 Operational Workforce, Place of Residence



Total Employment

In addition to the direct employment generated at the facility, Shell's operations also create indirect employment through its general purchases of goods and services. The total economic activity created by the facility also creates induced employment in the general economy as Shell's workers and employees of suppliers spend part of their income on housing, food, and other goods and services. As shown in Table 3-3, the total direct, indirect and induced employment associated with the Waterton Complex is estimated to be 265 FTEs in the region. These estimates are based on published multipliers by Alberta Finance (2017).

Table 3-3 Total Employment Related to the Shell Waterton Complex

Type	Pincher Creek Region
Direct	72
Indirect/Induced	193
Total	265

The total direct, indirect and induced employment generated by the Waterton Complex in the region of 265 accounted for roughly 8% of the study area's total labour force in 2016 of 3,435 (Statistics Canada 2016).

In addition to operations employment, the facility requires scheduled turnaround activities which occur once every five years and last approximately one month. These maintenance activities include equipment inspections as well as repairs and technology upgrades with an aim to improve the production of the facility. Approximately 400 contractors can be required to perform each scheduled maintenance activity. These contractors represent a sizeable but temporary impact on the infrastructure and services in the region.

3.2.4 Population and Housing

The direct, indirect and induced employment generated by the Waterton Complex contributes to population and housing in the region. Using the data regarding workers' residences provided by Shell (see Figure 3-3) along with regional demographic and housing data available via the 2016 Federal Census, it is estimated that:

- Employment associated with the facility affects an estimated 350 households in the region.
- Approximately 820 people (485 adults and 335 children) reside in these households, representing roughly 12% of the total regional population. These individuals are primarily located in the Town of Pincher Creek.

3.2.5 Infrastructure and Services

The Waterton Complex currently places demands on infrastructure and services in the region via two means:

- facility operations; and
- resident population associated with plant operations (i.e., direct, indirect, and induced workers and their families).

Facility-Related Effects

As an industrial facility, the Waterton Complex periodically requires emergency responder capabilities. There is on-site first aid at the facility and an emergency response plan on which workers at the site are trained. In the event of an escalated incident that would require emergency services, the facility would need to call on local ambulance, fire, and police.

According to Pincher Creek Emergency Services, Shell's recent workforce reductions (see Section 3.1.2) led to two effects on local emergency services (Cox & Neumann, pers. comm.):

- reduced volunteer base for the local fire department. Previously, Shell employees comprised a large portion – upwards of 50% - of the local volunteer firefighters in Pincher Creek. That number has dropped considerably in recent years.

- reduced on-site emergency response capabilities. With the reduction in on-site fire/medical response capabilities, the facility is more reliant on local services in the event of an emergency.

Local emergency services have responded to a limited number of calls in the past couple of years related to on-site incidents (e.g., need for ambulance services).

Population-Related Effects

All residents rely to some degree on social infrastructure. In some cases, such as education, the services are a part of everyday life for many residents. In other cases, such as fire and ambulance services, residents avail themselves of social infrastructure primarily during an emergency. As residents of the region, employees of the Waterton Complex and their families access these same infrastructure and services. Specifically, which services are accessed and to what degree is not known as this is not tracked by service delivery agencies. However, it is expected that the demand placed on these services will be roughly in-line with the population effects of the facility outlined in Section 3.2.4. Relating to specific services, some general observations can be made:

- It is estimated that of the 820 residents in the region directly and indirectly associated with the facility, roughly 250 are school-aged children. Assuming these children are enrolled in local schools, they would represent roughly 20% of total enrolment at schools in the region.
- According to a representative at the local Children's World Day Care center, an estimated 10% of the children enrolled in the centre are likely from parents who work at the facility (Mecklebourg, pers. comm.).
- Employees at the facility benefit from generally stable, well-paying employment and are unlikely to draw on social supports or certain social services (e.g., affordable housing, income support).

3.2.6 Local Community Investment and Volunteerism

Beyond the key local economic and fiscal contributions, the Waterton Complex plays an important role in supporting local community programs, services, and infrastructure, both through direct social investment and its support of volunteerism among Shell employees. Specifically:

- Shell donates approximately $100,000 to local programs and facilities in the region each year. Table 3-4 provides a breakdown of donations for the past two years (2015- 2016) by major focus area, along with examples of the types of programs and services that receive these donations. The level of donations to each area does vary year-to-year. Local community representatives indicate that these donations represent an important source of funding for many local community programs and services. Community representatives highlighted that Shell has long been a top corporate donor and there are no other corporate entities operating in the region that match the level of community investment provided by Shell.
- Shell also supports the volunteer efforts of its employees and retirees through its Community Service Fund by awarding grants of up to $1,000 to non-profit organizations where Shell employees volunteer. Shell volunteers can apply on behalf of two separate organizations each year, and contributions to any one organization are capped at $20,000 per year. The volunteer support of Shell employees was noted by a number of those interviewed for this study.

