Best Practices Guiding Industry-Community Relationships, Planning, and Mobile Workforces

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CONTENTS

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Availability

Copies of this project report have been provided to the BC Natural Gas Workforce Strategy Committee. Copies of the report may also be accessed through the UNBC Community Development Institute's website at: http://www.unbc.ca/community-development-institute/research-projects.

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GLOSSARY

AA	Alcoholics Anonymous
BC	British Columbia
BIBO	Bus-in Bus-out
DIDO	Drive-in Drive-out
FBT	Fringe Benefits Tax
FIFO	Fly-in Fly-out
GIWG	Gladstone Infrastructure Working Group
IBA	Impact Benefit Agreement
JIP	Joint Initiatives Project
LNG	Liquefied Natural Gas
NWT	Northwest Territories
RV	Recreational Vehicle
SIMP	Social Impact Management Plan
SISO	Ship-in Ship-out
SME	Small and Medium-sized Enterprises
UK	United Kingdom
UNBC	University of Northern British Columbia
US	United States
WBHDC	Wood Buffalo Housing and Development Corporation

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PREPARED FOR THE BC NATURAL GAS WORKFORCE STRATEGY COMMITTEE

1.0 INTRODUCTION

BC is on the cusp of significant investment in natural gas activity. Several natural gas projects have already been initiated in the northwestern and northeastern regions of BC (Petroleum Human Resources Council of Canada 2013b). An estimated 21,600 jobs are needed to support the construction of LNG pipelines and facilities, with another 2,400 permanent positions needed to support LNG operations (Petroleum Human Resources Council of Canada 2013a). With a very competitive labour landscape both provincially, nationally, and globally, labour shortages are anticipated for many phases of resource-based infrastructure and development projects (BC Hydro 2011; Mining Industry Human Resource Council 2008).

In 2012, a Labour Market Partnership Agreement was initiated to develop a workforce strategy and action plan for the BC natural gas sector (Province of British Columbia n.d.). The BC Natural Gas Workforce Strategy Committee was established to build capacity within industry, labour supply partners, and communities to address current and future natural gas related construction and operations issues. The purpose of this research is to examine the best practices and hard lessons that must be considered by rural regions that will experience rotational workforce practices to support LNG projects in British Columbia. The research explored:

- Workforce schedules and travel arrangements,
- Models of workforce accommodation during the construction and operational phases of industry projects, and
- Best practices that are guiding effective working relationships between industry, work camps, and communities.

Information collected will be used to help industry and BC communities optimize the benefits and minimize the risks associated with these types of workforce sourcing strategies.

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1.1 Best Practices

1.1.1 Rotational Workforces

Fatigue management strategies have been implemented in the workplace.

Staff shuttles have been coordinated with daycare facilities in order to engage the participation of Aboriginal women from reserves.

Women's participation with industry has been strengthened through partnerships with college trades programs, as well as through the provision of family-friendly schedules and female mentoring programs.

Aboriginal people's participation with industry has been strengthened through on-site and camp mentor programs to help Aboriginal workers adjust to extended shift rotation lifestyles.

Immigrant participation with industry has been improved by recognizing foreign credentials and work experience, providing mentorships and relocation packages, assessing immigrant compatibility to live and work in Canada, providing cultural awareness training, and hotlines to support their transition in Canadian work environments.

Youth recruitment in industry has been enhanced through dual credit trades programs, visits to industry sites, mobile units to support training and recruitment, and in-training programs.

Industry and local governments have worked together during project planning to identify appropriate staging areas and car-bus interchanges.

Home purchase assistance has been provided for workers relocating to a new community.

An annual location allowance has been provided to operational workers whose primary residence is within 150 km of the work site.

Industry has invested in a coordinator to support relocation programs that will connect workers and their families with housing, supports, amenities, and other arrangements in new communities.

Orientation packages / programs have been provided for workers with information about local housing, businesses, services, amenities, community groups, cultural protocols, and community expectations for behavior. It is important to ensure that workforce surveys and consultations compliment these orientation programs in order to better understand worker interests, lifestyles, and family needs in order to better inform orientation initiatives.

1.1.2 Workforce Accommodations

Bylaws have been developed to guide the development and decommissioning of work camps.

Regulations have been developed to ensure new industries provide affordable housing for a proportion of new employees generated by the large-scale industry project, either on site or off site, via the donation of land of equivalent value or through a cash-in-lieu option.

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Healthy living programs, such as fitness and nutrition, physical and mental health supports, and life coaching programs have been provided to mobile workers.

Work camp standards have improved to ensure workers have a personal room with a washroom, access to high speed Internet, and quality nutritional food to sustain them through long shifts.

Employees and contractors have signed a code of conduct agreement concerning appropriate behavior in nearby communities.

1.1.3 Community Housing

Job fairs have included information about housing as a key component of their event.

Loan programs have been developed for low-income staff employed by small businesses. In some cases, employers have provided a down payment while a housing authority provides a second mortgage with a low interest rate.

Provincial and local government have worked together to ensure physical infrastructure, such as water, sewage, and roads, are in place in advance of rapid growth in order to better position the community to quickly mobilize and respond to housing needs.

There has been success advocating for an increase in the low-income cut-off thresholds in booming economies in order to allow single income families and low-income workers to qualify for housing support programs.

Short-term subsidies have provided 6 months of assistance for residents impacted by rapid increases in housing costs. To access subsidies, residents are required to attend a workshop and meet with a financial counsellor to revise household budgets.

Industry and local governments have worked with service providers, such as police, health authorities, etc., to negotiate agreements to purchase homes designated to recruit and retain community service professionals. The agreements typically include provisions for a designated subsidized rate and a time period in which beneficiaries must find other suitable accommodations.

An affordable housing company has been used to manage asset donations on behalf of industry, build the capacity of local housing organizations and entrepreneurs, and provide advice to industry, local and senior levels of government, and other stakeholders about key issues in local / regional housing markets.

1.1.4 Bridging Relationships between Work Camps, Industries, and Communities

Royalty payment programs have been developed to invest in local governments, community services, and infrastructure.

Social impact management plans have been used as a tool to address socio-economic impacts and infrastructure needs associated with resource-based projects.

Work camps and industries have used lifestyle or recreation coordinators to connect workers with volunteering and recreational opportunities in the community.

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Work camp tours have been provided to community residents and stakeholders to improve the perception and understanding that local residents have about work camp accommodations and industry operations.

Work camps / industry have developed cafes and meeting rooms on site that are open for use by residents and community groups.

Grievance and complaints mechanisms, with participation by industry and the community, have been put in place to track the number, nature, and responses to concerns.

Industry associations have adopted a scaled up and coordinated approach to legacy investments and programs in communities.

Cumulative Impact Groups have been formed with industry stakeholders to investigate environmental issues. Infrastructure Working Groups have been formed to identify and coordinate responses to common issues across multiple industry projects.

Business associations have formed conglomerates to scale up and be competitive to obtain industry contracts. Best practice guides have been published to better position SMEs to pursue industry contracts.

Community plans have encouraged work camp accommodations to adopt universal design principles so modular units may be more easily converted into other uses after the project is finished. It is important to note, however, that such legacy arrangements should be negotiated between industry and the community early on during project planning.

Industry has realigned investment strategies to address childcare needs in the community and address barriers to workforce participation and retention.

Industry has invested in equipment, simulators, and mobile units in order to develop the next generation workforce.

Industry has worked with communities to develop a vision that will guide long-term development decisions in the community throughout all stages of the industry project's lifespan.

1.2 Key Messages

1.2.1 Workforce Management, Recruitment, and Retention

Workforce recruitment and retention is increasingly shaped by competition locally, regionally, nationally, and globally. Life cycle and lifestyle choices, and the presence of an aging workforce are accentuating these pressures.

Workers want to choose where they want to live. Lifestyle choices, access to services and amenities, the presence of family networks and supports, cost of living, and the temporary nature of work during construction periods are shaping these decisions.

Workforce recruitment strategies, however, should remain diverse and avoid exclusive use of FIFO strategies that undercut local labor, and hence the employment benefits, that support regional development.

Aboriginal people and women continue to be under represented in mobile workforces and skilled resource-based industry positions. Tailored recruitment and retention strategies are needed to improve the participation of under-represented groups in industry.

Commodity fluctuations not only impact industry operations, they also create tenuous circumstances for benefits that are provided to mobile workforces (i.e. travel support, living allowances, work camp amenities, etc.).

It is important to conduct routine surveys of workers living in work camp accommodations in order to inform ongoing planning, management, and investments that will strengthen recruitment and retention rates in a globally competitive labour market.

Mobile workforces have transformed workplace environments, requiring more attention to the design of shift rotation schedules, as well as communication protocols; clear regulations, standards, and procedures; conflict resolution protocols; problem-solving skills; fatigue management training; nutrition and well-being; and mental health programs.

Training is needed at all levels to understand the warning signs of fatigue, substance abuse, and mental health stress in the workplace.

The future workforce not only needs to be educated about potential jobs, but also about extended work camp living lifestyles. Job fairs and open houses that invite work camp operators, as well as education programs that provide students with experiences involving shift rotation work and work camp accommodations is a step in the right direction.

Investment in communications infrastructure is key to reduce isolation for workers, to connect them with on-line supports, and to support other recreational activities.

Orientation packages and programs should be used to introduce and integrate workers and their families with community networks, activities, services, and amenities.

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1.2.2 Policies and Regulations

Regulations and standards have become very outdated. There is an urgent need for government to renew and update the regulatory framework to reflect current workforce accommodation issues and demands, including open camps and RV accommodations.

Greater coordination is needed to identify and track work camp accommodations, as well as to streamline processes guiding their development and closure.

Develop clear, direct, and consistent expectations with regulations to guide the development of work camps and resource development infrastructure.

Canada needs a regulatory framework to identify and mitigate socio-economic issues throughout all phases of large-scale industrial development.

1.2.3 Building Relationships

Work camp protocols, tours, and community engagement strategies are helping to alleviate community fears of mobile workforces and work camp settings.

There is a need to invest in early and routine communication by establishing streamlined relationship mechanisms that will foster long-term working relationships. These structures should engage local, First Nations, and senior stakeholders to support timely responses and effective decisions.

Local governments and industry need to designate a contact person / liaison to manage long-term working relationships.

Collaborative structures need to remain relevant by routinely producing products and information that guides resource and community development.

1.2.4 Planning for Growth and Development

There is a need to develop a consistent approach to forecasting growth and socio-economic impacts from resource development.

Industry needs to engage companies that support the logistics and mobilization of rotational workforces early on in project planning in order to facilitate liaison with communities.

Small governments cannot bear the brunt of infrastructure and development costs to support economic growth.

Senior government policies need to recognize the unique context of rapidly growing communities where infrastructure and housing costs are significantly higher than other places of similar size. Traditional funding models will not work in contexts that have a limited understanding of shadow populations, higher costs of living, labour shortages, and higher costs for materials and construction.

Industry investment strategies should not replace or absolve senior government responsibilities in resource regions. Top-down supportive policies and senior government engagement is necessary to develop rapid and comprehensive responses to growth. This should include strategic engagement with deputy ministers and the treasury board to develop more coordinated responses.

Land release strategies need to be developed and updated well in advance of large-scale industrial projects that include provisions concerning the pace of development on land sold or transferred by the provincial government.

Greater coordination is needed between senior and local governments when pursuing industry contributions in order to avoid unintended consequences for community development initiatives.

Ensure work camps are in place before construction begins in order to alleviate housing pressures in communities. Greater engagement by senior government and industry to collaborate and address housing pressures is also needed during these early stages of planning and development.

Ensure housing supports are in place during the early phases of construction. Housing subsidies may be needed not only for vulnerable low-income residents, but also to retain professionals supporting essential services in the community.

Local governments and business leaders need to take a more proactive approach to be ready to pursue business opportunities related to large-scale industrial development. This should include building partnerships to develop the scale and capacity within the business community to provide goods and services to industry and work camps.

Investments in transportation planning and infrastructure are needed in advance of rapidly growing construction periods with attention to needs such as intersection traffic lights, staging areas, waiting rooms in camp / airport facilities, parking, etc.

Impact benefit agreements do not adequately reflect the context or capacity of community partners; thereby, limiting the opportunities to take advantage of large-scale industry development. Community partners may not have the skills or financial resources to take timely advantage of many provisions contained in these agreements.

There is a need to ensure that collaborative structures engage industry, local and senior levels of government, and relevant local stakeholders to identify and monitor cumulative impacts from resource development (i.e. housing, traffic, infrastructure, environmental issues, etc.).

1.2.5 Planning for Legacy

Greater strategic planning is needed to guide royalty and revenue sharing programs.

Communities need to work with industry and senior levels of government to pursue a long-term approach to planning. Legacy investments and projects should be considered during the planning and design phases of resource development.

Community stakeholders should pursue strategic investments that will be mutually beneficial for both communities, industries, and local and mobile workforces (i.e. training, recreational amenities, child care, mental health, housing, etc.).

Industry investment strategies must be carefully designed and delivered to avoid creating dependency amongst local governments and community stakeholders which could threaten the viability of community supports once industry declines or closes.

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Industries should work collectively to create a community benefit fund.

Don't stop planning. Industry scales up and down very fast.

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2.0 WORKFORCE ACCOMMODATIONS

Best Practices

Bylaws have been developed to guide the development and decommissioning of work camps.

Regulations have been developed to ensure new industries provide affordable housing for a proportion of new employees generated by the large-scale industry project, either on site or off site, via the donation of land of equivalent value or through a cash-in-lieu option.

Healthy living programs, such as fitness and nutrition, physical and mental health supports, and life coaching programs have been provided to mobile workers.

Work camp standards have improved to ensure workers have a personal room with a washroom, access to high speed Internet, and quality nutritional food to sustain them through long shifts.

Employees and contractors have signed a code of conduct agreement concerning appropriate behavior in nearby communities.

2.1 Introduction

Workforce accommodations have evolved significantly over time. These changes have not only reshaped workforce recruitment and retention strategies, but they have also influenced community impacts and guided new expectations for relationships with communities. This is because work camps are not just used in remote settings, but are increasingly being deployed within or adjacent to municipal boundaries (Beamish Consulting Ltd. and Heartwood Solutions Consulting 2013).

Many different forms of workforce accommodations have been used by industry, including the provision of homes, construction of neighbourhoods, caravan parks, campgrounds, hotels, cabins, bed and breakfasts, boarding rooms, and the use of barges, boats, or floatels (Province of Alberta 2006; Sommers and Cullen 1981; URS Australia 2012; Wanjek 2013). During construction, however, FIFO workers tend to stay in highly regulated, company controlled work camps (Haslam McKenzie and Rowley 2013). The diverse range of housing options for a mobile workforce has prompted important, but controversial, questions about the best location to house workers during construction and operations. However, there is no clear methodological approach to determine workforce housing needs. For example, one report estimated that the housing deficit in Fort McMurray was roughly 3,900 units. The estimate was based on the assumption that there would be no work camp population, an assumption that is highly unlikely as work camps are an increasingly common housing tool used by industry, particularly during the construction phases of projects (Province of Alberta 2006).

For community stakeholders, it is important to understand that there are many different types of camps such as exploration camps, 'road building' camps, construction workforce camps, and operational workforce camps (Access Consulting Group 2008). There are also closed camps (open only to client workers for the duration of a project), as well as open camps that provide temporary accommodations for anyone on a daily, weekly, or longer-term basis (Beamish Consulting Ltd. and Heartwood Solutions

Consulting 2013). During economic downturns, some open camps are now working to provide accommodations for tourists and tourism workers.

There are great variations in the definitions used for temporary camps ranging from those that operate for 15 consecutive days to those that operate for 5 months or less (Province of British Columbia 2012; Province of Québec 2014). These definitions can have important implications for regulations and infrastructure investments. Work camps have also varied in size from forestry camps that accommodate less than 20 workers to LNG projects that have plans to establish camps for up to 5,000 workers (Beamish Consulting Ltd. and Heartwood Solutions Consulting 2013). Stakeholders that we spoke with also suggested that some work camps have accommodated up to 10,000 people.

2.1.1 Why Camps are Needed

Work camps are increasingly used for both construction and operational phases of resource development projects (House of Representatives 2013). FIFO workforces and work camps are used in small community settings that have limited capacity to accommodate anticipated workforce needs (Manitoba Hydro n.d.). Industry has found it particularly useful to provide accommodations for large-scale, temporary workforces in work camp settings in order to reduce infrastructure and housing pressures for nearby communities where limited housing options are available (Anglo American Services 2012; Province of Alberta 2006). There are some cases, however, when industries are located within commuting distance, but there is no road in place; thereby prompting the use of work camps.

Work camps also play an important role in the construction of pipeline projects where the location of the work constantly moves, making it impractical to relocate workers and their families from one community to another (House of Representatives 2013). In highly mobile work environments, some industries have adopted new strategies to workforce accommodations by having one central moveable construction camp to service a region of industrial activity in order to reduce the number of beds required (Imperial Oil Resources Ventures Limited 2007).

2.2 Regulatory Frameworks

2.2.1 Quality of Camps Vary Significantly

Reports suggest that the quality of camps can vary significantly from those that resemble institutional settings to others that function more like resorts (House of Representatives 2013). The quality of camps can be driven by commodity market prices, the degree of competition for labour, and regulatory frameworks. Regulations for work camp accommodations generally address the provision and basic standards of:
- Water treatment facilities.
- Waste disposal.
- Power.
- Sleeping accommodations (i.e. size, furniture, storage, fixtures, linens and supplies, soundproofing, heating and insulation, housekeeping, gender accommodations arrangements, isolated sleeping quarters for sick workers, separation from production facilities, etc.),
- Ratio of washrooms to personnel..
- Laundry facilities.
- First-aid.
- Emergency services (i.e. fire prevention and suppression).

- Security.
- Recreation facilities (i.e. TV room, gyms, and game rooms).
- Satellite / television services.
- Communication services (i.e. provision of telephone jacks and ratio of pay phones to personnel),
- Dining services.
- Meeting spaces.
- Camp management (Access Consulting Group 2008; Province of Alberta 2011; Province of Nova Scotia 2004; Province of Québec 2014; Western Australia 2013).

Basic standards can vary according to the country's regulations, different types of resource sectors (i.e. more washrooms for mining camps), the expected life or duration of the camp (i.e. minimum of four months), as well as by the number of workers in a camp (Building Trades of Alberta and Construction Labour Relations 2010; Sommers and Cullen 1981). For example, more basic standards have been established for camps that accommodate 50 or fewer people (British Columbia and Yukon Territory Building and Construction Trades Council, and Construction Labour Relations Association of British Columbia 2008). Fewer requirements are also set for short-term accommodations (Province of British Columbia 2012).

2.2.2 Work Camp Standards Have Become Outdated

While camps are constructed to meet building code requirements (Manitoba Hydro n.d.), regulations and standards for work camps are perceived to have become outdated in some jurisdaictions. In dealing with such basic topics as bathing, one regulation stipulates, "Provision shall be made which will permit the bathing of all employees at least once a week" (Province of Nova Scotia 2004: 3). While many work camps employ paramedics, nurses, and even doctors, some regulations continue to discuss the basic provision of first aid kits (Province of Québec 2014). The regulations further no longer reflect modern designs of heating and water infrastructure in camps. As one work camp operator explained:

> *The camp rules and regulations established a minimum requirement where workers can stay. It specifies bed sizes, shower stall sizes, it specifies what meals are going to be served. And that all originates from camps that were "camps". The industry has evolved quite a bit. So it talks about that there's only x amount of rooms can be connected to one furnace. Well a lot of that is obsolete today. A lot rooms have p-vac units attached to them. Or it says minimum water storage of X amount per room. Again, kind of an obsolete quote because our wings are designed to have big water storage and heaters that are centralized (Participant ID #17: 2014).*

Some jurisdictions will ask work camp operators to surpass building code or legislation requirements. There may be requests, for example, to set higher decibel levels for fire alarms.

Variations in building codes across different jurisdictions can complicate the design and management of work camp assets. After each project, work camp operators will move modular units to other projects, many of which are located in other provinces or countries with different legislative requirements. This generates discussion between industry clients and work camp operators about who is responsible for

addressing unique building code requests within a particular jurisdiction. Building codes have provided more leniencies for temporary and remote office space and accommodations.

In some jurisdictions, the consequences for non-compliance with regulations may not be significant enough to encourage compliance. In Eastern Canada, fines for non-compliance range from just $20 to $25 for each offence or $5 to $20 each day after notification in which the offence continues (Province of Nova Scotia 2004; Province of Québec 2014). In Australia, penalties can reach up to $1,000 with daily penalties after notification ranging from a minimum of $50 to a maximum of $100 (Western Australia 2013).

2.2.3 Regulations for Closed vs. Open Camps

Closed camps are commonly included in the regulatory approval process for a project. There are instances, however, when closed camps are unable to meet the demand for industry projects. With more open camp operations emerging, government regulators are now starting to determine the types of regulatory policies and structures that must be put in place.

