

Soaring Higher:

A Sector Strategy for the Aerospace Industry

Produced by:

*Unifor's Aerospace Industry Council
and Unifor Research Department*

A Letter from the Aerospace Policy Working Group

The Aerospace industry is a strong contributor to our economy and has been for decades. The industry employs a highly skilled workforce, creates high quality employment opportunities, and contributes in important ways to the high-tech innovation and research and development the country needs to compete in the global marketplace.

The aerospace industry has a strong future but just as in the past, the industry must be supported with thoughtful, targeted policies that encourage the type of environment the aerospace industry needs to thrive in the future. This includes strategic investment and government procurement but also workforce development, labour standards, fair trade and regulation to name a few ideas.

The Aerospace Policy working group was formed in early 2017. Over the course of 10 months we worked together to develop this strategy for the aerospace sector. We gathered information, shared insights, and participated in meaningful discussion around the trends we see in our workplaces and what is happening on a national scale. We found that a number of trends and challenges are present in our workplaces from coast to coast. We found that much of what we've recommended for the aerospace industry in the past holds true today and that additional efforts are necessary to secure the strong future we are working towards.

This policy has been discussed and debated at the industry council level and has the full support of Unifor's Aerospace Industry Council. It has been developed to provide a cohesive framework for government action to continue the legacy the aerospace industry has built across the country.

We believe that with the right choices and the right policies, our aerospace industry can continue to thrive and soar even higher.

In Solidarity,

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1. Introduction

“Now is the time for the world to invest in Canada’s aerospace industry. At a time when companies can source their talent, goods and services from anywhere in the world, global companies are investing in Canada because of the talents of the highly skilled men and women who work in this country’s aerospace sector. They also invest in Canada because our government partners with the sector to develop next-generation technologies that enable this country’s aerospace companies to maintain their global leadership in innovation. That’s how innovation leads to better jobs and opportunities for Canadians.”

– *The Honourable Navdeep Bains, Minister of Innovation, Science and Economic Development at the 2017 Paris International Airshow*

Across the country the domestic aerospace industry is contributing to Canada’s economy through high-tech innovation, research and development, high-skilled employment, and an export intensity that is unmatched by the rest of the manufacturing sector. In short, the aerospace industry is an



important segment of Canada’s economy – one that must be nurtured and invested in if it is to continue to thrive in the future.

The domestic aerospace industry is currently the sixth-largest in the world, behind the US, the UK, China, France, and Germany. This represents a drop in ranking compared with 2004 when the industry ranked third in size, but the industry has continued to grow while facing intense competition globally. Removing

defence and focusing solely on the commercial aerospace sector shows the domestic industry ranked third in terms of both aircraft and engine production in the same 2016 global comparison¹.

This is a mighty feat for a small, northern country and one that did not happen by accident. Successive provincial and federal governments have made strategic investments to proactively develop the globally integrated, research and development intensive, and export oriented domestic industry known the world over.

Canada has a long history of aerospace and space technology innovation that makes us proud and is worth building on for the future. From Industrial Regional Benefit policies and Canadian content requirements in government procurement to support for research hubs and collaboration between the private sector and academia, governments have taken a strong stand to promote and nurture the aerospace industry. Government was an early investor in the iconic Canadarm and RADARSAT

technologies enabling international missions to space and protecting national security. All of these decisions together have built an industry that leads the manufacturing sector in investment in research and development, the hiring of skilled workers and innovation practices².

The aerospace industry contributes approximately \$28 billion to the country's GDP annually, creates or supports nearly 210,000 jobs and, between 2010 and 2015, grew its exports by more than 50 per cent, much of those exports are supply chain related³.

At the same time, a close look at the aerospace industry shows the domestic industry could contribute even more with the proper public policies, strategic investments and supports for decent work. From coast to coast, our members in the aerospace sector are reporting increasing use of temporary workers to complete work that should require highly trained, technically skilled individuals. Data from statistics Canada shows that the earnings premium observed for workers in the aerospace sector is slowly declining and workers report an under-investment on the part of the private sector in the training and up-skilling required to adopt and develop the new technology required to keep the domestic industry competitive.

At every level, governments continue to talk about creating good jobs and fostering a high performing, high achieving workforce and economy. Continuing to nurture the domestic aerospace industry must be an important component of that plan. Across the country, private citizens, workers, and even governments will clearly benefit from the high quality employment, high-tech development, tax revenue and spin-off effects that the domestic aerospace industry can generate.

This document provides a road map to understanding the domestic aerospace industry, describes some of the challenges the industry faces today and recommends concrete actions governments at the federal and provincial level can take in order to strengthen the industry and solidify its place on the global stage. Overall we find:

1. The aerospace industry has been and continues to be a source of strength to Canada's economy including high quality employment, large contributions to GDP, significant export intensity and high-tech innovation;
2. Competition for aerospace jobs and investments is fierce across countries. Canada needs to participate in that competition in a strategic manner without giving up the aerospace advantage: ensure high quality employment and benefits flow to government when investment in the industry is made;
3. The aerospace industry can continue to thrive. There are efforts that every level of government can take (many in partnership with industry, labour and academia) to ensure the continued success of the industry in the future.

2. The State of the Domestic Aerospace Industry

The domestic aerospace industry is known the world over for its research and development capabilities and technical savvy. These are highly sought after qualities in the competitive, innovation intense global industry. These qualities are supported by a highly skilled workforce and the strategic public policies put in place by federal and provincial governments across the country.

The country's domestic aerospace industry is the sixth largest in the world, behind the United States, the United Kingdom, China, France and Germany. That is a drop in the ranking since 2004. However at the same time, the market for aerospace goods and services has grown globally and the domestic industry has as well. An opening up of the air travel market in China and other emerging economies means that the market for air travel has significantly expanded.

Focusing solely on the market for commercial aircraft and commercial aircraft components shows Canada's commercial aerospace industry is third largest in the world, indicating the country has



focused to a large extent on commercial aerospace as opposed to military and defence. Globally, defence budgets are expected to rise, which indicates an increased focus on aerospace contracts supporting military and defence will become increasingly important in the future.

The aerospace industry is best understood as an ecosystem where three main sub-industries operate, including activities that support

commercial aerospace, activities that support defence initiatives and activities that support the development and manufacture of space and communications technology. The two main sub-activities in each industry include manufacturing and maintenance, repair and overhaul.

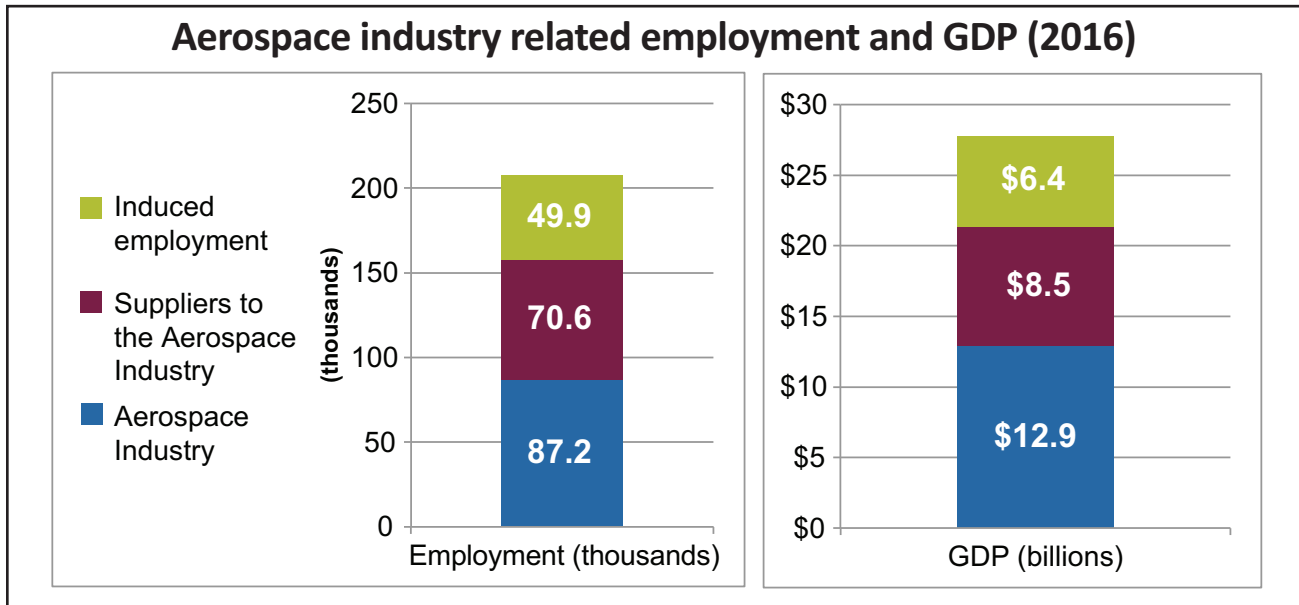
There was a time when it was common for an aerospace company to design, engineer and manufacture its own aircraft from nose to tail. This business model is no longer the norm. Instead, the aerospace ecosystem has become highly integrated with final equipment manufacturers sourcing materials and parts in a global marketplace where margins are tight and competition is fierce. Many aerospace companies now exist as component manufacturers and service providers that compete for the business of the firms that perform original design and final assembly.

2.1 Contribution to the Economy

The domestic aerospace industry makes a significant contribution to the country's economy. In 2016, the industry created or supported nearly 210,000 jobs and generated \$28 billion in GDP.

Those contributions were the direct result of activity in the aerospace industry, activity by suppliers to the aerospace industry and from consumer spending by associated employees. Figure 1 breaks down the data. More than 87,000 workers are directly employed by the aerospace industry (including manufacturing and maintenance, repair and overhaul), with another 70,000 employed by aerospace suppliers. Consumer spending by these workers generates another 50,000 jobs across the country.

