POWER SHARE | SHAPING FUTURE WORK

Bargaining Tech:

Strategies for Shaping Technological Change to Benefit Workers

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This research paper is published by PowerShare, a project to investigate workers' collective voice and agency in the future of work. Work is changing due to many forces: technology, business models, labour regulations and policies, and social attitudes. Will workers have a real say in what work becomes? Will they have the voice and power to meaningfully shape the future of work, and protect their interests?

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Table of Contents

Summary: Technology is Up for Grabs

THERE IS A COMMON IDEA THAT "TECHNOLOGY" IS an all-powerful force that is inevitably and inexorably remaking work and jobs. There's no point trying to "resist" technology: that didn't work for the Luddites, and it won't work today. Instead, workers should focus on learning the right skills (like STEM or coding) to succeed in a high-tech world. Whether dystopian or utopian, these storylines seem to agree that "technology" is calling the shots.

But what if "technology" isn't really in charge? After all, what we call "technology" is not something imposed by some external or exogenous force. Rather, technology constitutes the composite of evolving human knowledge that enables us to produce new goods and services, and produce them in new (and presumably more efficient) ways. This ongoing cumulation of knowledge reflects deliberate human choices about what problems we want to solve, and how to implement the solutions we invent. Deliberate human choices determine how technology evolves, and how it is used in our lives. We do not live in the world of the *Terminator* movie, where machines are in charge. Humans control technology: but not all humans have equal say in those decisions. In this understanding, technology is neither a villain nor a saviour. How technology affects us depends on how (and by whom) technology is managed and controlled.

The common assumption of "technological determinism" that underpins so many narratives about the future of work must be challenged. Technology should be understood as a fundamentally human endeavour, that reflects the priorities and choices and interests of human beings — not an exogenous, uncontrollable force. More particularly, technology reflects the priorities, choices, and interests of those who control

(and pay for) the innovation process aimed at solving specified problems — and who control (and pay for) the implementation of the resulting knowledge (usually embodied in machinery and other tangible forms) in workplaces.

The distribution of decision-making power over technology (both its direction and its application) is very uneven. But that distribution of power is not pre-determined or inevitable — just as the nature of technological change itself is neither exogenous nor uncontrollable. At present, decision-making power over technology is concentrated among those with economic wealth and political influence: those who own businesses, pay for research, and buy the machines and other equipment that are used in workplaces. But that need not forever be the case. We can imagine a world in which workers have more say, and more power, in how technology evolves and how it is used. And one of the best ways for workers to exercise that influence is through collective bargaining.

Technology is neither a villain nor a saviour. How technology affects us depends on how (and by whom) technology is managed and controlled.

This report considers the potential for workers to use union representation and collective bargaining to shape the direction and effects of technology and innovation.[1] It shows that technological change is contestable: its direction, implementation, and effects can be steered in better ways, if we ensure that all Canadians (not just employers and owners) have input to those decisions. Canadian unions are aware of their potential to influence technology, and have been wielding that influence through a range of collective bargaining strategies. They have not "rejected" technology, nor tried to "stop" it. But they are working ambitiously to regulate it: trying to prevent undue dislocation and job loss, trying to prevent its use in unfair or dangerous ways, and trying to ensure that workers share in the benefits of technology.

This paper is organized as follows. The first section considers the nature of technology, and technological change, in more detail. Strictly defined, "technology" means human knowledge, applied in some productive use. Technological change occurs when human ingenuity is applied to solving particular problems. Which problems are tackled depends on who controls and pays for that innovation effort. Depending on those choices, scientists and engineers can work to develop effective vaccines to stop COVID and sources of renewable energy — or to find more powerful ways of personally targeting advertising on social media, more complicated algorithms to predict stock market movements, and faster and more intense ways of steering workers to the next box they must quickly fetch in gigantic warehouses.