2.2.4 Regulations for RV Accommodations

The research found that in Australia, there are some basic standards established for the use of caravans for kitchens, office areas, and sleeping accommodations (Western Australia 2013). These standards provide guidelines for floor space, imposed loads, escape exits, cooking and storage facilities, and sleeping space. In Bradford County, the Bradford County Sanitation Committee and Pennsylvania Department of Environmental Protection have worked together to monitor situations where more than four RVs were using one septic system. In these cases, upon decommissioning, the land was then designated as a housing subdivision. In Canada, there are no regulations governing the use of caravans for workforce accommodations.

2.2.5 Work Camp Approval Processes are Complex

Work camp operators must maneuver a complex system of regulations across numerous acts and different ministries (Province of Manitoba n.d.). These can include health agencies that implement regulations for sewage disposal, waste management, drinking water, cleanliness of food premises, and occupational health and safety (Beamish Consulting Ltd. and Heartwood Solutions Consulting 2013; Northern Health 2012; Western Australia 2013). In BC, Worksafe BC has a camp inspection checklist that was developed to guide work camp operators with various orientation and safety requirements (https://www2.worksafebc.com/PDFs/Petroleum/camp.pdf).

Camp operators must work with water board regulators to address the use, storage, and disposal of water; transportation ministries concerning access permits, sign permits, right-of-way permits, and airstrips; heritage branches regarding archaeological and paleontological sites; ministries governing building codes, building permits, burning permits, electrical permits, and inspections; environment or natural resource ministries concerning solid waste disposal, air emissions, gas installation permits, camp sanitation, storage of petroleum products, and wildlife habitat; forestry departments about cutting permits; and other ministries concerning activity on agriculture or Aboriginal lands (Government of Yukon 2013). Depending on the camp location, work camp operators must also engage with local or regional governments to address any re-zoning needs, as well as to obtain development permits. Regional government bodies are increasingly becoming involved in order to reduce the impacts of work camps on rural property values, and to capture new development for assessment purposes in order to obtain revenue for services used. Despite having these regulatory frameworks in place, limited resources and for

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the inspection and enforcement of these regulations has limited their effectiveness. As Beamish Consulting Ltd. and Heartwood Solutions Consulting (2013: 28) notes:

> Camps are often established, used and dismantled before any of the regulatory agencies or the regional government become aware of their existence... Government agencies lack the resources and capacity necessary to monitor or inspect camp operations or to ensure compliance with the myriad government regulations or referrals from other agencies.

The effectiveness of regulatory frameworks is further impeded by the limited collaboration across various regulatory government agencies.

2.2.6 Industry Standards

Industry has adopted policies and regulations guiding when and how work camps are used to support construction and operations. In the case of Australia Pacific LNG, for example, permanent camps are used for operational staff who live more than 50 kilometres from the site (Australia Pacific LNG 2011c). Collective agreements with industry are also used to govern living conditions in camps, such as the quality of food and menu requirements, as well as the provision of camp amenities. (British Columbia and Yukon Territory Building and Construction Trades Council, and Construction Labour Relations Association of British Columbia 2008; Beamish Consulting Ltd. and Heartwood Solutions Consulting 2013). In the past, building trades organizations have certified work camps that meet and exceed their own requirements and inspections (Building Trades of Alberta and Construction Labour Relations 2010). This has changed with the rapid expansion of work camps, making it difficult to track and monitor their development and operations, especially given some of their remote locations.

2.2.7 Community Policies and Regulations

Community stakeholders often feel very conflicted over the location of work camp accommodations. While some towns prefer to have work camps located nearby in order to produce more benefits for businesses, other places prefer to have large construction camps located near the industry project site to reduce the disruption to the community. There are several successful examples in Australia where local governments have worked with industry to identify suitable locations for work camp accommodations (Creating Communities 2012). Through local development permit processes, local governments are provided with information about the location and layout of the camp facility; the capacity of work camp accommodations; traffic route plans; construction, completion, and decommissioning timelines; service and infrastructure plans; and information about compensation arrangements for impacted property owners (Australia Pacific LNG 2011c; British Columbia and Yukon Territory Building and Construction Trades Council, and Construction Labour Relations Association of British Columbia 2008).

Local government staff can experience a steep learning curve to respond to developments with which they are not familiar (i.e. compressor stations, water withdrawal facilities, etc.). They are, however, increasingly adopting their own regulations and standards to guide work camp and industrial development (Williams County Board of Commissioners 2011). Through official community plans, some communities encourage worker accommodations to adopt universal housing design principles in order to enable those facilities to be converted to retirement accommodation once the construction workforce leaves (Australia Pacific LNG 2012f). Others are developing zoning for temporary workforce accommodations in order to reduce noise, dust, light, and other concerns for nearby community residents (Australia Pacific LNG 2011c). Work camp operators have also been working with local governments to rewrite zoning bylaws. There is a general sense that work camps do not currently fit well within

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residential, business, or industrial zoning since they have different building codes, different density concerns, and are temporary in nature. Communities may consider zoning for short-term accommodations such as modular units or motels to support workforce housing. Restrictive parking requirements are also being developed for housing subdivisions to respond to parking pressures created from multiple workers staying in a single family dwelling. For example, the Wood Buffalo Regional Municipality's regulations require each single family dwelling to have two parking spaces, as well as an additional parking space for each bedroom in a basement suite (City Spaces 2006).

Experience has shown that it is in the interest of local and regional governments to ensure that every work camp operator has a decommissioning plan in place. People we spoke with identified concerns where new camp operators have been established in rural and remote areas and then disappeared following bankruptcy. Communities become left with the burden of cleaning up waste that is left behind. As one stakeholder told us:

> *There's gotta be an exit strategy for sure. There have been instances where people have taken trailers in the woods, set them up to try and run a camp that failed. They go bankrupt and disappear. Now you've got propane tanks and boxes out in the middle of nowhere where it's very expensive to bring them back. And towns don't want to be saddled with that expense (Participant ID #24: 2014).*

A key issue that must be considered concerns what will happen to the work camp after the project is finished (i.e. rezoned as park land, converted into a residential neighbourhood, etc.). In the case of Port Edward, BC, Target Logistics worked with the local government and L&M Engineering to redraft bylaws with attention to remediation regulations to guide the decommissioning of work camps and timelines for renewals.

In Williams County, North Dakota, conditional use permits for temporary work camps are approved for a period of two years and are used as a tool to ensure compliance with regulations (Williams County Board of Commissioners 2011). Work camp operators are further required to submit a bond and a decommissioning plan to restore the site to its original condition. This includes attention to replacing the topsoil and removing road infrastructure (Canadian Business 2012).

In Labrador City, Newfoundland and Labrador, the local government will only allow temporary accommodations during the construction phases of resource development projects. Under their regulatory framework, the municipality leases land to the company to develop a temporary work camp which generates revenues back to the municipality. Before a camp is approved, a 'score card' is completed to determine the need for, and benefits of, temporary accommodations. Decommissioning agreements are tied to each camp permit. Wabush, Newfoundland and Labrador, has similar regulations to guide the development of temporary work camps. Temporary bunkhouses must also meet additional requirements, such as having a fenced gate, security, and extra fire sprinkler systems and fire hydrants on site.

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2.2.8 Taxation Policies

There are also a range of policies and regulations that are examining taxation and funding schemes to support infrastructure and service programs for industry workforces. In some cases, communities are examining 'employee service charge by-laws' used in resort communities, such as Whistler, that require developers to provide employee units, either through housing directly on site or through payment-in-lieu, based on the size of the development (City Spaces 2006). Funds raised through the by-law are then invested into a housing fund. In Telluride, Colorado, new developers must "provide affordable housing for 40% of new employees generated by the development, either on site, off site, via the donation of land of equivalent value, or through a cash-in-lieu option" (City Spaces 2006: Appendix C 6).

Sometimes, taxation policies can provide disincentives for companies to provide housing infrastructure in remote communities. In Australia, the fringe benefits tax has been criticized by community stakeholders for taxing companies who provide non-monetary benefits, such as housing, to workers. The FBT is only applied to employer subsidies for residential workforces to offset high housing costs in communities; however, it is not applicable to work camp accommodations (House of Representatives 2013).

Taxation policies have been used as an incentive to recruit and retain workers in remote industry work sites. In Australia, a zone tax offset credit is available to workers who have lived or worked in a remote area for 183 days or more in a given tax year (Validakis and Hagemann 2014). This tax incentive has been criticized by remote communities who feel that the tax incentive should not be provided to FIFO workers, but rather only to residents who incur the high cost of living in remote places.

2.3 Work Camp Accommodations

Work camps have evolved from temporary trailers to resort-style lodges (Ferguson 2011). Even the most basic features of work camps have changed significantly. Living quarters consist of communal kitchen and dining areas, mudrooms, luggage storage rooms, as well as common laundry facilities. The provision of convenience stores, vending machines, licensed or 'wet' lounges, and barbeque shelters exist in a number of camps (Australia Pacific LNG 2012c; Creating Communities 2012). Special meal nights are provided, such as steak, seafood, or barbeque nights (Goerge 2012). Work camp commissary shops are also paying more attention to a range of products for women. Business supports have expanded with attention paid to the provision of ATM machines, post offices, and tax services (Manitoba Hydro n.d.). Mobile polling stations have also been provided to work camp staff and clients during election periods (House of Representatives 2013).

2.3.1 Living Spaces

Work camps are moving away from dormitory or shared accommodations to jack and jill[1] or private rooms (Australia Pacific LNG 2012f; Smith 2014). Today, rooms typically include larger flat screen televisions, DVD players, desks with computer equipment, higher quality mattresses and linens, air conditioning and temperature controls for each room, and blackout curtains (Australia Pacific LNG 2012c; Barclay *et al.* 2013; Chandler 2014b; Goerge 2012; Rothstein 2013). Resting rooms have also been provided for workers to rest before commuting home; although, there continue to be concerns about their limited use by workers (House of Representatives 2013). For women, accommodation options in work camp settings have included segregated living accommodations and jack and jill units (Building Trades of Alberta and Construction Labour Relations 2010). In Canada and Australia, industry has looked at the provision of family rooms for workers and project management staff (House of Representatives 2013;

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[1] Jack and Jill units consist of two separate rooms that share a shower and other washroom facilities.

Manitoba Hydro n.d.). In addition to family rooms, visitor accommodations for wives and family members have also been developed occasionally as a part of mining leases (O'Faircheallaigh 1995).

Separate living arrangements may be made for workforce supervisors. This may include separate work camp units or executive suites with private bathrooms; although, cabins have also been brought in for supervisors and other management staff (Goerge 2012; Wittmeier 2014). Management subdivisions have also been developed (Manitoba Hydro n.d.). Different living arrangements may be made for work camp workers (i.e. culinary staff) (Building Trades of Alberta and Construction Labour Relations 2010).

2.3.2 Work Camp Services

The range of services provided in work camps can vary significantly and are specified within the contractual agreements between resource companies and private camp operators (Creating Communities 2012).

3.3.2.1 HEALTH CARE

Key medical services offered in industry work sites and work camp environments have included paramedic staff on site, a registered nurse, routine physician visits, and access to employee assistance programs for counselling (Australia Pacific LNG 2012c; Creating Communities 2012; Northern Health 2012). While most work sites and work camps have first aid attendants or paramedics on site, there is generally limited access to general physicians to complete routine physical exams that may be required by industry. This can put increased pressure on nearby health centres. In Australia, Civeo work camps provide rooms for locum doctors who visit the community. Muscle strains and back injuries are common on work sites and in work camp settings. Some camps have expanded health care supports to include massage therapy and chiropractors, as well as medical and immunization clinics and support groups such as AA meetings (Australia Pacific LNG 2012f; Nichols Applied Management 2003). In more remote camps, such as those in northern Alberta, companies such as Imperial Oil and Albian Sands have invested in on-site medical centres that are equipped with diagnostic and minor medical treatment equipment and services (Province of Alberta 2006). FIFO models to engage doctors and health care professionals in remote work sites are also being explored. As Macgroarty and Pfaender (n.d.: 4) argue, "doctors using the FIFO model would be more familiar with the mining industry and the type of work involved and are therefore better able to support an alternative duties program".

Addressing mental health is the next key issue facing work camp and industrial settings. Isolation, loneliness, depression, anxiety, and even suicides have been reported amongst the various stakeholders we spoke with across various jurisdictions. Some research estimates that mental health can cost a mine between $300,000 and $400,000 per year (Macgroarty and Pfaender n.d.). In some LNG projects, health teams have been recruited to promote healthy living through fitness and nutrition programs, deliver physical and mental health services, and conduct health and behavioral risk assessments (Australia Pacific LNG 2012e). In the Shetlands, local businesses and mental health charities have promoted life coaching programs to mobile workers. Workers can remain reluctant, however, to pursue support for mental health and substance abuse issues "due to embarrassment, the fear of losing their employment and concerns with trust and confidentiality, or they may not be aware of the services available through their employer" (Northern Health 2012: 11). Mental health first aid programs are providing work sites with new tools to better connect mobile workers with adequate supports (Torkington *et al.* 2011). In Australia, industries have launched the campaign "R U OK" to get men to check in on other men in work camp settings. In Kitimat, BC, Bechtel has also been providing workers with information packages to promote health tips concerning nutrition, exercise, and healthy weights (Northern Health 2012). There continues to be a limited understanding, however, of the extremes related to mental health issues in work camps. The

Building Trades of Alberta has been engaging with Alberta Mental Health to explore models that may be used to address mental health issues in work camp settings.

2.3.2.2 RECREATION AND SOCIAL PROGRAMS

Common areas and recreation play an integral role in workforce satisfaction and the retention of workers by improving the livability of the work camp environment, as well as by providing ways to strengthen workforce cohesion (Creating Communities 2012). Some research has argued that without recreational facilities and programs, workers may be more susceptible to boredom, social isolation, drugs, and alcohol abuse (Chandler 2014a). More recently, work camp operators have added new services and programs in order to be competitive to attract and retain workers for industry projects. Recreation infrastructure and programs have included (Australia Pacific LNG 2012f; Canadian Business 2012; Nichols Applied Management 2003; Wittmeier 2014):

- Pool tables.
- Shuffleboards.
- Games.
- Wireless Internet.
- Satellite television.
- Cinema theatres.
- Lending libraries.
- Maintenance shops.
- Video rooms.
- Music rooms with instruments.
- Weight rooms.
- Basketball courts.
- Squash courts.
- Tennis courts.
- Indoor running tracks.
- Ice rinks.
- Swimming pools.
- Driving ranges.
- Gun ranges.
- Golf simulators.
- Soccer field.
- Volleyball courts.
- Yoga classes.
- Cardio rooms.

Concierge services, fitness trainers, and lifestyle or recreation coordinators have been used to connect workers with ongoing activities, such as sporting or card tournaments, social events, and even community volunteers, for workers in camp (Australia Pacific LNG 2012c; Barclay *et al*. 2013; House of Representatives 2013). In some cases, work camps have established social committees to organize a range of formal and informal activities and events, such as art / sculpture competitions or fundraising events (Creating Communities 2012). Some work camps are providing access to more educational programs, such as language, music, or cooking lessons. Church services and bible studies have also been provided; although, they are less common (Nichols Applied Management 2003).

More attention has also been invested to understand the unique demands that different generations and types of workers may have with recreational activities and amenities. Work camp operators noted that older generations are more social and spend more time in common areas, while younger workers tend to spend more time in their rooms working on their computer, playing video games, or spending time alone in the gym. Workers who exert a lot of energy throughout the day are less likely to want to use fitness facilities. Other workers that have more sedentary positions, such as safety supervisors, can become bored and are more interested in engaging in social activities.

2.3.3 Work Camp Infrastructure

Infrastructure needs will depend on the size and duration of the camp, with large, longer term camps requiring infrastructure similar to small communities (Government of Yukon 2013). In some cases, the infrastructure of small nearby communities is too limited to support large-scale work camp operations. For example, Target Logistics invested $3.1 million to develop a portable water treatment plant near

Tioga, North Dakota (Goerge 2012). Work camps are also investing in more energy-efficient infrastructure and equipment, including the use of low-flow faucets, shower, and toilets, energy efficient laundry facilities, energy efficient lighting, and thermostat controls (Rothaus 2013).

The communications industry is working to optimize on the business opportunities associated with booming resource regions. This reflects the growing importance of high speed Internet to support remote operations and the retention of mobile workers. Mobile phone reception, computer rooms, and high speed Internet is becoming increasingly important to allow workers to stay in touch with family, as well as to support on-line game activities (Australia Pacific LNG 2012c; Canadian Business 2012). Companies now promote "camp-in-a-box" packages specifically for the energy sector (Telus n.d.). These packages include camp room services with video on demand / Optik TV packages, wifi hot spots, smart hubs where no landlines are available, and rugged devices designed to withstand weather and shocks. Packages to support contractor services and training, such as audio and web / video conferencing, are also provided.

2.3.4 Transportation

Depending on the camp's location, routine transportation may also be provided to nearby communities to allow workers to access local services and participate in various recreational programs, fundraising activities, or community events. This may include free recreation shuttle services during specified time periods, as well as fee for service transportation such as taxis and shuttle buses that are not time restricted (Nichols Applied Management 2003). In Australia, BHP Billiton Iron Ore provides mobile workers with bicycles that enable them to travel to Newman to access services and attend community events (Creating Communities 2012). The bicycles are maintained by a non-profit Aboriginal organization.

2.3.5 Difference between Construction Camps and Operations Camps

Differences between construction and operations camps are influenced by the anticipated duration of the project. While construction camps may exist for 5-8 years in one location, operations camps are generally designed to support projects with 20-40 year life spans. As such, work camps that support industry operations are generally nicer, more permanent structures that resemble hotel facilities. The bedrooms are larger and equipped with better furniture (i.e. couch, larger televisions, etc.). More premium food choices are offered (i.e. more frequent steak nights, seafood nights, etc.). Specialty items such as power bars and Gatorade are more plentiful. Operations camps are also more likely to be equipped with full-size gymnasiums, indoor running tracks, and indoor hockey rinks. By comparison, construction camps may have outdoor rinks and tented running tracks. Operational phase work camps, however, are likely located in very remote settings. If the project is located within or close to a municipal setting, there is a preference to hire locally or encourage new employees to move to the community.

2.4 Work Camps and Worker Retention

In a competitive labour market, work camps are playing a more important role in the recruitment and retention strategies for industry projects. As a result, industry standards for work camp food, sleeping arrangements, and amenities have changed (Ferguson 2011). As Wittmeier (2014: 4) notes, "A decade ago, square-block trailers were the industry standard, housing 49 workers in private sleeping quarters with an adjoining 'gang' bathroom and shower room. Food was dominated by starches and fats, typically frozen and fried, nutritional lowest common denominator". Work camps have evolved considerably with a more diverse range of infrastructure and services. There is more privacy and more attention to services, programs, amenities, and design to support wellbeing and a healthy lifestyle.

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Investments in work camp environments have improved worker retention rates by as much as 66% and have been cited to save companies as much as $10 million each year (Chandler 2014b). Surveys have been conducted to better understand the types of features and services that are important to workers staying in camp. Key issues have included being able to have a single room, having a personal washroom, the provision of air conditioning in each room, retaining the same room during each rotation, and having room access to the Internet (Barclay *et al*. 2013). Healthier food options are becoming increasingly important with more requests for work camps to provide options for vegetarians, vegans, gluten free meals, and others who have special dietary needs. In terms of facilities, the mess hall, gym / fitness rooms (including female gyms), games rooms, and outdoor sporting facilities were deemed to be important. Investments in healthy nutrition and wellness programs are positively impacting worker retention rates. For example, in Bolton, Ontario, Husky Injection Molding Systems reported an annual savings of $6.8 million (US) after investing $2.5 million (US) in wellness programs (Wanjek 2013).

2.5 Work Camp Protocols

Work camp protocols have become an industry wide tool used to address community concerns around safety, as well as to improve and control productive working environments. Protocols, policies, and code of conduct agreements have become key components of workforce contracts and orientation for both employees and contractors (Australia Pacific LNG 2012c; 2011c; Creating Communities 2012). There continue to be projects, however, where behavioral protocols are only connected to accommodations with no employment consequences for breaching those protocols (House of Representatives 2013). Issues that are addressed in protocols or code of conduct agreements can vary, but may include:

- Zero tolerance for drugs and alcohol.
- Zero tolerance for harassment.
- Respect for co-workers, residents, and local culture.
- Zero tolerance for bribery.
- Zero tolerance for illegal activities (i.e. prostitution, weapons, illegal gambling, fighting, vandalism).
- Respecting speed limits.
- Restrictions concerning unauthorized site personnel.
- Strict use of camp / work vehicles (Anglo American Services 2012; Beamish Consulting Ltd. and Heartwood Solutions Consulting 2013; Northern Health 2012; URS Australia 2012).

Some policies are enforced through random drug and alcohol testing. In Labrador City, Newfoundland and Labrador, however, a local community advisory panel insisted on mandatory hair follicle drug testing for work camps. This method was preferred over urine testing as it is able to provide a longer history to detect drug use. Programs such as Respect in the Workplace are also used to address bullying, workplace violence, and harassment (Jergeas 2009). There are also regulations restricting people from entering living quarters that are designated for the opposite gender (Building Trades of Alberta and Construction Labour Relations 2010).