Figure 1



Source: Innovation, Science and Economic Development Canada, State of Canada's Aerospace Industry 2017 Report

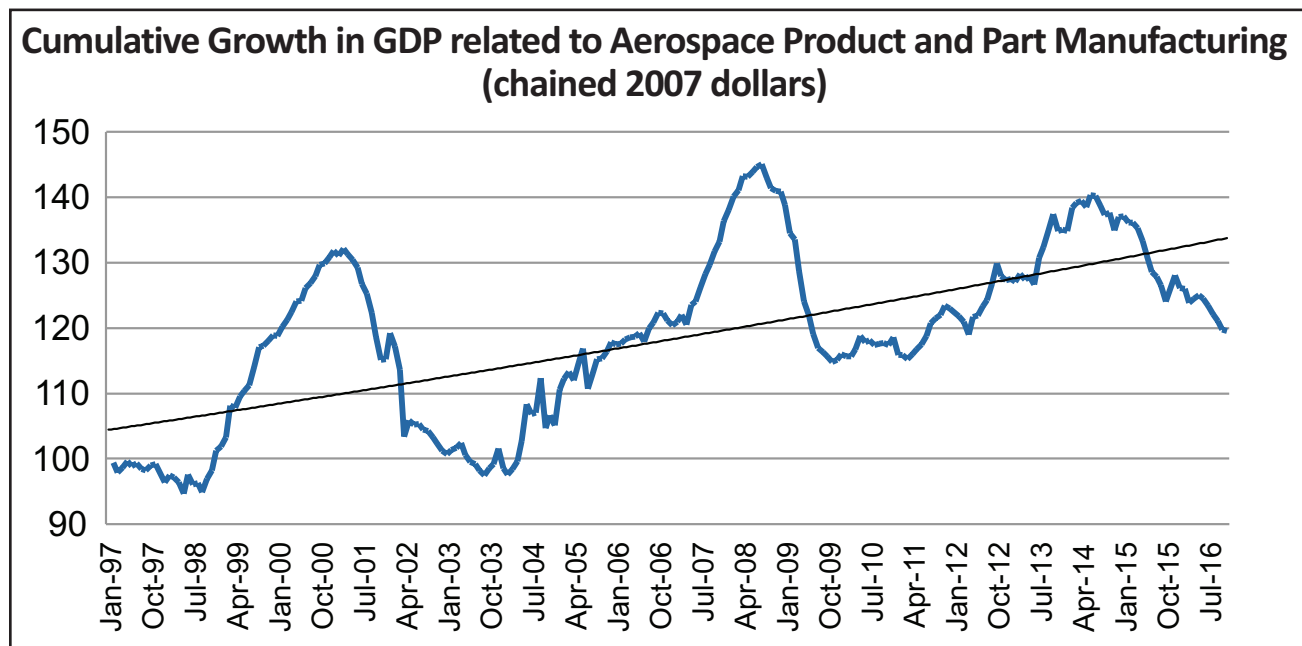
Employment in the industry is spread across the country and largely located in five provinces: Nova Scotia, Quebec, Ontario, Manitoba and British Columbia. According to Innovation, Science and Economic



Development Canada, nearly 40 per cent of all aerospace related work is performed in Quebec with another 25 per cent performed in Ontario, 28 per cent performed in Western Canada and the remaining 9 per cent performed in the Atlantic Region. The breadth of the aerospace industry across the country reinforces the importance of the industry to workers and governments from coast to coast.

Statistics Canada data show that the industry tends to be quite volatile with significant variation in the contribution to GDP made by the aerospace industry from peak to valley. The data also show that world events of many types can have a significant effect on the demand for aerospace related products and, ultimately, the success of the industry. Figure 2 outlines the cumulative growth of GDP related to domestic aerospace product and parts manufacturing. There are three obvious peaks between 1997 and 2016: the first occurring just before 9/11 which indicates the industry was severely affected by the September 11 attacks in New York City, but also that the attacks may have exacerbated a downturn that was already underway. Similarly, the peak in 2008 coincides with the beginning of the domestic recession and global financial crisis. Though not as severe, there also appears to be a downturn in 2014 which coincides, to some degree, with military spending cuts in the 2013 United States budget. While there has been much volatility in the market, the overall trend in the domestic aerospace industry is positive.

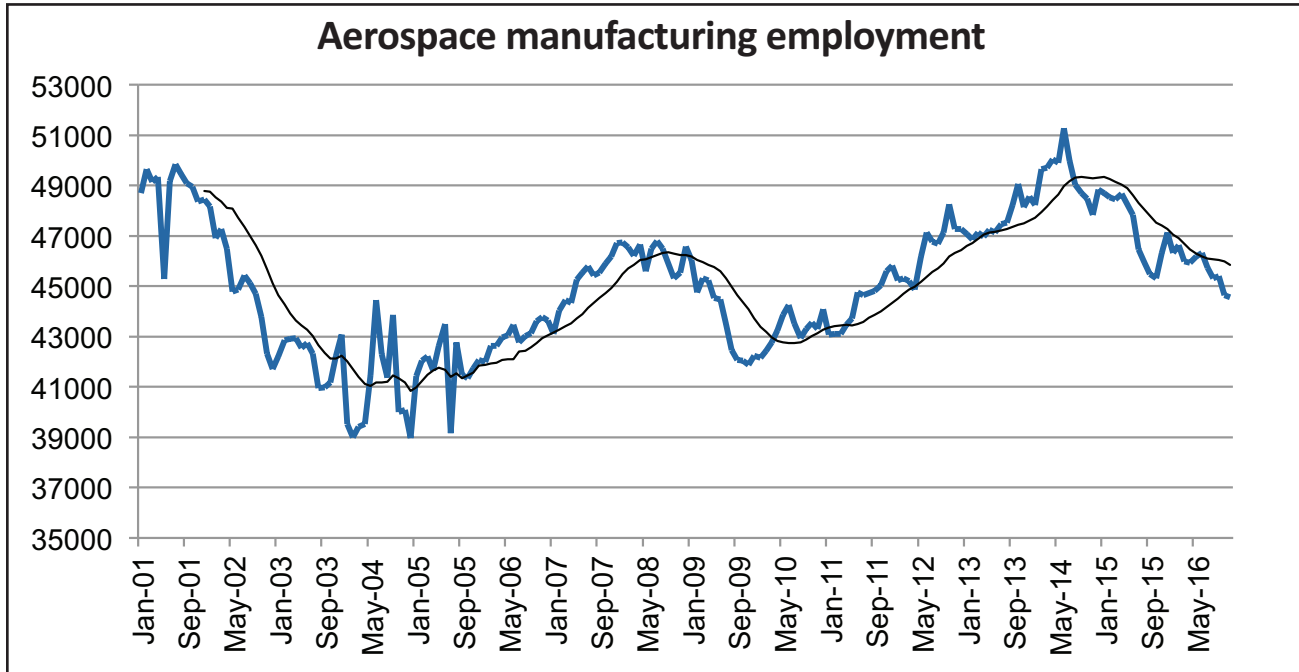
Figure 2



Source: Statistics Canada, CANSIM Table 379-0031, 2007 chained dollars

Employment in the aerospace manufacturing sub-sector follows a similar pattern to that of its counterpart, GDP. For the last decade and a half, employment in this industry sub-sector has consistently hovered between 40,000 and 50,000. A trough in the early 2000s was followed by an upswing in the years leading up to the 2008-09 recession. The aerospace sector did not suffer the massive losses felt in many other industries and by mid-2014 employment in the industry had climbed to the highest level seen since the turn of the century. Since then, employment has again fallen off to just below the pre-recession peak. Figure 3 outlines the data.

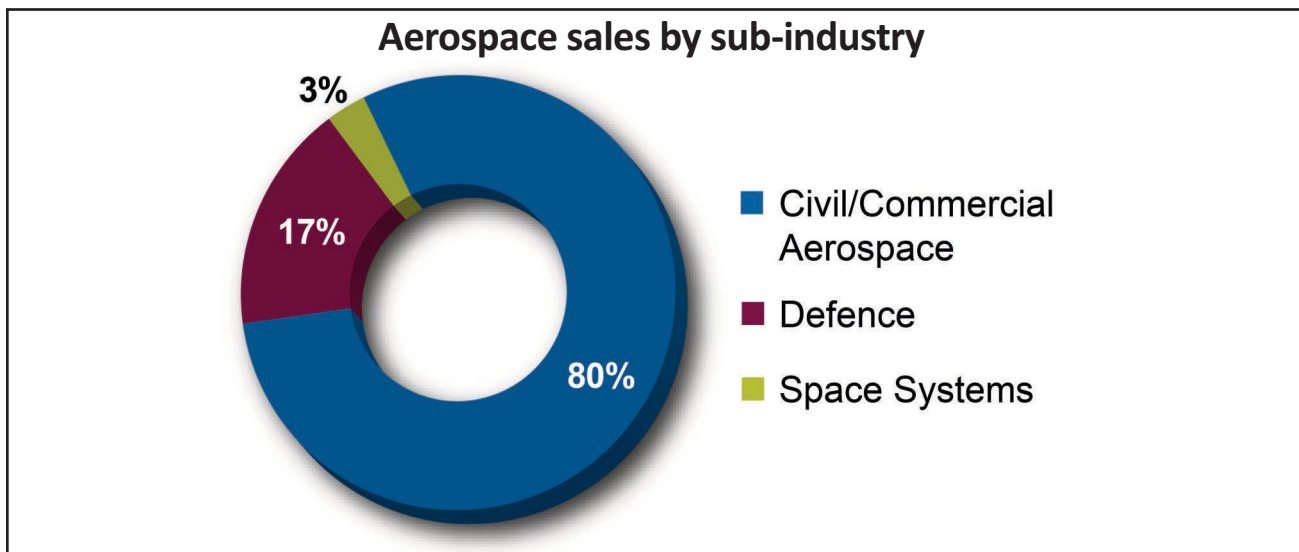
Figure 3



Source: Statistics Canada CANSIM Table 281-0023

According to industry consultants, this latest downturn in employment and GDP can largely be explained by a combination of reduced spending on military and defence activity by governments around the world as well as intense cost pressure from the commercial aerospace sector⁴. These two trends have been a double blow to the domestic aerospace industry and one not necessarily seen before as defence spending has tended, in the past, to be immune from austerity related spending cuts by governments the world over.