[1] This report is the third in a series of research projects undertaken by the Centre for Future Work through its **PowerShare** initiative, supported by the Atkinson Foundation and the Canadian Centre for Policy Alternatives. See https://centreforfuturework.ca/power-share/ for other publications in this series.

Curiously, contrary to widespread hype about accelerating technology, economic data suggest that business investment in new technology (both intangible knowledge, and tangible machinery and equipment) has actually been slowing down. Canadian businesses are investing less in new machinery (including robots) than at any time in postwar history. And Canada's productivity growth, far from accelerating as a result of labour-replacing robots and other inventions, has been languishing for years. This suggests that Canadian workers (and the whole economy) would benefit from more investment in new technology — not less.

Sections II and III of the paper then review the impacts of technological change on the quantity and quality of jobs in Canada. We conclude that those effects are indeterminate and contestable: the final impact on workers depends on whose interests and priorities shape technology and its application. In particular, we find that common fears that new digital technologies (including automation, robots, artificial intelligence, and others) will displace large numbers of workers, and usher in a painful era of mass unemployment, are misplaced. Indeed, machines cannot "replace" human labour, because machines themselves are brought into existence by human labour. To be sure, by using machines and other tools that enhance general productivity, we can produce a given amount of total output with less labour. But whether that translates into mass unemployment depends on several other factors, including:

Machines cannot "replace" human labour, because machines themselves are brought into existence by human labour.

- Growth in total output as new technologies are implemented (which is likely, for several reasons).
- Offsetting demand for labour in alternative functions (including those associated with developing and using new machinery, and jobs in new industries that are enabled by the capacity of new technology to produce new goods and services).
- Reductions over time in average working hours: if some or all of the gains of productivity growth are reflected in shorter lifetime working hours, then unemployment can be avoided.

Netting out these diverse impacts, Canadian evidence indicates that total employment has not been undermined by technology. More likely, employment has been modestly strengthened by investments in innovation and machinery (largely because of the positive impacts of business investment spending on aggregate demand, export success, and other channels).

While it is not likely that new technologies will cause a wholesale reduction in the number of jobs, there are many other important challenges posed by the advent of

new knowledge, new products, and new processes that need to be confronted by unions. Even if total employment does not change, new technologies often shift the composition of work across occupations and skill classifications. That raises the need for a sensible, supported, and fair adjustment process: including job protections for workers whose positions are affected or eliminated, fair opportunity to receive retraining and redeployment in new roles, and adjustment benefits and incentives to facilitate those transitions. Many job quality issues are also raised by new technologies: including diverse health and safety risks, the mis-use of technology to intensify surveillance and monitoring of workers, and the applications of technology in work-from-home settings (which expanded dramatically during the COVID-19 pandemic). A whole other set of issues is raised regarding the impact of technology on the employment relationship itself: some employers are using digital technologies to alter the nature and stability of *jobs* (without altering the actual *work* being performed) in ways that undermine job security, compensation, and basic fairness. Digital gig economy platforms are a high-profile example of this problem: firms have leveraged new technologies to reintroduce centuries-old employment arrangements (using on-demand piece-work), with resulting negative consequences for job stability and compensation. And there are many other ways in which technology is used by employers in ways that have little impact on actual production or productivity — but are motivated by an effort to tighten control over work, shift risks and costs to workers, and further boost profits. Those applications of technology tend to undermine security, well-being, and equality, rather than enhancing prosperity. They should be challenged wherever possible (including at the bargaining table) by the collective power of workers.

Canada's lagging technological adoption is due to the sustained weakness of Canadian businesses to invest in new technology, not due to "union resistance."

Section V of the paper provides a detailed review of the experiences of Canadian unions in shaping the nature and effects of technology through collective bargaining. It reports the results of a survey of Canadian unions and industrial relations databases, to identify collective agreement provisions that directly reference technological change. Some 350 specific examples of technological change language are compiled and categorized, into twelve different broad topic areas (as summarized in Table 1). We provide a high-level qualitative summary of the main features of these contract provisions in Section V of the paper. The Appendix then publishes the full catalogue of provisions we compiled, including information on the union involved, the employer, and a summary of the relevant language. Our hope is that this compendium of the concrete experiences of Canadian unions trying to regulate technology in the interests of their members will be a helpful resource for future rounds of bargaining.

