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CUSTOM REPORT

Economic Impacts of Community Spending on the Territorial Economy

Presented to:

Northwest Territories Association of Communities

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Executive Summary

Community government spending has a significant impact on the Territorial economy, as well as on the day-to-day wellbeing of community residents. The three overarching categories of community spending (i.e., community public infrastructure, environmental services, and operations and maintenance) collectively work to provide residents with basic urban infrastructure, water and waste management services, as well as protective and recreation services. In 2014, the Department of Municipal and Community Affairs in collaboration with the Northwest Territories Association of Communities produced a comprehensive review of funding levels for all Northwest Territories' communities. In doing so, they found a funding gap close to $40 million, or almost 37% per year. The proposed funding amounts have the potential to have a significant impact on the Territorial economy in terms of jobs, and contributions to wages and Gross Domestic Product.

- **Since 2002 municipal government and regional public administration activities have directly employed an average of 908 individuals and contributed roughly $55.6 million to the Northwest Territories' Gross Domestic Product per year.** This has a significant impact on the Territorial economy, accounting for roughly 3.5 per cent of Territorial employment during this period and 1.5 per cent of Territorial Gross Domestic Product.

- **If closed, the estimated gap in funding, in the order of $39,205,000, could result in close to 220 additional jobs per year (close to 165 jobs in a pessimistic case and 272 jobs in an optimistic case). These 220 additional jobs would come from a variety of different services and activities including the following:**
    - Infrastructure construction activities: 79.9 jobs;
    - Environmental services: 69.1 jobs;
    - Municipal government services (excluding infrastructure repair activities): 51.3 jobs; and
    - Infrastructure repair activities: 16.9 jobs.

- **The proposed increase in funding has a potential Gross Domestic Product (GDP) impact of roughly $21 million per year (roughly $18 million in a pessimistic case and over $23 million in an optimistic case).** The $21 million contribution to GDP would come from the following:
    - Infrastructure construction activities: $10,036,000 towards GDP;
    - Environmental services: $6,532,000 towards GDP;

- Municipal government services (excluding infrastructure repair activities): $2,011,000 towards GDP; and
- Infrastructure repair activities: $2,463,000 towards GDP.

- **There are significant differences in the value added of community government services compared to Federal or Territorial government services. Notably, the Direct and Indirect Multipliers of employment as compared by level of government show that on average:**
  - *Municipal government* services have the potential to create 13.11 jobs per million dollars of activities;
  - Federal government services have the potential to create 6.09 jobs per million dollars of activities; and
  - Territorial government services have the potential to create 7.01 jobs per million dollars of activities.

Contents

Introduction

Beginning in 2007, communities within the Northwest Territories (NWT) have been allocated funding for community infrastructure, operations and management, and water and sewage services according to the agreement of the New Deal. The New Deal gave communities full responsibility for community infrastructure, including the planning, financing, and project management of new infrastructure and the maintenance of current infrastructure. Community public infrastructure is an integral part of the day-to-day lives of individuals. It encompasses not only public buildings (ex. community offices, libraries, and community cultural centres), but also water and wastewater facilities and equipment, roads, sidewalks and drainage systems, fire protection and emergency response equipment, solid and hazardous waste facilities, and equipment. In addition to supporting the delivery of public services to the community, infrastructure helps to ensure public health and safety. In particular, basic infrastructure (such as roads, as well as sanitary and water systems), public facilities and public amenities become the foundation of each community supporting both daily social and economic activities.[1]

While important, there are a number of unique Northern challenges that complicate the deliverance of services and the upkeep and implementation of infrastructure in the NWT. In particular, a combination of small populations, increased costs, and isolation means that it is difficult to reach any real economies of scale. Notably, each of the communities within the NWT requires its own supporting infrastructure including water and wastewater facilities and equipment. Furthermore, the northern context means that communities, many of which are not connected to the rest of the territory via all-weather roads, face short construction seasons and changing circumstances due to climate change; both of which contribute to increased costs.

In 2014, the Department of Municipal and Community Affairs in collaboration with the Northwest Territories Association of Communities completed a comprehensive review of funding levels to all NWT communities. In doing so, they found that communities within the NWT were experiencing a funding gap in the order of $40 million, or almost 37% per year. At the time of the review, annual municipal funding totaled $106.4 million per year.[2]

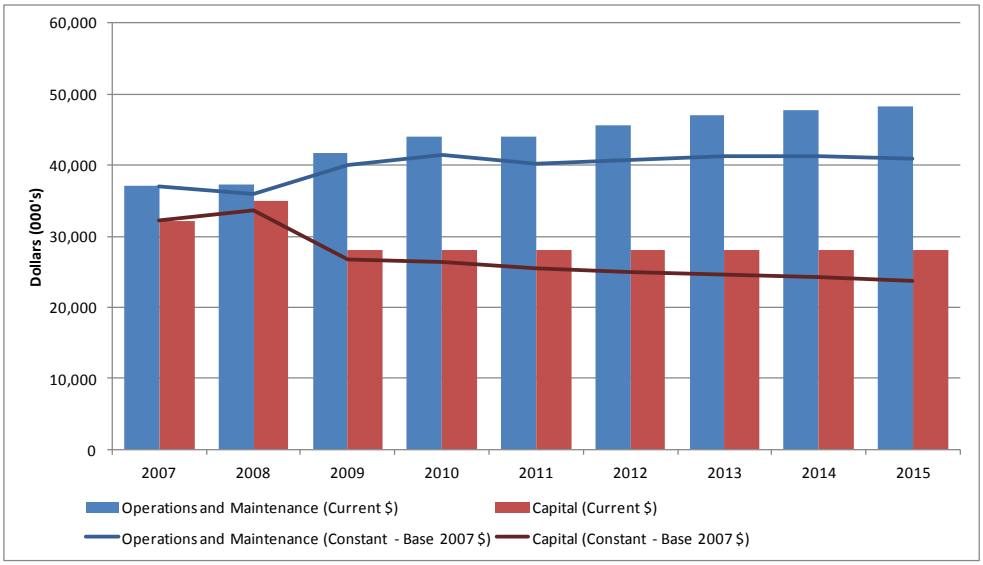
This paper aims to address the current benefits of community government spending as well as some of the possible benefits that may come from increased funding. As such, this paper will begin with an overview of funding changes since the New Deal, followed by a brief discussion of the economy of the Northwest Territories. This paper will conclude by outlining benefits of community spending, including a discussion of the direct and indirect impacts of infrastructure, government services, and water and waste management services.

[1] Altus Group, *Basic Urban Infrastructure and Its Community Wide Benefits*, II
[2] Municipal and Community Affairs, *Municipal Funding Review 2014,* 11

1.0 Changes to Community Funding

In 2007, community governments gained authority for all aspects of community infrastructure, including the planning, financing, and project management of new infrastructure as well as the maintenance of current infrastructure.[3] As such, infrastructure funding ceased to be provided on a per project basis, and rather, communities were provided funding through a "base plus" approach which provided each community with a base amount followed by an allocation through a formula.[4] However, since the introduction of the New Deal in 2007, funding levels have been, for the most part, static, and in the case of capital funding have decreased. (See Chart 1.)

Chart 1: Changes to Operations and Maintenance Funding and Capital Funding since the New Deal in Current and Constant (Base 2007) dollars, 2007-2015



Note: Funding from 2011-2012 comes from the proposed funding schedule outlined in the 2009 MACA update
Source: Municipal and Community Affairs, *Updates*; The Conference Board of Canada, *Consumer Price Index, Yellowknife, Northwest Territories Time Series Indicator RPCPIW*

Since 2007, operations and maintenance funding has increased by 30 per cent, however, funding for capital has decreased significantly (roughly 13 per cent).[5] This decrease in capital funding comes solely from an initial decrease in 2009-2010 where capital funding dropped by nearly $7 million and then stagnated for the remaining time. When one considers the impact of inflation, this decrease in capital

[3] Municipal and Community Affairs, *MACA Update Fall 2006, The New Deal for NWT Community Governments Edition,* 4
[4] Municipal and Community Affairs, *MACA Update Fall 2006, The New Deal for NWT Community Governments Edition,* 4
[5] Changes are calculated from 2007-2008 to 2015-2016

funding becomes more amplified resulting in a decrease of roughly 26 per cent.[6] Furthermore, accounting for inflation, the increase in operations and maintenance funding becomes muted, with roughly an 11 per cent increase (as compared to the 30 per cent increase not taking into account inflation).

An assessment of changes to funding in more recent years presents similar messages. From 2012-2013 to 2015-2015, operations and maintenance funding has grown by 5.8 per cent. Taking into account inflation, this amounts to a 0.7 per cent increase in funding. Similarly, during the same time period, capital funding has not shifted, but declined by 4.8 per cent once one takes into account the impacts of inflation.