Figure 4



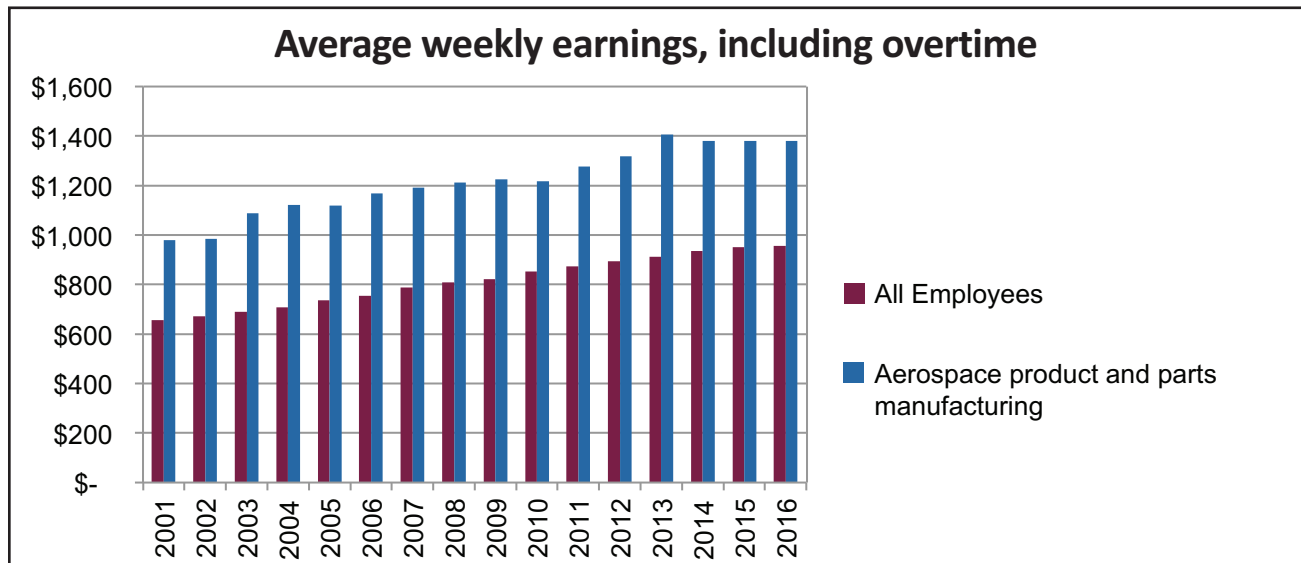
Source: Innovation, Science and Economic Development Canada, 2016

2.2 A Source of Good Jobs

One of the main benefits of a strong aerospace industry is the high quality jobs created for workers across the country. Reflecting the highly skilled workforce, data from Statistics Canada show that aerospace manufacturing employees' weekly average earnings (including overtime) are well above the industrial average. On average, aerospace employees earn close to \$1,400 per week. Data also show that employees paid by the hour earn approximately 15 per cent less than salaried employees. Figure 5 provides a comparison of earning between aerospace workers and all workers and shows the significant and consistent earnings differential between the groups. The data also shows the differential is shrinking.

Earnings is only one component of employment quality. Traditionally, the aerospace industry and the manufacturing sector in general have been a source of stability, good benefits, pensions and retirement savings, as well. Reports from our members working in aerospace firms across the country tell us that this is increasingly not the case. In fact, it seems precarious work is spreading in the aerospace sector. In recent years, there has been an expansion of temporary work across the industry. A number of temporary agencies specifically serving the aerospace industry have grown in size and stature and are offering an avenue for aerospace firms to lower costs through insecure and lower paid work with few or even no benefits and no commitment from employers.

Figure 5



Source: Statistics Canada, CANSUIM Table 281-0027

This temporary status means workers travel from employer to employer providing an important service but not receiving the investment in training and upskilling that is required to maintain the country's status as the home of a highly skilled workforce. In addition, workers are forced to move from place to place, without the certainty required to build a life or the benefits necessary to maintain a state of decent health over the long term.

2.3 A Research and Development Intensive Industry

The aerospace sector is a heavy investor in research and development. In fact, the research and development intensity of the aerospace industry is six times higher than the manufacturing industry as a whole. In 2016 the domestic aerospace sector invested more than \$1.6 billion in research and development and generated close to 30 per cent of overall research and development spending in the domestic manufacturing sector⁵.

Canada has a long history of supporting aerospace and space technology development and innovation, which has led to a highly innovative and research intensive industry. From the iconic Canadarm to RADARSAT, from the Downsview aerospace cluster at Downsview in Toronto to the Composites Innovation Centre in Winnipeg, our federal and provincial governments in Canada have invested in aerospace R&D as a tool for economic development and growth.

In 2014, aerospace firms outpaced the manufacturing average in terms of hiring skilled workers to introduce innovation and adopt advanced technologies. They also collaborated significantly more with industry, academia and government in order to further boost research and development efforts.

Furthermore, the Canada Survey of Advanced Technology found that aerospace manufacturers outpaced the manufacturing average on all types of innovation practices across the spectrum including product development, quality management, collaboration and even marketing. The survey also found that two times more aerospace manufacturers developed new technologies than the manufacturing average and



almost 50 per cent more companies customized or modified existing technologies. Aerospace manufacturers are also far more likely to adopt advanced manufacturing technologies than the manufacturing average.

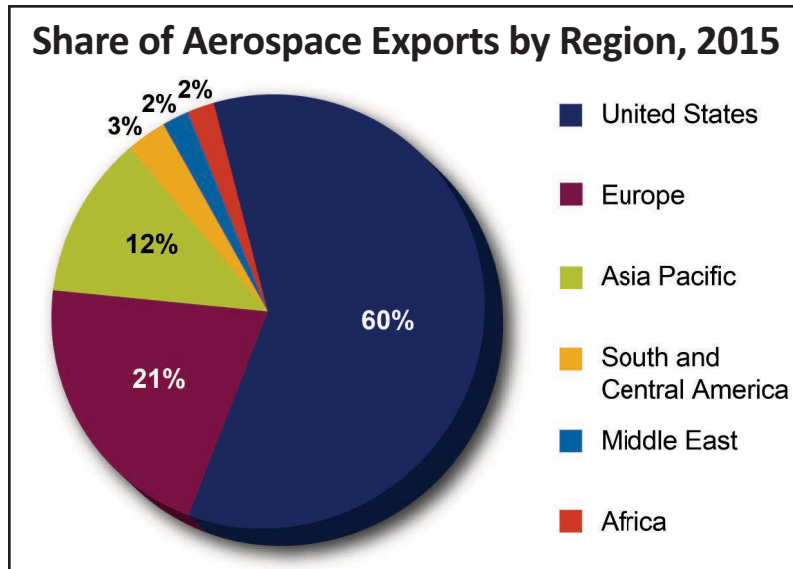
Our members report, however, that even as aerospace has become a leader in adopting advanced manufacturing technologies, domestic manufacturers and service providers

are failing to provide the appropriate training and up-skilling that is necessary to fully grasp the benefits of this technology and the additional competitive advantages this would bring. Investing in the necessary equipment is only half the battle when it comes to capitalizing on Canada's highly skilled workforce, the other half is ensuring the workers have the training necessary to use those skills to their full potential.

2.4 An Export Intensive Industry

The domestic aerospace industry is export intense and has enjoyed a trade surplus for many years. In 2016, domestic aerospace manufacturers exported more than \$20 billion worth of products and services. The trade surplus in the industry has hovered at approximately \$6 billion for the last three years. Close to 80 per cent of the products produced in the domestic aerospace industry are destined for foreign markets. This directly improves the country's balance of payments. Clearly a strong domestic aerospace industry contributes to a strengthening of our position globally.

Figure 6



Aerospace exports grew by more than 50 per cent between 2010 and 2015. The industry is also relatively trade diverse with exports destined for markets the world over. Sixty per cent of those exports were destined for the United States. However, a growing chunk of domestic production is destined for the Asia Pacific region, as China continues to open and expand foreign access to the domestic market for air travel.

2.5 Near and Long-term Forecasts

Globally, the aerospace industry is expected to see modest gains on an annual basis for the foreseeable future. The end of mandatory defence budget cuts in the US and a commitment from Donald Trump to increase defence spending by 10 per cent has aerospace firms in the defence industry anticipating an increase in orders. The US administration is also calling on NATO allies who currently spend less than 2 per cent of GDP on defence to increase spending in the area. With its new defence policy, our own federal government has followed suit to some extent by committing to more than \$45 billion in spending on defence infrastructure over 20 years, including new fighter jets and multi-mission aircraft. This spending though, is a long way off.

For its part, the federal government's recently released Defence Policy: Strong, Secure, Engaged, is committing to more than \$45 billion in expenditures on critical new equipment, infrastructure and information technology projects. Overall, program and project spending in the new plan is estimated to move the federal government expenditures on defence closer to the realm of what is expected under NATO commitments. This spending is a significant opportunity for the federal government to use strategic procurement and investment to shape the aerospace industry for the next 20 years.

Increasing tensions between the US and Russia, North Korea and Iran coupled with increasing concerns of global security threats and continued terror attacks will likely have additional direct effects on the defence policies of governments the world over and on defence spending in particular.

The long-term forecasts for commercial aircraft suggest the air transportation industry will require close to 40,000 new aircraft over the next 20 years. At 2,000 aircraft annually, that is significantly higher than the current production rates of approximately 1,400 per year. At this level, the commercial industry will be required to grow by 40 per cent to meet the demand over the next two decades.

The positive outlook, of course, leads to new competitors and new aircraft. Canada's Bombardier has recently entered the mainline market with its new C-Series jet. Sales of the C-Series to Delta Airlines in the United States prompted an unfair trade complaint from Boeing towards Bombardier filed with the US International Trade Commission in mid-2017. The US Department of Commerce found that federal and provincial governments as well as the UK government had provided subsidies that enabled ultra low pricing - a tactic not uncommon in the aerospace industry - and ruled that



100-150 seat aircraft from Canada should be subject to a 292% tariff. The USITC then ruled that the US aerospace industry was not harmed as a result of the subsidies and the tariffs were not applied. The dispute highlights the intensely competitive nature of the defence and commercial aerospace markets.

In addition to the C-Series and Bombardier's entrance in the single-aisle

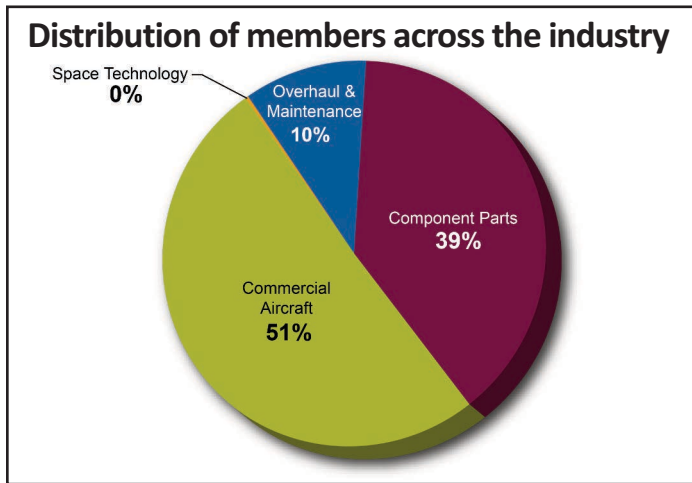
mainline market, the Commercial Aircraft Corporation of China or COMAC has entered into the international market seeking to take advantage of the growing demand for aerospace products. The C919 is one of COMAC's first aircraft and is built largely with component parts from western suppliers. However, the company intends to build a national aerospace industry by leveraging the technology it has purchased and compete with Boeing and Airbus as well.