Table 1. Major Themes in Union Technology Bargaining
Definition and Significance of Technological Change
Notice of Technological Change
Technology Committees and Consultation
Commitment to Negotiate
Adjustment and Job Security
Severance Pay
Other Compensation Issues
Training
Technology-Specific Health and Safety Issues
Surveillance and Monitoring
Working From Home
Other Technology Provisions
Source: Authors' compilation as described in text.

Our survey of union technological bargaining has highlighted several important conclusions:

- Unions are strongly and mostly constructively engaged in negotiating with their employers about the shape and effects of technological change. There is a clear focus on shaping technology, implementing technology more smoothly and fairly, and better sharing the costs and benefits of new technology.

- There was no evidence of unions attempting to impose blanket prohibitions on technological change. If the technological progress of Canadian workplaces is inadequate (and much evidence suggests this is the case), this cannot be blamed on unions. To the contrary, Canada's lagging technological adoption is due to the sustained weakness of Canadian businesses to invest in new technology, not due to "union resistance."

- Some emerging areas of concern around technological developments will require more attention and experimentation by unions in coming years — including the health and safety implications of certain new technologies (such as nanotechnologies), the mis-use of

digital technology by employers for monitoring and discipline of workers, and the many industrial relations issues raised by the expansion of work-from-home arrangements.

- One important area which collective bargaining over technology in Canada has largely ignored in recent years is the potential for working hours to be reduced on the strength of productivity gains associated with new technology. For various reasons, unions have been unable in recent years to make progress in reducing regular working hours (even as many workers in precarious jobs have inadequate and irregular hours). This is a gap which unions should try to address in their future bargaining efforts.

The final section of the paper provides some concluding recommendations for policy and strategy, directed at both governments and unions themselves. We conclude that being able to negotiate the terms of technological change is a positive and important feature of Canadian industrial relations, that should be celebrated and strengthened. When employers are forced to include the interests and perspectives of other stakeholders (and their workers, in particular) in their technological decision-making, they achieve more beneficial and equitable results. And when workers are able to exercise collective voice and influence in shaping how technology unfolds, they can enhance the net benefits of technology, and reduce negative costs and displacements. That produces a stronger multi-stakeholder critical mass that can foster faster, better technological change.

When workers are able to exercise collective voice and influence in shaping how technology unfolds, they can enhance the net benefits of technology, and reduce costs and displacements.

Recognizing the economic and social benefits of workers' ability to negotiate technological change, governments should support that capacity with policy measures. Our recommendations in this regard include:

- Labour law should affirm and strengthen the ability of workers to form unions and negotiate collectively. The combination of active employer opposition and hostile labour laws is causing a clear downward trend in union density in private sector workplaces (now about 16% of total employment). This drastically curtails the possibility of mutually beneficial negotiations around technological change. We propose several measures to reverse that trend.

- Learning from the successful experience of mandatory joint health and safety committees, governments should also encourage or require companies to establish ongoing mechanisms of consultation and participation around technology and training issues in work-

places — even in non-union workplaces. The broad spill-over (or "external") benefits of worker-management dialogue around technology and related issues (including training) justify a role for public policy in pushing employers to do more of it.

- Governments should also leverage their economic and fiscal power to encourage private firms to negotiate the features of technological change with their employees. Many businesses receive subsidies, incentives, or direct investments from governments for technology-related undertakings: including support for acquisition of new technology, subsidized training programs, expensive tax credits to foster R&D and other forms of innovation, and more. This public support is provided in recognition of the broad social benefits that are generated by successful technological progress among Canadian businesses. But by the same token, those businesses should be expected to engage with their employees in how they direct and implement these (taxpayer-supported) technological initiatives.