Communities within the NWT have the responsibility to provide a large number of services, including transportation infrastructure, water and wastewater services, and recreation and community safety services.[7] Given the broad and growing responsibilities, and limited resource base, community funding has a significant impact on the ability of community governments to deliver on these mandates. As such, the 2014 funding review can provide valuable information on the resource limitations and potential difficulties community governments are facing. (See Table 1.)

Table 1: MACA Funding Review Results

Category	Current Funding ($000s)	New Net Need ($000s)	Difference ($000s)
Operations and Maintenance	47,684	55,061	7,377
Environmental (both water and sewer and solid waste)	15,934	24,322	8,388
Community public infrastructure and Gas Tax	42,552	65,992	23,440
Total:	**106,170**	**145,375**	**39,205**

Source: Municipal and Community Affairs, *Municipal Funding Review 2014*

2.0 Historical Economic Impacts of Community Spending on the Territorial Economy

Even with a funding gap, community government spending has a significant impact on the economy of the NWT. While there are several ways in which to measure economic impacts, two of the most prevalent are Gross Domestic Product (GDP) and employment levels. These two measures provide information at varying levels of the economy. GDP, which can be considered the broadest measure,

[6] Inflation was accounted for through the use of a Consumer Price Index calculated for Yellowknife, Northwest Territories.
[7] Coates, *On the Front Lines of Canada's Northern Strategy*, 8

provides a means to measure the total value added of community spending, whereas employment is important due to the significance attached to jobs as well as the greater spending capacities of households generated by employment income.

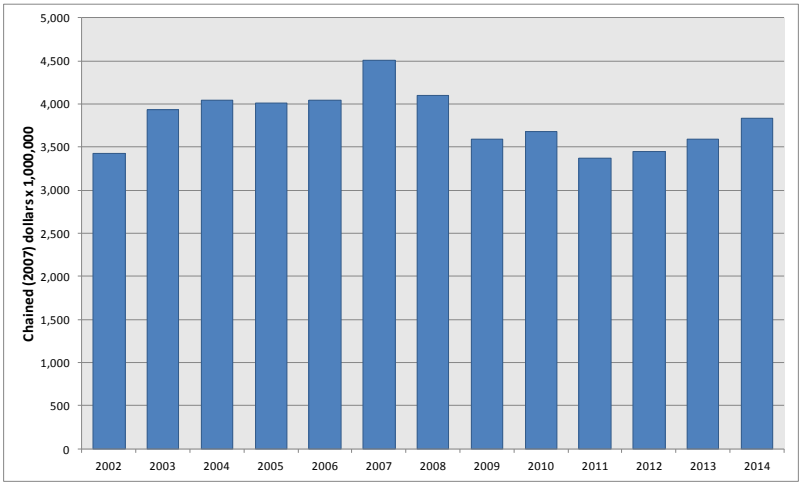
Historical economic impacts of community spending

Municipal government services and activities have had a significant impact on the Territorial activity in recent history. Notably, since the early 2000s they have:

- Directly employed an average of 908 individuals per year, accounting for roughly 3.5 per cent of Territorial employment during that time (public administration across all levels accounted for 22 per cent of total employment within the NWT during the same time). Furthermore, municipal employment levels have been steadily increasing from 800 employees in 2002 to close to 1,000 employees in 2014;
- Contributed roughly $55.6 million to the NWT's GDP; and
- Invested an average of $23.4 million per year on capital.

Chart 2 below provides a glimpse into the economy by presenting the fluctuations in total GDP since 2002. The GDP of NWT has experienced patterns of growth and decline from 2002 to 2014, in part due to the high proportion coming from the natural resource sector (which is relatively volatile).

Chart 2: Northwest Territories Gross Domestic Product, 2002-2014

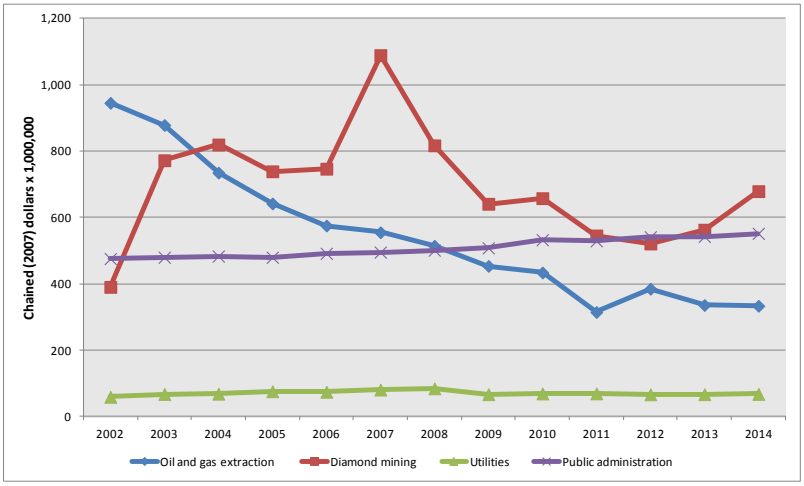


Source: Statistics Canada. *Table 379-0030 – Gross domestic product (GDP)*

In particular, looking back over the past several years of data collected by Statistics Canada, we see that, on average the largest contributors the NWT's real GDP were oil and gas extraction (18 per cent),

diamond mining (16 per cent) and public administration (all government levels) at 14 per cent. (See Chart 3.)

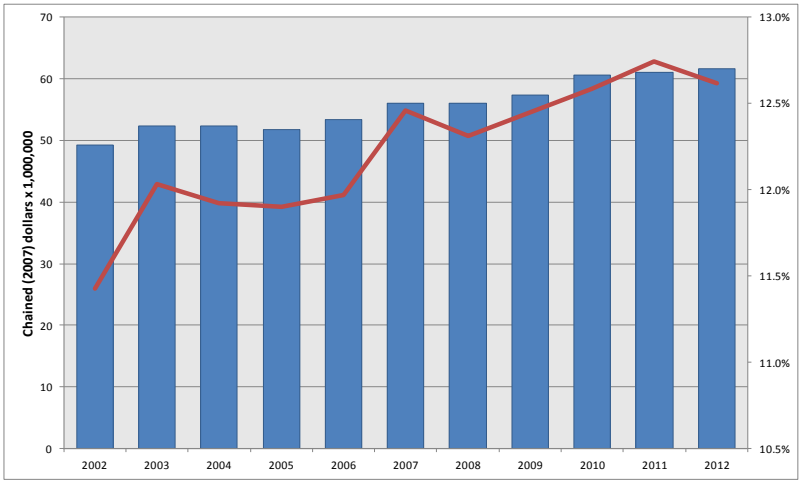
Chart 3: Select Components of the NWT's Gross Domestic Product, at Basic Prices ($ millions-chained 2007), by North American Industry Classification System, 2002-2014



Source: Statistics Canada. *Table 379-0030 – Gross domestic product (GDP)*

Chart 3 demonstrates the fluctuations to these key contributors, as well as the utilities industry, to NWT's GDP since 2002. Compared to the diamond mining industry or the oil and gas extraction industries, public administration has provided a strong, relatively stable, contribution over the past 14 years. This contribution by public administration can be further broken down into individual components, namely contributions by municipal, Territorial and Federal government.

Chart 4: Local, Municipal and Regional Public Administration Contributions to Territorial GDP (left axis, absolute value) and Percentage of Total Governmental Contributions to GDP (right axis, per cent), 2002-2012

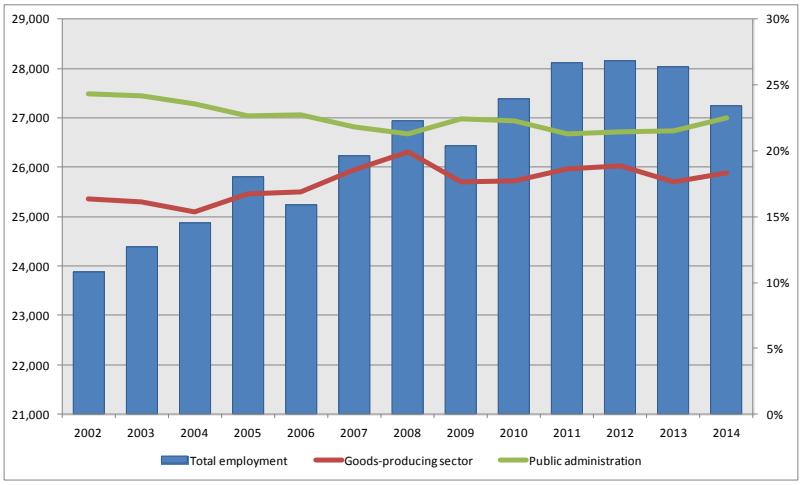


Source: Statistics Canada. *Table 379-0030 – Gross Domestic Product (GDP)*

Chart 4 above presents changes to local, municipal and regional public administration activities contributions to the Territorial economy since 2002. During this time period, these activities contributed, on average, $55.6 million (chained – Base 2007) to GDP. This accounted for, on average, 12 per cent of total government contributions to GDP within the NWT (e.g., GDP contributions by Federal, Territorial and local, municipal and regional public administration).