Code of conduct agreements are not just being developed to influence behaviors within the work sites and work camps, but also to guide behaviors and interactions in nearby communities. Communities are increasingly requesting mobile workers to sign social contracts as a condition for the project (House of Representatives 2013). For example, the Wheatstone Workforce Management Plan required all Chevron employees and contractors to sign a 'Code of Conduct' agreement concerning appropriate behavior in town (Haslam McKenzie 2013). Australia Pacific LNG has further developed a rural residential code of

conduct for projects that are situated on residential areas less than 15 hectares (Australia Pacific LNG 2011c). In Labrador City, Newfoundland and Labrador, a social code of conduct was vetted by the community advisory panel contained curfew restrictions, restrictions omitting guests from work camp sites, and limited tolerance for public intoxication. As one stakeholder told us:

The social code of conduct had curfews in it. You weren't allowed to bring anybody from the community on site, i.e. no women were allowed in there unless they were workers, and vice versa, no men were allowed into the camps unless they were workers. They weren't necessarily dry camps but it had to be controlled. Intoxication wasn't permitted in public. But they were certainly allowed to drink in their rooms and that kind of stuff as long as they drank responsibly. That was the biggest thing. There was a protocol in place, if there were concerns raised by residents or businesses in the surrounding areas, they had a place to go with their concerns and they would be addressed. There were not many instances but if anything happened, the person was on the flight the next day, very quickly removed. No ands, ifs, or buts (Participant ID#8, 2014).

Industry has been investing more resources to ensure adequate personnel are in place to foster positive behaviors in both work and community environments. For example, some industries have developed behavioral safety coaching programs (Australia Pacific LNG 2012e). Other industries have hired security personnel to accompany workers visiting nearby communities.

There are different industry models used to address behavioral and safety concerns in work camp settings. As one component of the contract between the resource company and the work camp operator, work camp management may be responsible for managing the behavior of workers in camp (Creating Communities 2012). In some cases, camp committees are responsible for enforcing camp rules and regulations, monitoring the maintenance and development of work camp accommodations, as well as addressing grievances on a monthly basis (Building Trades of Alberta and Construction Labour Relations 2010). Camp committees may have representation from industry, the workforce, and the work camp management (Building Trades of Alberta and Construction Labour Relations 2010). In other cases, grievances are forwarded to the client company who retain the responsibility for addressing concerns. If violations of camp protocols are identified, the parties involved must meet with the camp committee or enforcing officer. First time offences may result in the removal of camp privileges. Repeated offences can result in the expulsion from camps, and as a result, often termination of employment with the industry project (British Columbia and Yukon Territory Building and Construction Trades Council, and Construction Labour Relations Association of British Columbia 2008). Addressing issues related to alcohol consumption can be more difficult in wet camps, however, where camp operators may profit from supplying workers with alcohol (House of Representatives 2013).

2.6 Work Camp and Community Safety

Work camp safety has been shaped by investments in safety personnel, technology, and physical infrastructure. Safety infrastructure has included fire trucks, fire truck garages, training space for volunteer fire crews, fire water storage, a first aid building, an ambulance garage, a helicopter landing, and appropriate communication systems to support emergency needs (Manitoba Hydro n.d.). However,

road infrastructure also plays an important role in work camp safety. While many communities have multiple road exits, most work camps only have one emergency road exit despite the dangers of wildfires in many regions (Wittmeier 2014).

Standards require workforce accommodations to install smoke detectors and emergency lighting in all buildings, as well as ensure that adequate fire insurance is in place for their clients (British Columbia and Yukon Territory Building and Construction Trades Council, and Construction Labour Relations Association of British Columbia 2008). There are also standards to address safety issues during various weather conditions. This includes attention to walkways, decks, stairs, handrails, weather proof doors, and automatic doors between buildings. Women's safety in work camps has been improved with better lighting. New lighting systems are also being installed at the end of dormitory buildings in order to assist emergency workers in the event of an accident. To improve health safety, work camp personnel may be required to produce immunization certificates before working or entering work camp environments (Government of Québec 2014).

Some work camps have security checkpoints where bags are searched in order to prevent the influx of banned substances (House of Representatives 2013). Work camps may also be monitored by closed television cameras and equipped with swipe cards to track movement into certain areas. Communication companies now provide fleet tracking services to monitor mobile workers using detailed private lease road maps, as well as the ability to obtain reports on fuel consumption and speed (Telus n.d.). In some cases, industries require all company and contractor vehicles to be retrofitted with in-vehicle monitoring systems that can track the speed and location of vehicles (Australia Pacific LNG 2012e). Industries also use monthly vehicle incident reporting to track road safety issues (Government of Western Australia 2010). Police forces have set up more highway check points to identify impaired drivers and to search for illegal vehicles, including those without proper tires, overloaded trucks, those without proper licenses, and those without adequate braking systems.

Work camp safety is further guided by liquor policies that determine if a work camp will be 'wet' or 'dry'. Proponents of wet camps suggest that wet camp policies keep workers on site and reduces the risks of incidents in nearby communities (i.e. violence, impaired driving, etc.). Other sites adopt zero tolerance policies due to the higher risks and liabilities associated with wet camps. Communities are always concerned about the size, the proximity, and types of services that are put in a camp. For example, one camp was developed within a 20 minute commute of the closest community. This also prompted concerns about impaired driving around the community. In response, personnel were required to park their vehicles 5 kilometres from the camp and they were bussed from the parking lot to the camp. To obtain their vehicle, workers needed to have signed permission from their supervisor.

One of the most difficult issues to resolve in rapidly growing construction periods concerns local perceptions of crime and safety. Municipalities have responded by requesting routine police reports on crime and traffic statistics. In some cases, there was no evidence from these reports to suggest that crime was increasing. When these reports were combined with other initiatives such as work camp tours and initiatives to engage industry workers in community events and organizations, it became easier for these perceptions to be addressed. As one stakeholder explained:

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> *I guess, on the social side of it, people felt less safe even though the statistics didn't prove that. We had constant communication with the local police force. The statistics didn't [show it] but people felt less safe. They felt that they couldn't let their children out as they could before because of the heavier volumes of traffic and because there were so many people in the community that they didn't know. There was certainly a stereotype of the contractor, and a lot of people had those fears. And the contractor is someone's husband, someone's brother, someone's whatever; just a person looking to work. And there were some that maybe got permanent jobs in the community as well. At the time, the mayor was very much involved with the first Habitat [for Humanity] build they had here in Labrador West. And if it wasn't for the contractors who came on their days off to donate their time… everyone else in Labrador West, when they were off, they wanted to be at their cabin. The contractor presence didn't have a negative effect except for the drain on the service industry and stuff like that. They actually contributed (Participant ID#8, 2014).*

To alleviate community concerns and monitor workforce behaviours, companies, such as Total in the Shetlands, have also hired security staff to accompany crews during off-hour visits to nearby communities and during ferry travel to the mainland.

Rapid growth is also placing pressure on limited police detachment resources to fill service gaps in the community. In Labrador City, Newfoundland and Labrador, for example, the local detachment has taken on new responsibilities typically offered through an immigration office due to the influx of temporary foreign workers. The next closest immigration office is more than 600 kilometres away.

Key Messages

It is important to conduct routine surveys of workers living in work camp accommodations in order to inform ongoing planning, management, and investments that will strengthen recruitment and retention rates in a globally competitive labour market.

The future workforce not only needs to be educated about potential jobs, but also about extended work camp living lifestyles. Job fairs and open houses that invite work camp operators, as well as education programs that provide students with experiences involving shift rotation work and work camp accommodations is a step in the right direction.

Investment in communications infrastructure is key to reduce isolation for workers, to connect them with on-line supports, and to support other recreational activities.

Regulations and standards in some jurisdictions have become outdated. There is a need to renew and update the regulatory framework in these jurisdictions to reflect current workforce accommodation issues and demands, including open camps and RV accommodations.

Greater coordination is needed to identify and track work camp accommodations, as well as to streamline processes guiding their development and closure.

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3.0 HOUSING WORKERS IN THE COMMUNITY

Best Practices

Job fairs have included housing as key components of their events.

Loan programs have been developed for low-income staff employed by small businesses. In some cases, employers have provided a down payment while a housing authority provides a second mortgage with a low interest rate.

Provincial and local government have worked together to ensure physical infrastructure, such as water, sewage, and roads, are in place in advance of rapid growth in order to better position the community to quickly mobilize and respond to housing needs.

There has been success advocating for an increase in the low-income cut-off thresholds in booming economies in order to allow single income families and low-income workers to qualify for housing support programs.

Short-term subsidies have provided 6 months of assistance for residents impacted by rapid increases in housing costs. To access subsidies, residents are required to attend a workshop and meet with a financial counsellor to revise household budgets.

Industry and local governments have worked with service providers, such as police, health authorities, etc., to negotiate agreements to purchase homes designated to recruit and retain community service professionals. The agreements typically include provisions for a designated subsidized rate and a time period in which beneficiaries must find other suitable accommodations.

An affordable housing company has been used to manage asset donations on behalf of industry, build the capacity of local housing organizations and entrepreneurs, and provide advice to industry, local and senior levels of government, and other stakeholders about key issues in local / regional housing markets.

3.1 Introduction

Industrial workforces will not all be accommodated in work camp settings during construction and operational phases. For example, companies have either purchased or developed multi-year leases with hotels in order to secure accommodations for their workers during the early stages of the project (City Spaces 2006; Goerge 2012). There are examples where industry has housed FIFO workforces in communities. For example, BHP Billiton Iron Ore developed apartments to support their FIFO workforces (Creating Communities 2012). While contractors may also stay in work camps (Australia Pacific LNG 2011c), the daily rates to stay in new camps can be expensive for smaller contractors. Depending on the length of the contract, companies and contractors have purchased homes, rented accommodations in town, or occupied RV parks and campgrounds (Haslam McKenzie 2013).

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3.2 Market Impacts

Rapid growth has intensified housing pressures for residents, businesses, and service organizations in resource-based regions. Increased housing and rental prices, higher property taxes, lack of affordable housing, and low accommodation vacancy rates are common characteristics of housing markets in these boom towns (Ennis *et al*. 2013; Power *et al*. 1980). During construction periods, vulnerable residents have been susceptible to displacement and homelessness through renovictions and rising housing costs, prompting an increased demand for social services in these communities (Argent 2013; Schafft *et al*. 2014; Stantec Consulting and Keith Storey Consulting 2011). Studies have identified several groups that are at-risk to be impacted by housing pressures during periods of rapid growth, including Aboriginal residents, students, single parents, low-income senior women living alone, people with physical and mental health disabilities, households with disabled children, students, and other youth (Lawrie *et al*. 2011; Ryser and Halseth 2011; Williamson and Kolb 2011). Reports suggest that in boomtowns, the working poor are also finding it increasingly difficult to address their housing and basic living needs such as food, heat, and health care (Brueckner *et al*. 2013; Haslam McKenzie and Rowley 2013).

When an influx of people looking for work is combined with severe housing shortages, there can be an increase in hidden homelessness with overcrowded housing, couch surfing, illegal suites, as well as an increase in people living in caravans, sheds, tents, garages, and vehicles (Beamish Consulting Ltd. and Heartwood Solutions Consulting 2013; Haslam McKenzie *et al*. 2009; Power *et al*. 1980). Residents may move into RVs or summer cottages in order to rent their homes to mobile workers (Stantec Consulting and Keith Storey Consulting 2011).

3.2.1 Market Impacts on Community Services

Rising housing costs during boom periods have also impacted the recruitment and retention of professionals in a range of community sectors, such as local government, health, social services, education, daycare workers, police officers, business, arts and culture, and tourism and recreation (Measham *et al*. 2013). Stakeholders in some jurisdictions have argued that the absence of rent control legislation has fueled rising housing costs, prompting the out-migration of several residents, including working professionals. High turnover rates in sectors that have struggled to resolve housing constraints have impacted the quality of services in these communities. This can have profound impacts on long-term community development "as those who could not afford to stay have left, and those who came for the boom leave because the city is not attractive in terms of lack of services" (Ennis *et al*. 2013: 40). The out-migration of professionals and seniors who could no longer afford housing has also had profound impacts on the capacity and resiliency of the voluntary sector (Haslam McKenzie 2013).

The most intense housing pressures are often associated with the rapid growth that can take place during construction periods. In some reports, these pressures are most predominant during the first 12-18 months of an industry project (Australia Pacific LNG 2012f). Living out allowances are arguably one cause of inflated rental and housing costs in the community (Province of Alberta 2006). Reports have suggested that living out allowances of up to $3,000 a month have been provided to contractors and workers when space is not available in work camps (Province of Alberta 2006). Industry has not always been quickly aware of the impact its local living allowance rates are having on the community and its own bottom line. Contractors would pay high rental rates for homes, sometimes up to $5,000 per month, only to pass those costs onto industry. Cases were also reported where industry would be bidding against employees for a home, thereby further driving up the housing market. As one stakeholder explained:

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> *We also had, just from the housing perspective, the various contractors and groups like that who needed housing for their workers. We had apartment buildings that were purchased by other companies. People were put out on the street. Unfortunately, there is no rent control legislation in our province. And that is very detrimental when you look at an isolated urban centre like ours with the pressures that were onto it for housing. So the businesses with the deeper pockets that were doing this work on the expansion, it was cheaper for them to buy out an apartment building than to be trying to rent. But then the people who lived in those apartments for years were out on the street. There is no cap on how much they can put up rent in a year. The new owner would come in and say your rent of $800 a month is going up to $1,800 a month next month. So, in essence they didn't literally kick them out put the rent up so high that they couldn't afford it. We lost a fair number of seniors from our community because they just couldn't afford to stay here any longer. It seemed like it took a while for the industry to realize that in the end they were the ones who were footing the bill for all of this. The contractors are not paying $5,000 a month to rent a bungalow and not pass that cost back to industry. It just seemed like it took a long time for industry to realize that they were the ones who were ultimately footing the bills for this because there was no control put on anything. It was quite a wild ride. At one point in time, they admitted, some people would put up their house for sale and it was like a bidding war, and it turned out that the mining company was bidding against an employee for property. It really drove the prices of housing way up (Participant ID#12: 2014).*

Job fairs, such as those in Williston, North Dakota, have included housing as key components of their events. Work camps are invited to these job fairs in order to provide potential workers with information about work camp settings. During the planning and construction phase, communities are also working with industry to prevent or mitigate these impacts by encouraging industry to direct their funds to expand the housing stock instead of providing subsidies for the existing housing stock (Australia Pacific LNG 2012f). Limited access to residential construction trade workers, however, can impede efforts to renovate and expand housing infrastructure (Haslam McKenzie and Rowley 2013).

3.2.2 Market Impacts on Business Development

Housing pressures have also impacted recruitment and retention within the business sector, resulting in lower quality of services, limited retail and economic diversification, and even business closures (House of Representatives 2013; Lawrie *et al.* 2011). This can perpetuate economic leakage from the community as residents leave to shop in other centres (Haslam McKenzie and Rowley 2013). In Fort McMurray, the Wood Buffalo Housing and Development Corporation and the Chamber of Commerce developed a loan program for low-income staff employed by small business (City Spaces 2006). Employers provide a down payment and the WBHDC provides a second mortgage with a low interest rate.

Small businesses can further become "adversely affected when 'overflow' accommodation such as hotels, caravan parks and campgrounds is fully occupied by contractors and resource service industry workers, thus limiting tourism, casual visitors, and other business people" (Haslam McKenzie 2013: 347). The tourism industry has been impacted by workforce accommodation arrangements with hotels, particularly during peak tourism seasons. Industry employees and contractors often compete with tourists for space at nearby campgrounds and RV parks (Government of Western Australia 2010). In some cases, industry has

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purchased caravan parks for the purpose of developing worker accommodations, resulting in the eviction of some residents (URS Australia 2012).

Industry investment agreements have been reached with hotels and apartment buildings to house workers, particularly during the rapid expansion associated with construction periods (City Spaces 2006). Landlords are being impacted, however, by the relationship between powerless lease agreements, work camps, and workforce housing needs. Industries have signed one-year leases to house workers in the community. When space becomes open in nearby work camps, however, companies pull their workers from the community and terminate the lease agreement. Landlords have been reluctant to enforce lease agreements due to fears of losing future business. In other cases, industry and contractors have purchased homes to house workers who are unable to stay in work camps. There have also been examples where contractors have become involved to support the development of social housing. In Labrador City, for example, contractors stepped forward to become involved in Habitat for Humanity housing projects.

Ensure work camps are in place before construction begins

Despite efforts to develop and implement housing strategies for their workforces, the provision of an adequate housing supply often lags behind the demand. Ideally, there should be sufficient housing in place to meet industry needs before construction begins (i.e. through camps or broader housing stock). One community stakeholder explained:

> *It's a clear learning curve for us that with projects of these scales, even though there are conditions put in place, once they get up and going, they're driven by the fact that they've got approval to proceed. They're driven by the need to get the project going on the ground. They don't place priority on putting in place the accommodation before they commence. With all those projects, the provision of the camp and all of that starts rolling out at the same time as the construction starts rolling out. So there's an 18 month gap to when accommodation actually comes on stream to when it's actually needed. And that creates immense pressure on the community (Participant ID #11: 2014).*

In Australia, the Gladstone Regional Council received funding from LNG companies to invest in affordable housing. The first units have just recently been completed, long after they were first needed. The affordable housing units, however, have left an important $19.6 million legacy within the community.

A valuable lesson in "readiness" was learned in Fermont, Québec. The Province of Québec was involved in supporting economic development investments by installing water, sewage, and road infrastructure to meet the demands of the boom in the 1970s. Following the economic recession of the 1980s, the infrastructure was left in place with no housing. When the opportunity for industrial expansion emerged in 2007, the municipality was better positioned to quickly mobilize to have housing put in place than neighbouring communities in Newfoundland and Labrador.

Ensure housing supports are in place during the early phases of resource development construction

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Senior levels of government have deployed affordable social housing funds and subsidized rent programs (BC Housing, House of Representatives 2013); however, the criteria for these programs do not reflect the cost of living in boomtown settings. In these places, many households that are not designated as low-income are not able to afford high rental rates, but do not qualify for supports from these social housing programs. In Labrador City, the Housing Homeless Coalition was successful in advocating to raise the low-income cut-off for affordable housing in the community. Previously, to qualify for provincial subsidies, the low-income cut-off threshold was $32,500. After considering the impact of rapid growth on the local housing market, the low-income cut-off threshold for Labrador West was raised to $65,000 in order to allow single income families and low-income workers to qualify for the program. As explained by one stakeholder:

> *The other thing we did through the Housing Homelessness Coalition is that the low income threshold cutoff for affordable housing in our community to qualify with the provincial government used to be $32,500, which is pretty standard across the country. But in light of the growth here and the demand for housing, we were able to raise that low income cutoff in Labrador West alone to $65,000, which meant that people that were working, a single adult working in industry, now qualified for affordable housing through Newfoundland Labrador Housing. We also lobbied for housing support worker positions that would help to try to track the numbers of people that were in need of housing and try to match them up in some way. The Coalition did get some funding – it happened right across the province at the time – for housing support workers that they managed. These statistics around the demand for housing tried to work with individuals with complex needs; that's their main focus. Raising the LICO really did help because there had been vacancies in our non-profit housing that weren't being bought up because most people were making more than the $32,500. By doing that, it actually helped. What they did is that they looked at the income and developed a formula to arrange a rent. It wasn't based on just 25%, they had a cap on it as well with the higher level (Participant ID#8, 2014).*

Housing subsidies have also been developed in order to retain residents in the community. In Gladstone, each of the LNG proponents contributed $1 million (total $3 million) to the Gladstone Regional Council. At the time, the vacancy rate was less than 1%. The housing shortage not only impacted low-income residents, but many professionals (i.e. police, teachers, etc.) working in the community. The short-term housing subsidy program assisted people to revise their household budgets and cope with the initial increase in housing costs. The program provided up to 6 months of assistance. To access subsidies, residents were required to attend a workshop and meet with a financial counsellor. In some cases, the financial counsellor found that some residents could no longer afford to live in the community based on their household budgets. Those residents were relocated to other communities.

In some jurisdictions, agreements between industry and community organizations have been developed to provide housing subsidies to retain key professional positions in the community. For example, Australia Pacific LNG and the Queensland Police Service negotiated an agreement to provide three homes in Calliope for police officers and their families at a reduced, subsidized rate for two years (Australia Pacific LNG 2012f). The rental subsidy ranges from 20% to 25% of the current market rate. In Alberta, the Wood Buffalo Housing Development Corporation has developed partnership agreements with the Northern Lights Regional Health Authority and the Regional Municipality of Wood Buffalo to each

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partially fund 18 affordable housing units for their employees (Province of Alberta 2006). Employees are eligible to live in these units for up to one year as they search for other accommodation. In Labrador City, the local government is purchasing two new housing units for new employees. The municipality has also partnered with the Iron Ore Company of Canada to provide a housing subsidy for additional staff in the permitting department. The local hospital and police detachments have also purchased housing units to support recruitment and retention initiatives.