Canadian unions have generally been pro-active and constructive in integrating tech issues into their collective bargaining agendas. However, there are many ways in which those efforts could be strengthened — and some blank spots which their approach to bargaining over technology has largely overlooked. Our recommendations to unions include:

- Developing early-warning capacity about coming technological changes in workplaces, using regular discussions with employers and workplace union representatives, supplemented by intelligence gathering among industry and supplier contacts, to get advance indications of employers' technology plans. That will enhance the ability of bargaining committees and other union representatives to develop and negotiate transition practices before new technologies roll out.

Properly managed, many emerging technologies could improve jobs and working conditions, lift living standards, and support sustainability.

- Convening networks among union representatives at different workplaces, companies, and unions to compare experiences with evolving technologies and their implications for collective bargaining, to better inform union negotiators regarding risks, and innovative language, surrounding new technologies.

- Seeking ways to reintroduce working time reductions as a regular item on the collective bargaining agenda. Ongoing technological

> change and associated productivity growth provides a real economic foundation for reduced working time, without losses in pay. And the current infatuation with technology and automation provides an entry point for unions to discuss — with their own members, and the public at large — why those reductions would be beneficial. Parallel challenges such as the need to achieve better work-life balance for Canadian families, and the critical importance of reducing carbon pollution to combat climate change, would also be advanced by a rekindled commitment to negotiating shorter work time.

The general conclusion of this report is cautiously optimistic. Overblown and gloomy predictions that new technologies will cause large-scale technological unemployment are misplaced. Properly managed, in ways that are accountable to all stakeholders (not just employers and owners), many emerging technologies could improve jobs and working conditions, lift living standards, and support sustainability. But technology can also be misused, applied in ways that undermine working conditions and living standards — especially when employers are given free rein to control the direction and implementation of technology solely in the interests of their own profits. This is why it is essential, if a more harmonious and inclusive high-tech future is to be realized, that workers have countervailing power to advance their own interests and concerns as technology evolves.

I. What is Technology, Anyway?

IN POPULAR USAGE, "TECHNOLOGY" USUALLY REFERS TO TANGIBLE equipment: a machine, a sound system, a robot, an assembly line, a smart phone. "Dude, you have some awesome technology," is the common refrain among teenagers showing off their latest high-tech acquisitions. Strictly speaking, however, technology is defined[2] as knowledge about how to produce something — not the precise equipment that we might use in that production. In other words, technology is *knowledge*, not *stuff*. And the process of technological advancement throughout human history has consisted of the cumulative acquisition of knowledge about how to produce better goods and services, and produce them more efficiently and effectively. In general, that knowledge involves the use of more (and increasingly complex) tools. Today those "tools" include artificial intelligence, robotics, and nanotechnology. With those tools we can produce a much greater array of more useful goods and services, with less total labour required.

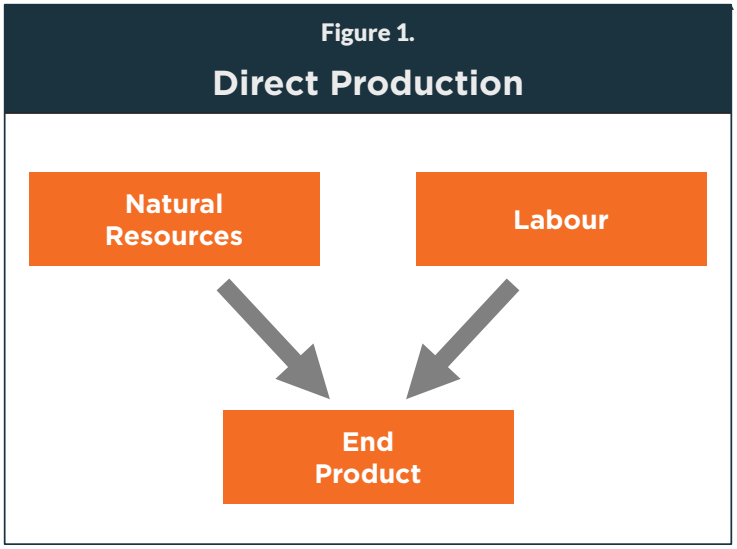
Understanding that using tools makes our work more efficient is not exactly rocket science (to invoke a technological cliché). Even many animals understand that tools can make their labour more productive: beavers build dams, chimpanzees use sticks to extract termites from a log, seagulls use gravity and rocks to break open clamshells, bees build hives. Indeed, humans began to use tools very early in our evolution. Our cumulating knowledge about how to use those tools, and how to use tools to build better tools, has been the fundamental force in economic progress. It allowed us to cultivate agriculture (rather than hunting and gathering for survival), facilitated