It should be noted that the goods-producing sector includes mining, quarrying and oil and gas extraction industries, as well as forestry and logging; utilities; construction; and manufacturing industries. Even combining all of the goods-producing industries together, public administration provides for greater employment within the studied time period. In fact, since 2002, public administration has accounted for roughly 22 per cent of total employment within the NWT. In contrast, the entirety of the goods-producing sector accounted for roughly 18 per cent of total employment.

Chart 5: Total Employment (left axis) and Employment Sectors in the NWT as a Percentage of Total Employment (right axis), 2002-2014

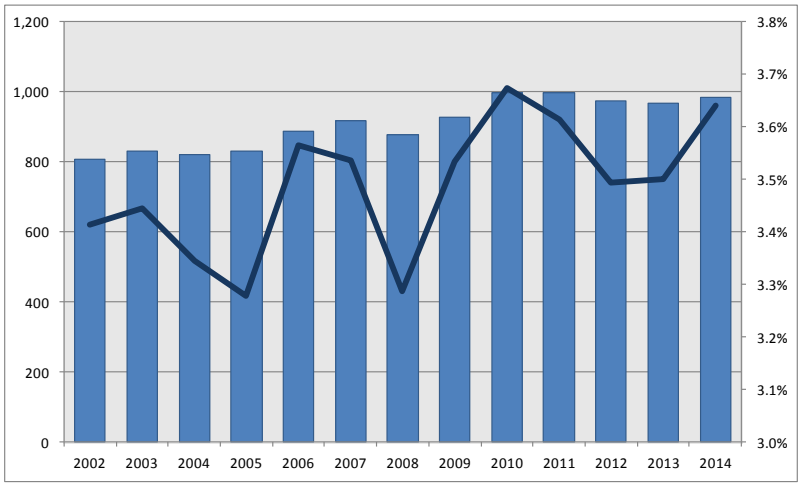


Source: Statistics Canada. *Table 281-0024 – Survey of Employment, Payrolls and Hours (SEPH)*

In order to refine the focus, Chart 6 presents the level of employment coming from local, municipal and regional public administration since 2002. During this time, local governments' employment has grown relatively steadily, from just over 800 employees in 2002 to close to 1,000 employees in 2014 (roughly 908 employees on average).[8] Given the relatively small size of the Territorial labour force, this means that local governments have accounted for approximately 3.5 per cent of the total employment since the early 2000s. This employment has a significant impact on the Territorial economy by providing labour income, greater stability for several households, and contributions to GDP.

[8] It should be noted that this employment does not distinguish between full-time, part-time, seasonal or casual workers.

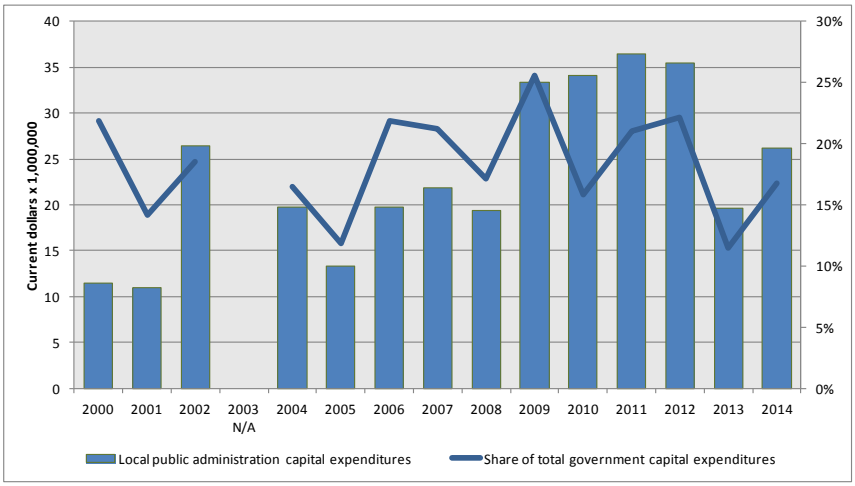
Chart 6: Local, Municipal and Regional Public Administration Employment within the NWT (left axis, absolute number) and Share of Total NWT Employment (right axis, per cent), 2002-2014



Source: Statistics Canada. *Table 281-0024 – Survey of Employment, Payrolls and Hours (SEPH)*

While analyzing the direct impact of municipal government activities on Territorial GDP is important, it does not provide further information into how spending was allocated. For example, it gives no indication into how much funding was directed towards infrastructure projects, or how much went towards waste removal services; both of which have their own impacts on the Territorial economy. It is difficult to assess all of the far-reaching impacts that this spending may have had, but, in the case of infrastructure projects, it is possible to get a good estimate.

Chart 7: Local Public Administration Capital Expenditures (left axis, absolute number) and Share of Total Government Capital Expenditure (right axis, per cent), 2000-2014



Note: Data for 2003 has been suppressed.
Source: Northwest Territories Bureau of Statistics

The NWT Bureau of Statistics keeps a record of capital expenditures made by both private and public entities. These take into account both expenditures on construction as well as machinery and equipment. Furthermore, the data are available at varying levels of government, including local public administration. As such, Chart 7 above provides some insight into local public administration capital expenditures since 2000.

Since 2000 (excluding 2003 where data are unavailable), local public administration capital expenditures have averaged $23.4 million per year (an average of 18 per cent of total government expenditures on capital during the analyzed period). These expenditures go towards construction activities as well as machinery and equipment. This has an impact on employment, wages, and industries related to construction activities, which in turn have impacts on the Territorial economy.

3.0 Social and Economic Benefits of Community Government Spending

Communities within the NWT are supported by local government spending on several levels. This section will outline some of the social and economic benefits from various spending and development initiatives. Namely, this section will provide information of known benefits of spending on c*ommunity infrastructure, environmental services*, and o*perations and maintenance*.

3.1 Community Public Infrastructure

Canadian municipalities are largely responsible to build, own and maintain most of the infrastructure that helps to support the economy as well as the quality of life of residents.[9] This is particularly true within the NWT where municipalities have full authority for decisions over community public infrastructure.[10] Much like the rest of Canada, municipalities within the NWT have been experiencing an infrastructure deficit that has significant impacts on the wellbeing of residents. Nonetheless, the infrastructure currently in place benefits residents and plays a significant role in the day-to-day lives of community residents.

Community public infrastructure overview

Community public infrastructure encompasses all of the physical assets that are required and used by community governments to support the delivery of programs and services to residents.

Social benefits of this infrastructure include:

- Aiding the aging population;
- Supporting community safety; and
- Promoting social and cultural capital.

Economic benefits of this infrastructure include:

- Facilitation of the movement of goods and people; and
- Supporting economic development and productivity growth.

MACA has estimated to maintain and provide adequate infrastructure would require an additional **$23.44 million per year**. The value of current community public infrastructure in NWT has been estimated at **$2.73 billion, with an annual replacement cost of close to $66 million**.

[9] Mirza, *Danger Ahead: The Coming Collapse of Canada's Municipal Infrastructure*, 2
[10] Municipal and Community Affairs, *MACA Update – Fall 2006, The New Deal for NWT Community Governments Edition*, 4

To understand the benefits of community infrastructure, it is first important to define what infrastructure encompasses. Community infrastructure can be thought of as "the physical assets required by a community government to support the delivery of mandated programs and services in a sustainable manner."[11]

Examples of community public infrastructure include the following[12]:

- Public buildings including community offices, fire halls, cultural and visitors centers, museums and recreation halls and gyms;
- Water and waste water facilities and equipment;
- Mobile equipment, including fire and emergency response vehicles, road maintenance equipment and light vehicles;
- Solid and hazardous waste facilities and equipment;
- Roads, sidewalks, lands and associated drainage systems; and
- Playgrounds, parks and associated equipment.