There have been recommendations for senior levels of government to adopt a more comprehensive approach to providing housing subsidies to public sector workers in order to avoid unintended consequences for the retention of workers and operations of other service sectors. In Alberta, for example, while provincial housing subsidy programs are provided for some public sectors, no funding was provided for school boards or health authorities. Those sectors provided housing allowances, but at lower levels and with funding from their existing budgets (Province of Alberta 2006).

Housing subsidy programs can have some limitations and generate unintended consequences. Most notably, there are concerns that an increase in housing subsidy rates will only further exacerbate housing pressures and restrict the number of beneficiaries due to limited housing subsidy budgets (Williamson and Kolb 2011).

3.3 Addressing Housing Pressures through Collaboration

Housing pressures have prompted local governments and community organizations to develop collaborative structures and initiatives with industry to ensure rental assistance programs are in place, as well as to assist those who have been renovicted or displaced (Australia Pacific LNG 2012b). For example, in Australia, industry has worked collaboratively with the Department of Communities to support the Rent Connect Program which provides assistance to residents at risk of being displaced due to rising rental costs (Australia Pacific LNG 2012b). In Australia, there are several examples of housing committees / task forces and community-senior government-industry partnerships that have been formed to develop housing strategies and affordable housing projects (Australia Pacific LNG 2012f). In the Regional Municipality of Wood Buffalo formed the Wood Buffalo Housing and Development Corporation as a non-profit society to manage roughly 900 affordable housing units (Province of Alberta 2006). Through this initiative, they successfully pursued $17 million through the Canada-Alberta Affordable Housing Program to support 414 affordable housing units. Similarly, in Peace River, the North Peace Housing Foundation manages 81 affordable housing units in the Town of Peace River, as well as an additional 36 units in Grimshaw (Province of Alberta 2006). Investments have also been made in emergency and transition housing for vulnerable residents, as well as retirement housing as older residents are one of the vulnerable groups that are susceptible to being displaced (Australia Pacific LNG 2012f).

3.4 Challenges Moving Forward

In some communities, timely responses to housing pressures have been hampered by bank policies. In smaller, unstable housing markets, banks have required housing developers to provide significant deposits, purchasing commitments, or long-term leases in order to obtain financing (Haslam McKenzie and Rowley 2013). In the absence of final investment decisions by industry, housing developments have not been put in place prior to rapid construction periods. One proposed solution by industry is to develop an affordable housing company that can manage asset donations on behalf of industry, build the capacity of local housing organizations and entrepreneurs, and provide advice to industry, local and senior levels of government, and other stakeholders about key issues in local / regional housing markets (Australia

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Pacific LNG 2012f). In response to land pressures, senior governments have also established land development authorities and transferred Crown lands to support housing developments. Local governments have also been working to address housing needs by using their regulatory tools to increase housing densities and allocating land for special housing needs within close proximity to services and transportation networks.

Responses to housing pressures have also been impeded by limited access to land as a result of unresolved Aboriginal land claims, proximity to protected agricultural land, the lack of Crown land released before industry construction begins, and complex processes required to obtain approval to transfer Crown land from other mining, forestry, or environment government ministries (City Spaces 2006; Haslam McKenzie and Rowley 2013; Shields 2012). However, Measham *et al.* (2013: 189) argue that "unwilling engagement or tardy planning by government to early signs of growing pains, and even market failure in the case of the housing market, were root causes of some of the issues". Land release strategies need to be developed and updated well in advance of large-scale industrial projects that include provisions concerning the pace of development on land sold or transferred by the provincial government (Province of Alberta 2006).

Labour restructuring trends that have increased patterns of mobile labour and migration have not transformed our understanding about housing markets and new approaches to housing policies (Haslam McKenzie and Rowley 2013). As other resource-based regions prepare for rapid growth, early and routine communications with industry, senior levels of government, and community stakeholders is needed to better understand housing needs. This may involve open housing forums, as well as more strategic efforts to connect developers with various stakeholders in order to address workforce housing needs as well as to diversify the housing stock in order to avoid unintended consequences for a broader range of residents. Furthermore, there have been calls to develop collaborative research partnerships to explore the impacts of resource development on low-income households, as well as to explore the socio-economic impacts of different housing models in rapidly growing resource regions (Australia Pacific LNG 2011c).

Key Messages

There is a need to develop a consistent approach to forecasting growth and socio-economic impacts from resource development.

There is a need to ensure work camps are in place before construction begins in order to alleviate housing pressures in communities. Greater engagement by senior government and industry to collaborate and address housing pressures is also needed during these early stages of planning and development.

There is a need to ensure housing supports are in place during the early phases of construction. Housing subsidies may be needed not only for vulnerable low-income residents, but also to retain professionals supporting essential services in the community.

Land release strategies need to be developed and updated well in advance of large-scale industrial projects that include provisions concerning the pace of development on land sold or transferred by the provincial government.

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4.0 RELATIONSHIPS BETWEEN WORK CAMPS, INDUSTRIES, AND COMMUNITIES

Best Practices

Royalty payment programs have been developed to invest in local governments, community services, and infrastructure.

Social impact management plans have been used as a tool to address socio-economic impacts and infrastructure needs associated with resource-based projects.

Work camps and industries have used lifestyle or recreation coordinators to connect workers with volunteering and recreational opportunities in the community.

Work camp tours have been provided to community residents and stakeholders to improve the perception and understanding that local residents have about work camp accommodations and industry operations.

Work camps / industry have developed cafes and meeting rooms on site that are open for use by residents and community groups.

Grievance and complaints mechanisms have been put in place to track the number, nature, and responses to concerns.

Industry associations have adopted a scaled up and coordinated approach to legacy investments and programs in communities.

Cumulative Impact Groups have been formed with industry stakeholders to investigate environmental issues. Infrastructure Working Groups have been formed to identify and coordinate responses to common issues across multiple industry projects.

Business associations have formed conglomerates to scale up and be competitive to obtain industry contracts. Best practice guides have been published to better position SMEs to pursue industry contracts.

Community plans have encouraged work camp accommodations to adopt universal design principles so modular units may be more easily converted into other uses after the project is finished. It is important to note, however, that such legacy arrangements should be negotiated between industry and the community early on during project planning.

Industry has realigned investment strategies to address childcare needs in the community and address barriers to workforce participation and retention.

Industry has invested in equipment, simulators, and mobile units in order to develop the next generation workforce.

Industry has worked with communities to develop a vision that will guide long-term development decisions in the community throughout all stages of the industry project's lifespan.

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Community engagement is a tool to foster dialogue that can build long-term working relationships, broaden awareness of community and industry concerns, manage expectations, tap into local expertise, and build community capacity to respond to the opportunities and challenges of large-scale industrial development (Franks 2012). There are many best practices used today to improve these relationships. In this section, a range of mechanisms and tools are identified that can guide long-term working relationships between industry, work camps, and communities.

4.1 Communication & Relationship Building Mechanisms

Several communication mechanisms have been used to guide industry-community relationships. Examples include:

- Public or town hall meetings.
- Focus groups.
- Formal meetings between industry and government.
- Industry leadership groups.
- Interagency committees.
- Special topic roundtables.
- Open house meetings.
- Presentations to schools, professional groups, and specific organizations.
- Conference presentations.
- Community offices.
- Comment boxes.
- Surveys.
- Newsletters.
- Information sheets.
- Newspaper advertisements.
- Posters.
- Project websites.
- Toll-free numbers.
- Advisory committees and stakeholder panels (Anglo American Services 2012; Australia Pacific LNG 2012c, 2012f, 2011c; Franks 2012; Haslam McKenzie 2013; Stantec Consulting and Keith Storey Consulting 2011; URS Australia 2012).

These mechanisms are crucial to ensure all stakeholders are kept up-to-date on pressures, opportunities, and strategies associated with resource development. They also play a role to share information about existing resources, to monitor and provide recommendations to address key and emerging issues (Kassover and McKeown 1981). The key is to ensure that communication is conducted on a routine basis. For example, leadership groups and community consultation committee meetings can take place on a monthly or quarterly basis (Australia Pacific LNG 2011a). Best practices also ensure that senior management is represented at formal stakeholder meetings (ABM Resources n.d.; Franks 2012). In circumstances where stakeholder fatigue or conflicts impedes involvement in community-industry stakeholder processes, industries have pursued smaller group or one-on-one meetings (Anglo American Services 2012). The sensitivity of issues also shape the type of communication approach that is used to guide industry-community stakeholder engagement with smaller group meetings used for controversial issues.

A significant challenge for small, rural municipalities is the staff resources and time required to meet with multiple industry stakeholders individually on a routine basis. One representative from the Wood Buffalo Regional Municipality explained:

> *There are 13 companies that are actively operating and producing oil or bitumen in the region, but there are upwards of 40 or 50 companies that are actively working in the region whether that's through constructing a project, or exploring for bitumen, or putting together an application for a project they want approved for the provincial government (Participant ID #7: 2014).*

Industry leadership groups and interagency committees have enabled small local governments to efficiently engage and nurture working relationships with industry, senior government, and community stakeholders. For example, the Oil Sands Community Alliance has developed a process for how industry members collectively bring initiatives together (i.e. coordination, cost sharing, etc.). Their Joint Initiatives Project process defines collaboration between industries, partners, and communities that have common objectives. The JIP structure provides a common framework to facilitate coordinated responses with industry peers and stakeholder groups.

In Pennsylvania, a Natural Gas Task Force was formed that gathered information from each municipality (i.e. location, contacts, required permits) to support resource development in the Marcellus Gas Shale Region. The task force consisted of several sub-committees and has engaged industries, including Chesapeake and Southwest industries, local municipal officials, economic development staff, GIS staff, and others. The committee has worked hard to remain relevant by routinely producing products and information that can guide resource and community development. Ongoing education and learning is a key component to the committee's activities. Each meeting is started with a monthly natural gas webinar delivered through Penn State University. With the development of new facilities, industries provided presentations to the committee concerning the design of new facilities, as well as the processes they needed to work through to develop those facilities on site. Pipeline safety organizations were also invited to talk to the committee.

Previously in Moranbah, Australia, there had been limited cooperation to address concerns about noise and air quality due competitive advantages. There were also challenges convincing industries that while individual mines do not exceed any pollution levels, the cumulative impact of dust and pollution had exceeded acceptable levels. The Moranbah Cumulative Impacts Group (http://mcig.org.au) has been effective to bring industry stakeholders together to investigate noise, dust, and air quality issues.

Top-down, supportive policies and senior government engagement is necessary to develop comprehensive and more efficient responses to rapid growth. In Alberta, a provincial government cabinet committee called the Oil Sands Ministerial Strategy Committee was formed to respond to industry needs and pressures facing rapidly growing communities. While the cabinet committee provided a good foundation to foster improved coordination across government ministries, one government report suggested improving the effectiveness of the committee by ensuring the chair was a member of the provincial treasury board, as well as establishing an Oil Sands Sustainable Development Secretariat that would engage deputy ministers across various sectors (Province of Alberta 2006). Such a secretariat could play a role to develop a common approach to assess infrastructure and socio-economic impacts of resource development, to coordinate regional infrastructure plans, and to develop and coordinate community impact benefit agreements (House of Representatives 2013).

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The Labrador West Regional Task Force brought together executives from six industrial companies, provincial and federal government stakeholders, and municipalities, including Labrador City and Wabush in Newfoundland and Labrador and Fermont, Québec. The provincial government's engagement, however, has been restricted to assistance with the long-term vision and growth plan with no additional strategic involvement to move the plan into action.

During the early phases of construction in Gladstone, Australia, the state established the Gladstone Infrastructure Working Group that brought together industry, agencies, local and state governments, and other service providers. It allowed stakeholders to identify and work through common issues. This was critical during the first two years of construction when there were many common issues across various industry projects. For example, the GIWG was successful in bringing proponents together to develop a coordinated approach to emergency response.

4.1.1 Organizational Capacity

Working relationships between industry, work camps, and communities are most effective when there are clear policies and clear indicators to track performance and initiatives. It is equally important to ensure that all stakeholders have adequate staff, skills, and financial resources in place to support industry-community relationships. There may be a need to invest in building capacity and skills, such as facilitation skills, conflict resolution skills, and understanding cultural protocols and values (Anglo American Services 2012). Professionals with specialized, credible expertise may be invited to meetings.

Stakeholders have advocated for several principles to strengthen community-industry partnerships. These include:
- Clearly defining roles and responsibilities within the partnership.,
- Clearly defining financial control and commitments.
- Understanding the legal implications of the partnership agreement.
- Understanding processes for amending the partnership agreement.
- Determining timelines for the partnership.
- Ensuring conflict resolution protocols are in place at the beginning of the partnership.
- Clearly outlining reporting and monitoring responsibilities of each partner.
- Including protocols for either party to withdrawal from the partnership (Anglo American Services 2012).

4.2 Community Engagement

Attention to community engagement can be beneficial to mitigate fears of mobile workforces, support family visits, connect workers with important nearby businesses and supports, and alleviate social isolation and negative behaviours (Creating Communities 2012). Some companies have used community engagement as an effective recruitment and retention tool. For example, anecdotal evidence suggests that B&G in North Dakota experienced a decline in turnover rates from 72% to 41% through community engagement strategies. Community engagement can come in many forms. We have focused on the issues and best practices guiding community engagement through corporate donations, in-kind support, and volunteering.

Industry sponsorship and donations have been an important form of community engagement. Several mechanisms have been put in place to guide financial contributions to community organizations, such as social infrastructure investment strategies, community partnership programs, sponsorship and donation

programs, and employee giving programs through matched giving and paid volunteer leave (ABM Resources n.d.; Australia Pacific LNG 2011c). Corporate investment strategies have varied significantly with support for community safety initiatives, housing, health equipment and infrastructure, transportation infrastructure, physical infrastructure, community beautification, computers and other educational equipment, training programs, daycare expansions, environmental stewardship, recreation and tourism infrastructure, community development foundations, and events that nurture community cohesion (Anglo American Services 2012; Australia Pacific LNG 2011a; Cheshire 2010; Haslam McKenzie 2013; Lawrie *et al*. 2011). Industry has also provided various forms of in-kind support for community stakeholders, including the temporary use of equipment to support road construction and grading, donation of new or refurbished equipment (ABM Resources n.d.).

Before industry will engage and support community development initiatives, an assessment is often done to determine the capacity, and hence readiness, of community organizations. These types of assessments are done to determine the potential and likeliness that an initiative or project will succeed. This may include assessing an organization's (or group of organizations') ability to plan and implement projects, ensuring organizations have a detailed budget and annual budgeting review processes in place, assessing their ability to pursue broader revenue and in-kind resources, assessing their use of appropriate tools to determine the need and priority of the project (i.e. surveys, public forums, etc.) within the community, ensuring that they have accountability mechanisms in place, as well as how the initiative aligns with local, regional, or national policies and strategies (Anglo American Services 2012; Herbert-Cheshire 2000). Recent studies suggest, however, that some industries are reducing their donation programs. "Arguing that they are paying substantial royalties to the government, companies publicly resist calls to provide infrastructure and services that they see as being the responsibility of the government" (Haslam McKenzie and Rowley 2013: 376).

There needs to be a coordinated approach between senior and local levels of government concerning significant industry donations. Senior government initiatives, for example, can undermine local efforts to pursue industry support for community investments. In Gladstone, Australia, industry withdrew a $4 million offer to support social infrastructure investments that was instead allocated to a regional trust where board representatives were appointed by the state government. With funding processes designed and managed through senior levels of government, the trust was not structured or designed to provide timely support to address immediate needs.

Industries have developed volunteer programs to share the capacity of the workforce to address local needs (Kassover and McKeown 1981). In some cases, lifestyle or recreation coordinators have been used to connect workers in camp with volunteering or recreational opportunities in nearby communities (Australia Pacific LNG 2012c; Creating Communities 2012). Some industries have employee volunteering programs that are aligned with company community investment strategies (Australia Pacific LNG 2011a). These volunteer initiatives tend to be focused on short-term commitments such as providing support for clean-up days and fundraising events (Australia Pacific LNG 2011a). In Williston, North Dakota, for example, larger camps, such as Capital Lodge, ATCO, and Target Logistics, have become involved in the community by sponsoring events, holding business after hours events, engaging in community clean-up activities, participating in food drives, and providing tours to various community groups. Target Logistics has also sponsored the 'Welcome to Williston' event for newcomers to the community. Work camps have also catered local fundraising and community events. Industry workers have also used trade skills to work on community men shed programs or volunteer with local fire-fighting departments and highway rescue crews (House of Representatives 2013; URS Australia 2012; Ryser *et al*. 2012c). Major industries and contractors have encouraged their employees to become involved in the board of directors of community organizations to collaboratively monitor and address emerging issues (Kassover and McKeown 1981).

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Long shift rotation schedules, fatigue, and prolonged absences from family have reduced workers' level of engagement in both host and home communities (House of Representatives 2013). In some cases, volunteer and recreational organizations have adjusted their hours in order to accommodate mobile workers (Ryser *et al.* 2012c).

4.2.1 Tours of Industry / Work Camp Infrastructure

During the planning phase, industries have provided local government teams with tours of other facilities in order to provide more information about the types of equipment, development, and operations that were being planned for new sites. Work camp tours have also been provided for schools, seniors, service providers, and local government leaders to improve the perception and understanding that local residents have about work camp accommodations and industry operations. As stakeholders explained:

> *Chesapeake was the one big company in Athens township. They had a really great crew of community people that would work as liaisons between the two of us. That was extremely helpful. […] They were here before they even purchased the property to build their headquarters. [..] We hadn't had anything like this here before and, naturally, we were apprehensive about it because you hear all the horror stories first, and you don't hear anything that is more realistic until you are living it. So, the community [liaison] people took us out to Arkansas and showed us, 'this is the type of work that we do. Here is a well. Here is a derrick.' That was extremely helpful to us. Those people were in place long before they actually came here and broke ground (Participant ID #23: 2014).*

> *As far as selling it to the public, it was pretty easy to do that… to change their perception. Like even myself, when we first heard crew camp, I was like no way letting these things come into the area because I had a misconception of what they actually are. And I think because the larger ones get involved in the community, they will do tours any time you ask them, they are very open about their camps. You can walk through them anytime you want when you call them and set up an appointment. I think that was the easier thing was to change public perception (Participant ID #27: 2014).*

In Australia, the Wickham FIFO camp has a café that is open to both mobile workers and residents of nearby communities (Creating Communities 2012). In Port Hedland, community groups may also use meeting rooms at BHP Billiton Iron Ore facilities for seminars, conference, and general meetings (Creating Communities 2012).

4.2.2 Complaints / Grievance Mechanisms

Industries have grievance and complaints mechanisms in place as one component of their community engagement strategy (Australia Pacific LNG 2011c; URS Australia 2012). Within this process, it is

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possible for industry to track the number, nature, and responses to grievances. Grievance mechanisms have not just been put in place for the primary industry, but contractors have also been trained to implement such measures (Anglo American Services 2012).

4.2.3 Personnel

Rapid industrial growth can require stakeholders to work through many complex processes and develop relationships with numerous other stakeholders. Work camp operators have found it useful to connect with the local economic development officer to obtain advice about appropriate organizations and committees to contact. Aboriginal and community liaison officers are commonly put in place to foster routine working relationships with community stakeholders (ABM Resources n.d.). Industry, government, and community stakeholders are also increasingly building the capacity of its staff through cultural awareness training (Anglo American Services 2012; Creating Communities 2012). Community liaison officers and communication personnel who are stationed in the community, however, do not have any authority to make decisions. This can cause delays to move community development initiatives forward. The formation of task forces that engage high level senior management across all industry and levels of government has been instrumental to address this problem.

Large-scale industrial projects, however, can have layers of contractors. Communities found it most effective when they were able to focus on dealing with the principle contractor. Rapidly growing communities have hired a stakeholder relations manager to build relationships with industry and work camp operators. This has allowed council and key local government staff to focus on other business. A key lesson learned is that it is equally important to promote the roles and responsibilities of the designated stakeholder relations manager internally as well. This includes ensuring that any local government communication that pertains to industry activities is at least copied to the stakeholder relations manager. This helps to reinforce communication protocols with external stakeholders.