[2] The Oxford English Dictionary (OED Online 2021) defines the relevant use of *technology* as "The branch of knowledge dealing with the mechanical arts and applied sciences," and "the application of such knowledge for practical purposes, esp. in industry, manufacturing, etc."

permanent settlements (and the structures and infrastructure associated with them), harnessed energy from nature (first wood, then fossil fuels, and now wind and sun), and now allow us to achieve amazing accomplishments across the full array of goods and services industries. There is nothing new about technological change: it has been a hallmark of the human condition since our species began.

The Indirect Route

In this telling, technology is not a force or entity in its own right. It is human knowledge, acquired through eons of use, thought, and experimentation. This simple insight sheds important light on an age-old concern regarding technology and labour. Technology is knowledge. And a machine is a material embodiment of that knowledge — namely, the general knowledge that it's better to use tools in our work (rather than working with our bare hands), and specific knowledge regarding how to produce and use particular machines. But both the general knowledge of the overall process, and the specific capacity to conceive, build, and use machines, are innately human. Each step in the process requires human labour (both physical and mental) to harvest raw materials from the natural environment (hopefully in a sustainable manner), and then add value by transforming those resources into more useful goods and services. Often, the products we make with materials harvested from nature are tools which we use in further production of the final goods and services which are the end goal of our labour. Understood this way, there is no possibility that "technology" could somehow replace human labour, in any general sense. Technology is itself the *result* of human labour. And rather than replacing humans, technology expands the repertoire of things we can produce, and changes how we produce them (most importantly through the use of ever-increasing numbers and complexity of tools).



This simple but deceptively important insight is illustrated in Figures 1 and 2. All economic production can be traced back to inputs of the two primary factors of production: human labour and natural resources. In a simple *direct* production process, those inputs are combined (through the application of labour to resources harvested from

nature) to produce a desired product or service (Figure 1). However, the quality and productivity of applying direct labour to raw materials (ie. "working with our bare hands") is inherently limited.