Table 3-4 Local Community Investments by Shell Canada (2015-2016)

Theme/Area	Percentage of Total	Examples of Supported Programs/Services
Community	31%	• Small Spurs Program • Local agricultural society • Spray park • Minor sports programs
Environment	27%	• Interpretive program • Youth conservation program • Ed Gregor 21st Annual Stewardship Day • Blue Weed Blitz • Weed and Riparian Management • West Castle Biological Field Station
Health and Social Services	17%	• Windy Slopes Health Foundation
Traditional Livelihood and Culture	16%	• Rodeos • 4-H Scholarship and Training • Plain Eagle Crafts
Education	9%	• Aboriginal artist training • High School awards • Youth employment services • Local theatre society
Total	100%	

4. Closure

4.1 Overview

As noted in Section 3, Shell has been operating the Waterton Complex for over 60 years, well beyond the typical lifespan of most industrial operations. Although Shell is anticipating that production levels will remain relatively constant in the near-term, Shell has also publicly stated that, notwithstanding changes in economic conditions, the facility is facing a likely decline in production and possible closure in the next 10 to 15 years (from 2015).

Ultimately, there is considerable uncertainty surrounding the pace, nature, and timing of declining operations and closure. The remaining operational life of the facility, and subsequent closure, is dependent on a number of factors including:

- future technological advances that improve the economic viability of Shell operations or, conversely, reduce the demand for the facility's end-use products;
- remaining reservoir capacity that can be feasibly recovered;
- cost of inputs, such as labour, energy, and materials; and
- the forecasted and realized price for end-use products, such as methane, natural gas liquids, condensate, and sulphur.

To enable a quantitative assessment of the potential effects of closure, it has been assumed that there will be a reduction in production, with an associated reduction in facility-related employment and expenditures, beginning in 2026, followed by complete closure of the facility in 2030. Other closure scenarios are possible. Shell has no specific plans for closure and has not undertaken any closure planning, including considering potential plans for future use of facility-related assets (e.g. repurposed, shutdown, sold, reclaimed).

Even though Shell has yet to undertake closure planning, high-level workforce estimates related to the closure scenario outlined above were provided by Shell.

4.2 Future Conditions

4.2.1 Economic Activity

As shown in section 2.1, the size of regional communities has remained largely stable over the past 15 years, despite substantive fluctuations in the provincial economy. Specifically, between 2001 and 2016, the regional population changed only slightly, decreasing at an annual rate of less than 0.3%. During that timeframe, Alberta experienced a period of strong economic expansion (early to mid 2000s), economic recession (2008-2009), economy recovery (2010-2014) and, again, economic recession (2014-2016). The region's stability is likely attributable to its relatively diverse economy and sense of strong social cohesion.

Based on stakeholder interviews, a review of proposed economic activity in the region, and broader provincial economic forecasts, the region's outlook, before taking the closure of the facility into account, remains relatively stable. Over the next 10 to 15 years, the regional economy is expected to remain focused on renewable energy projects such as wind and solar, cattle ranching and farming, tourism and industrial development. There are several local developments that could influence future economic conditions including:

- **Provincial government investments in Castle Provincial Parks.** The provincial government recently committed to investing $20 million over the next four years to improve recreation opportunities via

infrastructure additions and upgrades in the Castle Provincial Parks, roughly 30 km west of Pincher Creek (GOA 2017). There is expectation that this will increase the number of visitors traveling to the region and potentially create tourism-related business opportunities (Pincher Creek Echo 2017c). In addition, there is evidence from the United States that outdoor recreational opportunities and natural landscapes associated with protected public lands can be an effective tool for attracting entrepreneurs and skilled workers in higher-wage services industries such as high-tech and health care (Headwaters 2012). Development of parkland within the region, if managed appropriately and in keeping with the culture of the area, offers additional sources of economic diversification.