Infrastructure is widely recognized to benefit communities and residents by helping meet the basic needs of residents in terms of public health and safety, by facilitating the movement of goods and peoples, and by aiding a broad range of public services (e.g., health care, education, public security, communication and culture).[13] The benefits are so important that a pillar of Canada's Northern Strategy is addressing infrastructure needs in order to promote stronger economies and more prosperous communities in the North.[14] This feeling is echoed by The Canadian Chamber of Commerce, which found that business owners believe that it is important to overcome barriers associated with infrastructure.[15] In overcoming these barriers "business people believe that the operational costs of doing business in Canada's territories can be overcome."[16]

While the benefits of infrastructure are widely recognized, there still remains a large infrastructure deficit across the NWT. This deficit can be thought to include both "unfunded investments required to maintain and upgrade existing infrastructure… [as well as] funding needed over and above current and projected levels to bring existing facilities to a minimum acceptable level for operation over their service life, through maintenance, rehabilitation, repairs and replacement."[17] This infrastructure deficit is aggravated by a combination of aging and underdeveloped infrastructure, climate change impacts and increasing resource development pressures.[18] In addition, the realities of smaller communities in the North result in larger per capita expenditures on infrastructure, which are further increased by

[11] The Department of Municipal and Community Affairs, *Building Healthy Communities: A Plan for Addressing the Community Public Infrastructure Deficit in the Northwest Territories*, 2
[12] The Department of Municipal and Community Affairs, *Building Healthy Communities: A Plan for Addressing the Community Public Infrastructure Deficit in the Northwest Territories*, 18
[13] Altus Group Economic Consulting, *Basic Urban Infrastructure and its Community-wide Benefits*, I
[14] Government of Canada, *Canada's Northern Strategy*, 17
[15] The Canadian Chamber of Commerce, *Developing the Economic Potential of Canada's Territories*, 4
[16] The Canadian Chamber of Commerce, *Developing the Economic Potential of Canada's Territories*, 5
[17] Mirza, *Danger Ahead: The Coming Collapse of Canada's Municipal Infrastructure*, 7
[18] Infrastructure Canada, *Building for Prosperity: Public Infrastructure in the Northwest Territories*, 11

communities' rural natures.[19] Furthermore, challenges associated with short construction seasons complicate the implementation and maintenance of infrastructure in the NWT.[20] However, given the multitude of benefits, closing the gap in core public infrastructure has been recognized as an important challenge to be addressed by Federal, Territorial and municipal governments in Northern Canada.[21]

In 2014 MACA estimated that an additional $23.44 million would be required annually to maintain and provide adequate infrastructure to community residents.

Social Benefits

Besides the increased mobility for goods and passengers that transportation infrastructure provides, there are several social benefits that come from a well-maintained infrastructure system.[22] Amongst the most important social impacts, basic urban infrastructure helps to accommodate an aging population, supports community safety, and promotes social and cultural capital.

Municipalities have an important role in anticipating and addressing the challenges associated with an aging population. As such, infrastructure that allows for easy "human powered transportation" such as walking or biking is an important part of age-friendly communities.[23] Furthermore, well-maintained physical infrastructure allows municipalities to provide necessary services to older residents.[24]

Well-maintained infrastructure helps to promote public health and safety through numerous paths.[25] For instance, well-maintained roads help to reduce the risk of accidents; well-maintained water supply and wastewater treatment centers help to prevent the spread of disease; and fire suppression infrastructure helps to prevent property damage or loss of life during fire situations.[26] In the short run, not maintaining infrastructure can lead to potholes and sidewalk cracks, but in the long run, the infrastructure deficit can lead to crumbling bridges and unusable roads.

Finally, community public infrastructure provides social and cultural benefits to communities by providing venues which foster social and cultural events (ex. parks, community centers, public squares).[27] For instance, community social gatherings can be aided by community halls; local sports activities require arenas; and arts events are promoted by having public theaters.[28] This infrastructure can be fundamental to promoting community social and cultural development. However, given the priority of "road improvements, public transit, water and waste-water project…there is a chronic

[19] Mirza, *Danger Ahead: The Coming Collapse of Canada's Municipal Infrastructure*, 10
[20] Infrastructure Canada, *Building for Prosperity: Public Infrastructure in the Northwest Territories*, 11
[21] Infrastructure Canada, *Infrastructure Spotlight: Canada's Small and Rural Communities*, http://www.infrastructure.gc.ca/pub/infra/src-pcr/src-pcr-eng.html
[22] Gill and Bristow, *Northern Assets: Transportation Infrastructure in Remote Communities*, 17
[23] Federation of Canadian Municipalities, *Canada's Aging Population: The Municipal Role in Canada's Demographic Shift*, 17
[24] Federation of Canadian Municipalities, *Canada's Aging Population: The Municipal Role in Canada's Demographic Shift*, 6
[25] Altus Group Economic Consulting, *Basic Urban Infrastructure and its Community-wide Benefits*, 5
[26] Altus Group Economic Consulting, *Basic Urban Infrastructure and its Community-wide Benefits*, 23
[27] Breen, *Uncertain Foundation: Infrastructure in Rural Canada,* 10
[28] Altus Group Economic Consulting, *Basic Urban Infrastructure and its Community-wide Benefits*, 5

underfunding for all other infrastructure needs' in Canada."[29] These social and cultural events, and the arenas in which they take place, provide an outlet for youth in the community. Notably, events and activities in community centers, gyms, and pools can help youth achieve physical wellness, social wellness, and cultural wellness.[30] All three of these types of wellness have been found to be an important part of overall individual wellness by the University of Victoria.[31] Youth sport, which is an important component of physical wellbeing, can help to reduce youth crime by, amongst other reasons, helping young people keep busy, helping youth feel empowered, fostering teamwork skills, promoting problem solving skills and increasing self-esteem.[32] These skills can be integrated into school curriculum further promoting youth development (ex. skating and swimming can become part of the school curriculum). Furthermore, the provision of gyms and recreation centers can promote healthier communities, which can have a positive impact on local health systems.

Economic Benefits

The provision of community public infrastructure has numerous impacts on the economies of municipalities and surrounding regions. While Section 2.0 noted historical economic impacts of community spending on the Territorial economy, this section will provide a brief overview of general economic impacts of well-maintained infrastructure. In its most basic function, infrastructure facilitates the movement of goods and people. This in turn supports economic development and productivity growth. On a Canada-wide scale it has been estimated that public infrastructure is responsible for 9% of the growth in labour productivity over the past several decades.[33] Additionally, within Canada it has been estimated that a "$1.00 increase in the net capital stock generates, on average, approximately 17 cents of "cost saving" producer benefits per year for the business sector."[34]

Furthermore, investments in infrastructure, particularly through construction activities, have significant impacts on the economy. Particularly, any construction activity results in a direct demand on the construction industry which in turn results in indirect demands on suppliers of materials and services to the construction industry.[35] These activities have an impact on wage income in both the construction industry and suppliers to the construction industry which increases the incomes of individual households.[36]

[29] Mustafa and Sengupta, *Connecting Capital to Sustainable Infrastructure Opportunities*, 3
[30] These wellness types have each been found to be an important part of overall individual wellness by the University of Victoria. Source: Foster and others, *The British Columbia Atlas of Wellness*
[31] Foster and others, *The British Columbia Atlas of Wellness*
[32] See: Nichol, *A Consideration of Why Active Participation in Sport and Leisure Might Reduce Criminal Behaviour*
[33] Altus Group Economic Consulting, *Basic Urban Infrastructure and its Community-wide Benefits*, IV
[34] Harchaoui and Tarkhani, *Public Capital and Its Contribution to the Productivity Performance of the Canadian Business Sector*, V
[35] Sonnen, Informetrica Limited, *Municipal Infrastructure Macroeconomic Impacts of Spending and Level-of-Government Financing*, 4
[36] Sonnen, Informetrica Limited, *Municipal Infrastructure Macroeconomic Impacts of Spending and Level-of-Government Financing*, 4

3.2 Environmental Services

Environmental services, including water and wastewater systems and waste management, are a critical component to quality of life.[37] These systems can be thought of as being part of the basic urban infrastructure that is a foundation of a community; supporting both daily social and economic activities.[38] Water systems act as key contributors to healthy citizens and communities by providing safe, non-contaminated water.[39] In particular, these systems help to prevent the spread of diseases, therefore aiding the health of the community.[40] Similarly improvements in sanitation act as a form of preventative health care – which can reduce health costs in the long run.[41] As such, a growing waste system infrastructure deficit can compromise the health and safety of community residents.[42]

On a larger scale, water and waste water systems are important for the proper treatment and disposal of wastewater to ensure environmental sustainability.[43] These systems are so important that, from 2005 to 2011, municipalities in the NWT invested close to 70 per cent of their gas tax funds to upgrade drinking water and wastewater (35 per cent drinking water and 35 per cent waste water).[44] Finally, like all infrastructure activities, the implementations of these systems generate construction activities, which have a positive impact on the economy.[45]

However, while the benefits of these water and wastewater systems, and waste management systems are widely recognized, municipalities on both a Canadian and Territorial scale are experiencing water system infrastructure deficits. One of the major challenges within the NWT in terms of environmental services is the limited opportunity to take advantage of economies of scale (or to share resources) due to geographic isolation.[46] This leads to having "big projects in small communities" whereby communities must provide all the necessary services despite small populations.[47] Notably, investing in water treatment systems for communities of 500 people require similar investments to those of 5000 people.[48]

In 2014 it was estimated that the municipal water and wastewater system deficit in Canada had reached $31 billion.[49] On a Territorial level, MACA has estimated that in order to maintain the current systems, communities require more than an additional $8 million annually.[50]