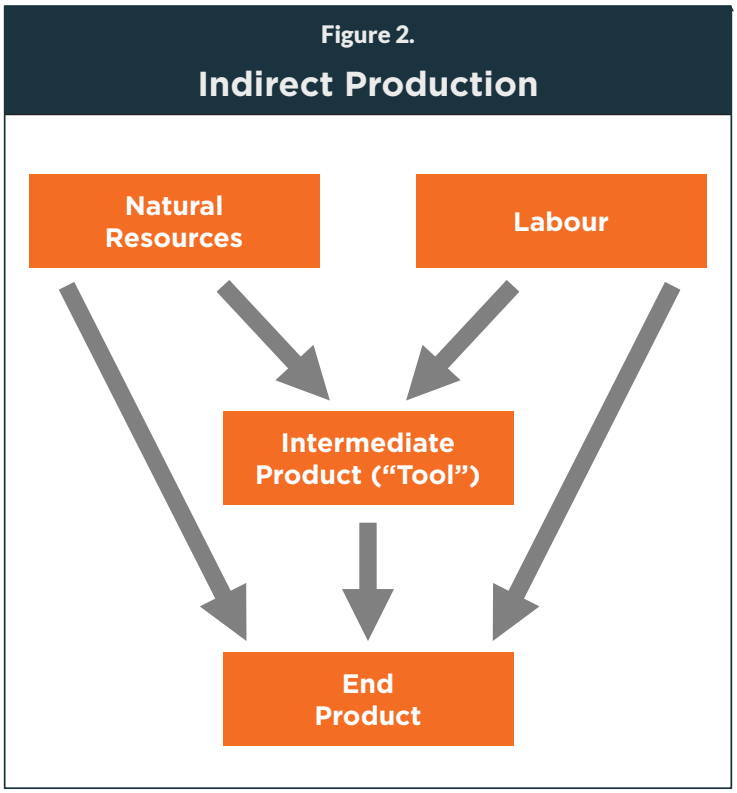


Figure 2.
Indirect Production

So virtually all production in our economy involves an *indirect* or "roundabout" route. Humans first allocate labour (both physical and mental) to producing various intermediate goods: including partially processed resources and raw materials; buildings, structures, and other infrastructure; and machinery, equipment, and other tools. In a modern economy, intermediate products also include various intangible productive assets (such as computer software, formulae, and other intangible tools). An intermediate product is not intended for consumption or final use, but instead is used in subsequent production. We can broadly think of these intermediate products as "tools." Then, in a second stage, the tools are wielded along with further inputs of labour (and in most cases further inputs of natural resources) to produce the final product that was the end goal of production.

The modern economy is represented by an incredibly complex network of overlapping chains of indirect production.[3] But the output of any industry can always be disaggregated (considering both its direct production, and the indirect inputs that flowed through its supply chain) into primary inputs of labour and natural resources. In an employment-based economic system (like ours), most labour is compensated in

[3] Empirically that network is summarized in the input-output tables produced by Statistics Canada and other statistical agencies; see, for example, Statistics Canada, "Symmetric Input-Output Tables," Table 36-10-0001-01.

the form of wages and salaries paid at each stage of production.[4] Business owners capture profit as a result of their investment and ownership of those intermediate goods as they move through the supply chain. Where ownership of natural resources is privatized, their owners also receive income for the use of those resources (usually called "rent" in economics). Only labour adds value to the resources harvested from nature (and, of course, proper account must be taken of the condition of that stock of natural resources, lest it become depleted or polluted over time). Payment of both profit and rent are contingent on the social status of private ownership, and those payments represent a socially-mediated deduction from the value added by labour.[5]

All economic production can be traced back to inputs of the two primary factors of production: human labour and natural resources.

From this perspective, the prospect that human labour could be "replaced" in any general sense by "machines" is simply not possible. Machines merely represent labour that has been allocated to indirect production, so that our labour (measured across all stages of production) can be more efficient.

To be sure, the growing intensity and complexity of this web of intermediate production (and the correspondingly broader use of machinery) will cause many changes in employment over time. Specifically, the location where labour occurs in the chain of production, and the kinds of labour that are required (across skills and occupations) will evolve, as direct labour is replaced by indirect labour. Whether the *total* amount of labour required changes is indeterminate, depending on a wide range of offsetting factors (that are discussed further below). For any given amount of output, if new technologies facilitate substantial improvements in labour productivity, then the total inputs of labour required to produce that (given) amount of total output would decline. That tendency will be partly or wholly moderated by several countervailing factors, including likely growth in total output (spurred by various motives, including macroeconomic policy interventions) and/or shorter working hours (which allow people to capture some of the benefits of productivity growth in the form of increased leisure time rather than higher material consumption).[6]

Nevertheless, the idea that machines are somehow a substitute for labour in a general sense should be rejected. Machines are produced by labour, from start to finish: their conception, their design, their engineering, their manufacture, their installation, their operation, and their maintenance all depend centrally on human labour — both conceptual and physical. The challenge for society is how to manage the process of increasingly complex and indirect labour in ways that lift (rather than harm) living stan-

[4] The economy also relies on significant inputs of unpaid labour in our homes and communities (performed disproportionately by women).