Overall, there is potential for the continued growth of the domestic aerospace industry. However, government, the private sector, labour unions and academia will be required to focus and work together in order to continue to hold competitive advantage in this global market.

3. Unifor in the Aerospace Sector

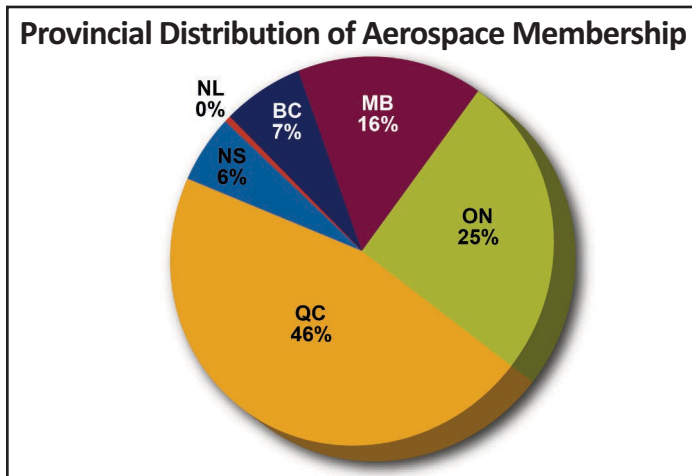
Unifor represents more than 11,000 people working in the aerospace sector. Our aerospace members design, build and finish commercial and utility aircraft; build component parts for defense aircraft; conduct overhaul and maintenance work on civilian, military and government aircraft; design and manufacturing simulators and training devices for a range of commercial and military aircraft and

Figure 7



Source: Unifor State of the Union

Figure 8



Source: Unifor State of the Union

(25 per cent) and Manitoba (16 per cent). British Columbia, Nova Scotia, and Newfoundland and Labrador are home to smaller portions of the aerospace membership at seven per cent, six per cent and one per cent respectively.

Clearly, Unifor’s membership in the aerospace industry is as diverse geographically as it is industrially. Across the country there are 18 Unifor local unions supporting 30 bargaining units in the aerospace sector.

are engaged in the production of satellites and robotics for space exploration.

Unifor members in the aerospace sector work for some of the world’s largest aerospace firms including Boeing, Bombardier, Magellan and Pratt & Whitney.

By far, the largest employer of Unifor members in the aerospace sector is Bombardier – 36 per cent in three locations. Bombardier is followed closely by Pratt & Whitney where a full one-fifth of Unifor’s aerospace members work.

The bulk of Unifor members (51 per cent) work in commercial and business aircraft divisions. An additional 39 per cent build component parts for commercial and defence aircraft. Ten per cent of Unifor aerospace members perform overhaul and maintenance work. A small but mighty proportion of our aerospace members design and build space technology.

Unifor’s aerospace membership is spread across six provinces including both east and west coasts and central Canada. Quebec is home to the largest portion of aerospace members (46 per cent) followed by Ontario

Figure 9: Unifor Locals and Units in the Aerospace Sector

Local	Unit	Company	Location	Province	Number of members
62	1	Centre de Finition Bombardier	Montreal	Quebec	1700
112	1	Northstar Aerospace	Milton	Ontario	200
112	4	Bombardier Aerospace	Toronto	Ontario	1800
112	9	MDA	Mississauga	Ontario	15
114	109	Viking Air	Sidney	British Columbia	300
114	122	Cascade Aerospace	Abbotsford	British Columbia	450
199	6	Genaire	Niagara	Ontario	40
252	50	Aircraft Appliances and Equipment	Bramalea	Ontario	30
252	84	Metal Improvement	Brampton	Ontario	45
303	24	Firan Technology Group	Toronto	Ontario	70
444	32	Heligear Canada	Tecumseh	Ontario	70
508	10	MDA	Sainte-Anne-de-Bell	Quebec	200
510	0	Pratt & Whitney Aircraft Canada	Longueuil	Quebec	2050
522	0	CAE	Saint-Laurent	Quebec	500
597	55	D-J Composites	Gander	Newfoundland and Labrador	50
673	4	Bombardier Aerospace	Toronto	Ontario	475
673	5	MDA	Mississauga	Ontario	15
698	34	Solutions Energetiques Sermatech	Montreal	Quebec	45
698	41	Vac-Aeros International	Montreal	Quebec	40
698	45	PCC Aerostructures Dorval	Montreal	Quebec	85
698	47	Avior Produits Integres	Montreal	Quebec	40
698	57	CP Tech	Ville St. Laurent	Quebec	75
698	64	Solutions FAXX (Canada)	St. Eustache	Quebec	50
728	9	Avior Produits Integres	Laval	Quebec	115
1956	1	Heroux Devtek	Longueuil	Quebec	250
1956	2	Heroux Devtek	Longueuil	Quebec	15
2169	0	Boeing of Canada	Winnipeg	Manitoba	1300
2215	1	IMP Group	Halifax	Nova Scotia	600
2889	1	CMC Electroniques	Montreal	Quebec	220
2889	2	CMC Electroniques	Montreal	Quebec	280
3005	1	Magellan Aerospace	Winnipeg	Manitoba	400
Total:					11500

3.1 Unifor's Aerospace Industry Council

Unifor's Aerospace Industry Council meets at least once each year to discuss and analyze developments and trends in the aerospace industry in the country. These meetings often coincide with Unifor's Canadian Council or Convention. The Council is made up of delegates from local unions affiliated with the council. These delegates are responsible for reporting to and updating the council on important developments in their local, including bargaining wins or concessions, layoffs and hires, and new work awarded or lost in their facility. Delegates are also responsible for voting on any resolutions or other matters that may arise including federal and provincial government policy.

The Aerospace Industry Council executive is made up of five elected representatives from the diversity of the aerospace council membership. The executive meets regularly to discuss activities of the council, plan meetings and organize events. Additionally, the executive takes the lead on issues of policy, analyzing industry trends and government activities, and responding as appropriate.



4. Smart Policy is an Essential Component of a Successful Aerospace Industry

The size and robust nature of the domestic aerospace industry we know today is a remarkable achievement for a relatively small country such as ours. That the domestic aerospace industry is known the world over for its innovative and highly skilled workforce, research and development intensive activity and high value exports is a testament to the strategic and proactive actions federal and provincial governments have taken over many decades to nurture and fortify the industry across the country.

As we've stated before, if the industry had been left solely to the free market, there is little reason to believe the country would have an aerospace industry at all, let alone the incredible successes we've known in the past.

Free market dogma suggests that low taxes, tax credits and free trade are the only factors under government's control that lead an aerospace entity to locate in a particular jurisdiction, but both research (new and old) and past experience suggest quite the opposite. The vision of the private sector as dynamic, innovative and competitive and the public sector as sluggish, bureaucratic and obstructionist is a common thread in public discourse. However, a look at the actions of past governments shows that strategic investment and procurement practices, coupled with research and development support and strong labour market regulations, was a necessary ingredient in the creation to the dynamic and innovative aerospace industry present today.

4.1 A Look at Past Government Action

Over the decades, subsequent governments have used public procurement, direct ownership, programs support and financing for major purchases as four strategies to support the aerospace industry.

In the early days, the federal government delivered support to the industry by leveraging the significant dollars spent on large military and commercial aircraft purchases into required Canadian content and/or industrial regional benefits agreements. Canadian content requirements meant that foreign firms were required to build at least portions of the final aircraft domestically. Often this meant the winning companies were domestically based firms with significant presence across the country. The industry received a large boost when the country entered World War II and domestic plane makers supplied a total of 16,000 military aircraft to the allied war effort.

Later, the federal government further leveraged investment through industrial regional benefits policies or industrial offsets which required large foreign owned companies that won Canadian military contracts to spend an amount equal to the contract in the domestic aerospace industry.

During Air Canada’s time as a crown corporation, the government was able to use these strategies to leverage investment in the commercial aerospace industry as well. The active use of strategic government procurement policies has been an important tool in the suite of options available to governments across the country.

Another early government strategy was direct government ownership. Canadair and deHavilland are just two such companies to have received significant support for crucial aerospace manufacturing facilities – the legacies of which are still visible today at Bombardier, Viking Air and MDA to name a few.

Canada has a long history of direct investment in and support for research and development, prototyping and even early commercial production of aerospace and space technology. The Defence Industry Productivity Program (DIPP), Technology Partnerships Canada (TPC), Investissement Quebec (IQ), the Strategic Aerospace and Defence Initiative (SADI) and the newly created Strategic Innovation Fund (SIF) are all examples of government programs that have or will provide direct investment into research and development, worker training and even production of the next generation of aerospace technologies. Each leverages private investment by providing grants, repayable loans or direct public purchase of a portion of the business to develop aerospace technologies.

Some of the technologies developed as a result include air traffic control equipment and technology, systems integration, navigation technology, turbofan technology in aircraft engines, state of the art satellite technology (RADARSAT), the Canadarm and the development of composite materials for use in aircraft manufacturing. These investments have resulted in Canada’s participation in enabling NASA’s space shuttle program and the assembly of the International Space Station. Without these investments in technological development, it is unclear the domestic aerospace industry would have been nearly as successful as it is today.



Of course investment in the aerospace industry comes with risks. Because the industry is high-tech and the spin-off effects so lucrative, governments the world over compete to win both aerospace employment and investment in their respective jurisdictions. The federal government was one of the first to implement industrial regional benefits as a requirement of winning a contract. Today, IRBs and local content rules are common practice, with some jurisdictions, most notably China, going as far as requiring 60 per cent content, a joint venture with the government or direct technological transfer as a condition of gaining access to the Chinese market.

Further, growing markets in India, Brazil and Russia are putting additional pressure on the competition for jobs and investment. These competing jurisdictions are implementing policies that have been winning strategies for the domestic industry in the past.



In order to continue to compete, federal and provincial governments will need a multi-pronged strategy that incorporates Canadian content and industrial regional benefits with government investment and support for worker training and R&D.

For their parts, federal and provincial governments have been making investments recently as well. The federal government continues to make payments into the Joint Strike Fighter Program. Whether the government ends up purchasing the F-35 is still an open question, but investment in the partnership ensures Canadian organizations are able to bid on contracts for the program. In May of 2016, the federal government invested \$54 million in MDA Systems Ltd and its partners to support the development and testing of the next generation of satellite technologies. The Quebec Government and Caisse de Depot invested a total of \$2.5 billion, \$1.5 billion in the transportation division and \$1 billion in the aerospace division in exchange for ownership stakes in the companies. In 2017, the federal government followed suit and provided a \$372 million loan to Bombardier for use in the continued development in the new C-Series program. In the 2017 federal budget, the new Strategic Innovation Fund was formed. This fund combines a number of previous government programs with the aim of streamlining some of the bureaucracy and reaching more industries. Federal and provincial governments in Manitoba and Winnipeg have also provided investment of almost \$20 million combined for the development of new Aerospace Technology and Training Centre in Winnipeg and in aerospace tech innovation in Ontario.