4.3 Social Impact Management Plans

Social impact assessments (SIAs), conducted typically as part of the environmental impact assessment process, provide an important baseline and starting point for identifying and addressing the impacts of industrial development on community infrastructure and services such as housing, health services, social programs, education, and public safety services. When required as part of the project approval process, SIAs comprise a useful and proactive tool for highlighting and developing plans for addressing impacts. In most jurisdictions, however, for those projects that are not subject to an environmental assessment, SIAs occur on a voluntary basis only. Furthermore, while mitigation strategies may be developed, funding for the implementation of these strategies may not be forthcoming from either industry or senior government. Another potential issue is the timing of the funding, as local and senior governments, well as industry, often wait until the final investment decisions are made before implementing infrastructure upgrades and housing developments, by which time the solutions are too late. As one stakeholder explained:

> *There's a large amount of effort being put into environmental impact assessments. And that's good. That needs to happen. But with respect to the socio-economic impacts, and I think the use of project accommodations falls in that discipline, there is not a lot of rigour in assessment at the provincial level on that issue. And they're the ones that require… that have the ability to require that information from companies and providers and if they don't ask for it, it makes it really hard for the municipality to get that information because we don't hold the regulatory hammer or the higher order of approval saying we won't give you this approval if you don't provide us with this information. So there needs to be more research being done on the impact of project accommodations on local communities (Participant ID #7: 2014).*

In Australia, SIMPs have been used as one tool to guide working relationships and protocols between industry and Aboriginal communities. They are completed as part of state approval processes and identify actions that industry and contractors will do to address socio-economic impacts and infrastructure and support needs associated with resource-based projects (House of Representatives 2013). Those action plans can be represented through a range of strategies concerning housing, community investments, Aboriginal engagement, health and safety, workforce training and development, and land use. In addition to identifying specific actions, SIMPs develop evaluation and monitoring protocols, as well as community engagement strategies that will be used throughout the project (Australia Pacific LNG 2011c). SIMPs can benefit industry-community relationships by assisting to build trust and long-term working relationships, by identifying issues early in order to reduce and address costs associated with resource development, and to identify opportunities to leave a positive legacy in communities (Franks 2012).

A range of socio-economic performance indicators have been developed to track the implementation of SIMPs (Table 2) (Anglo American Services 2012; Government of Western Australia 2010). These include indicators for community relations, employment, retention rates, housing, economic development, education and training, social investments and funding, infrastructure, community engagement and recreation, safety and emergency services, and the environment. Performance audits / reports have been generated on a quarterly, bi-annual, and annual basis, as well as at the end of construction, operational, and closure phases (ABM Resources n.d.; Australia Pacific LNG 2011a, 2011c; URS Australia 2012).

Table 2: Indicators for SIMPs

Community Relations	Number / type of grievances or concerns
	Number / nature of behavioral incidents
	Number of participants attending community sessions
	Evidence of engagement with Aboriginal stakeholders
	Evidence of engagement with local government stakeholders
	Evidence of engagement with senior government stakeholders
	Evidence of engagement with government planning departments
	Evidence of collaborative partnerships between industry / community stakeholders
	Number of meetings with stakeholders

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	Number of resolutions made Number of information sessions Number of complaints from property owners
Employment	Number of employees Length of employment Retention rates Requests to return to community Number of permanent jobs supported Number of permanent jobs created Number of temporary jobs created (annual FTE basis) Number of beneficiaries with improved livelihoods Number of Aboriginal people employed in construction workforce Number of Aboriginal people employed in operation workforce Number of local residents employed with contractor workforce Number of social equity people employed by industry / contractors Percentage of employees access benefits
Economic Development	Number of businesses created Number of businesses supported Annual turnover of businesses supported Number of employees in firms supported Number / dollar value of supplier contracts sourced from local / regional areas Number of calls concerning billing issues
Education and Training	Training provided to workers Number of community residents trained Number of partner staff trained Number of beneficiaries of education programs Number of beneficiaries of capacity development projects Ensuring all employees are aware of the SIMP Number of employees provided with cultural awareness training Number of Aboriginal / non-Aboriginal apprenticeships Number of vocational training positions to support programs Number of pre-trade training positions to support programs Number of scholarships Number of work experience programs Number of underrepresented people participating in skills development programs
Social Investments	Number of facilities improved / maintained Number of facilities built Number of beneficiaries of health projects / programs Number / percentage of employees / contractors registered for Fit for Work program Number / percentage of employees / contractors who have been provided with an orientation of the drug / alcohol policy Number of beneficiaries of social service programs Number of community development projects delivered Number of beneficiaries of community development projects / programs
Funding	Total investment over a reporting period Total investment spent per priority area

	Number, value, and nature of social infrastructure investments
	Number, value, and nature of sponsorships and donations
	Number and value of employee giving to local charities / non-profits
Housing	Number of houses built
	Number of houses renovated
	Number of beneficiaries with improved housing
	Rental vacancy rates
	Average housing sale prices
	Percentage of workers living in work camps
	Percentage of workers living in nearby communities
Infrastructure	Number of beneficiaries of water / sanitation projects
	Number of beneficiaries of energy projects
Community Engagement and Recreation	Number of beneficiaries of sports, arts, culture, and heritage projects / programs
	Number of workers using local recreational facilities
	Number of workers using local tour operators
	Number of tourists visiting
	Number of workers participating in community events
Emergency Services	Number of beneficiaries of disaster and emergency relief projects / programs
Safety	Number, type, and frequency of community safety awareness programs
	Number, type, and percentage of work related health and safety incidents
	Number of project related visits to medical facilities outside of work place medical facilities
	Use (number of incidents, length of time spent) in police facilities
	Number / nature of community safety complaints
Environment	Tonnes of CO_2 avoided / offset
	Power generated (kWh) annually
	Power save (kWh) annually
	Length of waterways improved / protected
	Area of land improved / protected
	Area of surface waters improved / protected
	Tonnes of waste reused / recycled

Source: (ABM Resources n.d.; Anglo American Services 2012; Australia Pacific LNG 2011c, 2012c; Government of Western Australia 2010; URS Australia 2012).

In order for SIMPs to be effective in addressing social impacts and facilitating and guiding industry, work camp, and community relationships, they must be supported with adequate time and resources to support meaningful consultation and development. This level of commitment of staff time and resources can be particularly difficult for small local governments. In Australia, one study estimated that the cost to local government to engage in the assessment process was on average $403,000 over two years, a significant cost for smaller municipalities (Morris 2012). Furthermore, while SIMPs can serve to identify and develop plans for mitigating social impacts, most jurisdictions do not have legislation in place to ensure their implementation. Funding has been identified as the primary barrier to implementation.

4.4 Economic Development

For rural and remote communities, a potential downside of industrial work camps is a lack opportunities for to realize economic benefits from these large-scale industrial projects (Government of Western Australia 2010; McDonagh 2010; Morris 2012; Rolfe and Kinnear 2013; Storey 2001; Tonts *et al.*

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2012). This is largely due to the containment of workers in work camps, mostly during construction periods, and the outsourcing of supply, service, and labour contractors to distant urban centres (Cheshire 2010; Lawrie *et al.* 2011; Measham *et al.* 2013; Plummer *et al.* 2012). Outsourcing has meant that spending and taxation benefits have been broadly distributed beyond the resource-based region (Shrimpton and Storey 1992). Rural and small town entrepreneurs often find it difficult to obtain tenders for supply, maintenance, and service contracts due to the small scale of their operations, as well as their limited access to capital, skills, infrastructure, and equipment (Tonts and Jones 1997). Many industries, work camp operators, and contractors already have national and global supply arrangements. In the Marcellus region, industries have regional offices in place to circulate more dollars within the region, but there are concerns that this does not provide adequate financial benefits to communities that must respond to infrastructure and service pressures where drilling is taking place (Kelsey *et al.* 2010).

Communities may also be concerned about the provision of business services (i.e. convenience stores, bars, etc.) in work camps that compete with nearby community businesses, resulting in fewer benefits for nearby towns (House of Representatives 2013). The justification for establishing businesses in work camps has been the limited capacity of nearby businesses to meet the demand of large construction workforces (ABM Resources n.d.). Communities are now investing resources to explore ways local businesses can scale-up and work together in order to have the capacity to work with industry. For example, the Gladstone Engineering Alliance and other business associations are forming conglomerates to function at a scale that will enable them to win business contracts.

Fly-over effects have been mitigated to a degree with the inclusion of adjacency principles in impact benefit agreements that encourage or establish targets for local hiring and suppliers that meet industry requirements (Storey 2010). Industries may have local content policies that guide the procurement of goods and services (Australia Pacific LNG 2011b; Government of Western Australia 2010). The scale and specialization of supplies and services that are needed to support construction and operations, however, does not always make local procurement practical. Industry policies are increasingly adopting more flexible procurement policies that encourage local content where possible, while subsequently prioritizing the purchase of goods and services at regional, national, and then international levels (Australia Pacific LNG 2011a).

Take a proactive approach to pursue business opportunities for the community

Many industrial proponents have policies in place stating that they will show a preference for sourcing services and supplies locally when possible. When communities become aware of potential industrial investment, they have the opportunity to prepare to take advantage of this policy. In some communities, business owners have come together to develop a compiled inventory of services and suppliers in the community. There is also the opportunity for businesses to develop partnerships that could "scale-up" sector capacity (e.g. plumbing, electrical). Local governments can play a role in encouraging the business community to undertake these tasks and supporting this undertaking, if necessary. As one stakeholder from the Shetland Islands noted:

> *When Total first came here, they did ask for a list of local suppliers for goods and services, which the economic development unit did compile. So very upfront… they were looking for local suppliers to help generate local income and get businesses on side. So that's really important. That businesses get involved and provide information. Council was involved in compiling this information together. I think it's important that the public sector or local government takes responsibility for compiling information about local businesses and suppliers in the local community and that the oil and gas companies put their money where their mouth is and use those local suppliers and companies. Money talks and if you're going to support local business and you've got the business community on side, then most other people usually fall into place (Participant ID #20: 2014).*

Some local chamber of commerce organizations have been very proactive to provide work camps and industries with a list of local vendors, including information about their products, pricing, capacity, and contact information. Several business expos and trade shows have been organized to provide an opportunity for industry to meet with local and regional vendors and obtain information about what they could offer.

Opportunities have been available to local businesses to provide goods and services to nearby camps, including contracts for taxis and bus companies, beauty salon services, tax services, accounting, office equipment rental businesses, heavy equipment rental businesses, tire shops, legal advice, aggregate used for well pads, etc.. It is important that these opportunities are pursued early on during the development of large-scale industry projects. As one stakeholder demonstrated:

> *From a regional type of perspective, there is a huge opportunity for people to get involved and service the industry – especially at the beginning when a lot of those services won't be available locally. That's the time to get the expertise and learn how to do it. But it's all going to take capital. Rentals are huge. Being able to have equipment. A lot of the oil field companies don't own their equipment, they rent it all. So having appropriate rentals available and being able to have enough supply in order to service that industry because they like to deal with as few vendors as possible. It's just easier for them to manage one, two or three vendors as opposed to 50. So they'll be looking for everything from port-a-potties to excavators to rent (Participant ID #3: 2014).*

In Pennsylvania, restaurants have also adapted their menus to cater to workforce needs. In Athens, for example, many workers in camp came from southern areas in the United States. This prompted the work camp to work with local caterers to provide southern cuisine menu choices. During a recession in the forest industry, loggers re-equipped their logging trucks with tanks to haul water for the natural gas industry. In other places, community vendors have been invited to Christmas bazaar events in work camps. Work camp operators have interacted with nearby communities to respond to maintenance and service needs.

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Through impact benefit agreements, Aboriginal businesses and joint ventures have received contracts for cleaning, catering, hauling water, snow removal, security, road maintenance, etc. Business opportunities have also emerged for regional centres to support accommodations, logistics and transportation activities of industry projects (Imperial Oil Resources Ventures Limited 2007). Cautions have been raised, however, that due to the spatial nature of drilling and oil and gas activity, there may be limited financial benefits to the local economy through lease and royalty payments (Kelsey *et al*. 2010).

Develop partnerships to build the capacity of the business community

There are several opportunities for industry-community partnerships to strengthen economic development, such as delivering community forums to share information about potential business opportunities, working with local business organizations to deliver procurement boot camps and programs to understand tendering processes, supporting business incubator facilities, as well as supporting business mentoring programs (Anglo American Services 2012; Australia Pacific LNG 2012d; Ministry of Jobs, Tourism, and Innovation and Ministry of Advanced Education 2012; Petroleum Human Resources Council of Canada 2013a; URS Australia 2012). In some cases, post-secondary institutions have collaborated with industry and communities to develop best practice guides for procurement in resource-based sectors. For example, the Centre for Social Responsibility in Mining at the University of Queensland published a best practices procurement guide for SMEs working in the mining, oil, and gas sectors (Esteves *et al*. 2010). These initiatives broaden business capacity by enhancing their understanding of the criteria used to evaluate procurement bids, including the financial and technical capacity, management structures, and past performance in order to determine the stability of the supplier (Australia Pacific LNG 2011a).

Industries have also been partnering with community stakeholders to better understand the types of services and businesses that are used by mobile workers who visit nearby communities. In northern Alberta, for example, Nichols Applied Management (2003) surveyed 1,120 workers to examine reasons why mobile workers commuted to Fort McMurray and Fort McKay. The study found that work camp residents most frequently went to town to purchase supplies (79%) such as gas, clothing, and snacks, as well as visit restaurants (62%). Other reasons that motivated trips to town included attending movies or sporting events (14%), using recreation facilities (13%), visiting health care or dental service providers (6%), visiting the emergency ward (5%), participating in a support group (3%), using government employment services (3%), or visiting a social service agency (1%).

A final key issue concerning business and work camp accommodations concerns price gouging or the over pricing of goods and services offered by entrepreneurs in work camp settings (i.e. convenience stores, worker clothing, equipment, etc.). Trade associations and work camps have responded with regulations stipulating that no goods or services will be more than a specified percentage (i.e. 20%) compared to standard retail prices in the region (Building Trades of Alberta and Construction Labour Relations 2010).

4.5 Community Impact Benefit Agreements

Community impact benefit agreements are an important tool, and are a more formal mechanism, for outlining the impacts, detailing the responsibilities and commitments of all interested parties, and outlining a plan for sharing the benefits through employment and/or economic development provisions. For small rural communities, concerned that they will be asked to absorb the costs of the upfront investments required to successfully accommodate industrial investment, impact benefit agreements can provide a measure of assurance that they will be able to respond to the opportunities and challenges of rapid growth.

Community impact benefit agreements have been one tool used to enable industry to obtain a social license for resource development projects. Through these agreements, industry has a foundation to nurture and maintain local support that can help to avoid delays and keep projects on track (Storey 2010). These agreements may address topics such as:

- Local hiring targets (including targets for specific populations such as women and Aboriginal residents).
- Provisions guiding the use of mobile workforces.
- The provision of education and training for local residents.
- Requirements guiding the development and operations of work camps.
- Targets for supporting local suppliers.
- Specific actions to reduce impacts on wildlife.
- Housing and infrastructure investments.
- Legacy projects (House of Representatives 2013; McDonagh 2013; Stantec Consulting and Keith Storey Consulting 2011).

In Canada, industries largely negotiate community impact benefit agreements with Aboriginal communities, especially in regions with unresolved land claims (Sosa and Keenan 2001; Storey 2010). These agreements involve provisions for education and training, employment, contracts, joint ventures, health, and other programs (Storey 2001). More First Nations are also putting camp and catering work into their impact benefit agreements. Through such arrangements, First Nations are starting to drive the industrial accommodations market. As one stakeholder suggested:

> *We're seeing more and more First Nations set aside work of camp and catering into their impact benefit agreement, which really says that they're driving the industrial accommodations market and we're their supplier. And that's going to be interesting trend moving forward because now you're mapping in some of the frictions of local municipalities with local First Nations and we get stuck in the middle (Participant ID#24, 2014).*

There has been debate about the confidentiality of IBAs between industry and First Nations. At this time, these negotiations and the agreements that result are private and confidential. Many see this as respecting the authority and independence of both parties. Others say this confidentiality excludes the consideration of other interests from Aboriginal and non-Aboriginal communities in the region (Shanks 2006). Not only do other communities and the broader public not get a say in the negotiations, but the lack of transparency also poses questions about the equal distributions of benefits. It also means that, even if an IBA has the full support of the community who negotiated and signed it, there is always a possibility of other interests surfacing through regulatory and legal processes (Fidler and Hitch 2007). A more transparent process would "enhance procedural fairness [in that] Aboriginal groups could learn from other IBA negotiations" (Fidler and Hitch 2007: 51). In addition, monitoring and follow-up of IBAs appears to be lacking or inconsistent, and their confidential nature is not supportive of public accountability.

Another set of issues arises from the positioning of IBAs within existing political realities and policy frameworks. Unclear definitions and overlapping land claim boundaries can lead to conflicts with other processes affecting resource development, especially environmental assessments. Another issue that has been identified relates to the continuing role of senior government in the affairs of Aboriginal communities. While it legally falls within the fiduciary role of the Crown to support the best interest of

Aboriginal communities and promote reconciliation between Aboriginal and non-Aboriginal interests, some are concerned that IBAs represent an element of "off-loading public sector responsibilities onto the private sector" in which industry and Aboriginal communities are left to make up for welfare, and environmental and social monitoring shortcomings of the government (Shanks 2006: 10). Those that maintain this position assert that, as a consequence, industry finds itself in a far more encompassing role beyond business decisions, while Aboriginal communities see opportunities to demand compensation for the historic impacts they have experienced, thereby taking these matters into the realm of private or commercial law. Again, there are others that feel that this approach to IBAs is more in keeping with the authority of both parties.

Capacity determines the effectiveness of IBA. This refers to financial capacity as well as skills and expertise. As Shanks (2006) points out, the extent of the financial benefits that are negotiated in an IBA is limited by the economic scope of the project and the negotiating skills. Gross (2005) adds the element of legal expenses. These aspects show that a community, which is likely to have less access to negotiating expertise and a smaller budget than large industry players, tends to be on the shorter end of a power imbalance between participants at the negotiating table. Another limiting factor in terms of IBA effectiveness is the community ability to take advantage of negotiated terms and conditions, such as employment or training opportunities. The appropriateness of such terms depends on the recognition and inclusion of community realities, including geography, demographics, and education. Regional planning frameworks that could help tie community realities and IBA arrangements together would help increase the effectiveness of the agreements (Shanks 2006).

There are emerging arguments from industry that investments / donations made to fulfill community impact benefit agreements or social licenses are filling gaps created by senior government policies that have reduced or withdrawn services from rural communities (Cheshire 2010). Resource royalty payments may also impact industry interest to provide further investments (House of Representatives 2013), and exacerbate the 'resource curse' for communities that fail to obtain government assistance as they are perceived to have more access to industry resources that are not present in other places (Haslam McKenzie 2011).

There are also concerns that industry investment strategies are creating a sense of dependency amongst local governments and community organizations that will challenge their viability once industry closes (Bice 2013; Measham *et al*. 2013; Petrova and Marinova 2013). This sense of dependency is created during the construction phases of projects when large community investments are made to secure social licenses. As one stakeholder explained:

> *Construction phases have massive budgets for assisting the community. They create an expectation from community groups. And when the construction phase finishes, that funding stops. And the money left for the ongoing stuff is a lot less. So you've actually been training the community to expect these grants and then suddenly the fund stops and that's part of the danger as well (Participant ID #10: 2014).*

4.6 Royalties and Industry Revenues

Several royalty and industry revenue programs have allocated funding to communities experiencing pressures from rapid industrial growth. In 2009, Australia initiated the Royalties for Regions initiative to promote community and economic development in resource regions throughout Western Australia (Haslam McKenzie 2013). Through this program, 25% of annual royalty payments received from industry were to be reinvested through three funds including the Community Local Government Fund, the Regional Community Services Fund, and the Regional Infrastructure Fund (Argent 2013). Revenues from royalties have also been invested to support the Pilbara Cities program that is designed to increase economic and industrial diversity, assist with planning for growth, invest in a breadth of projects to improve services, and coordinate infrastructure development (Franks 2012). In Queensland, Australia, mining companies also pay special mining rates to support services in rural outback locations (Anglo American Services 2012).

Shortly after development began in the Marcellus Gas Region, Pennsylvania legislation enacted an Impact Fee to transfer revenues generated from industry back to communities in order to offset expenses that were incurred. In Alberta, the Oil Sands Royalty Regulation was drafted in 1997. Under the legislation, the provincial government obtained royalties that reflect roughly 1% of the gross revenue or 25% of the net revenue. Royalty revenues from the oil sands are estimated to exceed $3.5 billion by 2020 (Province of Alberta 2006).

Royalty programs have been criticized for the limited strategic vision they have been given to support strategic investments that support long-term growth in resource regions (Rolfe and Kinnear 2013). Limited strategic analysis of mobile workforce issues can misdirect royalty revenues from where it is needed most (House of Representatives 2013). Royalty revenues are increasingly being shared amongst communities outside of resource regions, despite gaps in physical and social infrastructure gaps in rapidly growing communities that are required to support industry and broader economic growth (Kelsey *et al.* 2010). One stakeholder explained that during the first round of funding, the Royalties for Regions program was open to 14 local governments impacted by rapid resource development. During the second round, the competition for funding was opened up to 30 regional councils that were either directly or indirectly impacted by industry growth. The most recent round of competition has now been opened up to all regional councils in Queensland. Senior government programs have been using royalties and other industry-related revenues to strategically target investments in regional growth centres (Creating Communities 2012; Government of Western Australia 2010).

4.7 Planning for Legacy

Communities need to work with industry and government partners to pursue a long-term approach to planning. This work should work toward the recognition and realization of mutual long-term interests in resource development.