- **Installation of a fibre optic network.** The Town of Pincher Creek recently engaged a private service provider to install fibre optic internet in the community, benefiting existing residents and businesses, as well as improving the community's ability to attract future business opportunities (Everts, pers. comm.; Pincher Creek Echo 2017b).
- **Proposed nearby coal project.** Riversdale Resources Limited is proposing to develop the Grassy Mountain Coal Project near Blairmore, roughly 60 km from Pincher Creek (Riversdale 2018). The project, which is currently under regulatory review, could provide additional employment and business opportunities in the region.
- **Local commitment to encouraging innovation.** The Regional Centres for Arts, Design and Entrepreneurship (RCADE) recently opened a space in Pincher Creek to encourage technology-based interests among the community's youth (e.g., computer coding, programming, robotics) (CBC 2017). It is hoped that initiatives like this will help spur innovation and diversification in both economic and social terms for the community.
- **Impact of Wildfire on Waterton Park.** In fall 2017, Waterton National Park, a major tourist attraction just south of Pincher Creek, was impacted by a sizeable wildfire event. The Kenow Fire burned roughly 19,303 hectares of the Park, affecting built infrastructure (e.g. bridges, visitor centre, water and electrical systems) and over 80% of the park's hiking trail network (Parks Canada 2018). As of early 2018, it's unclear what impact this might have on visitor numbers to the region or how long it might take for the park to recover.
- **Closure of Teck mine.** At the end of 2017, Teck closed its long-running Coal Mountain operation located about 30 km southeast of Sparwood, B.C. Although the impact of this closure will largely be felt in and around Sparwood and the Crowsnest Pass, roughly a dozen Coal Mountain employees are residents of Pincher Creek (Crowsnest Pass Herald, 2016).

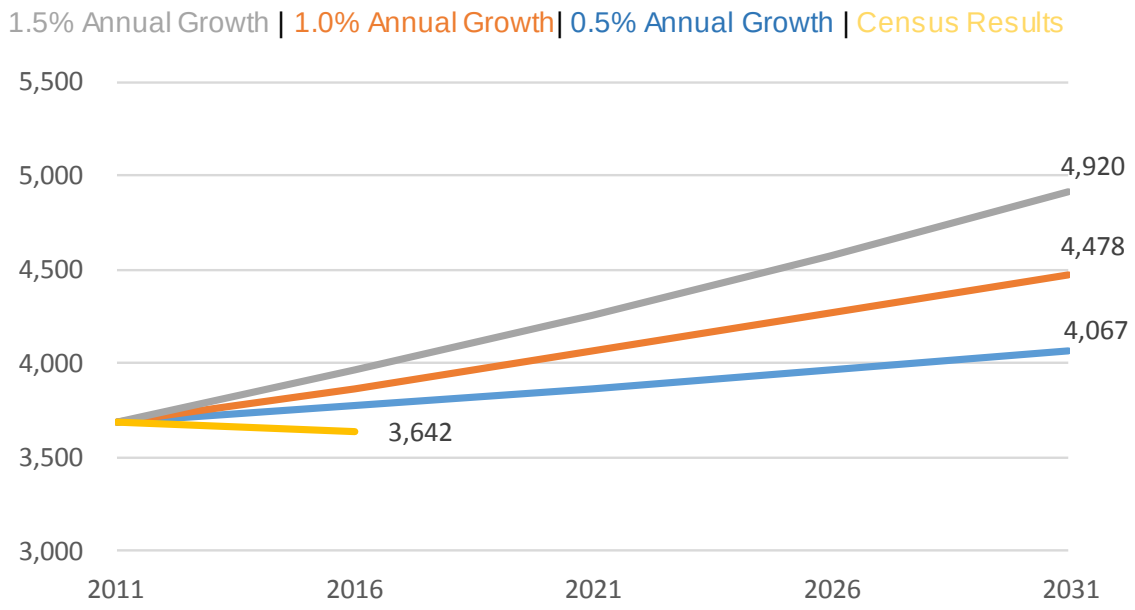
4.2.2 Population Projections

The Town of Pincher Creek's most recent municipal development plan (MDP), completed in 2013, estimates the town's population could reach between 4,067 and 4,920 by 2031 (see Figure 4-1). These projections use the 2011 Federal Census results as a starting point and then estimate future population based on a linear annual growth rate of between 0.5% and 1.5%.[7]

[7] The most recent municipal development plan for the M.D. of Pincher Creek does not contain a population projection.

Since the MDP was completed (2013), a more recent federal census was done in 2016. As shown in Figure 4-1, the town's population in 2016 was 3,642, roughly 4% to 8% below earlier MDP estimates.

Figure 4-1 Municipal Development Plan Population Projections (Town of Pincher Creek)



Sources: Town of Pincher Creek 2013; Statistics Canada 2016.