All of the above information points to the need for a robust industrial partnership between government, academia, labour and business. All stakeholders need to commit to work together to build the success of the aerospace industry moving forward. Just as the success of the aerospace industry of the past is no accident, the future of the industry will take proactive planning and commitment by the industry's diverse stakeholders to get it right.

5. Key Elements of a Strong and Growing Aerospace Industry

Unifor's analysis of the aerospace industry globally, nationally, locally and at the firm level finds there are a number of elements necessary to sustain and grow a strong aerospace industry. The following section outlines the key elements, explains the challenges and suggests policy solutions that must be implemented by government to sustain and grow our industry in Canada. Solutions include a range of topics including strategic government investment and procurement, a commitment to make trade fair and a need to protect and improve employment quality in the aerospace sector to name a few.

5.1 Strengthen Strategic Government Investment

The aerospace industry across the country is highly innovative. Canadian firms design and build satellites, robots and technology for use in space exploration, have developed new and more fuel efficient aircraft for commercial use, and are building components of the new generation of fighter jets for a number of large defence producers.

Product development in aerospace requires massive financial investment. It is a long term cycle from the first drawing to entry into service and financial returns are only attained once the process is complete. When venture capitalists are unwilling and private, mission oriented capital is unavailable, governments must often step in to provide the long-term, stable investments necessary to get a new product to market. As a result, government support is a critical component of the innovation agenda at many aerospace companies.

Globally, government support can and often does come in many forms: from direct ownership to tax breaks, from investment in research and development to defence subsidies and defence contracts. In addition to the investments outlined below, most governments also provide tax exemptions for R&D. While it is difficult to pinpoint exactly how much money different governments have invested in the aerospace industry, there are some sources with reliable estimates.

The United States is a major player in the aerospace industry and major competitor in the commercial and military aviation sectors. It is estimated that the US invests more than \$50 billion a year in support for the aerospace industry. This includes direct subsidies for research and development through NASA (National Aeronautics and Space Administration), DARPA (Defence Advanced Research Projects Agency) and the DOD (Department of Defence) as well as the transfer of research results and collaborative R&D from government institutions such as the ASC (Aeronautical Systems Center)⁶.

The European Union is estimated to have provided Airbus with launch aid and/or loans of approximately \$15 billion between 1987 and 2002. The company has also received royalty based



launch aid of \$1.8 billion and been given access to R&D grants from both France and Germany. In addition, France, Germany and Spain each own a portion of the company – ensuring that they directly benefit from the investments they have made⁷.

Brazil has provided preferential loans of approximately \$2.5 billion to aircraft development as well as infrastructure concessions and a small government owned stake in Embraer. Additionally, the government awarded a \$500 million defence contract to Embraer – one of its domestic aerospace firms.

Mitsubishi Heavy Industries is another international competitor with serious government support. The Mitsubishi Regional Jet received at least 60 per cent of its financing from government sources as well as royalty based launch aid of \$600 million⁸.

The Russian company Sukhoi is 100 per cent state-owned and operated. The Russian government budgeted \$13.9 billion for the aerospace industry between 2006 and 2015.

Finally, China is a fierce competitor on the scene. The Chinese company COMAC is 100 per cent state-owned and the government is pulling out all the stops to become a commercially viable player. The company has received \$30 billion through budgets and direct loans.

The aerospace and space tech industry is one of the leading sectors when it comes to R&D. The

domestic industry was responsible for \$1.5 billion in R&D spending in 2015 alone. That number works out to 10 per cent of total R&D spending across the country – a significant contribution to the government’s high-tech, good jobs agenda.

Recent research is highlighting the significant role that government spending has played in the most lucrative innovations of our time. Just think about what the iPhone would be without the internet, the touch screen, and Siri, or what Google’s search engine would be without the algorithm (all innovations developed with support from the US government)⁹.

As analysts, pundits and government representatives continue to put emphasis on innovation and R&D as drivers of future prosperity, it is imperative that innovations such as those being produced by our nation’s aerospace companies get the patient, mission-oriented support they need as they prepare for commercial viability.

In this environment the Federal government must continue to invest in the aerospace industry as a strategic priority in creating and maintaining high value jobs and ensuring that high-tech talent can find their niche close to home. In recent years, the federal government has invested in Bombardier’s new C-Series aircraft, the continued development of Canadian content in the F-35 Joint Strike Fighter Program, and a space technology research consortium led by MDA to bridge the gap in the space satellite sector between academic research and commercialization opportunities. These are perfect examples of the type of pro-active industrial policy that has enabled the development of our high performing aerospace sector.

In its 2017 budget, the federal government announced it will invest \$950 million in superclusters meant to build an ecosystem around innovation and industrial development that will grow specific industries. The government did not include aerospace on that list. There are currently a number of aerospace clusters across the country including in Halifax, Montreal, Toronto, Winnipeg and Southwest BC. These clusters should be included in the supercluster strategy. Furthermore, government is relying 100 per cent on industry-led applications to a competitive fund for supercluster development. In addition to new superclusters, government should look to clusters that currently exist and provide funding to scale-up investment in enhancing and streamlining cluster initiatives.

At the same time, recent high profile frustration with companies receiving government investment has highlighted the need for governments at the federal and provincial level to exert the power they have as investors and creditors to ensure the money invested is put to productive use and that they share in the rewards once the innovation has made it to the commercialization stage. The current state of play has tended to transfer the risk onto the government (i.e. the public) while delivering the benefits of the risk (i.e. profit, stock price increases and dividends) to private owners. This status quo needs to change.

Unifor recommends:

- **Strengthen the Strategic Innovation Fund:** Federal and provincial governments build on the innovation agenda by continuing to use the Strategic Innovation Fund to support early stage, Canadian made, high potential innovations in the aerospace and space technology industries. These investments must also include pro-active partnerships between multiple levels of government, the private sector and research institutions and ensure government shares in the reward if and when a piece of experimental technology reaches the commercialization stage. Additional funding through the new Strategic Innovation Fund should be made available.
- **Investment Set-Asides for SMEs:** Include a set-aside within the SIF for small and medium sized enterprises with high innovation and commercialization potential to ensure high potential and high-technology firms at all levels have access to the partnership funding necessary to compete in the sector.
- **Strong, Enforceable Conditions on Investment:** Federal and provincial governments must impose more strict conditions on the actions of companies when investments are made. Conditions must be linked to align with strategic goals including ensuring investments are tied to job creation and maintaining design, production and ownership in domestically located facilities as opposed to exporting expertise and technological advances. Ensure capital investments are used for manufacturing equipment, and ensuring that manufacturing remains in the country.
- **Sales Financing:** Introduce a consistent, universal sales financing program to facilitate purchases of Canadian made passenger aircraft, in both domestic and export markets.
- **Supercluster Development:** Federal and provincial governments take a pro-active approach to the aerospace industry by enhancing the 2017 budget commitment to supercluster development to include additional investment and further development of existing clusters. This Aerospace cluster development strategy should be developed alongside the new innovation for Defence Excellence and Security clusters announced in the recent Defence Policy.

5.2 Leverage Government Procurement

The importance of the aerospace industry to the Canadian economy cannot be overstated. Innovation, exports, productivity and high value jobs are just a few of the ways the industry supports and shapes the Canadian economy. But the growth and maintenance of the aerospace and space technology industry did not happen by accident. The aerospace industry is the result of decades of strategic government decisions to nurture an industry with such vital spin-offs. One of the tools at the government's disposal for nurturing the industry is government procurement.

Spending on aerospace and aerospace-related products and services forms a significant piece of government expenditures domestically and internationally. While a large majority of that spending is on military aircraft and equipment, a small but growing share of spending occurs in support of law enforcement and emergency response activities. Contracts for government related aerospace purchases are often in the billions of dollars and can include millions more in the form of overhaul, maintenance and in-service support work. Governments can use this cost-intensive investment opportunity to attract jobs as an important lever in garnering public support for large, public expenditures, particularly in the defence industry.

Typically, countries with companies that manufacture defence-related aerospace products make their purchases “at home”. A country such as Canada, however, that lacks an original equipment manufacturer in the military aircraft industry, must purchase aircraft from companies based in foreign countries. But that doesn’t mean it is powerless to use government procurement as a tool to boost



spending in the aerospace sector. On the contrary, the federal government can use these procurements of both goods and services to leverage investments in Canadian suppliers in the aerospace industry across the country.

It has become standard practice to require the companies that win large government contracts to offset the price of the government purchase by spending equal amounts of money on products and services of companies

located in the purchasing country. At the federal level, the policy is called Industrial Regional Benefits or IRB and it requires that firms winning government contracts spend equal sums of money on Canadian goods and services within the aerospace sector. According to the federal government's 2012 aerospace review, Canada was one of the first countries to introduce such a requirement¹⁰.

It is generally accepted that IRBs have had a positive benefit on the domestic aerospace industry, but that implementation of the policy has been far from perfect. The government could do better by being more deliberate and aggressive in its approach to IRB planning requirements on foreign suppliers and in enforcement efforts once those commitments have been made.

The federal government circumvented its IRB policy when it entered in to the Joint Strike Fighter Program that led to the development of Lockheed Martin’s F-35. In addition to investing hundreds of millions into the program, the decision has led to questions about whether or not the federal

government is required to purchase the F-35 in order for domestically located firms to continue to have the privilege of bidding on contracts to supply component parts to the F-35. This style of procurement leaves purchasing decisions solely up to the foreign supplier and removes what control the federal government does have from the procurement process. Unifor supports participation in the JSF and suggests additional IRB measures must be taken if the F-35 is the fighter jet ultimately purchased by the federal government.

At the same time, Canada is home to world class OEMs that design and manufacture high quality, technologically advanced emergency response aircraft including water-bombers and search and rescue aircraft.

The country is currently home to one of the most innovative space technology industry bases in the world. Technological advancements from this industry include roaming satellite maintenance stations and strategic defence radar. From the functioning of traffic signals and ATMs to measuring climate change and promoting national security and defence, the technology produced in this industry plays a critically important role in the everyday functioning of Canadian society and in every individual's day to day life.

Provincial and federal governments can use their power to invest in Canadian equipment, innovation, and technology by purchasing Canadian made products in this category.