[5] The decomposability of all production into inputs of primary resources (labour and natural resources), the dependence of payments of profit on deductions from the produce of labour, and the resulting determination of a whole system of relative prices was classically demonstrated by Sraffa (1960).

[6] Shorter working hours are a way to reduce the extent to which falling total hours of labour required do not translate into falling employment.

dards, job security, and sustainability. In facing that challenge, the "problem" is not technology: the problem is certain groups of human beings who want to use technology in ways that enrich themselves but harm others. This is an economic, political, and social problem, not a technological one.

How Technology Evolves

The determinist narrative of technological change also tends to assume that technology follows some exogenous or pre-ordained trajectory. Not only is technology portrayed as an independent force outside of humanity, but the directions of innovation and technological change are assumed to be somehow random or exogenous. Perhaps there is a random creative process that stumbles across new ideas, which are then developed and commercialized by clever people motivated by private profit, social conscience, or some other motive.

The "problem" is not technology: the problem is certain groups of human beings who want to use technology in ways that enrich themselves but harm others.

In practice, however, technology is not random or exogenous. New ideas are not generally "stumbled upon" — although in some cases inquiry can lead to accidental breakthroughs in unexpected areas. Modern research in science, medicine, engineering, computing, communications, and other technologies is typically organized in a systematic, deliberate manner. Researchers (who are generally salaried staff, not "entrepreneurs") are employed to conduct planned experiments, aiming to solve specified problems or questions their managers have assigned them. Mazzucato (2021) aptly calls this process "mission-oriented innovation." She describes how these missions over time — in many cases organized and funded by government — have unleashed the powerful new technologies that are being implemented today.

A stunning and hopeful example of such a mission was the successful worldwide effort to quickly develop an effective vaccine for the COVID-19 pandemic. Researchers in companies and laboratories around the world were provided facilities, resources, and mandates (building on previous knowledge) to seek and develop appropriate vaccines, running through numerous stages (from genetically identifying the virus, to various stages of testing and trials, to large-scale manufacture, distribution, and mass injection).[7] This is a wonderful and successful example of mission-oriented innovation that will literally save hundreds of millions of lives.

[7] Lest anyone conclude that the successful development of vaccines somehow proves the value of private ownership and control of pharmaceutical R&D (in the hands of companies like Pfizer, Moderna, and Astra-Zeneca), keep in mind that the mandates and funding for these efforts were almost completely provided by government, and those companies also benefited from previous publicly-funded research into the component techniques that allowed the vaccines to be created. In several countries, publicly-owned pharmaceutical enterprises also quickly developed COVID-19 vaccines that also seem to be effective. Baker (2021) and others have argued the race to develop and mass manufacture COVID-19 vaccines was hampered, not facilitated, by private ownership of intellectual property.

On the other hand, smart innovators are often assigned (and paid) to solve other "problems," with rather less beneficial impacts for the human condition. Think about the intense, high-tech warehouses operated by Amazon: which at time of writing ranked as the fifth most valuable company in the world (with a market capitalization of $1.6 trillion, one-tenth owned by founder Jeff Bezos), and also the fifth largest employer in the world (with 1.2 million workers as of end-2020).[8] Amazon, of course, has profited from its innovative and effective use of a wide array of technologies: from web-based marketing, ordering, and payment systems, to a range of other data-intensive services (including video streaming, cloud computing, and others). However, Amazon is proof positive that the so-called "digital economy" is hardly a worker-free zone. Amazon relies fundamentally on the labour performed by its enormous and growing workforce — and like profit-maximizing employers throughout the history of capitalism, it has invested incredible attention and innovation to finding ways to extract maximum labour output from those workers, for the lowest unit labour cost. Amazon's warehouses provide a powerful illustration of the dystopian potential of the ruthless application of technology in workplaces, in which this enormous company faces minimal constraint from any source: whether government regulators, unions, or labour market pressures.[9] The motion and location of the warehouse workers who locate, "pick," package, and prepare for shipment the millions of items shipped every day to Amazon customers, is "optimized" through digital technology.[10] Devices direct workers to specific parts of the warehouse and specific levels of storage shelves, with little time for rest or breaks. Incidents of injury and stress are very high. Similar techniques of supervision, control, and surveillance are applied in other aspects of the company's business.