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[37] Breen, *Uncertain Foundation: Infrastructure in Rural Canada*, 10
[38] Altus Group Economic Consulting, *Basic Urban Infrastructure and its Community-wide Benefits*, II
[39] Coad, *Improving Infrastructure Management: Municipal Investments in Water and Wastewater Infrastructure*, 3
[40] Altus Group Economic Consulting, *Basic Urban Infrastructure and its Community-wide Benefits*, III
[41] Vander Ploeg, *A Capital Question: Infrastructure in Western Canada's Big Six*, 32
[42] Vander Ploeg, *At the Intersection: The Case for Sustained and Strategic Public Infrastructure Investment* ,3
[43] Coad, *Improving Infrastructure Management: Municipal Investments in Water and Wastewater Infrastructure*, 3
[44] Infrastructure Canada, *Building for Prosperity: Public Infrastructure in the Northwest Territories*, 5
[45] Coad, *Improving Infrastructure Management: Municipal Investments in Water and Wastewater Infrastructure*, 3
[46] Coates and Poelzer, *On the Front Lines of Canada's Northern Strategy*, 9
[47] Department of Municipal and Community Affairs, *Building Healthy Communities: A Plan for Addressing the Community Public Infrastructure Deficit in the Northwest Territories*, 3
[48] Department of Municipal and Community Affairs, *Building Healthy Communities: A Plan for Addressing the Community Public Infrastructure Deficit in the Northwest Territories*, 3
[49] Sengupta and Mustafa, *Connecting Capital to Sustainable Infrastructure Opportunities*, 3

3.3 Operations and Maintenance Spending

Operations and maintenance spending is broadly defined as funding for four categories: infrastructure operations and maintenance (e.g. repair activities), protective services, recreation services, and administration activities. In 2014, MACA estimated that operations and maintenance funding requires an additional $7.37 million annually in order to maintain the services and activities provided.

Infrastructure operations and maintenance (e.g. repair activities) help to maintain the community public infrastructure currently in place, and as such provide the same benefits as those of community public infrastructure (please refer to 3.1 Community Public Infrastructure for the benefits of infrastructure). The remaining funding acts to increase the quality of life of residents by ensuring the safety of residents, facilitating government actions, and promoting social and cultural capital. Notably, events that promote social and cultural wellbeing can help to support many pillars of lifelong learning.[51] In particular, cultural and recreational events are important for youth; several studies have noted the connection between Aboriginal youth wellness and cultural identification.[52] These activities can have positive implications on health (ex. greater physical and emotional wellbeing) as well as education (ex. teaching youth skills and connecting to culture).

Similar to arguments presented for infrastructure, operations and maintenance spending can have a positive impact on reducing youth crime. For instance, recreation activities, such as sports teams and constructive after-school activities, have been found to help prevent youth crime and involvement in drug and alcohol abuse.[53]

[50] Department of Municipal and Community Affairs, *Municipal Funding Review 2014*, 10

[51] For instance, the First Nations Holistic Lifelong Learning Model notes that social, as well as spiritual and cultural developments are important facets of individual development. Source: Canadian Council on Learning, *First Nations Holistic Lifelong Learning Model, http://www.ccl-cca.ca/CCL/Reports/RedefiningSuccessInAboriginalLearning/RedefiningSuccessModelsFirstNations.html*

[52] See Wexler, *The Importance of Identity, History, and Culture in the wellbeing of Indigenous Youth;* or Chandler and Lalonde, *Cultural Continuity as a Protective Factor Against Suicide in First Nations Youth*.

[53] Pulla, *Building on Our Strengths: Aboriginal Youth Wellness in Canada's North*, 59

4.0 Potential Impacts of Increased Community Spending

Economic multipliers help community leaders, policy advisors, and businesses understand the potential impact of any new economic activity by providing estimates of potential impacts to GDP, employment, and labour income. As such, this section will present an economic multiplier analysis in order to assess the potential impacts of greater funding to community governments.

The initial spending by communities, which is called the *direct* impact, gives a good preliminary assessment of municipal government spending by assessing how this direct activity may impact economic variables. However, while it provides a good estimate of the initial activity, it lacks the ability to demonstrate any far-reaching effects. As such, when considering the impact of increased funding for municipalities, it is important to consider the impacts beyond the initial income and employment created. This can be accounted for by analyzing both the *direct* and *indirect* impacts of community government spending. Indirect impacts "measure the changes due to inter-industry purchases as they respond to the new demands of the directly affected industries."[54] For example, in the case of community public infrastructure spending, *indirect* impacts capture the effect on industries that supply goods and services to the construction industry. This may be captured, for example, through the inter-industry connections with the transportation industry that brings supplies to the construction site, or the connections with the forestry industry that supplies lumber for construction.

Statistics Canada constructs economic multipliers at both a National and Territorial/Provincial level annually which can be used to analyze the relative impacts of community (e.g., municipal government) spending on the Territorial economy. Although these multipliers are produced annually, they are generally released a few years in arrear in order to allow all required data to be gathered. As such, this analysis uses multiplier data from 2001 to 2008.[55]

There are a few important things to note about the multipliers to be discussed. The first is that multipliers are best used to determine the relative impact of a change in economic activities, rather than an absolute value. As such, this document will aim to show the relative impacts of spending at both the municipal, Territorial and Federal government levels within the NWT. The second is that, by the nature of the multipliers, the labour income (e.g., wages and salaries) ratio is usually smaller than the overall GDP impact. This is because labour income is a component of GDP. The third is that industries that use a high amount of technology generally experience lower income ratios. For example, construction activities will generally experience a lower return to wages than activities in the public service (ex. municipal public administration). Finally, any multiplier analysis does have limitations in its method; namely, it does not take into account capacity constraints that industries may face.[56]

With these facets in mind, the following sections will present a multiplier analysis for the three primary funding uses. To recall, the MACA Funding Review found a funding gap of $23,440,000 for *community*

[54] Statistics Canada, *Provincial Input-Output Multipliers, 2009; Catalogue no. 15F0046XDB*

[55] Multiplier data is available for 2009 and 2010, but is not comparable to data before 2008 conceptual revisions and methodological changes. As such, in order to have several years of comparison, data from 2009 and 2010 has not been included in this analysis.

[56] Cross and Ghanem, *Multipliers and Outsourcing: How Industries Interact with Each Other and Affect GDP,* 3.3.

public infrastructure, $8,388,000 for *environmental services* and $7,377,000 for *operations and maintenance* funding.[57]

4.1 Community Public Infrastructure

The value of current community public infrastructure has been estimated at **$2.73 billion, with an annual replacement cost of close to $66 million**[58]. This infrastructure includes buildings, roads, infrastructure for water and waste management, as well as mobile assets and other equipment. Notably, buildings currently constitute 24.2 per cent of community infrastructure, while roads constitute 26.0 per cent, and infrastructure for water and waste management constitute roughly 45.3 per cent[59].

This section will look at the direct and indirect impacts of construction and engineering activities on wages and salaries, GDP, and employment. Their impacts are computed by applying the multipliers created by Statistics Canada to the proposed increase in funding of $23,440,000. In order to determine in greater detail the impact of this funding, the overall funding was split into three categories; non-residential building construction, transportation engineering construction, and other engineering construction. Non-residential building construction relates directly to community buildings (ex. arenas, community centres, government office buildings). Transportation engineering construction will be used to determine the impact of road construction activities, and other engineering construction corresponds to service infrastructure such as pipes and water treatment plants.

Given the current stock of community public infrastructure, the proposed additional funding was split such that 24.2 per cent went towards building construction activities (roughly $5.7 million), 26.0 per cent went towards road construction activities (roughly $6.1 million), and 45.3 per cent went towards water and waste management (roughly $10.6 million).

Furthermore, in order to assess the potential impacts of the increased funding, three cases will be presented for each activity. The average case makes use of the average multiplier from the eight years of multiplier data. The high case makes use of the highest multiplier effect computed by Statistics Canada during the analyzed years, and the low case makes use of the lowest multiplier.

[57] Municipal and Community Affairs, *Municipal Funding Review 2014*
[58] Municipal and Community Affairs, *Municipal Funding Review 2014*
[59] Municipal and Community Affairs, *Municipal Funding Review 2014*

The Potential Impacts of Increased Community Public Infrastructure Funding

Proposed funding increase of **$23,440,000**

The proposed funding, when considering combined direct and indirect impacts, could result in:

- Almost **80** additional jobs per year (almost 58 jobs in the low case, and over 100 jobs in the high case);
- An additional **$5,767,000** in contributions to wages and salaries per year ($4,554,000 in the low case and $6,654,000 in the high case); and
- An additional **$10,036,000** in contributions towards GDP per year ($8,272,000 in the low case and $11,496,000 in the high case).

Direct Impacts

Due to the high use of technology in the construction industry, the employment levels associated with construction activities are relatively low, but remain significant. In particular, each activity has over 2.6 jobs associated with each million dollars of activities on average. (See Table 2.) As such, the potential direct impact of increased funding for community public infrastructure is an additional 64.0 jobs per year (almost 80 in the high case, and 51.1 in the low case). These jobs could be filled, for example, by construction workers, engineers, project managers, general labourers, carpenters, electricians, or other trades people.