Additionally, the federal government's approach to overhaul and maintain government owned aircraft could do more to foster good jobs and domestic expertise. Government procurement in aircraft services can ensure the continued development of skills and capabilities and ensure the transfer of technical data and intellectual property from the foreign vendor to the domestic overhaul and maintenance supplier to support and improve the protection of the country's national security interests.

Furthermore, stakeholders in the overhaul and maintenance sub-sector report that the procurement process is unreasonably lengthy, which creates uncertainty and skepticism among government contractors and suppliers. For example, the "will-they or won't-they" nature of the process to replace the military's current fleet of CF-18 fighter jets has meant companies and individuals are uncertain as to which technology and equipment to invest in for the future. It has left overhaul and maintenance workers in a state of limbo as they continue to question what up-skilling investments are required for the future.

In the 2017 Defence Policy, the federal government announced \$47.2 billion in funding over 20 years for 52 critical new equipment, infrastructure and information technology projects. This is significant



spending over a sustained period of time. Unfortunately, the spending was not tied to specific requirements for Canadian content and services or industrial regional benefits. This was an oversight that can be rectified. *Unifor recommends:*

- **Stronger Industrial Regional Benefits Requirements:** Recommit to and fortify the Industrial Regional Benefits program such that government procurement is used to leverage investment in key technologies and production in domestic firms supplying component parts and developing new technologies for the global aerospace industry. Commitments should be outlined in the early stages of the procurement process to provide early understanding of the intended domestic investments and to ensure sufficient investment in the high technology systems and services domestic aerospace firms must continue to develop in order to compete in the global market.
- **Domestic Maintenance, Repair and Overhaul Policy:** Implement a “Service in Canada” policy that enhances the likelihood that domestic firms will win overhaul and maintenance and in-service contracts on aerospace equipment owned and operated by federal, provincial and municipal governments across the country. These aircraft are in-use to support broader public goals such as defence, fire-fighting and coast guard related tasks and can also be put to use supporting robust safety standards and high quality jobs for workers.
- **Stronger Support and Protection for Canadian Space Technology:** Recognize space technology as a critical component of federal government infrastructure and make every effort to purchase with Canadian content, design and engineering in mind but also, given the national security implications, ensure the ownership and technical knowledge in this industry remains in Canada as well.
- **Procurement to Promote Research and Development:** Use procurement to promote and incentivize Canadian research and development in aerospace and space technology areas.
- **Canadian Content:** Recognize the capabilities of Canadian aerospace companies in filling orders for military and emergency response aircraft by including a preference for Canadian content and made in Canada solutions.

5.3 Enhance Workforce Development and Planning

The success of the aerospace industry is highly dependent on a well-trained and agile workforce; one that is fluent in today’s technology and requirements, and also capable of creating and mastering the aerospace technology of the future. Our members, our employers and the Aerospace Industry Association of Canada (AIAC) alike have all raised concerns about workforce development and training in the sector.

While there is a general understanding at the macro level that a growing training gap exists in the industry, there is a lack of understanding of what the current and future talent requirements of the industry actually are. The Canadian Council for Aviation and Aerospace (CCAA) has begun an investigation. Key findings of an early LMI survey found that 42 per cent of aerospace and aviation related companies face immediate and persistent recruitment challenges. Companies reported low attrition rates and few problems with retention; however there is a coming retirement wave that is expected to pose labour challenges.

At the firm level, our members report that new entrants into the field are not receiving the training they need to perform their job at the high quality standards the aerospace industry is known for. Furthermore, technological change and efficiency improvements, including the use of robotics in the manufacturing process, mean the skills requirements at job entry are much higher and the learning curve much steeper than was the case a generation ago.

Office administration support and services are not immune to technological change. Our members working in the administration side of the aerospace business report training gaps among office staff that are used as an excuse to move work overseas or to hire contract and temporary workers. Unifor does not oppose the advancement of new technology, however we do believe technological change



and advancement must be implemented with transition measures to up-skill current employees, and ensure employment security and equal opportunity for existing workers to learn and adapt to changing technology.

Unfortunately on both sides of the business, instead of increasing efforts to train new employees and up-skill existing

workers as new technology is implemented, companies have taken a hands off or laissez faire approach that has led to training gaps that do not need to exist. In fact, these so-called skills gaps are actually created by a lack of pro-active action on the part of employers and policy makers alike. In British Columbia, employers participating in a recent labour market survey stated that additional on-the-job training is often required before a new employee can be considered productive. Most of the reported staffing challenges had to do with lack of experience or certification as opposed to a

lack of skill. Companies are investing less in training and upskilling and more in raising alarm bells with no solution.

The country's highly educated workforce is a core strength of the Canadian economy. A consistent theme in many industries across the country has been insufficient on-the-job and industry specific training to bridge the transition from an educational institution to the workforce. In order to remain competitive, innovative and successful, the aerospace industry must develop a workforce development strategy to integrate post-secondary education, apprenticeships and on-the-job training to prepare the next generation of aerospace workers and up-skill the current workforce for the future. Continued investment in a highly skilled workforce will continue to prove a competitive advantage for the country over the rest of the world. Government and industry need to lean into this prospect and train and upskill the current and future workforce.

Unifor Recommends:

- **Integrated Labour Market Information System:** Federal government invest in an integrated and consistent labour market information system that can catalogue and disseminate data on future talent needs and current job vacancies. This system could build on the previous work of the CCAA but also be integrated into a larger labour market information system. .
- **Stronger Education and Training:** Strengthen aerospace-related education and training programs at all levels of government and across stakeholders to prepare for looming retirements and next generation technologies. All levels of government, industry and other stakeholder groups must invest heavily in worker training and professional development. Investments should include targeted support for aerospace apprenticeships, upskilling of current workforce as new technologies are implemented, recognition of transferrable skills and require appropriate oversight of public training support to ensure funds are not used to develop expertise in foreign countries.
- **Skilled Trades Harmonization:** Work towards full harmonization of skilled trades training and recognition in all jurisdictions across the country to continue to reduce barriers to worker mobility. Ensure harmonization efforts default to the highest quality standards in order to avoid undermining the caliber of the skilled trades system.
- **Training the Next Generation of Aerospace Workers:** Develop pre-apprenticeship, paid internship and mentorship programs in partnership with aerospace firms and educational institutions that work to build capacity and experience in the aerospace industry throughout the educational system.

5.4 Maintain Employment Quality

One of the most important benefits of a large aerospace industry in an economy is its tendency to produce high quality jobs with good pay and decent standards as well as the economic spin-offs including activity in supplier related industries and the taxes that are paid by the employers and employees in the aerospace sector. However, our members are raising concerns and providing evidence that without concerted effort to maintain the quality of employment in the aerospace sector, the country risks seeing diminished employment quality in aerospace sector across the country.

There are three main avenues of employment quality erosion in the aerospace sector: wages growing more slowly than the industrial average, an increase in temporary and contract employment, and travelled work.

Average hourly wages in the aerospace sector are roughly 40 per cent higher than the average industrial wage. On a weekly earnings basis, workers in aerospace earn significantly more than the average Canadian worker. However, the premium in the aerospace industry has been slowly shrinking over time. In the last decade the weekly earnings premium enjoyed by aerospace workers by aerospace workers has decreased from 55 per cent to 45 per cent.

While often holding secure jobs themselves, our members in the aerospace industry are increasingly warning about the use and overuse of temporary workers in their workplaces. Temporary workers are often paid less to do the same work and receive less training than their permanent and unionized colleagues. A growing share of the aerospace workforce is considered to be permanently temporary. This creates a two-tiered structure in the workplace, in both training and remuneration, which leads to downward pressure on the high quality jobs the industry is lauded for producing.

Contract work is on the rise as well. Contracting out can take many forms: from sending work off site to bringing workers in on a temporary basis. A number of the facilities where our members work rely on contract workers from



supplier firms to complete work that used to be done by the original equipment manufacturer. This work is generally done by suppliers at a lower rate of pay and with fewer benefits.

On the administration side of the aerospace business, our members report increased use of off-shoring schemes that reduce the number of high quality jobs in the sector. As technology becomes more sophisticated, office and administration related work is being outsourced or off-shored to foreign firms that provide the service at a lower cost.

Our members also report increased use of temp agencies to fill permanent positions. They also report the increased use of the temporary foreign worker program in aerospace workplaces across the country. This overuse has been to the detriment of skills and expertise development domestically.

The use of temporary and contract workers (foreign and domestic) is rather quickly creating a transient sub-workforce in the aerospace sector that travels from workplace to workplace. The creep of these business practices into the aerospace sector is the continuation of the creation of a precarious workforce with few protections and minimal stability. Employers don't generally admit that the use of temporary workers is done with the purpose of undercutting employment quality but reduced employment quality is certainly a direct result. Companies outsource and off-shore work in order to save money and improve efficiency, but it is common for workers, whether outsourced locally or off-shore, to make a less money than what workers were paid in the home country and to not be afforded the same benefits or labour protections and standards.

In addition to lower job quality, the increased share of workers who are temporary, contract or travelled has led to increased health and safety concerns, less training and fewer experienced workers.

While governments cannot control the Human Resources decisions of large firms, they can implement employment standards legislation that directly affects the quality of employment for some workers both through government regulation and implementing higher standards in government procurement. The Ontario Changing Workplaces Review interim report outlined some important ways that employers use contracting out as a scheme to create intense competition that leads to lower quality employment and a simultaneous abdication of responsibility by the contract writer to the social outcomes resulting from those contracts. Governments are guilty of this, too.

In recent years our members have begun to discuss the negative effect that austerity in government spending has had on employment quality and employment standards in the aerospace industry. In order to control costs, government has placed unreasonable constraints on government contractors in terms of the time allotted to perform a task and the need to justify work that is done. In this way, government has squeezed its suppliers and created intense competition which is contributing to the downward pressure on the quality of employment as well as on the ability of employers to train new employees for current and future tasks.

Unifor recommends:

- **Strengthen employment federal and provincial employment standards:**
 - ◇ **Equal pay and benefits for temporary workers:** Provincial and federal governments implement and vigorously enforce employment standards legislation requiring pay and benefits equity amongst all employees, whether permanent or temporary. This policy could diminish the perceived financial benefit to hiring temporary workers or contracting out pieces of work that were at one time performed in house.
 - ◇ **Liability for violations:** Make employers jointly and severally liable with temporary employment agencies for any employment standards violations of workers employed in their worksites (not just lost wages) with no ceiling on potential claims and a five-year limit on filing claims. Require temp agency employees be paid the same wages and benefits as permanent employees at the enterprise in which they are performing comparable work.
 - ◇ **Reduce incentive to outsource:** Strengthen provincial and federal labour laws and employment standards to reduce the incentive for companies to outsource.
 - ◇ **Grant successor rights:** Strengthen provincial and federal labour laws such that successor rights are granted in cases where a set of tasks or jobs is transferred from one employer to another.
- **Social Procurement:** Governments improve the procurement processes to consider social outcomes of procurement as well as cost. To this end, governments must consider the effect of their intense cost control measures and unreasonable constraints and place an effort to promote job quality and worker well-being.
- **Temporary Foreign Workers:** Extend full labour rights, mobility rights and social protections to all temporary foreign workers in the country. Implement a path to permanent residency as an alternative to the current temporary foreign worker program.