An important issue for communities concerns the type of legacy that may be left behind after the project has been completed. Legacy investments are always easier to accommodate during the design and planning phase of industry and work camp projects when it's possible to plan how infrastructure may be later converted to other uses (Morris 2012). Design panels may review the design of work camp accommodations for their potential to be converted to other uses as a local legacy. In Australia, the Gladstone Regional Council's community plan encourages work camp accommodations to adopt universal design principles so that work camp facilities can be more easily converted to other uses after the construction workforce leaves (Australia Pacific LNG 2012f). Other spin-off infrastructure associated with work camp projects have included linking work camp water infrastructure with community water

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infrastructure, the expansion or renewal of the housing stock, the legacy of fully serviced lots to support RV campgrounds, as well as extending power and road infrastructure to nearby communities (Anglo American Services 2012; Gauvreau 2013).

The opportunity to discuss multi-purpose designs for work camp facilities is often missed during early stakeholder meetings. Community stakeholders then fail to understand the prohibitive costs involved to convert facilities. Modular units must be brought up to code and retrofitted for other uses (i.e. accessible for seniors). Once an industry project is completed, work camp facilities are normally disassembled and moved to other project sites (Canadian Business 2012; Goerge 2012). For example, following the 2010 Winter Olympics in Whistler, BC, housing units were moved by Target Logistics to support industry operations in North Dakota (Rothaus 2013). Some argue that work camp infrastructure is not designed to support long-term legacy investments with modules that have an anticipated life-span of just 12 years (Wittmeier 2014).

Industry will be interested to support legacy investments that are mutually beneficial to support workforce retention strategies, as well as to attract and retain a broader range of residents and businesses in the community. Childcare has been a service significantly impacted by rapid growth during construction periods. In some communities, there was an out-migration of childcare providers who could no longer afford to live in the community. At the same time, there is an intense increase in demand for childcare support. In Gladstone, Australia, Rio Tinto Alcan found it increasingly difficult to recruit new workers due to a lack of childcare. This prompted the company to realign its community investment strategy to support childcare needs in the community. The provision of industry support for social infrastructure does not guarantee that community service issues will be resolved. In Labrador City, there are two childcare facilities with long wait lists. Industry has been proactive to work as a partner to resolve child care needs by engaging in a local committee / task force, as well as building a child care facility, but there has been limited success to attract a compliment of staff to operate the facility.

Industry investments have been made in community colleges to foster the development of the next generation workforce. In Fort McMurray, for example, a new engineering facility at Keyano College was sponsored by several large industries. The college has also benefited from investments in equipment and simulators to train students to operate processing facilities. An important legacy for many work camp operators we spoke with involves trained skilled workers (i.e. Red Seal chefs).

Industry legacy projects can also upgrade or convert aging infrastructure in small communities. In Camptown, Wyalusing Township, Pennsylvania, Southwest Energy purchased an old school building to convert into a work camp office and accommodations. It was quickly discovered that the school, which was constructed in the 1970s, had asbestos. This prompted the company to tear the building down. Instead of building a work camp, they decided to work with the community to build an office space for themselves, as well as a community centre, a recreation area, baseball and soccer fields, walking trails, and a barbeque pit. In Western Ross, Highlands, Scotland, the construction of the Kishorn fabrication yard in the 1970s not only left a deep water dock for the community, but significant contributions were also made towards the construction of a care home for older residents in order to retain them in the community. In Canada, the UK, the US, and Australia, resource-based companies have invested in multi-purpose recreation facilities and aquatic centres (Creating Communities 2012). In Fort McMurray, MacDonald Island was developed from a culmination of industry investments that produced the Suncor Leisure Centre, the Total workout room, the Cenovus field house, and others.

Communities will be much better prepared and will realize much greater benefit if they have invested time and resources to develop a vision and strategies to guide the community past the expected life of the project. This vision should be collaboratively developed with input from local community leaders,

industry stakeholders, business leaders, service organizations, unions, provincial leaders, and independent experts (Anglo American Services 2012). They should include short-term, medium-term, and long-term timelines to support strategic investments in the community[2] (Australia Pacific LNG 2012b). The vision should consider infrastructure needs, such as roads, water, sewage, housing, and schools; the future quality and capacity of natural or environmental assets; the skills of the local labour force; and the capacity of local organizations and businesses (Anglo American Services 2012).

The most effective examples of best practices that guide working relationships between industry and communities were those where industry worked in partnership with the local government and other community stakeholders strategically as opposed to responding to ad-hoc requests for investments and donations. They are investing resources to support strategic planning. As explained by one stakeholder:

> *The companies that are doing it right are actually working in partnership with local government and the community. They are doing things on a strategic level as opposed to an ad-hoc level…. You know we'll give the local football club $5,000 and keep people quiet. They're investing in resources to steer community programs. They're looking at strategic planning and diversification of industry (Participant ID #18: 2014).*

For example, the Clermont Preferred Futures Project (http://www.isaac.qld.gov.au/preferred-futures-strategy) was a partnership formed with Rio Tinto Alcan. It involved a visioning exercise that was based on the potential event that the mine would close. It posed questions about existing assets, what was needed to remain sustainable, and how could the next few years be used strategically to foster industry and community development opportunities. Through the project, Rio Tinto Alcan provided funding to oversee the implementation of the project. There were challenges engaging stakeholders outside of the business community, which limited the diversity and representativeness of opinions and weakened broader community ownership throughout the process (Parsons *et al*. 2013). Community ownership with visions can be further diminished by an emphasis to consult rather than engage a breadth of stakeholders in implementing long-term plans.

In some regions, communities have collectively pooled their resources to develop a strategic vision that can lead to a coordinated approach to growth and development across the region. The communities of Labrador City and Wabush in Newfoundland and Labrador are in the latter stages of completing a long-term strategic vision, Plan Big. The engagement and contributions of both municipalities, the provincial and federal government, and industry helped to foster significant buy-in for this initiative. In Alberta, the Oil Sands Community Alliance is transitioning into a scaled up and coordinated industry approach to legacy investments. The legacy initiatives must be community driven and equipped with the appropriate partners and capacity to ensure the initiative can be sustained through any lengthy processes and succeeds.

A report released by Anglo American Services (2012) demonstrates how strategic visions can carefully consider future and alternative uses of place-based assets. In terms of transportation infrastructure, for

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[2] Investment timelines will vary. One model defines short-term timelines to encompass investments and strategies implemented within a 12 month period. Medium-term timelines include those strategies that are implemented between 1-2 years. Long-term strategies include initiatives that are pursued throughout the life of the project (Australia Pacific LNG 2012b).

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example, site roads can be transformed for motor sports and vehicle testing, freight railways can be transformed for passenger / tourist railway services, and airstrips can be converted to support flying schools, charter services, and other uses. Workforce housing can be converted into retirement housing, tourism accommodations, educational dormitories, and training facilities. Training facilities can be used for other educational uses or converted to provide office space. Work camp recreational facilities can be converted for other tourism or local recreational uses. Industry workshops can be converted to support local transportation and other businesses. Industry offices can be converted and used by other community and government agencies. Rehabilitated land can be redeveloped to support trail systems, off-road motor sports, and other recreational uses. Industry water treatment plants can be transformed to other industrial uses, such as aquaculture. Grid connections and power supplies can be sold to other potential industry, business, or residential users.

Key Messages

The experience in other jurisdictions suggests that Canada would benefit from a regulatory framework to identify and mitigate socio-economic issues throughout all phases of large-scale industrial development.

Senior government policies need to recognize the unique context of rapidly growing communities where infrastructure and housing costs are significantly higher than other places of similar size. Traditional funding models will not work in contexts that have a limited understanding of shadow populations, higher costs of living, labor shortages, and higher costs for materials and construction.

Industry investment strategies can never replace or absolve senior government responsibilities in resource regions. With this in mind, senior government engagement in preparing for rapid growth is necessary to develop comprehensive and coordinate responses. This should include strategic engagement with senior officials, for example deputy ministers and the treasury board.

There is a need to ensure that collaborative structures engage industry, local and senior levels of government, and relevant local stakeholders to identify and monitor cumulative impacts from resource development (i.e. housing, traffic, infrastructure, environmental issues, etc.).

Communities need to work with industry and senior levels of government to pursue a long-term approach to planning. Legacy investments and projects should be considered during the planning and design phases of resource development.

Community stakeholders should pursue strategic investments that will be mutually beneficial for both communities, industries, and local and mobile workforces (i.e. training, recreational amenities, child care, mental health, housing, etc.).

Industry investment strategies must be carefully designed and delivered to avoid creating dependency amongst local governments and community stakeholders which could threaten the viability of community supports once industry declines or closes.

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5.0 ROTATIONAL WORKFORCES

Best Practices

Fatigue management strategies have been implemented in the workplace.

Staff shuttles have been coordinated with daycare facilities in order to engage the participation of Aboriginal women from reserves.

Women's participation with industry has been strengthened through partnerships with colleges, as well as through the provision of family-friendly schedules and female mentoring programs.

Aboriginal people's participation with industry has been strengthened through on-site and camp mentor programs to help Aboriginal workers adjust to extended shift rotation lifestyles.

Immigrant participation with industry has been improved by recognizing foreign credentials and work experience, providing mentorships and relocation packages, assessing immigrant compatibility to live and work in Canada, providing cultural awareness training, and hotlines to support their transition in Canadian work environments.

Youth recruitment in industry has been enhanced through dual credit programs, visits to industry sites, mobile units to support training and recruitment, and in-training programs.

Industry and local governments have worked together during project planning to identify appropriate staging areas and car-bus interchanges.

Home purchase assistance has been provided for workers relocating to a new community.

An annual location allowance has been provided to operational workers whose primary residence is within 150 km of the work site.

Industry has invested in a coordinator to support relocation programs that will connect workers and their families with housing, supports, amenities, and other arrangements in new communities.

Orientation packages / programs have been provided for workers with information about local housing, businesses, services, amenities, community groups, cultural protocols, and community expectations for behavior. It is important to ensure that workforce surveys and consultations compliment these orientation programs in order to better understand worker interests, lifestyles, and family needs in order to better inform orientation initiatives.

5.1 The Shift Towards Rotational Workforce Practices

Restructuring processes have transformed the nature of work and community relationships in resource hinterlands over the past three decades. Resource towns that were once built to accommodate large local workforces are now immersed in much more fluid flows of labour and capital (Haslam McKenzie and Rowley 2013). Following the global recession of 1982-1984, government and industrial restructuring focused on shifting away from building new single industry communities, or 'instant towns', in rural resource regions (Peetz *et al.* 2012; Storey 2010). Rising costs, lengthier approval processes, increasingly strict environmental regulations, and a reduced role for senior levels of government in town development[3] all supported a shift in preference towards rotational workforce practices, labour mobility, and long distance labour commuting (Humphreys 2000; McDonald *et al.* 2012). Similarly, from an industry perspective, issues of cost, improvements in (and long-term cost reductions to) transportation and communication, the adoption of flexible production techniques, the adoption of extended shifts to support year round operations 24 hours a day, lower turnover and absenteeism, and access to a larger supply of qualified workers also helped to make rotational workforce practices more appealing (Markey 2004; Tonts 2010; Aroca and Atienza 2011; Rolfe and Kinnear 2013). Industries are also able to write off FIFO workforce expenses, such as the costs of work camp accommodations, and avoid paying capital gains on 'developed' properties (House of Representatives 2013; Storey 2001).

5.2 Workforce Composition

Industry use of mobile workforces has been accelerating since the 1980s (Measham *et al.* 2013). Mobile workforces have been used by many resource-based industries, starting with the oil and gas industry and expanding to other sectors such as mining, forestry, fishing, hydro, and construction (Shrimpton and Storey 1992). Limitations within the local skilled labour pool, as well as difficulty encouraging skilled labour to relocate to resource-based regions have driven this change (Storey 2001). High housing costs in booming communities, limited services, the absence of family support networks, and lifestyle choices have been key barriers to encouraging workers and their families to relocate to resource-based communities (Rolfe and Kinnear 2013).

A significant proportion of mobile workers tend to be men (Baker *et al.* 2003b). Several groups continue to be underrepresented in high paying resource-based sectors, such as women and Aboriginal people. Brueckner *et al.* (2013: 117) argue that "lower education levels compared to non-Aboriginal Australians, higher morbidity and mortality rates, crime rates, unemployment rates and poor housing have all contributed to both the poor recruitment and retention rates of Aboriginal people in the resource sector". For some projects in Canada, provincial and federal governments have reached lease agreements with industry that identify workforce quotas for specific target groups, such as Aboriginal residents, that industry must strive to recruit and employ on a best practice basis. In Saskatchewan, research suggests that local / regional employment within the mining industry increased as a result of employment targets contained in these development agreements (McDonagh 2010).

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[3] Canada has a long experience with planned resource towns and instant towns (Markey *et al.*, 2012). BC, in particular, put considerable effort into the planning and construction of post-World War II towns to create attractive communities in isolated regions that could better recruit and retain young workers and their families (Gill 2002). In BC, the Instant Towns Act was created in 1965 to allow the province to "establish a municipality in conjunction with the development of a natural resource" (Province of British Columbia 1998). Resource-based companies also supported the development of these 'instant towns' in order to stabilize their workforce and reduce their responsibility for maintaining company towns or work camps. It became increasingly costly, however, to deliver programs to maintain the infrastructure in these communities. In 1983, Tumbler Ridge became the last 'instant town' developed in British Columbia.

The composition of the workforce can be largely influenced by two factors. The first concerns the staging or pick-up points that support travel to and from industry sites. In Australia and the United States, larger regional cities have become staging areas and a key source of labour for the mining industry (Schafft *et al.* 2014; Storey 2001). This has meant that rural and remote regions have lost skilled workers and their families due to policies that require them to move closer to FIFO staging areas (Shrimpton and Storey 1992). O'Faircheallaigh (1995: 210) further demonstrates how the location of staging areas has limited employment benefits for Aboriginal people in nearby communities:

> Aboriginal people live in small, isolated communities, which are often not pick up points for commuter planes operated by mining companies. […] In its view, picking up potential workers at other communities is not cost-effective. Meanwhile, it recruits from major population centers such as Edmonton, Alberta. Thus non-Aboriginal people from Edmonton may get employment at Lupin, while native people from communities much closer to the mine are effectively excluded from the job opportunities it creates […] a resident of Red Deer, Alberta, could spend $20 worth of fuel and drive to the pick-up point at Edmonton, whereas a native resident of Aklavik in the NWT would to spend $800 to fly to the pick-up point at Yellowknife.

The second factor shaping the composition of the workforce concerns industry policies to pursue FIFO workforce operations. FIFO work operations are defined as arrangements to support workers who do not live within a daily commuting of a work site (Barclay *et al.* 2013). The use of FIFO can be traced back to the 1950s when it was used to support offshore oil and gas activities in the Gulf of Mexico (Storey 2001). Workers spend a designated number of roster days on the work site in which food and accommodation is provided nearby, followed by a designated number of roster days in their home community (Storey 2010). The use of FIFO workforces have varied. In Queensland, Australia, for example, 40% of the workforce in the Bowen Basin is estimated to be FIFO workers (Barclay *et al.* 2013). Another study completed by the Chamber of Commerce and Industry Western Australia in 2005 found that 47% of all mining employees were employed as FIFO workers (House of Representatives 2013). FIFO operations have been increasingly used to support short, intensive labour needs associated with construction and maintenance where the short-term nature of work makes it impractical for workers and their families to move repeatedly across various rural and remote locations (Creating Communities 2012). As mobile workforces continue to become increasingly common, there is an urgent need to better understand the relationship between shift work and mobile workforce arrangements and the recruitment and retention of workers (Solomon *et al.* 2008).

Industry policy is fairly universal in indicating a preference for hiring locally. If the required workforce is not available, industry will look regionally, provincially, nationally, then internationally. That said, skills shortages, combined with the highly specialized nature of the work, the large number of workers required, and the short duration of the construction phase means that many projects have come to rely on FIFO workers for the construction phase. This approach to workforce recruitment also has the effect of more broadly spreading the socio-economic benefits of resource development to a wider range of communities, and to diffusing the costs and impacts associated with industry closures (Morris 2012; Shrimpton and Storey 1992; Wilson 2004). Some hold the view that these workforce policies also reflect efforts to de-unionize workforces and reduce benefits for resource-based regions (Argent 2013). As one stakeholder suggested:

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> *There's a bit of controversy at the moment because a couple of the big mines have said they want all the employees FIFO. And there's lots of people living in the local community and they're not taking local people. The reason for that… one of the reasons is if you've got local people, they can organize quite well. The union can get them together and organize them. Fly-in, fly-out workers, you've got less ability to organize them (Participant ID #15: 2014).*

In some cases, mandatory FIFO positions have uprooted rural workers who needed to relocate with their families to staging areas (House of Representatives 2013; Jacques 2014a, 2014b, 2014c; Validakis 2013). This was demonstrated by another stakeholder who told us:

> *With the 100% FIFO mines, if you live 20 kilometres from the mine site and you are ineligible to apply for work at that mine site unless you physically move your family to Brisbane, then that creates a really really nasty culture of anger. Real anger. And there's real anger in our communities around that decision. And that's real hard to deal with because with that comes irrationality. You know these people are coming in and stealing our jobs (Participant ID #18: 2014).*

This has prompted concerns from investors in remote and regional centres who have lost revenues from an out-migration of labour / tenants and a decline in the local housing market (Duke 2014). Proposed developments have been postponed due to a decline in local employment and housing values. In some cases, industry has pursued FIFO workforces due to a perceived shortage of housing, despite industry ownership of large tracts of land in and around resource-based towns.

Some researchers hold the position that the use of mobile labour as a strategy to fragment workforces, provide opportunities for sub-contractors, and weaken unions in resource-based industries (Carrington *et al*. 2011; Houghton 1993). Unions have advocated for travel allowances to be provided to workers rather than charter companies in order to empower workers to decide where they want to live (House of Representatives 2013). Knowledge about how unions are advocating for the unique needs of rotational workplace practices that involve long distance labour commuting, however, continues to be limited (Ferguson 2011).

Given that the operations phase of resource industry projects generally employs far fewer workers than the construction phase, the use of FIFO strategies during the construction phase may be necessary, even desirable. Expanding community infrastructure and amenities such as housing, health care, and transportation to accommodate the construction workforce would result in a community that was overbuilt for the operations phase workforce. This is not the case, however, for the operations phase workforce. Newman *et al*. (2010) further argue that FIFO strategies are incompatible with regional development strategies aimed at 'enabling places' rather than simply enabling projects. Instead, the heavy reliance on mobile workforces limits the growth and capacity development of resource regions due to a leakage of socio-economic benefits beyond the region where resource development takes place (Rolfe and Kinnear 2013; Storey 2001). In response, some have called for legislation to cap the percentage of FIFO

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workers permitted, particularly where industry work sites are located near communities (Morris 2012). Some local governments have developed policies to ban fly-in, fly-out workforces. In Labrador City, Newfoundland and Labrador, for example, the local government adopted a policy to ban FIFO workforces for a new proposed mine. The community faced opposition from industry, as well as from other towns in the province as it prevented their residents from commuting to the region to make a living while remaining in their home communities. The mine came to terms with the community's decision, and eventually promoted new local living incentives for workers. As one stakeholder explained:

> *Council had been a year ahead and decided when we were seeing the writing on the road that we were not going to become a fly-in fly-out community. We had already made that decision. So we knew that anything we were putting up was going to be temporary in nature. And we knew that operational jobs would be expected here. We had to fight all industry on that. In fact, the new mine that hasn't even started development yet, initially had it in their plan to be a full fly-in fly-out workforce. We told them we would not give them a permit. End of story. 'We will not give you a permit to construct the mine if that's the way it's going to be.' It took a while. I don't think they really thought we were serious. It took a while for them to back away and then, of course, they came to the realization it's actually cheaper not to use fly-in fly-out. It's cheaper to have a residential workforce. I know that other communities in our province didn't understand our stance on that. Why wouldn't we let their people who are unemployed come here, fly-in and fly-out. They thought that we were really out to lunch on it but we stuck to our guns on it. And I think it has proven to be beneficial in the long term. We certainly felt like we were standing alone. From the provincial perspective, it doesn't matter where you live in the province; they are still getting their tax dollars and it probably helps them support rural communities that have lost their industry if they can fly into another community. But the community that's a host, they are never better off (Participant ID#12, 2014).*

The labour landscape is also being transformed by a shift towards hiring contract labour, particularly during the construction phases of the project (Rolfe and Kinnear 2013). This has helped industry to have greater flexibility to modify the workforce as needed and control costs (Storey 2001). These changes, though, have created greater uncertainty for mobile workers. As Ferguson (2011: 114) writes, "Many people found themselves unemployed as the various projects they were assigned to were either cancelled or scaled back. Individuals who had envisioned long-term careers or back-and-forth employment" were "faced with the realization of how precarious and contingent these jobs actually were" as they were experiencing longer stretches of unemployment between work contracts. Employment uncertainty can become one factor shaping recruitment and retention rates for both communities and industry when labour markets once again become competitive. The rapid expansion of temporary foreign worker programs has exacerbated the levels of short-term contract work (Major and Winters 2013).