Table 2: Construction Direct Impacts

	Direct Effect Multiplier			Potential Direct Effect		
	Average	Low	High	Average	Low	High
	Wages and Salaries			Wages and Salaries (000's)		
Non-residential building construction	0.20	0.11	0.27	1,134	624	1,532
Transportation engineering construction	0.24	0.22	0.25	1,463	1,341	1,524
Other engineering construction	0.20	0.17	0.24	2,124	1,805	2,548
Total Potential Impact:				4,721	3,770	5,604
	Total GDP			Total GDP (000's)		
Non-residential building construction	0.35	0.23	0.46	1,985	1,305	2,609
Transportation engineering construction	0.41	0.39	0.44	2,499	2,377	2,682
Other engineering construction	0.35	0.31	0.39	3,716	3,292	4,141
Total Potential Impact:				8,200	6,974	9,432
	Employment (per million $)			Employment		
Non-residential building construction	2.91	1.90	4.45	16.5	10.8	25.2
Transportation engineering construction	3.12	2.09	3.96	19.0	12.7	24.1
Other engineering construction	2.68	2.60	2.76	28.5	27.6	29.3
Total Potential Impact:				64.0	51.1	78.6

Source: Statistics Canada, *Multiplier Reports*; The Conference Board of Canada

A look at the impact on wages and salaries as well as GDP shows that a 1$ increase to these activities will have a less than a 1$ increase to GDP on average (specifically, the GDP multiplier averages less than 0.50). This is not uncommon, and is not unexpected, due to the significant leakages that the Territorial economy faces. Much of this effect can be explained by the reliance on imports that the Territory has (for example, the need to import construction materials, expertise, or machinery). As such, a $23.44 million expected increase in infrastructure activities has a potential GDP impact of $8.2 million ($9.4 in the high case and almost $7.0 million in the low case). Noteably, more than half of this impact comes from contributions to wages and salaries. The direct impacts alone are significant given the relatively high number of additional jobs per year, as well as contributions to GDP, and wages and salaries.

Direct and Indirect Impacts

Considering both direct and indirect impacts gives a more encompassing picture of the possible outcomes from community public infrastructure. (See Table 3.) Specifically, it gives an idea of the impact outside of the direct construction industry. For instance, if a construction project requires importing goods, the indirect effects will include changes to the transportation industry as well as to goods suppliers.

When enlarging the analysis to include indirect impacts, non-residential building construction averages 3.78 jobs, transportation-engineering activities averages 3.78 jobs, and other engineering construction averages 3.34 jobs per million dollars of activities. Together, the combined potential impacts of infrastructure activities could result in an additional 79.9 jobs per year (57.9 jobs in the low case and 102.4 jobs in the high case). These close to 80 additional jobs per year could be filled by individuals involved in the construction industry, as well as professions such as truck drivers (to supply goods), forestry workers, and brick manufacturers (all of which help to supply the construction industry). If this is compared to just the direct activities, it shows that an additional 15.9 jobs come from indirect impacts.[60]

While still less than a one-for-one ratio, the indirect and direct multipliers show a greater impact on GDP than previously. This is especially true for transportation engineering activities, where a $1 increase in construction activities could result in close to a $0.50 increase to the Territorial GDP. As such, the total impact of increased community infrastructure funding has a potential GDP impact of roughly $10 million (roughly $8.3 in the low case and almost $11.5 in the high case). Again, more than half of this impact comes from increases to wages and salaries. A comparison to the direct impacts shows that indirect impacts account for close to an additional $1.8 million towards GDP, and roughly an additional $1.0 million towards wages and salaries.

[60] The number of jobs attributable to indirect impacts can be found by subtracting the total 'direct impact' from the 'direct and indirect impact'. In this case it would be 79.9 jobs – 64.0 jobs = 15.9 jobs.

Table 3: Construction Direct and Indirect Impacts

	Direct and Indirect Effect Multiplier			Potential Direct and Indirect Effect		
	Average	Low	High	Average	Low	High
	Wages and Salaries			Wages and Salaries (000's)		
Non-residential building construction	0.24	0.16	0.30	1,361	908	1,702
Transportation engineering construction	0.27	0.21	0.29	1,645	1,280	1,767
Other engineering construction	0.26	0.22	0.30	2,761	2,366	3,185
Total Potential Impact:				5,767	4,554	6,654
	Total GDP			Total GDP (000's)		
Non-residential building construction	0.43	0.32	0.54	2,439	1,815	3,063
Transportation engineering construction	0.48	0.38	0.53	2,925	2,316	3,230
Other engineering construction	0.44	0.39	0.49	4,672	4,141	5,203
Total Potential Impact:				10,036	8,272	11,496
	Employment (per million $)			Employment		
Non-residential building construction	3.78	2.77	5.23	21.4	15.7	29.7
Transportation engineering construction	3.78	2.90	4.70	23.0	17.7	28.6
Other engineering construction	3.34	2.31	4.15	35.5	24.5	44.1
Total Potential Impact:				79.9	57.9	102.4

Source: Statistics Canada, *Multiplier Reports*; The Conference Board of Canada

4.2 Environmental Services

Environmental services fall under two categories: water and sewage services, and solid waste services. These correspond directly with the utility industry responsible for water, sewage and other systems, and the industry responsible for the provision of waste management and remediation services. Similar to the previous section, this section will look at the direct and indirect impacts of these services on wages and salaries, GDP and employment.[61] Furthermore, as in the previous section, this analysis will present three cases; an average case, a high case and a low case.

Following the funding review it was determined that an additional $2,628,000 was required for water services and an additional $5,760,000 was required for solid waste services annually.

[61] Note: The direct only impacts have not been included due to a high level of suppression in the Statistics Canada data.

The Potential Impacts of Increased Environmental Service Funding

Proposed funding increase:

- Due to water services: **$2,628,000**
- Due to solid waste service: **$5,760,000**

The proposed funding, when considering combined direct and indirect impacts, could result in:

- Almost **70** additional jobs per year (almost 52 jobs in the low case and a little over 90 jobs in the high case);
- An additional **$2,841,000** in contributions to wages and salaries per year ($2,421,000 in the low case and $3,087,000 in the high case); and
- An additional **$6,532,000** in contributions towards GDP per year ($5,515,000 in the low case and $6,946,000 in the high case).

Direct and Indirect Impacts

Table 4 presents the potential impacts of the proposed funding on the Territorial economy. As in the previous section, this table presents the potential impact of the additional funding, and not of the total funding.

When assessing the potential impact of environmental services two noticeable points jump out. The first is the high number of jobs associated with these activities. (See Table 4.) Water, sewage and other services average 6.46 jobs per million dollars of associated activities on average (4.10 jobs in the low case and almost 10.79 jobs in the high case). In comparison, waste management and remediation services average nearly 9.1 jobs per million dollars of associated activities (7.11 jobs in the low case and 10.74 jobs in the high case). The second noticeable point is the high contribution to GDP. Specifically, a $1 increase in water, sewage and water activities will potentially result in over a $0.70 contribution to GDP, while a $1 increase in waste management and remediation services will potentially result in a $0.81 contribution to the Territorial GDP. This high contribution is most likely due in part to the low associated leakage of these activities.

The relatively little leakage related to waste management and remediation services in part results in the vast majority of activities playing back into the Territorial economy. Further to that, nearly half of that contribution to GDP comes from wages and salaries. Notably, a $5.76 million increase in the waste management and remediation services industry has a potential GDP impact of close to $4.7 million. This funding could also result in the creation of an additional 52.1 jobs per year. These jobs could be filled, for example, by water and waste treatment plant operators, general labourers, or engineers.

While not as high as the waste management and remediation service, an increase in water and sewer industry funding does have the potential to create 17.0 new jobs, and contribute close to 1.9 million to the Territorial economy.

Table 4: Environmental Services and Utilities Direct and Indirect Impacts

	Direct and Indirect Effect Multiplier			Potential Direct and Indirect Effect		
	Average	Low	High	Average	Low	High
	Wages and Salaries			Wages and Salaries (000's)		
Water, Sewage & Other Systems	0.27	0.22	0.32	710	578	841
Waste Management & Remediation Services	0.37	0.32	0.39	2,131	1,843	2,246
Total Potential Impact:				2,841	2,421	3,087
	Total GDP			Total GDP (000's)		
Water, Sewage & Other Systems	0.71	0.63	0.78	1,866	1,656	2,050
Waste Management & Remediation Services	0.81	0.67	0.85	4,666	3,859	4,896
Total Potential Impact:				6,532	5,515	6,946
	Employment (per million $)			Employment		
Water, Sewage & Other Systems	6.46	4.10	10.79	17.0	10.8	28.4
Waste Management & Remediation Services	9.05	7.11	10.74	52.1	41.0	61.9
Total Potential Impact:				69.1	51.8	90.3

Source: Statistics Canada, *Multiplier Reports*; The Conference Board of Canada

Together, the combined impact of increased funding to environmental services could result in close to 70 additional jobs per year, as well as roughly $6.5 million towards the Territorial GDP. (See Table 4.)