5.5 Make Trade Fair

Domestically located aerospace producers exported nearly \$20.5 billion in aircraft, aircraft engines and aircraft parts and services in 2016. The aerospace industry across the country is highly integrated into global supply chains. While a majority of our aerospace exports are destined for the U.S. market, aerospace imports tend to come from countries classified as emerging markets, including Mexico and others.

In the aerospace sector, free trade agreements can limit public investment, support for research and development, and the additional financing sometimes necessary to bring a cost intensive and innovative product to market. They can also block access to export-development loans that are used to finance sales.

Free trade is often sold to people around the world as a necessary tool for growth and prosperity. In fact, the trade deals of the last 30 years have largely given power to corporations at the expense of government, of working people and of citizens.



For example, Mexico’s footprint in the aerospace industry is growing rapidly – the number of aerospace firms with a footprint in Mexico tripled in the last decade. Many reports suggest the growth in Mexico’s aerospace sector is correlated to the government’s aggressive pursuit of free trade deals, along with lax business, labour and tax regulations.

Canadian companies are facing challenges of illegal subsidies and product dumping from foreign suppliers including Embraer in Brazil and Boeing in the United States. At a high level, both companies allege that government investments in and supports for Bombardier (both aerospace and transportation divisions) are illegal subsidies that allow Bombardier to sell its C-Series aircraft at a low cost in order to improve competitiveness. These challenges threaten Canada’s ability to engage in industrial policy.

In addition to competition from North America, we are facing increased competition from emerging markets. Free trade agreements can increase the intensity of that competition in negative ways. For example, while Industrial Regional Benefits are credited with fortifying the aerospace industry, a number of the trade agreements currently under negotiation and/or ratification stages consider these offsets to be a barrier to free trade. As such, governments are generally prohibited from using them. However, emerging market economies are not. For example, the TPP allows developing countries, including Malaysia and Vietnam, transitional periods in which offsets can be imposed. The reason: these countries are considered emerging markets and are allowed an additional transition period to build their industry. Under this arrangement, transition periods may last as long as 25 years. Allowing low-wage countries such as Vietnam and Malaysia to utilize these investment incentives to build their home aerospace markets is an unfair advantage that has the potential to drive future investment away from higher wage countries.

The reality is no aerospace company the world over would exist without the patient, mission-oriented investment governments provide and that includes major players in other countries including Boeing, Embraer, Airbus and COMAC. Canada needs to protect its ability to engage in industrial policy and continue to be a prominent producer of aerospace technology in the future.

Domestic overhaul and maintenance services are also under threat from trade agreements covering trade in services such as the General Agreement on Trade in Services (GATS) and the Trade in Services Agreement (TiSA). Coverage of air transport maintenance services is being contemplated in the TiSA. This could limit government’s ability to develop public policy that fosters the safety and security of the

air transportation industry as a whole and implementing public policy aimed at fostering the public good such as the Air Canada Public Participation Act, which is already lacking teeth.

The aerospace supply chain is highly integrated. According to the U.S. International Trade Administration, an aerospace component part crosses the border between the US and Canada an average of seven times before it is finally assembled into an aircraft. Fair trade and industrial policy will support this integration to continue.

The potential renegotiation of the North American Free Trade Agreement is an important opportunity to rethink international trade policy and institute trade that is not only global in scope but also fair to workers and citizens.

Unifor recommends:

- **Benefit from Public Spending:** Ensuring trade agreements do not place unfair restrictions on government's ability to require government spending to deliver direct benefits to workers located in the country, and supports high-tech innovation and research and development.
- **Enforceable Labour Standards:** Ensure all trade deals include strong, fully enforceable labour standards including the right to organize and join a union and minimum employment standards that promote increased employment quality and pay across the trade region in question. Promoting increased standards across all jurisdictions can have the impact of reducing the downward pressure on working conditions and even improve conditions in the country as well.
- **Maintenance, Repair and Overhaul Regulations:** Maintain and protect overhaul and maintenance work regulations in order to avoid a further offshoring of aircraft maintenance jobs and facilities overseas.
- **Contingency Plan:** Develop a contingency plan in the event that the United States introduces additional tariffs on Canadian aerospace products to safeguard our ability to compete in the aerospace market.

5.6 Regulation, Inspection and Enforcement

Government regulation of the aerospace sector plays an important role in the success of the aerospace industry. First and foremost, regulation coupled with strong inspection and enforcement standards form the foundation for our country's strong reputation for safe and reliable aerospace development and air travel. Regulation in the aerospace industry runs the gambit of possibilities from approving new aerospace equipment and technology for use to inspecting overhaul and maintenance personnel. But that reputation has been put at risk as our standards for robust inspection and enforcement have eroded.

In May of 2011, the Air Transport Association of Canada held a symposium with a large group of aviation and aerospace stakeholders to discuss issues around Transport Canada service levels and competencies. The group discussed issues such as limited inspectorate resources, lengthy timelines and inadequate experience and competency in the human resources available to conduct the important work of Transport Canada. There are growing concerns on many fronts that budget cuts at Transport Canada have led to a crisis in inspection and ultimately, safety across the board.

Fast forward 5 years, and Transport Canada's budget has been squeezed further. Spending on aviation safety has been reduced by more than 20 per cent since 2010 even while the industry is booming. Over reliance on industry led safety management systems are allowing the prioritization of short term profit over consistent safety standards. This places more responsibility for safety inspections on individual owner operators instead of the industry as a whole. In 2017, two Transport Canada inspector groups, pilot inspectors and Air Traffic Control Inspectors, highlighted their own concerns about safety in the industry, stating that inadequate investment and under-experienced staff could result in a serious accident.

This underinvestment affects the aerospace industry in at least three ways. First, low staffing levels mean that the time it takes to get a product approved for flight or use in flight is unnecessarily long, over extending the time it takes to get a product to market. Second, in the overhaul and maintenance sub-industry it means safety certifications have been relegated to the responsibility of owner operators who have other priorities top of mind. Third, Canada has an incredible reputation when it comes to safety. The aerospace industry relies on this reputation as a selling feature of its products – budget cuts put that reputation at risk. Industry is quietly raising the alarm that government needs to take ownership of its responsibility over the safety and security of the aviation industry by reversing the course on spending cuts and implementing robust safety standards supported by strong inspection and enforcement of those standards.

Unifor recommends:

- **Invest in Inspectors and Inspection:** Significant investment in human resources for inspectors at Transport Canada. This investment must include additional resources in training and professional development for inspectors; hiring additional inspectors to ensure the department has the resources to effectively cover the entire jurisdiction; and specific focus on the attraction and retention of highly qualified personnel through appropriate salary and benefits.

5.7 Utilize Natural Resources

Our country is blessed with a rich endowment of natural resource wealth. But we are failing to maximize the full range of benefits, job opportunities, and diversification opportunities offered by the sustainable development of those resources. Light-weight aluminum, wood and composite materials

are core inputs into aerospace technology design and manufacturing. Additional innovations including the use of nanotechnology in aluminum and composite materials is further pushing the industry to strengthen and fortify its materials while producing lighter weight, more fuel efficient component parts.

It has long been Unifor's position that the federal government and industry should be partnering to develop our national capacity to add more value to resources. Investing in light-weight technology for aerospace applications can serve the dual purpose of strategic action and innovation in two critical Canadian industries: aerospace and natural resources.

Unifor recommends:

- **Light Weight Materials:** Industry and government work together to leverage our country's strength in strategic metal and composite production (including light-weight aluminum, wood and composite materials) into value added aerospace applications including the integration of nanotechnology. Investment and research and development support should be targeted to the design and application of light-weight components in the aerospace industry.
- **Strong Safety Standards:** Consider the implementation of robust health and safety standards as the use of nanotechnology continues to grow in the aerospace industry. Standards should include support of scientific research into exposure risks on human health, developing an exposure registry and mapping tool with workplace parties, developing an open data system to provide transparent information on health effects of nanotechnology, and mandate risk prevention actions appropriate to the degree of risk assessed.

5.8 Create an Aerospace Development Council

It has long been a Unifor policy that the federal government develop and lead an Aerospace Sector Development Council. The goal of sector development policy is to encourage job creation, incentivize investment and increase production and exports in strategic sectors of the economy¹¹. To achieve this goal, government will need to work more strategically and in active partnership with Canadian aerospace producers to identify and develop the key products and innovations necessary to support high-skilled workers, high-value jobs and significant technological advancement for today and in the future.

Just as the current success of the aerospace industry is no accident, the future success of the industry will take continued pro-active planning and action by the industry's diverse stakeholders including all levels of government, private firms, workers and even academia. Unifor and predecessor unions have been advocating for a Canadian Aerospace Development Council for years. This council would provide an unusual opportunity for a diverse set of stakeholders to meet together and discuss

the common challenges faced by the industry and the potential solutions to those challenges – both government and private sector led.

In its February 2017 series of reports to the Ministry of Finance, the Federal Finance Minister’s Economic Advisory Council recommended a similar approach to a few key industries including: agriculture and food, life and health sciences and advanced manufacturing. Unifor suggests that aerospace should not only be on the list, but is in a strategic position to become a test industry for the enhanced approach.

In addition to the recommendations of the Economic Advisory Council, Unifor suggests this approach could build on the former sector councils cancelled by the previous federal government and should not limit the efforts of councils to removing obstacles but also focus on workforce development initiatives, inherent structural challenges and the potential for partnering on new technology development and commercialization.