Recent projections for the town are more conservative than the MDP. Specifically:

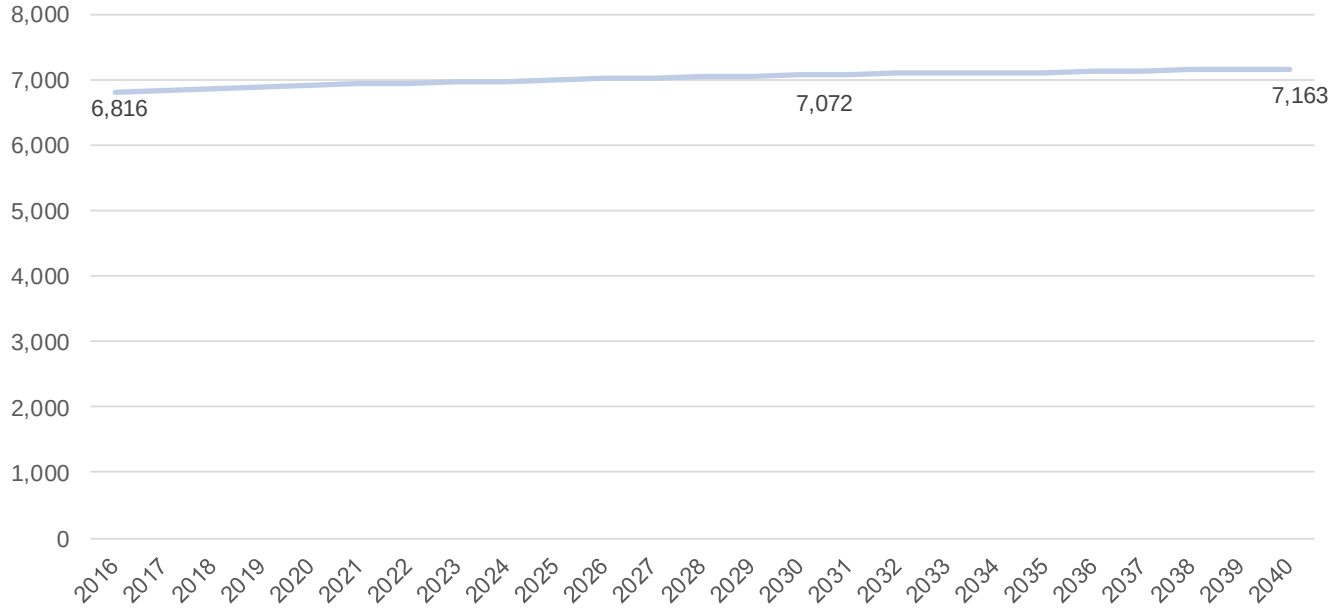
- The updated Local Housing Needs Assessment (Housing Strategies 2016) estimates a town population of between 3,715 and 4,130 by 2035. Using the 2016 Federal Census results as a starting point, this implies an average annual growth rate of 0.1% to 0.7%.
- A recently completed assessment of daycare needs in the community (Motivention 2017) estimates a town population of 3,669 by 2031. This implies an annual growth rate of just 0.05% between 2016 and 2035.[8]
- Medium scenario population projections prepared by Alberta Treasury Board and Finance indicate average annual growth of approximately 0.2% from 2016 to 2031 for the larger Census Division of which the study area is a part. Applying this growth rate to the 2016 population of the Town and M.D. of Pincher Creek, as well as the Village of Cowley, would result in a population in 2031 of 3,755, 3,057, and 215 residents, respectively.

As noted in Section 1.2.5, estimating future population growth is open to considerable uncertainty. Recognizing that uncertainty, a relatively conservative forecast has been chosen that is in line with both past trends and recent

[8] These projections are taken from population projections for communities in southwestern Alberta for the 2016-2036 period developed by the Oldman River Regional Services Commission in order to assist municipal and regional planners (ORRSC).

projections noted above. Using an integrated age-cohort survival and labour force model developed by Nichols, the study area population is forecasted to grow at a modest annual rate of 0.2% per year, reaching 7,069 by 2030 and 7,165 by 2040 (see Figure 4-2).[9] This forecast does not take into consideration the potential effect on population of closure of the Waterton Complex, which is discussed separately below in Section 4.4.2.

Figure 4-2 Regional Population Projections (2016-2040)



4.3 Anticipated Closure Activities

Although closure will lead to the cessation of current production and associated employment at the facility, there are a number of closure-related activities that will need to be undertaken by Shell and its contractors. Specifically:

- **Pre-planning.** Development of demolition, abandonment, and reclamation plans (e.g. environmental assessments, hazardous material surveys, regulatory notification)
- **Decommissioning.** De-energization and evacuation of all hydrocarbon from process equipment, waste management, and fluid disposal.
- **Demolition**. Removal and salvaging or sale of all process equipment, including removal of all below ground infrastructure, pile and foundation removal
- **Abandonment.** Wells, pipeline and facilities abandonment as per regulations in place at the time
- **Abatement**. Removal and management of all identified hazardous materials
- **Remediation.** Cleanup and risk management of soils and groundwater as per regulation and approvals in place at the time

[9] These projections relate to the resident population and do not include temporary and seasonal workers.