4.3 Operations and Maintenance

Operations and maintenance funding is used to support infrastructure operation and maintenance activities (e.g., repair activities), protection services, recreation services and administrative activities. Of these activities, infrastructure operations and maintenance take up roughly 47 per cent of the available funding (including own source revenue) leaving 57 per cent for recreation, protective, and administrative activities. As such, operations and maintenance funding will be divided this way into two categories: repair construction activities which correspond to infrastructure operations and maintenance, and municipal government services which correspond to recreation, protective, and administrative activities.

The Potential Impacts of Increased Operations and Maintenance Funding

Proposed funding increase of **$7,377,000**

The proposed funding, when considering combined direct and indirect impacts, could result in:

- Almost **70** additional jobs per year (over 55 jobs in the low case, and almost 80 jobs in the high case);
- An additional **$2,851,000** in contributions to wages and salaries per year ($2,426,000 in the low case and $3,276,000 in the high case); and
- An additional **$4,474,000** in contributions towards GDP per year ($4,153,000 in the low case ($4,864,000 and in the high case).

Similar to the previous sections, this section will analyze the direct and indirect impacts of government services on wages and salaries, GDP, and employment. This section will present three cases; an average case, a high case and a low case. Again, it should be noted this section looks at the value of the additional proposed funding. Furthermore, in order to better understand the value of municipal government services, this section will compare the added value of these services to those of Federal and Territorial government services.

Direct Impacts

Some noticeable points from direct impacts to government services jump out immediately. (See Table 5.) In particular, municipal government services have a very large impact on employment, with an average of 11.66 jobs coming from each million dollars of municipal activities (almost 10 jobs in the low case and 13 jobs in the high case). Second, for both repair construction activities and municipal government services, a $1 increase could potentially result in a $0.51 increase in GDP.

Table 5: Operations and Maintenance Direct Impacts

	Direct Effect Multiplier			Potential Direct Effect		
	Average	Low	High	Average	Low	High
	Wages and Salaries			Wages and Salaries (000's)		
Repair construction	0.31	0.21	0.42	1,075	728	1,456
Municipal government services	0.35	0.33	0.36	1,368	1,290	1,408
Total Potential Impact:				2,443	2,018	2,864
	Total GDP			Total GDP (000's)		
Repair construction	0.51	0.42	0.60	1,768	1,456	2,080
Municipal government services	0.51	0.48	0.53	1,994	1,877	2,072
Total Potential Impact:				3,762	3,333	4,152
	Employment (per million $)			Employment		
Repair construction	3.76	2.57	5.40	13.0	8.9	18.7
Municipal government services	11.66	9.57	12.93	45.6	37.4	50.6
Total Potential Impact:				58.6	46.3	69.3

Note: Repair construction activities do not consider multipliers from 2001
Source: Statistics Canada, *Multiplier Reports*; The Conference Board of Canada

The potential increase in jobs from just direct impacts is significant given the size of the labour force within the NWT. Based on the proposed funding increase of **$7,377,000**, this could potentially result in an additional 58.6 jobs per year (with a high case of 69.3 jobs and a low case of 46.3 jobs). These jobs could be filled, for example, by office workers, or human resources or other government workers.

Furthermore, the proposed funding could potentially result in an additional $3,762,000 towards the Territorial GDP ($4,152,000 in the high case and $3,333,000 in the low case). The bulk of this contribution to GDP comes directly from wages and salaries (which corresponds in part to the high number of jobs associated with these activities).

A comparison of municipal government services to those provided by the Federal or Territorial government shows significant differences. (See Table 6.) Notably, while municipal government services have the potential impact of 11.66 jobs per million dollars of activities, Territorial and Federal government services have a much smaller potential impact (less than 5 jobs each per million dollars of activities).

If the increased funding were applied to Federal or Territorial government services, it would potentially result in additional 19.4 jobs or 18.9 jobs respectively; less than half of the potential impact of municipal services. The difference between municipal and Territorial government services impacts on wages and salaries, and GDP are relatively small, falling within $100 thousand of one another. While still relatively small, the difference between Federal and municipal services potential impacts on wages and salaries is roughly $300 thousand, and on GDP is roughly $600 thousand.

Table 6: Level of Government Comparison

	Direct Effect Multiplier			Potential Direct Effect		
	Average	Low	High	Average	Low	High
	Wages and Salaries			Wages and Salaries (000's)		
Municipal government services	0.35	0.33	0.36	1,368	1,290	1,408
Federal government services	0.42	0.38	0.46	1,642	1,486	1,799
Territorial government services	0.36	0.37	0.35	1,408	1,447	1,368
	Total GDP			Total GDP (000's)		
Municipal government services	0.51	0.48	0.53	1,994	1,877	2,072
Federal government services	0.66	0.62	0.71	2,580	2,424	2,776
Territorial government services	0.53	0.56	0.51	2,072	2,189	1,994
	Employment (per million $)			Employment		
Municipal government services	11.66	9.57	12.93	45.6	37.4	50.6
Federal government services	4.97	4.37	5.62	19.4	17.1	22.0
Territorial government services	4.84	4.30	6.60	18.9	16.8	25.8

Source: Statistics Canada, *Multiplier Reports*; The Conference Board of Canada

Direct and Indirect Impacts

When taking into account both direct and indirect impacts of municipal services, the number of jobs per million dollars of activities increases significantly. Notably, there are over 13 jobs associated with each million dollars of municipal services on average. (See Table 7.) Furthermore, the proposed funding has a

potential GDP impact of roughly $4.5 million (approximately $4.1 million in the low case and $4.9 million in the high case), of which more than half comes from contributions to wages and salaries. Similarly, repair construction activities show an average of 4.87 jobs per million dollars of activities.

To put this in perspective, the additional proposed funding to municipal operations and maintenance activities could potentially result in an additional 68.2 jobs per year (79.3 jobs in the high case and 55.1 jobs in the low case) (see Table 7.) Comparing this to the direct impacts shows that nearly 10 additional jobs come from the indirect impacts of increased operations and maintenance activities.

Table 7: Operations and Maintenance Direct and Indirect Impacts

	Direct and Indirect Effect Multiplier			Potential Direct and Indirect Effect		
	Average	Low	High	Average	Low	High
	Wages and Salaries			Wages and Salaries (000's)		
Repair construction	0.36	0.26	0.46	1,248	901	1,595
Municipal government services	0.41	0.39	0.43	1,603	1,525	1,681
Total Potential Impact:				2,851	2,426	3,276
	Total GDP			Total GDP (000's)		
Repair construction	0.58	0.51	0.67	2,011	1,768	2,323
Municipal government services	0.63	0.61	0.65	2,463	2,385	2,541
Total Potential Impact:				4,474	4,153	4,864
	Employment (per million $)			Employment		
Repair construction	4.87	3.74	6.42	16.9	13.0	22.3
Municipal government services	13.11	10.78	14.59	51.3	42.1	57.0
Total Potential Impact:				68.2	55.1	79.3

Note: Repair construction activities do not consider multipliers from 2001
Source: Statistics Canada, *Multiplier Reports*; The Conference Board of Canada

A comparison of the three levels of government shows that municipal government services have a potentially much higher impact on jobs (13.11 jobs) than either Federal government services (6.09 jobs) or Territorial government services (roughly 7.01 jobs) per million dollars of activities. (See Table 8.)

Given the proposed funding level, this translates to 51.3 jobs if applied to municipal government services compared to 23.8 jobs for Federal government services or 27.8 jobs if applied to Territorial government services.

Table 8: Level of Government Comparison

	Direct and Indirect Effect Multiplier			Potential Direct and Indirect Effect		
	Average	Low	High	Average	Low	High
	Wages and Salaries			Wages and Salaries (000's)		
Municipal government services	0.41	0.39	0.43	1,603	1,525	1,681
Federal government services	0.47	0.43	0.50	1,838	1,681	1,955
Territorial government services	0.47	0.45	0.48	1,838	1,759	1,877
	Total GDP			Total GDP (000's)		
Municipal government services	0.63	0.61	0.65	2,463	2,385	2,541
Federal government services	0.77	0.73	0.80	3,011	2,854	3,128
Territorial government services	0.73	0.70	0.76	2,854	2,737	2,971
	Employment (per million $)			Employment		
Municipal government services	13.11	10.78	14.59	51.3	42.1	57.0
Federal government services	6.09	5.26	6.93	23.8	20.6	27.1
Territorial government services	7.01	5.99	9.06	27.4	23.4	35.4

Source: Statistics Canada, *Multiplier Reports*; The Conference Board of Canada

A comparison of GDP and wages and salaries impacts show that Federal and Territorial government services have a potentially higher impact on these than municipal government services. However, the differences between these indicators are relatively small. Specifically, in the average case, Federal and Territorial government services have a potential total impact on wages and salaries of $235 thousand greater, and on GDP of $391 to $548 thousand greater than municipal services.