5.3 Workforce Rotation Schedules

Resource-based workforce practices during both construction and operations have been transformed by changes to the shift length and rotation length. Industries have increasingly moved to extend shifts from 8 or 10 hours to 12 hour shifts (Barclay *et al.* 2013; Parkes 2010; Peetz *et al.* 2012). Extended shifts have been used to reduce shift teams and improve communication during shift changes (Baker *et al.* 2003b).

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Industry continues to experience challenges covering absences for 12 hour shifts with largely mobile workforces (Oliver and Capshaw n.d.). Shift workers have also advocated for longer shifts in order to acquire more days off throughout the year for family and recreational activities, as well as to reduce the costs and time committed for travel (Smith *et al*. 1998). Research suggests that 10 hour shifts are preferred by many workers; however, they are not suitable to support 24 hour operations (Oliver and Capshaw n.d.).

Shift rotation lengths can vary significantly from 4 days on, 4 days off to as long as 70 days on and 14 days off (McDonagh 2010; Peetz *et al*. 2012). Within this range, common rotations include 2:1 ratio rosters; although several other configurations have been used (see Table 1). Longer shift rotations tend to be a more common feature of workplace practices during the construction phase of industry projects.

Table 1: Workforce Rotation Schedules

Shorter Rotation	Longer Rotation
7 on 10 off	63 on 21 off
7 on 3 off	60 on 5 off
7 on 7 off	42 on 21 off
6 on 7 off	42 on 14 off
6 on 6 off	35 on 21 off
6 on 2 off	28 on 28 off
6 on 1 off	28 on 14 off
5 on 5 off	28 on 9 off
5 on 4 off	28 on 7 off
5 on 2 off	24 on 4 off
4 on 7 off	21 on 21 off
4 on 5 off	21 on 12 off
4 on 4 off	21 on 7 off
4 on 3 off	21 on 3 off
4 on 2 off	20 on 10 off
3 on 4 off	20 on 8 off
3 on 3 off	15 on 15 off
2 on 7 off	15 on 6 off
2 on 5 off	15 on 5 off
2 on 3 off	14 on 14 off
	14 on 7 off
	14 on 4 off
	14 on 2 off
	10 on 4 off
	10 on 3 off
	9 on 5 off
	8 on 6 off

Source: Australia Pacific LNG 2012c; Barclay *et al*. 2013; Beach *et al*. 2003; McDonagh 2010; Northern Health 2012; Paech *et al*. 2010; Ryser *et al*. 2012a; Storey 2010.

Work rotation schedules can vary depending on the position. For example, senior management and administrative staff tend to only work day shifts (Barclay *et al*. 2013); although, anecdotal evidence from interviews suggest that this trend is changing from 5/2 rotations to 10/4 rotations. Industry trends to hire contract labour have resulted in longer rotation schedules for contractor personnel in order to reduce FIFO costs for the industry (Storey 2001). While some research has suggested that mobile workers are required to work longer rotations than local workforces (Beach *et al*. 2003), this phenomenon was not supported within our interviews where stakeholders suggested that there was no difference between local

and mobile workforce schedules. Drive-in, drive-out mobile workers generally have shorter rotation patterns compared to FIFO workers.

Rotation schedules have been changed to reduce overtime costs, accidents, fatigue, absences, and labour turnover, as well as to better support 7-day operations (Davis and Aguirre 2009). Shorter work rotations have been associated with less fatigue and lower turnover rates (Beach *et al*. 2003). Shorter shifts and rotations are also recommended for extreme work environments that expose workers to extreme temperatures, loud noises, chemicals, and heavy physical labour (Oliver and Capshaw n.d.). Shorter shift rotations, however, can increase commuting time and travel costs, as well as limit the ability of workers to engage in family, household, and community activities (Parkins and Angell 2011).

5.4 Worker Safety

Mobile work has shaped worker safety in several ways. Workers can be exposed to several physical stresses, such as poor air quality, noise and vibrations, hazardous chemicals, hazardous equipment, extreme temperatures, cramped workspaces, and heavy work (Parkes 2010, 2002). Overcrowded work areas, poor or infrequent inspections, inadequate communication, lack of procedures, and changes in foremen / supervisors can also produce unsafe working conditions for largely mobile workforces (Jergeas 2009). During construction, a constant influx and change of contractors and work crews can introduce many individuals who are not familiar with the work site and there can be little time for them to develop effective working relationships with permanent employees (Beach *et al*. 2003). Cultural differences can also impact what is perceived as important safety practice (Tharaldsen *et al*. 2010). Enforcement of consistent, simple management and shift change procedures is needed to support the use of mobile workforces during all phases of resource development (Jergeas 2009). A final general issue is that mobile workers may be reluctant to express concerns about health and safety issues due to employment uncertainty (Major and Winters 2013).

5.4.1 Fatigue

Research has explored the relationship between fatigue and the length of shifts and rotations. Fatigue can become problematic during the construction phases of resource development projects when contractors and work crews are working exceedingly long hours and rotations. One study suggests that 48% of personnel working in construction and / or deck work and almost 73% of management reported in excess of 94 hours per week[4] (Parkes 2010; Parkes and Clark 1997). The impact of shiftwork on fatigue levels will be influenced by the duration of shifts, the number of consecutive day vs. night shifts, the direction of rotation (i.e. from days to nights, nights to days), and the nature of work (physical vs. sedentary) (Smith *et al*. 1998). It can also be impacted by the number of overtime hours worked, the commuting distance to work, diet (i.e. too much high fat, high sugar foods), coping mechanisms for stress, and access to wellness and childcare programs (Westfall-Lake 1997).

Several rotation scenarios can increase safety risks for workers. When shifts are scheduled during normal sleep hours, it can be more difficult for workers' bodies to adjust circadian rhythms (Postnova *et al*. 2014). Throughout the work day, fatigue has been shown to be enhanced between 3 am and 5 am in the morning, as well as 3 pm and 5 pm in the afternoon (Department of Labour 2007). Accidents were also more frequent after midnight, during handover periods, and during morning shifts due to the early start time of the shift, as well as the increase number of workers on site (Kantermann *et al*. 2013; Parkes 2002; Peetz *et al*. 2012). Longer shift rotations were also associated with increased risks for fatigue and injuries

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[4] This study of the North Sea oil and gas industry was based on a total sample of 1,647 offshore workers, including 126 construction and / or deck personnel, as well as 164 management personnel (Parkes and Clark 1997).

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(Parkes 2010). In particular, successive shifts that exceed nine hours were deemed to increase the risk of workplace accidents (Baker *et al.* 2003a; Paech *et al.* 2010).

For workers, fatigue can affect their alertness and cognitive functions; increase infections and cardiovascular diseases, poor digestion, blood pressure, obesity, and other health related illnesses; increase risks of accidents and injuries; and affect overall workplace performance (Department of Labour 2007; Paech *et al.* 2010; Peetz *et al.* 2012; Rothstein 2013). Signs of workplace fatigue consist of:

- Yawning.
- Blurred vision.
- Irritability.
- Being withdrawn.
- Limited ability to concentrate.
- More restricted short-term memory of recent tasks.
- Confusion.
- Limited motivation (Caterpillar and Circadian Technologies Inc. 2008).

Older workers were also found to have more difficulty adapting to shift work and exhibit fatigue (Parkes 2010).

Fatigue can be worsened by monotonous and repetitive work tasks, noise during sleep hours, shared sleeping quarters, poor air quality, room temperature, exposure to light, heavy caffeine use, heavy meals before bed, exercise before bed, use of non-prescription sleep aids, and long commuting distances home (Caterpillar and Circadian Technologies Inc. 2008; Parkes 2010; Peetz *et al.* 2012; Ryser *et al.* 2012b). Exposure to television screens, computers, tablets, and smartphones can make it more difficult for workers to fall asleep as the blue-spectrum light suppresses the release of melatonin (Rothstein 2013). Some research has advocated for new diet approaches in order to reduce fatigue and improve workplace performance. This has included replacing red meat, high fat or deep fried food, junk food, and spicy foods with low fat proteins and complex carbohydrates (Caterpillar and Circadian Technologies Inc. 2008). With attention to B-complex vitamins, as well as vitamins A, C, and D, menus are designed to provide the body with adequate nutrition to support tissue repair, to strengthen the immune system for working in physical environments, and to sustain energy through long shifts (Wanjek 2013). Information materials have also been provided to advise workers about the best types of snack to consume to support sleep habits, such as bananas, almonds, oatmeal, chamomile tea, and almond milk (Rothstein 2013).

Safety risks are compounded by worker decisions to drive home immediately after their shift (Parkes 2002). These risks are of particular concern with contractors. According to one report:

> While many employers provide bus services…, the Australian Services Union noted that the practice of employing workers on individual contracts (that is, without direct employer supervision) was leading to people taking higher risks to get to and from worksites by driving before and after the end of long shifts (House of Representatives 2013: 57).

There were also reports of workers being impacted by fatigue before the start of their shift rotation due to their travel schedules. According to one study, "because of the travel time, some workers report being awake for 20 hours or more before starting their first shift" (Caterpillar and Circadian Technologies Inc. 2008: 13). This has prompted the use of new practices that avoid starting shift work before 6 am (Department of Labour 2007). There does not seem to be any agreement about which types of rotations are best suited to address fatigue. Shorter rotations (i.e. 4 and 4) are less likely to produce accumulated

fatigue and can improve gym participation to better prepare the body to cope with fatigue; however, longer rotations (i.e. 14 and 14) provide longer periods for recovery (Parkes 2010; Peetz *et al.* 2012). Research suggests, however, that more time is needed to recover from night shift rotations (Parkes 2002).

Several strategies have been used to address workplace related fatigue. These have included:
- Restricting the use of caffeine and alcohol.
- Wearing blue light blocking glasses after night shifts.
- Listening to the radio.
- Encouraging workers to take short walks.
- Fitness and exercise.
- Providing travel arrangements.
- Providing space for short naps (Caterpillar and Circadian Technologies Ltd. 2008; Department of Labour 2007; Rothstein 2013).

Research also suggests that increasing break lengths between shift rotations can improve sleep recovery (Paech *et al.* 2010). Four day breaks can provide mobile workers with sufficient time to recover from sleep deprivation; however, 24 hour breaks that are inserted half-way into 10 day or 14 day rotations provide limited recovery.

Commuting and worker safety should also be considered through investments in fatigue management training by sharing information about the role nutrition and exercise play to support alertness and prepare the body for prolonged periods of stress, as well as to train DIDO workers to recognize the signs of fatigue while driving (Di Milia, 2006; Westfall-Lake 1997). Workplace strategies should include, among other things:
- Greater attention to broaden awareness of fatigue issues in the workplace by all levels of staff and management.

- Ensuring that commuting times are incorporated into the selection of rotation schedules and the occupational health and safety protocols (Di Milia and Bowden, 2007; Gander *et al.* 2011; Parkes 2010).

Workers need to understand their role to address workplace fatigue by using their recovery times responsibly to obtain adequate rest (Department of Labour 2007). Research suggests that employees do not adjust their sleep patterns to prepare them for shift rotations with early start times (Paech *et al.* 2010). They may also underestimate the impact of the hours they have been awake before accepting overtime work (Smith *et al.* 1998). Fatigue management, however, is not always adequately addressed in workplace safety policies, protocols, and orientation programs. In New Zealand, the Department of Labour requires industry to provide workers with an orientation of fatigue management strategies before their shift work begins (Department of Labour 2007). While shift work and fatigue management policies may be developed, senior management commitment to enforce such policies has remained a concern.

5.4.2 Substance Abuse

Reports suggest that drug and alcohol consumption has been increasing amongst industry work forces, prompting an increased demand for assistance through employment assistance programs (Jackson 2009). Research suggests that alcohol consumption can emerge as a serious workplace issue when it is being used as a strategy to address fatigue. Based on a sample of 2,566 mining and energy workers, one study in in Australia revealed that "37% of respondents admitted using alcohol to help them sleep" (Peetz *et al.*

2012: v). Supervisors, staff, and training personnel should receive training to understand the warning signs of alcohol abuse, including:

- An increase in absences.
- Reduced productivity.
- Missed deadlines.
- Limited concentration.
- Changes in appearance.
- Coming to work despite illnesses and injuries.
- Increased irritability and anxiety.
- Discussions about family problems.
- An increase in incidents outside of the work place (i.e. family violence, accidents, etc.) (Chandler 2014a).

5.5 Communication Strategies for Mobile Workforces

Hazardous work environments require highly engaged training to enhance procedural knowledge and skill development (Burke *et al.* 2011). The rotational nature of industry workplace practices means that it is particularly important for industry work sites to adopt more open and routine communication, provide daily feedback, annual performance reviews, and close consultation between supervisors and trainers to monitor and alter worker performance (Lukic *et al.* 2010). In addition to routine feedback and evaluations, other communication issues are important for work environments that have mobile workers. Having worker concerns or issues addressed immediately by supervisors and management staff can help to maintain smooth operations and reduce stress that can quickly accumulate from both long work hours and from the stress of commuting long distances. Clear regulations and standards also help to maintain consistent operations. Many of these communication practices come about as a product of the mobile work environment where new workers move into places on a routine schedule, particularly during construction (Storey and Shrimpton 1994). Through more active and engaged approaches to workplace learning, workers understand how more routine communication and feedback can help to transfer new knowledge and adaptive skills in chaotic work environments (Burke *et al.* 2011). Routine investments in communication, conflict resolution, and problem-solving skills will be needed to support the effective development of mobile workers (Ryser *et al.* 2013).

5.6 Workforce Recruitment and Retention

In a competitive labour market, worker retention is a key issue to keep industry projects on track. Industry is not just competing to prevent labour from moving to other companies, but they are also facing a tight timeline in which workers are willing to engage in a mobile work lifestyle. Some studies suggest that FIFO workers engage in mobile work for an average of five years (Barclay *et al.* 2013). An aging workforce is further imposing labour force pressures (Chandler 2014b). The Petroleum Human Resources Council of Canada (2012), for example, anticipates that age-related attrition will produce the greatest number of labour shortages amongst oil and gas field workers, plant / process operators, supervisors for oil and gas drilling services, truck drivers, heavy equipment operators, primary production managers / drilling coordinators, millwrights and machinists, welders, industrial technicians, and petroleum engineers.

Research suggests that annual turnover rates for FIFO workforces range from 10-28%, with higher turnover rates reported for contractors, management, and professional staff (Beach *et al.* 2003). Reports also suggest that turnover rates can be high for field workers, operators, and labourers, often exceeding 50% (Petroleum Human Resources Council of Canada 2013b). Labour turnover can be costly for both companies and contractors (Chandler 2014b). According to Beach *et al.* (2003), the cost of labour

turnover for a FIFO mine operation of 300 workers is approximately $2.8 million each year due to separation costs (processing loss of employees), recruitment and training costs, and loss of productivity.

5.6.1 Factors Influencing Workforce Recruitment and Retention

Research has identified several job-related factors that shape the recruitment and retention of local and mobile workers (Barclay *et al.* 2013; Fahys-Smith 1983; Government of Western Australia 2010; House of Representatives 2013; Jergeas 2009; Parkes 2002; Peetz *et al.* 2012), including:
- Employment security.
- Higher salaries[5].
- Benefit packages.
- Career advancement.
- Opportunities for education and training.
- Positive and flexible working environments.
- Communication in work environments.
- Safe working environments.
- Crowded / inadequately equipped site facilities.
- Physical conditions of the work environment (i.e. climate).
- Boredom / monotony.
- Workplace policies and protocols.
- Job flexibility.
- Distance to staging areas.
- Supports for commuting.
- Workforce accommodations.
- Access to services.
- Cost of living.
- Roster cycles.
- Competition for labour from new operations in surrounding regions.

There are additional challenges to retaining FIFO / DIDO workforces due to the prolonged absences of workers from their home environments. With smaller business operations, contractors are more likely to face recruitment and retention pressures as they are able to provide fewer career development and advancement opportunities (Beach *et al.* 2003). Contractors also tend to work more unpredictable hours, must constantly adjust to different work cultures, and may feel inferior or mistrusted by permanent employees (Tharaldsen *et al.* 2010). Labour turnover amongst contractors can, in turn, increase health and safety training costs for industry and result in the termination of contracts.

While a lot of attention has been focused on labour shortages for the construction and operations of industry projects, less consideration has been given to labour constraints in work camps that support mobile workforces. As work camps are under construction, contractors are hired for surveying and excavating the sites, installing and maintaining power, waterlines, plumbing, and building roads (Goerge 2012; Government of Yukon 2013). Once they are operational, work camp facilities recruit a range of staff, including chefs and culinary staff, cleaning and maintenance staff, security, guest reception services, administrative and accounting personnel, and management (Canadian Business 2012). Recreation coordinators are starting to emerge in larger facilities in order to coordinate social and recreational activities for work camp clients. At the end of the contract, work camp operators require contractors to support reclamation.

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[5] Reports suggest that FIFO workers earn an average $8,600 (AUS) more in salary (House of Representatives 2013).

There are several labour shortages in work camp settings, including camp attendants, chefs, sous chefs, housekeeping, and maintenance staff. Increasingly, in Canada, camps are introducing Aboriginal recruitment, training, and retention programs. Camp managers are particularly difficult to recruit and retain. They are responsible for all aspects of camp operations, with some camps accommodating up to 10,000 workers. There is a small pool of individuals who are equipped with the skills to understand remote accommodations. They need to have managerial skills, logistical skills, and human resource skills. One camp operator suggested:

> *You're looking for someone who has operational experience in a large hotel chain that has 400-500 beds and can translate that into remote locations (Participant ID #26: 2014).*

Labour shortage issues can be difficult to address in work camp settings. Companies may have a 'cooling off' period that prevents work camps from hiring staff from other project components. Recruitment and retention is difficult within projects that require contractors to accommodate hiring targets for specific populations (i.e. Aboriginal). There are several work camp positions that provide the easiest and lowest barrier to enter the workforce early in the project's development. As one stakeholder explained:

> *Mines will go to the First Nations and tell them I will hire all the mining engineers you have living on rez right now. And the chief says I've got underemployed youth and single moms. I don't have mining engineers. The mine goes, huh, I need mining engineers. So the work that we have is very accessible (Participant ID#24, 2014).*

As higher paying trade positions are posted on industry work sites, it becomes more difficult for work camps to retain their workforce. Work camps are now pursuing temporary foreign workers to fill some skilled positions.

There are challenges recruiting workers who are able to adapt their family lives to an extended work camp rotational schedule. Work camps tend to attract younger workers who are not married, have no children, or have older children. There may also be residents in nearby communities that do not have access to transportation. This has prompted companies, such as Target Logistics, to provide staff shuttles that are coordinated with daycare facilities.

5.6.2 Workforce Recruitment and Retention Strategies

Generic recruitment and retention strategies will no longer be successful in a competitive labour landscape (Mining Industry Human Resource Council 2008). Industry has strengthened recruitment approaches by investing in websites to promote employment and business opportunities, establishing community human resource networks, engaging with regional workforce tables, and promoting tailored recruitment and retention packages for both a local and mobile workforce (BC Hydro 2011; Ministry of

Jobs, Tourism, and Innovation and Ministry of Advanced Education 2012). Regional development agencies that support coordination, however, face tenuous funding circumstances that affect the stability and types of long-term structures that are required to support industrial growth and development (Glennie 2012).

Recruitment and retention strategies have also been tailored to specific workforce groups. To recruit more women, industry has:

- Rolled out marketing programs to encourage women to consider industry employment.
- Developed partnerships with college programs that feed into industry employment.
- Engaged with female network organizations, such as the Women in Mining and the BC Women in Energy Network.
- Provided family friendly schedules and services.
- Established gender supportive work environments through respectful workplace training.
- Showcased female role models and success stories.
- Implemented female mentorship programs (Barclay *et al*. 2013; Mining Industry Human Resource Council 2008; Petroleum Human Resources Council of Canada 2013a; Stantec Consulting and Keith Storey Consulting 2011).

In Newfoundland and Labrador, efforts through a provincial steering committee to engage more women in mining has been credited with increasing women's participation in industry. As one stakeholder told us:

> *And the Iron Ore Company of Canada today is still the largest employer of apprentices in the province. They have the highest ratio of apprentices per work force in Newfoundland and Labrador. They also reached out to women. There was a steering committee struck provincially with local talent to reach out to women in mining. Through that, we have some of the largest population of women working in mining in the country. So I think the last call from IOC is around 30% women working in the mining industry, which at the beginning of the expansion probably was less than 10%. So a significant number of women entered the workforce through the mining industry, through the college. There was a course that had been developed prior to the expansion that was called "The Employee of the Future", and that course really gave the students basic mill wright training but also gave them some well, a little bit of electrical, but also a little bit of jack of all trades (Participant ID#12, 2014).*

To recruit and retain Aboriginal workers, there is a greater trend to provide supports, such as on-site and camp mentor programs, to help Aboriginal FIFO workers cope with extended work camp lifestyles (House of Representatives 2013). In Smithers, BC, the Northwest Community College's School of Exploration and Mining program is designed to have students live and learn in simulated work camp settings to condition their bodies for resource-based industry work environments (McCreary 2013). Students routinely engage with industry professionals, instructors, and Aboriginal elders. This also provides the opportunity to expose other students to Aboriginal culture and sensitivity training. DIAVIK Diamond Mines has also offered workshops to prepare potential employees for the FIFO lifestyle, such as managing finances remotely and being away from home for extended periods of time (Mining Industry Human Resource Council 2008). Work camps have also served wild game in order to provide a more traditional Aboriginal diet (Wanjek 2013).