- **Reclamation.** Recontouring of disturbed soils, access road removal, and replacement of soils profiles and revegetation to equivalent land use as required by regulations in place at the time.
- **Environmental assessment**. Investigation and monitoring of potential soils and ground water impacts.

These closure activities will generate employment opportunities, albeit on a largely temporary or seasonal basis. As previously noted, Shell has yet to undertake closure-related planning. However, drawing on closure-related experiences at other facilities, order-of-magnitude estimates have been developed in relation to the closure scenario outlined in Section 4.1.[10] As shown in Table 4-1, the bulk of closure work would be expected to take place in the 2031-2033 period (assuming closure in 2030).

Table 4-1 Estimated Workforce Associated with Closure Activities

Timeframe	Estimated Average Annual Workforce (FTEs)[1]	Pre-Planning	Decommissioning	Demolition	Abandonment	Abatement	Remediation	Reclamation	Environmental Assessment
Prior to 2030	6	✓							✓
2030	20	✓	✓						✓
2031-2033	120			✓	✓	✓			✓
2034-2037	85			✓	✓		✓	✓	✓
2038-2042	40						✓	✓	✓
2043-2055	3-5								✓

Notes:

1) Workforce estimates are based on full-time equivalent (FTE) totals. Although some activities are seasonal, the FTE is an average over the year, with peak activity being June-October.

Although this employment will generate economic activity in the region, particularly for the local accommodation and service industries (e.g. hotel/motel, retail, hospitality), it cannot be considered a 'replacement' for operations-related economic effects. Specifically, much of these closure-related employment and business opportunities are temporary and, in a number of instances, seasonal in nature. There is expected to be relatively steady turnover in the onsite workforce as closure-related activities vary over time. In addition, although local workers and contractors will be able to pursue these opportunities, a considerable portion of the employment opportunities will likely flow to workers and firms based outside the region with the specific experience and specialized expertise required to carry out the work.

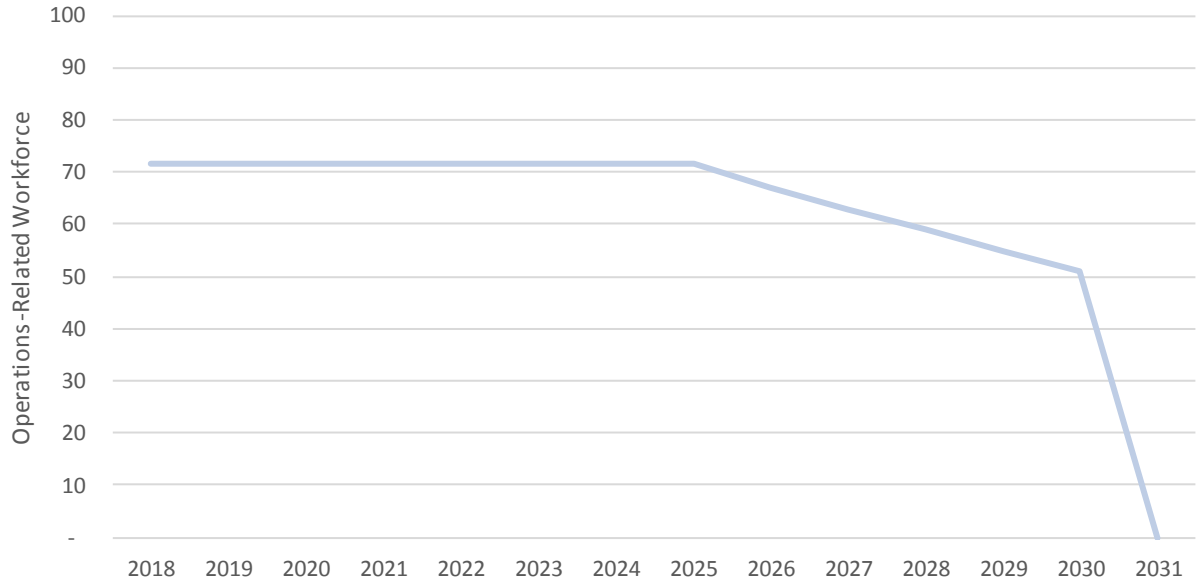
[10] Ultimately, there is considerably uncertainty surrounding the pace, nature, and timing of declining operations and closure (see Section 4.1).

4.4 Effects of Closure

4.4.1 Changes in Employment and Economic Activity

Figure 4-3 provides an estimate of potential changes in the operations-related workforce at the Waterton Complex, assuming complete closure of the facility in 2030. As shown, workforce reductions could begin as early as 2026 and continue at a relatively consistent annual rate of 6% (4-5 workers) until 2030 when operations cease and the remaining operations-related employment (45 employees and contractors) ends. The rate and proportion of workforce reductions are expected to be relatively the same between Shell employee and contractor positions.