Unifor recommends:

- **Create a Canadian Aerospace Development Council:** The federal government create a Canadian Aerospace Development Council to build on the actions proposed in this document that brings together industry stakeholders to identify high priority challenges and produce actionable recommendations that will be acted upon by government and the private sector. As previously recommended, the council must be developed with efficiency and effectiveness in mind. As such, the council must incorporate the following features:
 - ↳ **Cross sector participation:** Invite participation from a broad cross section of stakeholders including: major aerospace suppliers and associations, the federal government and provincial governments with significant concentrations of aerospace activity, worker representatives including Unifor, the aircraft overhaul and maintenance industry, academia, and other relevant constituencies as identified.
 - ↳ **Decision makers:** Participating stakeholders must be represented by individuals who have decision making authority and council sessions should be off the record. These measures will help ensure frank, pragmatic discussions about challenges and opportunities.
 - ↳ **Comprehensive Approach:** The council should take a comprehensive view of the aerospace industry to review everything from lightweight materials to manufacturing and assembly, and maintenance and overhaul.
 - ↳ **Mandate and Timeline:** The council should be given a clear mandate and timeline to propose a comprehensive industrial strategy, including measures to be taken by government, private corporations and other stakeholders, and to effectively monitor and enforce the implementation of the strategy to increase the likelihood of its success.

6. Conclusion

The aerospace industry is a highly competitive, highly lucrative industry. At the national level, the industry contributes in significant ways to GDP, creates and sustains tens of thousands of good jobs and is an important ingredient in the federal government's innovation and research and development agenda.

The strong, positive presence of the aerospace industry in the country did not happen overnight, in fact it is the result of proactive government policies and industry partnerships that have worked together to build the aerospace industry in Canada.

Similarly, the future of the aerospace industry depends on smart government policy as an essential component to its continued growth and development. Historically, successive federal and provincial governments have taken a multi-pronged approach to developing the aerospace industry. A multi-pronged approach continues to be necessary today including strategic government investment and procurement, workforce development initiatives, the maintenance of employment quality in the sector and a specific commitment to making trade fair across industries and countries to improve the livelihoods of people everywhere.



7. Recommendations

7.1 Strengthen Strategic Government Investment

- **Strengthen the Strategic Innovation Fund:** Federal and provincial governments build on the innovation agenda by continuing to use the Strategic Innovation Fund to support early stage, Canadian made, high potential innovations in the aerospace and space technology industries. These investments must also include pro-active partnerships between multiple levels of government, the private sector and research institutions and ensure government shares in the reward if and when a piece of experimental technology reaches the commercialization stage. Additional funding through the new Strategic Innovation Fund should be made available.
- **Investment Set-Asides for SMEs:** Include a set-aside within the SIF for small and medium sized enterprises with high innovation and commercialization potential to ensure high potential and high-technology firms at all levels have access to the partnership funding necessary to compete in the sector.
- **Strong, Enforceable Conditions on Investment:** Federal and provincial governments must impose more strict conditions on the actions of companies when investments are made. Conditions must be linked to align with strategic goals including ensuring investments are tied to job creation and maintaining design, production and ownership in domestically located facilities as opposed to exporting expertise and technological advances. Ensure capital investments are used for manufacturing equipment, and ensuring that manufacturing remains in the country.
- **Sales Financing:** Introduce a consistent, universal sales financing program to facilitate purchases of Canadian made passenger aircraft, in both domestic and export markets.
- **Supercluster Development:** Federal and provincial governments take a pro-active approach to the aerospace industry by enhancing the 2017 budget commitment to supercluster development to include additional investment and further development of existing clusters. This cluster development strategy should be developed alongside the new innovation for Defence Excellence and Security clusters announced in the recent Defence Policy.

7.2 Leverage Government Procurement

- **Stronger Industrial Regional Benefits Requirements:** Recommit to and fortify the Industrial Regional Benefits program such that government procurement is used to leverage investment in key technologies and production in domestic firms supplying component parts and developing new technologies for the global aerospace industry. Commitments should be

outlined in the early stages of the procurement process to provide early understanding of the intended domestic investments and to ensure sufficient investment in the high technology systems and services domestic aerospace firms must continue to develop in order to compete in the global market.

- **Domestic Maintenance, Repair and Overhaul Policy:** Implement a “Service in Canada” policy that enhances the likelihood that domestic firms will win overhaul and maintenance and in-service contracts on aerospace equipment owned and operated by federal, provincial and municipal governments across the country. These aircraft are in-use to support broader public goals such as defence, fire-fighting and coast guard related tasks and can also be put to use supporting robust safety standards and high quality jobs for workers.
- **Stronger Support and Protection for Canadian Space Technology:** Recognize space technology as a critical component of federal government infrastructure and make every effort to purchase with Canadian content, design and engineering in mind but also, given the national security implications, ensure the ownership and technical knowledge in this industry remains in Canada as well.
- **Procurement to Promote Research and Development:** Use procurement to promote and incentivize Canadian research and development in aerospace and space technology areas.
- **Canadian Content:** Recognize the capabilities of Canadian aerospace companies in filling orders for military and emergency response aircraft by including a preference for Canadian content and made in Canada solutions.

7.3 Enhance Workforce Development and Planning

- **Integrated Labour Market Information System:** Federal government invest in an integrated and consistent labour market information system that can catalogue and disseminate data on future talent needs and current job vacancies. This system could build on the previous work of the CCAA but also be integrated into a larger labour market information system.
- **Stronger Education and Training:** Strengthen aerospace-related education and training programs at all levels of government and across stakeholders to prepare for looming retirements and next generation technologies. All levels of government, industry and other stakeholder groups must invest heavily in worker training and professional development. Investments should include targeted support for aerospace apprenticeships, upskilling of current workforce as new technologies are implemented, recognition of transferrable skills and require appropriate oversight of public training support to ensure funds are not used to develop expertise in foreign countries.

- **Skilled Trades Harmonization:** Work towards full harmonization of skilled trades training and recognition in all jurisdictions across the country to continue to reduce barriers to worker mobility. Ensure harmonization efforts default to the highest quality standards in order to avoid undermining the caliber of the skilled trades system.
- **Training the Next Generation of Aerospace Workers:** Develop pre-apprenticeship, paid internship and mentorship programs in partnership with aerospace firms and educational institutions that work to build capacity and experience in the aerospace industry throughout the educational system.

7.4 Maintain Employment Quality

- **Strengthen employment federal and provincial employment standards:**
 - ↳ **Equal pay and benefits for temporary workers:** Provincial and federal governments implement and vigorously enforce employment standards legislation requiring pay and benefits equity amongst all employees, whether permanent or temporary. This policy could diminish the perceived financial benefit to hiring temporary workers or contracting out pieces of work that were at one time performed in house.
 - ↳ **Liability for violations:** Make employers jointly and severally liable with temporary employment agencies for any employment standards violations of workers employed in their worksites (not just lost wages) with no ceiling on potential claims and a five-year limit on filing claims. Require temp agency employees be paid the same wages and benefits as permanent employees at the enterprise in which they are performing comparable work.
 - ↳ **Reduce incentive to outsource:** Strengthen provincial and federal labour laws and employment standards to reduce the incentive for companies to outsource.
 - ↳ **Grant successor rights:** Strengthen provincial and federal labour laws such that successor rights are granted in cases where a set of tasks or jobs is transferred from one employer to another.
 - ↳ **Social Procurement:** Governments improve the procurement processes to consider social outcomes of procurement as well as cost. To this end, governments must consider the effect of their intense cost control measures and unreasonable constraints and place an effort to promote job quality and worker well-being.
 - ↳ **Temporary Foreign Workers:** Extend full labour rights, mobility rights and social protections to all temporary foreign workers in the country. Implement a path to permanent residency as an alternative to the current temporary foreign worker program.

7.5 Make Trade Fair

- **Benefit from Public Spending:** Ensuring trade agreements do not place unfair restrictions on government's ability to require public investment to deliver direct benefits to workers located in the country, and supports high-tech innovation and research and development.
- **Enforceable Labour Standards:** Ensure all trade agreements include strong, fully enforceable labour standards including the right to organize and join a union and minimum employment standards that promote increased employment quality and pay across the trade region in question. Promoting increased standards across all jurisdictions can have the impact of reducing the downward pressure on working conditions and even improve conditions in the country as well.
- **Maintenance, Repair and Overhaul Regulations:** Maintain and protect overhaul and maintenance work regulations in order to avoid a further offshoring of aircraft maintenance jobs and facilities overseas.
- **Contingency Plan:** Develop a contingency plan in the event that the United States introduces additional tariffs on Canadian aerospace products to safeguard our ability to compete in the aerospace market.

7.6 Regulation, Inspection and Enforcement

- **Invest in Inspectors and Inspection:** Significant investment in human resources for inspectors at Transport Canada. This investment must include additional resources in training and professional development for inspectors; hiring additional inspectors to ensure the department has the resources to effectively cover the entire jurisdiction; and specific focus on the attraction and retention of highly qualified personnel through appropriate salary and benefits.

7.7 Utilise Natural Resources

- **Light Weight Materials:** Industry and government work together to leverage our country's strength in strategic metal and composite production (including light-weight aluminum, wood and composite materials) into value added aerospace applications including the integration of nanotechnology. Investment and research and development support should be targeted to the design and application of light-weight components in the aerospace industry.
- **Strong Safety Standards:** Consider the implementation of robust health and safety standards as the use of nanotechnology continues to grow in the aerospace industry. Standards should include support of scientific research into exposure risks on human health, developing an exposure registry and mapping tool with workplace parties, developing an open data system to provide transparent information on health effects of nanotechnology, and mandate risk prevention actions appropriate to the degree of risk assessed.

7.8 Create an Aerospace Development Council

- **Create a Canadian Aerospace Development Council:** The federal government create a Canadian Aerospace Development Council to build on the actions proposed in this document that brings together industry stakeholders to identify high priority challenges and produce actionable recommendations that will be acted upon by government and the private sector. As previously recommended, the council must be developed with efficiency and effectiveness in mind. As such, the council must incorporate the following features:
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End Notes

- ¹ Innovation, Science and Economic Development Canada (2017) *State of Canada's Aerospace Industry*.
- ² Innovation, Science and Economic Development Canada (2017) *State of Canada's Aerospace Industry*.
- ³ *Ibid*
- ⁴ Price Waterhouse Coopers (2016) *2016 Aerospace and Defense Industry Trends*
- ⁵ Innovation, Science and Economic Development Canada (2017) *State of Canada's Aerospace Industry*
- ⁶ Niosi, J. (2012) *R&D Support for the Aerospace Industry: A study of eight countries and one region*.
- ⁷ *Ibid*
- ⁸ *Ibid*
- ⁹ Mazucatto, M. (2015). *The Entrepreneurial State: Debunking Public vs. Private Sector Myths*
- ¹⁰ *Government of Canada (2012) Aerospace Review: Beyond the Horizon: Canada's Interest and Future in Aerospace* www.aerospacereview.ca
- ¹¹ *CCPA (2017) High Stakes Clear Choices: 2017 alternative Federal Budget*



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