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Strategic initiatives have also been used to recruit immigrants, such as evaluating and recognizing foreign credentials and work experience, providing mentorships, providing relocation packages, assessing the compatibility of immigrant workers to live and work in Canada, providing Canadian cultural awareness training to support their integration, and connecting immigrant workers with 24/7 hotlines to support their transition (Mining Industry Human Resource Council 2008). Industries are also retaining foreign students who are already proficient with language skills, have developed both personal and professional networks, and have been exposed, and are therefore more likely to successfully integrate, with local work and living environments (Platonova and Urso 2012).

Partnerships have been formed to expose youth to industry careers during high school through dual credit programs, visits to industry sites, and access to sites and equipment for post-secondary training. At Vale Inco, post-secondary students have been invited to weekend sessions that expose them to job related skills and work environments. New recruits from universities have also been enrolled in engineer-in-training programs (Mining Industry Human Resource Council 2008). In northern Alberta, industries have sponsored the Keyano College mobile unit to travel across communities recruiting new students for different trades. Open houses have also been held to share information about long-term and future workforce needs to support operations.

Several recommendations have been provided to strengthen recruitment and retention strategies (BC Hydro 2011; Beach *et al*. 2003; Chandler 2014b; City Spaces 2006; House of Representatives 2013; Petroleum Human Resources Council of Canada 2013a), including:
- the development of a regional workforce recruitment database / information portal,
- developing competency assessment tools for newly emerging and high demand occupations,
- providing signing bonuses and stock options,
- tracking labour turnover across different occupations and contractors,
- improving the use and application of data collected from exit interviews,
- conducting surveys on workplace culture,
- developing policies to support culturally-based leave of absences for Aboriginal workers,
- routinely evaluating recruitment and retention strategies,
- routinely evaluating the impact of management policies and protocols on labour turnover,
- creating workforce management and development programs for older workers, and
- reviewing roster arrangements to explore opportunities for more balance.

5.7 Travel Arrangements

A combination of FIFO (fly-in/fly-out) and BIBO (bus-in/bus-out) has been used to support travel arrangements for most mobile workers; although, ships (sail-in/sail-out) and personal transportation (drive-in/drive-out) are also used (Beach *et al*. 2003; House of Representatives 2013). Longer commutes have been associated with rapidly growing construction periods when industry experiences labour market pressures. In one study, 61% of the workforce sampled (n=286) commuted over 1,000 kilometres between home and the work site (Barclay *et al*. 2013). Travel arrangements play an important role in the recruitment and retention of mobile workers. Reducing the commuting distance and time can help to manage fatigue. This is particularly critical given that some workers travel and check-in to work camps on the same day that they start a long shift rotation schedule. This has prompted more industries to use airstrips to fly-in workforces closer to the remote work site in order to avoid extended travel by flying into a regional airport and then commuting by bus.

There can be different travel arrangements for employees, contractors, and management. Management executives tend to take their own flights and book charter flights to do site tours. Construction contractors have relied more on bus charters as a cost effective method to transport workers to site. Industry, however, will fly-in workers and primary contractors from across Canada to the closest municipal airport. While more cost-effective travel arrangements can be made for construction workforces that are in place for short periods of time, workers hired for the long-term operations phase expect to fly. Airport parking stalls have also been an expense covered for operational workforces.

Travel costs and arrangements are usually addressed in collective agreements. In the case of FIFO operations, workers are generally required to cover their own costs to travel to designated airports or staging areas for bus or car pool transportation. Companies then cover travel costs from these designated airports and staging areas to the work site (Storey 2010). Some companies consider one or both journeys to work as work time (Beach *et al*. 2003). With commodity fluctuations, travel allowances and living subsidies are no longer certain. During less favourable market conditions, companies may cancel charter flights and require workers to cover their own travel expenses (Ferguson 2011).

An important legacy of industrial projects can be improved airport infrastructure and services that increase the connectivity of small towns and regional centres (Morris 2012). More distant regional centres may be selected as pick-up sites or staging areas due to the inadequate or underdeveloped transportation infrastructure of smaller communities that are located in close proximity to the industrial site (McDonagh 2010). This can impede local communities from capturing economic development benefits from the mine and may also exacerbate concerns of uneven community development (Storey 2010).

Communities need to understand the scale of transportation needs during each phase of large-scale industrial projects. As construction begins, some communities perceive that commercial airlines are positioned to accommodate the traffic anticipated with moving large workforces. As commercial flights reach full capacity, some workers are not always able to book flights to arrive at their destination when needed. While commercial airlines have been responding to the demand around company schedules, airport authorities have failed to engage charter carriers. Furthermore, while regional airports are equipped with adequate landing strips to support charter flights, this capacity is often underdeveloped in smaller airports that are located in closer proximity to industrial sites. This produces longer travel times which can quickly become a deterrent for retaining workers.

Regions with extensive resource development will experience increased commercial and charter air traffic associated with FIFO patterns (Australia Pacific LNG 2012a). In Fort McMurray, for example, the original airport was built to process 250,000 passengers each year. The airport now accommodates one million passengers annually. In places that are experiencing rapid growth, there is a need to examine several infrastructure and operational needs of local airports, including parking, the size of waiting lounges and security areas. In Gladstone, Australia, airport upgrades to improve the landing system were needed to ensure flight paths avoided flares from resource development. Rapidly growing communities must also examine the need to expand and resurface runways, develop multi-use facilities for de-icing and aircraft storage, expand airport terminals, expand visitor information centres, acquire additional passenger loading ramps, and install taxiway lighting (Stantec Consulting and Keith Storey Consulting 2011). Increased air traffic can also have unexpected implications for smaller airports. When air traffic at the Wabush Airport in Newfoundland increased from 30,000 to 100,000 in a year, Transport Canada required the airport to have a fire service in place. While the community had a local fire department, they were not previously trained to respond to airport emergencies. Greater coordination is being pursued with taxi companies and bus charter companies. Industry has also invested in developing airstrips within close proximity of work sites (Australia Pacific LNG 2011c).

Work camps and charter companies have also upgraded their infrastructure to support mobile workforces. For example, many work camps are also equipped with waiting lounges. Civeo has an airport check-in counter and screening process at one of their facilities. Charter company lounges are also equipped with wifi, bars, flat screen televisions, and newspapers. North Cariboo Air is currently developing a system to monitor and streamline logistics for rotational workforces. Such a system would provide a live feed that would allow industry to track the movement of crews from airports to work camps.

Many industries have their own internal policies and practices that guide work hours, accommodation, and transportation logistics. Larger industries tend to have more detailed standards governing travel arrangements. Best practices occur when industry engages work camps, charter companies, and airport authorities at the beginning of project planning processes in order to establish as many schedule plans as possible. As one stakeholder recommended:

> *Best practices are when the client engages air travel companies on the front end for planning. Most look at talking with charter companies and moving their people at the tail end of the planning and that puts a strain on the charter companies to accommodate them. It also puts a strain on them in terms of where their labour then comes from (Participant ID#2, 2014).*

Large-scale industry projects, however, tend to engage with charter companies towards the end of project planning. This limits the ability of charter companies to accommodate a range of shift rotation schedules and transportation needs, especially when there are multiple companies requesting workforce transportation on the same day. As competition for labour intensifies, skilled labour can choose where they want to live and travel from; thereby expanding the number of staging areas and further complicating transportation planning. As labour is increasingly recruited from international sources, there is an emerging need to examine international travel logistics for global workforces. Work camps can also experience challenges synchronizing check-out times with bus and airline schedules.

Appropriate planning and investments are also needed to support DIDO workforces. Increased commuting and truck traffic volumes can be experienced until the pipelines were built into the area. As one stakeholder noted:

> *In Alberta, we're a little bit better off because the industry's been around for a longer time, so we have more pipelines. Until pipelines are built into new areas you're exploring, it'll be all trucked, so you'll have a lot of truck traffic until pipelines are built. Then depending on how they're stimulating the wells, whether it's being done with fracturing using water and sand or whether it's nitrogen fracking, there's a lot of infrastructure that goes into it. So whether it's trucked in or railed in at the beginning, it'll be a lot of truck traffic for sure until the appropriate infrastructure is built (Participant ID #3: 2014).*

During construction, high traffic volumes can make it difficult for residents to turn at intersections, prompting the need for traffic studies to demonstrate the need for turning lanes and traffic lights. As another stakeholder commented:

> *We have a bad intersection in town. We finally had to do a traffic study there because we kept telling them, 'you have to do something here. It's ridiculous. People sit for 20/25 minutes trying to pull out. And they can't get out. We are not kidding you. This is a real problem.' So finally, when they got up here and looked at it, our traffic had increased over 70% at that intersection. So we had issues like that. We are still working through that because dealing with the state nothing happens quickly. They are going to put some turning lanes and traffic signals in. That started around 2010 and we are not going to see a signal hanging there until 2016 (Participant ID #23: 2014).*

During construction, many work camp facilities do not permit private vehicles on site (House of Representatives 2013). Designated staging areas in regional centres or pick up points in nearby communities are established to provide transportation to the work site and reduce highway traffic and pressures on local transportation networks (City Spaces 2006; Rothaus 2013; Wittmeier 2014). Staging areas have been established in several community locations, such as shopping mall parking lots and school grounds. Without adequate planning, the ad-hoc designation of staging areas can have a profound impact on the broader public use of those facilities. Working with planning departments to develop car-bus interchanges can leave another important legacy within the community. Improved coordination between various industries to manage shift changes can also reduce the cumulative impact that workforces have on local traffic patterns.

A key barrier to addressing transportation infrastructure needs to support rapidly growing construction periods and operational phases is that local government stakeholders frequently pay higher rates for infrastructure work. Contractors will not bid on public tenders if they can obtain work with industry. Labrador West estimates that it costs 40% more to complete infrastructure work compared to other regions. This significant challenge is not recognized in funding formulas for senior government infrastructure programs. Greater coordination across industry is needed to develop common infrastructure.

5.8 Living Local Programs

When space is not available in work camps, living out allowances have been provided to workers during construction periods. These allowances have typically averaged around $2,000 up to a maximum of $3,000 per month (Province of Alberta 2006). In some cases, workers have used living out allowances to purchase RV homes (City Spaces 2006). Again during poor market conditions, companies may eliminate living allowances and other supports and require workers previously housed in work camps to find their own temporary accommodations (Ferguson 2011).

Some communities may question mobile workforce practices and advocate for industry policies that encourage workers to move to the community. Industry's initiatives have not always been successful to encourage the migration of workers to the community:

Vale Inco tried to encourage workers from outside of Labrador to move into the region by initially agreeing only to pay for travel to the mine site from Happy Valley-Goose Bay in central Labrador... However, insufficient workers were willing to agree to these terms and given the short supply of labour, the company had to back down from its original position and agree to payment of full transport costs for those living outside of the region (Storey 2010: 1165).

Living local incentives and programs are predominantly used to guide the transition into the operational phases of industry projects. Drawing upon experiences in North Dakota and the Marcellas gas region, this transition period can mark another phase when there can be intense housing pressures within a community (Williamson and Kolb 2011). Industry incentives offered to relocate workers to resource-based communities may include financial subsidies, such as mortgage interest subsidies or home purchase subsidies (Australia Pacific LNG 2012b). In Australia, ConocoPhillips provides home purchase assistance for workers relocating to a new location with their families (Australia Pacific LNG 2012f). Australia Pacific LNG (2012b) also provides an annual location allowance to operational workers whose primary location of residence is located within 150 km of the gas plant.

Some industries provide relocation assistance to non-local workers and contractors relocating to the work site region (Australia Pacific LNG 2012f; Mining Industry Human Resource Council 2008). Relocation assistance may include packing and transporting household items, travel to the new location, and support for short-term, temporary accommodation (Australia Pacific LNG 2012b). Typically, recruited professionals are provided with three months of housing (Major and Winters 2013). In Australia, ConocoPhillips supports their relocation program with a coordinator who is available to assist families arriving in their new community with housing, schooling for children, and other arrangements (Australia Pacific LNG 2012f).

5.9 Orientation

Community orientation programs support recruitment and retention strategies by broadening awareness of, and integrating workers and their families with, community networks, activities, services, and amenities. They can help to address misunderstandings and perceptions that some individuals may have about resource-based communities. The value of orientation programs is demonstrated by stakeholders who explained:

> *People say, oh I hate Fort McMurray. And you say why do you hate Fort McMurray or the Regional Municipality of Wood Buffalo? They say well you guys probably don't even have this service or that service. The best example is they say you don't even have a recreation facility for your families to go to. And I look at them and I say have you ever heard of MacDonald Island? They say no. I say do you realize that MacDonald Island is a recreation facility in Fort McMurray that is likely Western Canada's or Canada's largest and best recreation facility. They said I had no idea. Well how can you say you hate Fort McMurray and that we don't have a service if you don't know about that. And they say, oh, I just live in a camp, I don't live in Fort McMurray (Participant ID #7: 2014).*

> *He's not going to move his family out there right away when he gets the job. He's never been to the town before. So he goes out there and stays in camp. The town's best chance to get that man to bring his family to town and grow their town is to impress him while he's there for that year. If he loves the town and he's had a year to live there, he's going to go home and say I already know the place, I've been living there for a year, let's go find a house. And then he'll bring mom and the kids out. So you need to get residents to understand that we're not stealing their new citizens in camp, we're giving you're new citizens a test drive on what it's like to live here before they come and live here and get them to engage that way as well (Participant ID #28: 2014).*

Orientation programs provide workers with information about local housing, businesses, services, amenities, and community groups; cultural protocols; and community expectations for behavior (URS Australia 2012). For example, Australia Pacific LNG provides their workers with an orientation about living in Gladstone as a part of their Workforce Induction Program for employees moving to the region (Australia Pacific LNG 2012c). In Shetland, a youtube video was produced to share with Total's workers. Work camps have also provided space for community brochures and pamphlets. Successful orientation programs are supported by workforce surveys and consultations that provide information about the interests, lifestyles, and needs of workers and their families (Creating Communities 2012; Mining Industry Human Resource Council 2008).

As resource development moves into the operations phase, there are several opportunities to identify and integrate newcomers into the community. Within the community, newcomers can be identified "through information supplied by employers, school districts, utility companies, churches, and responses to announcements about the program" (Kassover and McKeown 1981: 52). This presents an opportunity to provide an orientation package to new residents, to discuss their interests and needs, and to broker connections that will help to integrate them into the community.

There can be challenges with using orientation packages as a recruitment and retention tool. During rapid change, orientation packages may never be partially or fully developed due to the limited capacity of local government, tourism, and economic development staff. Orientation packages that are strategically developed for different target groups is a task that can be attended to during slower periods of economic development or with the assistance of local service clubs, committees, and other

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community organizations. Some community stakeholders suggest that it can also be difficult during the construction phase to effectively use orientation packages to highlight the positive attributes of living in a community that is currently in 'survival mode' to respond to the intense pressures of rapid growth.

Key Messages

Workforce recruitment strategies should remain diverse and avoid exclusive use of FIFO workforce strategies that undercut local labour, and hence the employment benefits, that support regional development.

Mobile workforces have transformed workplace environments, requiring more attention to the design of shift rotation schedules, as well as communication protocols; clear regulations, standards, and procedures; conflict resolution protocols; problem-solving skills; fatigue management training; nutrition and well-being; and mental health programs.

Training is needed at all levels to understand the warning signs of fatigue, substance abuse, and mental health stress in the workplace.

Aboriginal people and women continue to be under represented in mobile workforces and skilled resource-based industry positions. Tailored recruitment and retention strategies are needed to improve the participation of under-represented groups in industry.

Industry needs to engage companies that support the logistics and mobilization of rotational workforces early on in project planning.

Orientation packages and programs should be used to introduce and integrate workers and their families with community networks, activities, services, and amenities.

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6.0 FINAL THOUGHTS

This project has explored how mobile workforces and large-scale industry projects are transforming industry-community relationships. It has explored the development and transformation of mobile workforces with an interest to improve recruitment and retention strategies used by industry today. It has also explored the pressures and opportunities around workforce and community accommodations. Furthermore, the report has explored several mechanisms that are guiding long-term effective working relationships between industry, work camps, and communities.

Today, the labour landscape is increasingly shaped by competition locally, regionally, nationally, and globally. Mobile workforces are not new. They can provide industry with greater flexibility to address workforce needs. However, policies, procedures, and supports have not been fully retooled and designed to support these mobile workforces. From the experience in other jurisdictions, there would be benefit in renewing policies, regulations, processes, and coordination of programs so that they remain relevant to the changing labour landscape. Fatigue management training, mentoring, introduction and supports for mobile lifestyles, efficient transportation supports, nutrition and health programs, and communications are just some of the workforce tools that were found to be helpful. There is also a need to develop clear, direct, and consistent expectations, through regulations or other means, to guide the development of work camps and resource development infrastructure. Communities, industries, and senior government stakeholders need to work together to ensure appropriate infrastructure, services, and resources are in place before construction begins in order to alleviate pressures for both industry and communities.

The research indicates that stakeholders would benefit from looking at the construction and operational phases of large-scale industry projects, and investing in frameworks that will more effectively bridge responses and opportunities across both phases. This may include a need to invest in a competitive labour landscape to support operations through orientation and relocation programs, living incentives, worker development, and stable community supports.

Senior government policies need to recognize the unique context of rapidly growing communities where infrastructure and housing costs are significantly higher than other places. Traditional funding models have been found to inadequate in contexts that have substantial shadow populations, higher costs of living, labour shortages, and higher costs for materials and construction. Top-down supportive policies and senior government engagement is necessary to develop rapid and comprehensive responses to growth. A comprehensive and integrated regulatory and information framework to identify and respond to cumulative socio-economic issues throughout all phases of resource development is required.

Communities, industry, and senior levels of government should work together to pursue a long-term approach to planning. All stakeholders should be prepared to invest adequate time and resources to establish streamlined mechanisms that will guide long-term working relationships. Greater coordination for strategic planning mechanisms is also needed to better guide investments that will support long-term community and economic development goals in resource regions that are mutually beneficial for communities, industries, and local and mobile workforces. By better understanding the information needs, pressures, opportunities, and best practices, stakeholders will be better informed to make decisions concerning policies and investments needed to shape infrastructure and supports in rapidly growing resource-based regions.

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APPENDIX A: METHODOLOGY

The research methodology consisted of literature reviews and interviews with key informants. The literature reviews consisted of academic articles, as well as reports and evaluations completed by industry, government, and other organizations. While examples from a wide range of countries are considered, this review focused on workforce rotational practices, policies, and experiences from across Canada (Alberta and Newfoundland and Labrador), the United States, Australia, and Scotland.

In 2014, 30 key informant interviews were completed with a range of stakeholders including industry associations, work camp operators, labour, and local stakeholders. Participants were recruited through publically available lists, as well as through local recommendations of residents who have an interest in large-scale industrial development. A general breakdown of interview participants is shown in Table A.1.

Table A.1: Interview Respondents (By Region)

Sector	Number of Respondents	% of Respondents
Alberta	13	43.3
Newfoundland and Labrador	3	10.0
USA (Pennsylvania)	3	10.0
USA (North Dakota)	4	13.3
Australia	4	13.3
Shetlands	3	10.0
Total	30	

Source: BC Natural Gas Workforce Strategy Project, 2014.

Research conducted by the Community Development Institute is bound by protocols at the University of Northern British Columbia that require all survey or interview guides be submitted to UNBC's Research Ethics Board for review. A key component to this protocol is to provide research participants with a copy of the consent form that outlines the purpose of the study, how the research process will protect their anonymity and confidentiality, and that their participation is voluntary.

In general, participants were asked questions about workforce pressures, key issues with workforce accommodations, and key factors and mechanisms that were shaping working relationships between industry, work camps, and community stakeholders. Following each interview, notes were provided to each participant for review. Qualitative analysis was done to identify, code, and categorize patterns and themes that emerged from open-ended questions.

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The Community Development Institute (CDI) at UNBC was established in 2004 with a broad mandate in the areas of community, regional, and economic development. Since its inception, the CDI has worked with communities across the northern and central regions of British Columbia to develop and implement strategies for economic diversification and community resilience.

Dedicated to understanding and realizing the potential of BC's non--metropolitan communities in a changing global economy, the CDI works to prepare students and practitioners for leadership roles in community and economic development, and create a body of knowledge, information, and research that will enhance our understanding and our ability to anticipate, and develop strategies for, ongoing transformation. The CDI is committed to working with all communities – Aboriginal and non--Aboriginal – to help them further their community and regional development aspirations.

http://www.unbc.ca/community-development-institute