Figure 4-3 Potential Change in Operations-Related Workforce (2018-2031)



Note: This figure is exclusive of operations-related workers who reside outside the region (see Section 3.2.3).

In addition to direct employment, Shell's operations support indirect employment, through its general purchases of goods and services, and induced employment in the region as operations workers and employees of suppliers spend part of their income on housing, food, and other goods and services. Reduced operations and eventual closure of the Waterton Complex will impact the roughly 193 indirect and induced FTEs associated with the facility (see Section 3.2.3).

The economic effect of the operation of the facility, in terms of local GDP and labour income, will also cease at the time of closure. As previously shown Table 3.2, the direct GDP impact of operating expenditures is estimated to be $34 million annually in the region, $31 million of which constitutes labour income. As of 2017, this loss would represent a decrease of up to 10% of regional GDP.

The ability of the region to absorb these job losses and reduced economic activity will depend on the anticipated economic activity at the time of closure (see Section 4.2.1).

Additional factors to consider regarding closure-related reductions in employment include:

- Some of the companies in the area which supply goods and services to the Waterton Complex are smaller companies with a sizeable portion of their business dedicated to the facility. Closure of the facility could have a substantive effect on some of these businesses as it would force them to either shift their product or service offering, relocate, or close altogether.
- Although the loss to the local labour force due to closure of the facility is expected to be roughly 265 FTEs (72 direct and 193 indirect and induced), implications for the community also exist in terms of the quality of some of the positions lost. Many of the Shell employee and contractor positions, for example, are highly skilled and relatively well-paying positions.
- Much of the induced employment losses will be felt in service-based industries, such as retail, accommodation, and food services, which, in the region, are more concentrated in the Town of Pincher Creek. In addition, households that experience employment losses but remain in the community might reduce their overall household spending, especially as it relates to non-essential goods and services (e.g., restaurants, entertainment).
- Reduced economic activity from facility closure will be partially offset over the short to medium term (i.e., <10 years) by closure-related employment, as outlined in Section 4.3. The closure-related workforce is expected to average between 85-120 FTEs annually for the first seven years following closure (see Table 4-1), before dropping to just 3-5 FTEs annually in less than 15 years after closure (i.e., after 2043). This level of employment in the first few years following closure is comparable to existing operational workforce requirements and will generate spinoff economic activity in the region while it lasts. However, as noted in Section 4.3 above, a considerable portion of the closure-related employment opportunities will likely flow to workers and firms based outside the region and therefore its effect on offsetting the local impact of reduced employment and declining labour income will be limited.

Finally, it should be emphasized that the impacts of job loss will vary at a household and individual level. Those with higher educational attainment levels, and stronger support systems will likely cope better with, and be able to adapt to, change.

4.4.2 Change in Population and Housing

With the loss of employment, workers and their families will be faced with the choice of either remaining in the region or relocating elsewhere. Workers and their families will likely consider a number of factors when making their decision, including:

- the worker's and their spouse's age (e.g. option for retirement);
- the availability of comparable employment opportunities, both inside and outside the region; this would also include consideration for accessing work outside the region while still living in the region (e.g. mobile work, or telecommuting);
- the employment status of workers' spouses (e.g. how attached are they to their current position/employer, what is their ability to relocate);
- the length of time workers and their families have already lived in the region and their sense of belonging to the community; and

- other personal circumstances (e.g. financial wellbeing, marital status, children/no children, location of extended family and friends)