4.4 Total Potential Impact

The total potential impact is found by summing together the individual impacts from community public infrastructure, environmental services, and operations and maintenance funding. (See Table 9.)

The Potential Impacts of the Proposed Funding – Multiplier Analysis

The proposed funding, when considering combined direct and indirect impacts, could result in:

- Almost **220** additional jobs per year (almost 165 jobs in the low case, and over 270 jobs in the high case);
- An additional **$11,459,000** in contributions to wages and salaries per year ($9,401,000 in the low case and $13,017,000 in the high case); and
- An additional **$21,042,000** in contributions towards GDP per year ($17,940,000 in the low case and $23,306,000 in the high case).

The total potential impact on the Territorial economy is significant. Notably, the impact of the proposed funding could potentially lead to an additional 220 jobs, and upwards of 272 jobs in the high case, per year. (See Table 9.) These jobs would provide residents with higher incomes, which would in turn induce greater impacts in the economy through greater purchasing power.

Table 9: Total Potential Impact on the Territorial Economy

	Potential Direct Effect			Potential Direct and Indirect Effect		
	Average	Low	High	Average	Low	High
	Wages and Salaries (000's)			Wages and Salaries (000's)		
Community public infrastructure	4,721	3,770	5,604	5,767	4,554	6,654
Environmental services	x	x	x	2,841	2,421	3,087
Operations and maintenance	2,443	2,018	2,864	2,851	2,426	3,276
Total Potential Impact:	7,164	5,788	8,468	11,459	9,401	13,017
	Total GDP (000's)			Total GDP (000's)		
Community public infrastructure	8,200	6,974	9,432	10,036	8,272	11,496
Environmental services	x	x	x	6,532	5,515	6,946
Operations and maintenance	3,762	3,333	4,152	4,474	4,153	4,864
Total Potential Impact:	11,962	10,307	13,584	21,042	17,940	23,306
	Employment			Employment		
Community public infrastructure	64.0	51.1	78.6	79.9	57.9	102.4
Environmental services	x	x	x	69.1	51.8	90.3
Operations and maintenance	58.6	46.3	69.3	68.2	55.1	79.3
Total Potential Impact:	122.6	97.4	147.9	217.2	164.8	272.0

Source: Statistics Canada, *Multiplier Reports*; The Conference Board of Canada

Furthermore, the proposed funding has a potential GDP impact of roughly $21 million per year. This contribution to GDP would come from greater infrastructure activities, the provision of clean water and removal of waste, and community/municipal government services (including protective, recreational and administrative services).

4.5 Northwest Territories Bureau of Statistics Multipliers

In addition to the economic multipliers calculated by Statistics Canada, the NWT Bureau of Statistics prepares its own multipliers. The input-output model used by the NWT Bureau of Statistics is based off the same structure and data from Statistics Canada. It provides information on both direct and indirect economic effects on the Territorial economy. Further to this, the NWT Bureau of Statistics presents their calculations in the form of Industry Intensity Ratios. These ratios "are calculated by dividing the total (direct and indirect) economic impact due to some change in consumption or output, by the change in consumption or output."[62]

[62] Northwest Territories Bureau of Statistics, *NWT Economic Multipliers – Overview and Results*

The Potential Impacts of Funding – Industry Intensity Ratio Analysis

Proposed funding increase of **$39,205,000**

The proposed funding, when considering combined direct and indirect impacts, could potentially result in:

- Roughly **180** additional jobs per year;
- An additional **$13,818,000** in contributions to wages and salaries per year; and
- An additional **$21,704,000** in contributions towards GDP per year.

Notably, when comparing differing levels of government, using the Industry Intensity Ratios, the same amount of funding could result in:

- 41.8 jobs from municipal government services;
- 20.7 jobs for Federal government services; or
- 23.5 jobs for Territorial government services.

The latest publically available multipliers use data coming from 2008. As such, they provide a good comparison to those multipliers produced by Statistics Canada. There are however two key differences in the industry classification between the multipliers available through Statistics Canada, and those from the NWT Bureau of Statistics. Firstly, while we are able to disaggregate construction activities (e.g., community public infrastructure activities) into non-residential construction, transportation engineering construction, other engineering construction and repair activities using data from Statistics Canada, the data from the NWT Bureau of Statistics are only publically available at the higher level of *construction*. Secondly, the NWT Bureau of Statistics combines natural gas distribution, water, sewage and other utilities (excluding electric power generation, transmission and distribution) into one category. In contrast, Statistics Canada separates natural gas from water, sewage and other systems.

Taking into account the differences in industry classification, the Industry Intensity Ratios produced by the NWT Bureau of Statistics and the multipliers produced by Statistics Canada tell much the same story. Notably, both speak to the high number of jobs which could potentially be created from municipal government services (over 40 jobs in each case); the high contributions to GDP of both the waste management and remediation services industry; and the water, sewage and other services industry; and to the high contribution to wages and salaries of municipal government services. (See Table 10.) Because the classification of construction activities is on such a different level, it is difficult to compare to the analysis by Statistics Canada.

Taking together all of the activities, the proposed funding could result in an additional $13,818,000 towards wages and salaries, an additional $21,704,000 towards GDP and an additional 180.4 jobs.

Table 10: Northwest Territories Bureau of Statistics Industry Intensity Ratios - 2008

	Direct and Indirect Effect Intensity Ratio	Potential Direct and Indirect Effect
	Wages and Salaries	Wages and Salaries (000's)
Construction	0.33	8,879
Natural gas distribution, water, sewage & other	0.15	394
Waste mangement & remediation services	0.47	2,707
Municipal government services	0.47	1,838
	Total Potential Impact:	13,818
	Total GDP	Total GDP (000's)
Construction	0.46	12,377
Natural gas distribution, water, sewage & other	0.80	2,102
Waste mangement & remediation services	0.82	4,723
Municipal government services	0.64	2,502
	Total Potential Impact:	21,704
	Employment (per million $)	Employment
Construction	3.5	94.2
Natural gas distribution, water, sewage & other	2.2	5.8
Waste mangement & remediation services	6.7	38.6
Municipal government services	10.7	41.8
	Total Potential Impact:	180.4

Source: The Conference Board of Canada; Northwest Territories Bureau of Statistics, *NWT Economic Multipliers – Overview and Results*

Using the NWT Bureau of Statistics Industry Intensity ratios, Table 11 demonstrates the potential different impacts funding allocated towards municipal government, Federal government and Territorial government services could have. Notably, the same amount of funding could result in 41.8 jobs for municipal government services compared to 20.7 for Federal government and 23.5 for Territorial government services. Differences in potential impacts towards GDP, and wages and salaries, fall within $450 thousand of one another.

Table 11: Level of Government Comparison

	Direct and Indirect Effect Intensity Ratio	Potential Direct and Indirect Effect
	Wages and Salaries	Wages and Salaries (000's)
Municipal government services	0.47	1,838
Federal government services	0.58	2,268
Territorial government services	0.58	2,268
	Total GDP	Total GDP (000's)
Municipal government services	0.64	2,502
Federal government services	0.75	2,932
Territorial government services	0.74	2,893
	Employment (per million $)	Employment
Municipal government services	10.7	41.8
Federal government services	5.3	20.7
Territorial government services	6.0	23.5

Source: The Conference Board of Canada; Northwest Territories Bureau of Statistics, *NWT Economic Multipliers – Overview and Results*

5.0 Conclusion

Community government spending has a significant impact on both the Territorial economy and on the quality of life of community residents. The services supplied act to provide residents with clean drinking water and proper waste management, which in turn helps ensure the overall health of the community; recreation activities, which help strengthen social and cultural capital; and protection services, which ensure the safety of residents. The infrastructure which is maintained by community governments provides a basic necessity; one which plays a significant role in accommodating the aging population, and as such plays a large role in the quality of life of residents. Furthermore, the maintenance of current infrastructure helps ensure the safety of community residents and promotes economic development.

Even without the proposed funding, community governments have directly employed over 900 individuals and directly contributed an average of $55.6 million to Territorial GDP since 2002. Furthermore, since 2000, local public administrations have spent an average of $23.4 million on capital expenditures, accounting for roughly 18 per cent of total government (e.g., Federal, Territorial and local) capital expenditures during this time.

As shown through the Statistics Canada multiplier analysis, the proposed additional funding has the potential to have a large impact on the Territorial economy, by supporting 220 additional jobs per year (up to 270 jobs) and contributing roughly $21.0 million to GDP (up to $23.3 million). Nearly 80 of the potential jobs would come from investments in community public infrastructure, while another 70 jobs would come from providing water and waste management services (both of which are necessary for a healthy community). Furthermore, more than half of the increase in GDP would come from greater contributions to wages and salaries.

A comparison to the NWT Bureau of Statistics Industry Intensity Ratios demonstrates a similar message. Namely, using these ratios the proposed funding has the potential to create roughly 180 jobs per year, while contributing nearly $21.7 million to GDP per year (of which roughly $13.8 million comes from contributions to labour income).

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