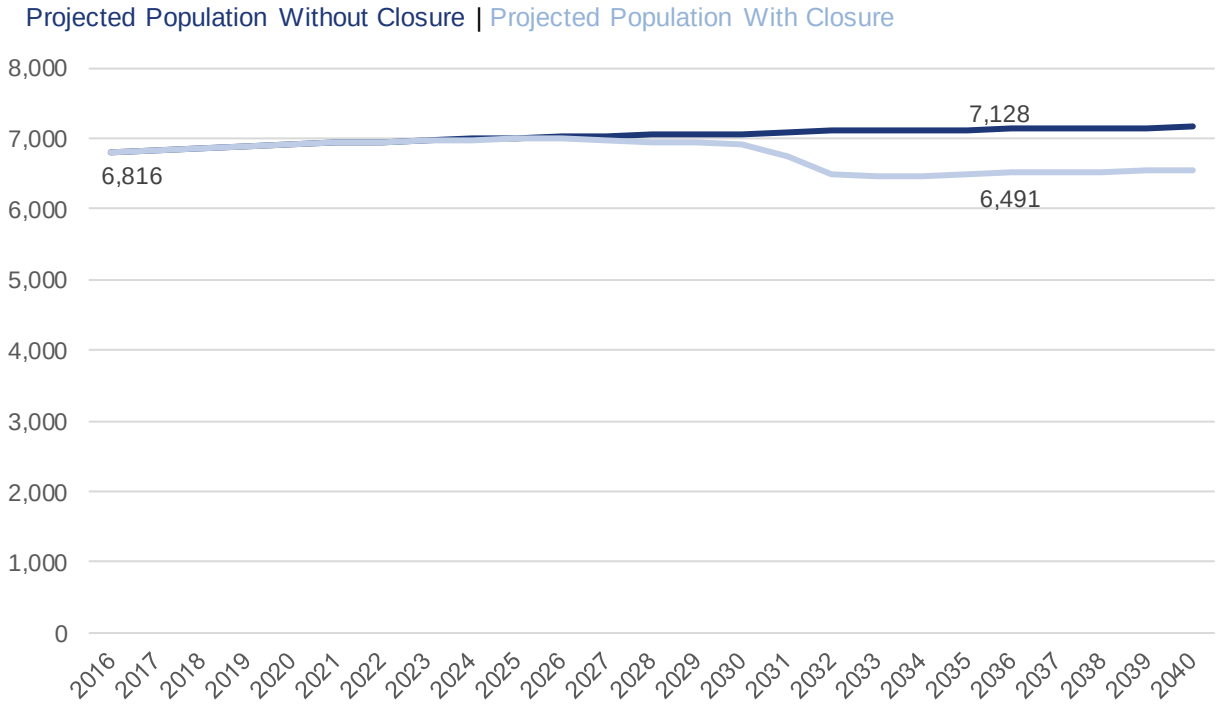
Specific worker choices and preferences are unknown at this time. Although indications of worker preferences can be obtained via a survey, the closure of the facility is too conceptual and too far out in time to make any survey of current worker preferences meaningful. In order to estimate how many workers and their families might remain in the community after closure, Nichols drew on publicly available labour force data from Statistics Canada, its own experience supporting the closure of other industrial facilities, and information from Shell about its past and current operations workforce. Drawing on this information, it is estimated that:

- Approximately 20% of affected workers will retire and remain in the region. Human resources (HR) data from Shell indicates that a majority of past retirees from the facility have chosen to remain in the region. It is expected that a similar proportion of affected workers nearing or at retirement age will do so near or at the time of facility closure.
- Approximately 5% of affected workers will remain in the community and access employment opportunities outside the region via telecommuting or working mobile. Although an estimate is not available, service providers interviewed for this study indicated that there are regional residents who currently engage in mobile work. Recognizing the increase in demand among workers for alternative work arrangements, such as working mobile or telecommuting, along with the relatively limited work opportunities in the region comparable to that offered by Shell and its contractors, it is expected that a small portion of affected workers will make use of these arrangements.

Based on the above assumptions, roughly 70 affected workers (direct, indirect and induced) and their families will remain in the region. The remaining workers (195) and their families will be faced with the option of either remaining in the region or relocating elsewhere to seek new employment opportunities. For the purposes of this analysis, it is assumed these workers and their families will relocate elsewhere. In reality, a proportion of them will choose to remain in the community either because their family is settled here, they are from the region originally, or their spouse has employment opportunities for which they wish to stay. Even so, many of these workers will take up employment opportunities that would otherwise have been filled by new migrants to the region, thereby effectively representing a reduction in population as compared to a future scenario in which the facility remained open (see Section 4.2).

Drawing on the above assumptions and using the same age-cohort survival model used in Section 4.2, the reduction in Shell workforce and associated employment is estimated to reduce population in the region by approximately 650 people in the years immediately following closure in 2030. As shown in Figure 4-4, taking into consideration closure of the Waterton Complex, the regional population in 2035 is estimated to be 6,490, roughly 9% lower than the projection for 2035 in the absence of facility closure, and 5% (330 people) lower than the current regional population of 6,816.

Figure 4-4 Estimated Population Impact of Shell Waterton Closure



Based on average household size, it is estimated that this would impact approximately 260 to 285 households in the region, representing roughly 9% of the estimated total housing stock in 2035. It is possible that this number of dwelling units coming onto the market in the period of just a few years would have a dampening effect on local housing prices, at least until the excess housing supply is addressed and the housing market returns to a more balanced state.

4.4.3 Other Community Effects

The closure of the facility, and associated reduction in population has the potential to impact the community in other ways as well, including:

- **Reduced volunteerism.** Although the level of volunteerism among Shell employees relative to the overall population is not known, based on interviews conducted for this study, it is anticipated that the rate of volunteerism amongst Shell employees is high given Shell's support for its employees' volunteer activities. The closure of the facility will not only reduce the volunteer base in the region by reducing the overall population, but arguably will reduce the size of a relatively engaged group of volunteers (i.e., Shell employees).
- **Reduced demand on most community infrastructure and services.** Generally speaking, it is expected that the demand placed on community infrastructure and services will decrease roughly in-line with the population effects of the facility outlined in Section 4.4.3. Some services, such as childcare and education, might face financial pressures or underutilized infrastructure, leading to potential reductions in the quality and/or quantity of service offerings. As an example, closure of the Waterton Complex could lead to reduced school enrolment in the range of 200 students as compared to a scenario in which the facility remained open.

In addition, closure of the facility will reduce demands placed on emergency services resulting from facility-related incidents (e.g. workplace accidents) (see Section 3.2.5).

- **Increased demand on some social and employment support services.** As both workers and their families cope with the effects of changing employment status (e.g. unemployment, transitioning to other work arrangements) increased demands might be placed on specific services, such as social and employment services (e.g. counselling services, skills training, food bank).
- **Altered social relationships**. The closure of the facility will lead some workers and their families to leave the region, potentially disrupting social connections within the community.
- **Contributing to a demographic shift towards an overall older and aging population**. Younger workers associated with the facility are more likely to leave the region after closure as compared to those workers nearing or at retirement age. This shift to an overall older population could further influence local economic and social conditions by reducing the relative size of the local working-age population and leading to changes in service delivery demand (e.g., reduced demand for local education offerings, increased demand for certain health services).
- **Loss of Shell Community Investment**. As noted in Section 3.2.6, Shell makes direct donations to local community programs, services, and infrastructure in the amount of roughly $100,000 annually. The loss of these community contributions will necessitate that service providers who typically receive these funds to seek out other public and private funding options.

Despite the potential community effects discussed above, many service providers interviewed for this study felt confident in their ability, and that of the community, to adapt to the changing circumstances associated with facility closure. A number of those interviewed pointed to the community's relative stability and diversified economy as factors that could help counter the impact of facility closure.

4.4.4 Change in Property Taxes

Assessment values and associated property tax payments for the Waterton Complex will decrease and ultimately cease with the wind down and closure of the facility. The precise timing of the reduction and ultimate cessation of property tax payments cannot be modeled without additional closure details, which are not yet available. Even so, it is not expected that the assessment value of the facility, upon which property tax payments are calculated, will be substantively reduced until after 2030 when decommissioning and demolition take place. However, the eventual reduction in municipal tax revenue will be significant: as noted in Section 3.2.2, facility-related property tax payments to the M.D. represented 22% of total property taxes paid to the M.D. in 2016, an important source of municipal revenue. To put this into perspective, 22% of property tax revenues in 2016 was roughly equal to the municipality's expenditures on: police, fire, disaster, ambulance, and bylaw enforcement; water supply and distribution; waste management; parks and recreation; and family and community support services (MDPC 2017).

In the absence of alternative revenue sources coming forward, this reduction in municipal tax revenue will impact future investments in public infrastructure and services by the M.D. or lead to a greater tax burden being placed on other properties (e.g., commercial, residential). It could also impact funding of shared municipal services with the Town of Pincher Creek. The effect of this reduction could be exacerbated in the future as the M.D. faces a potential shift in property taxes from wind turbines (i.e. fewer projects coming online and declining tax payments from existing facilities) (Dryda pers. comm.).

Along with impacts to municipal revenue, municipal expenditures could also be impacted by closure. Currently, Shell maintains a number of local roads in the area that are also used by local residents for ranching, residential, and recreational access. Although it is unclear at this time what impact closure might have on the continued maintenance of these roads, there is the potential that maintenance of these roads will become the responsibility of the M.D. of Pincher Creek at some point in time, further increasing municipal obligations.

4.5 Addressing the Socio-Economic Effects of Closure

Based on a scenario in which closure occurs in 2030, it may appear the community has considerable time to plan and act to address the potentially adverse effects of closure. However, that only holds true if the community moves forward in the very near term. Inaction will result in a wasted opportunity and increase the likelihood that the adverse effects of closure on the community will be substantive. The need for community action in the near term becomes even greater when considering that closure is inevitable and that depending on economic conditions and other factors, closure could, in fact, occur much sooner than the 10 to 15-year range previously stated by Shell.

This report provides information on what current operation and eventual closure of the Shell Waterton Complex means for the community. The report is intended to spur discussion about what actions might be needed to help transition the community from active to post-facility operations. To that end, SASCI is proposing to facilitate dialogue with stakeholders in the affected communities on this very topic. It is important that these discussions occur in the near term in order to capitalize on the opportunity the community currently has to pro-actively address potential adverse effects *before* they occur.

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