Whether human ingenuity is applied to developing vaccines, or finding ways to squeeze a few seconds more of productive time out of exhausted warehouse workers, is a matter of human choice.

The technologies of work intensification perfected by Amazon in its warehouses have not eliminated the need for labour. But they have reduced the cost of labour, and tightened control and predictability of the company's planned, vertically integrated production process. All this has contributed mightily to Amazon's lucrative profit margins. So Amazon's technological feats have been fundamentally shaped by both its greed, and its ability to impose new technologies in its operations largely free from constraints imposed by unions, regulators, or other countervailing forces. But technology doesn't have to develop in such a lopsided way. Whether human ingenu-

[8] See companiesmarketcap.com (2021, June 7) and Shendruk (2020). That employment estimate does not include hundreds of thousands of other workers who toil for Amazon as independent "contractors" delivering packages and performing other tasks on a piece-work gig basis.

[9] Amazon's footprint in some labour markets, especially in particular regional communities, is so large it has been shown to exercise "monopsony" power: whereby a dominant buyer can suppress prices. See Azal et al. (2020) for indicative results.

[10] See powerful accounts of conditions in Amazon warehouses by Adler-Bell (2019) and Sainato (2019). See Roman (2020) and Green and Alcantara (2021) for details on injury rates and other hazards of that work.

ity is applied to developing vaccines, or finding ways to squeeze a few seconds more of productive time out of exhausted warehouse workers, is a matter of human choice — reflecting the interests and priorities of those who manage innovation and control its implementation.

A related dimension of the innovation process is an important idea called "learning by doing." In general, new knowledge is not created via independent stand-alone discoveries. More often, innovation occurs in a cumulative process that builds on the experience of previous ideas that have been applied in practice; this practical experience then reveals ways in which tools and processes can be further improved. Humans naturally imagine ways of improving what they are already doing, and that innate urge is the most fruitful pathway for further refinement, discovery, and progress. The implications of learning by doing for traditional economic theories are profound and rather disruptive (as famously discussed by Arrow, 1962). If you get better at something by learning from initial applications, then early entrants into any field will have a natural head start in subsequent innovation. That produces a tendency to concentration in ownership and wealth that is obvious in today's mega-powerful tech conglomerates.[11] The same concentrating impulse can be seen in other economic variables — such as international trade imbalances, that often tend to widen over time as successful export-led economies use their leading position to learn-by-doing and thus reinforce their dominance. This concentrating effect is quite contrary to predictions in conventional economics that competition should equalize prices and disperse market power over time. And it certainly reinforces the conclusion that workers (and other stakeholders in society) must develop mechanisms of countervailing power to offset the dominance of technological leaders – and ensure that new technologies are applied in ways that do less harm, and more good, for the bulk of society.

Speeding Up? Or Slowing Down?

It is usually taken for granted that technology has accelerated, and this assumption is commonly invoked to explain (and often implicitly justify) the dramatic changes that have occurred in peoples' jobs and lives. This attitude feeds into the general sense of technological determinism which influences how people understand and respond to those changes: we see incredible feats of high-tech machines and robots on countless YouTube videos (themselves directed to our timelines by programmed AI robots), and we are left feeling that we can't possibly keep up with it all. This reinforces the general sense of powerlessness and passivity that is a corollary to technological determinism.

To be sure, advances in several game-changing technologies are unleashing amazing opportunities to achieve incredible outcomes in a huge array of different fields and endeavours. But in the real economy, where technology is applied in the production of goods and services (as opposed to laboratory experiments or demonstration

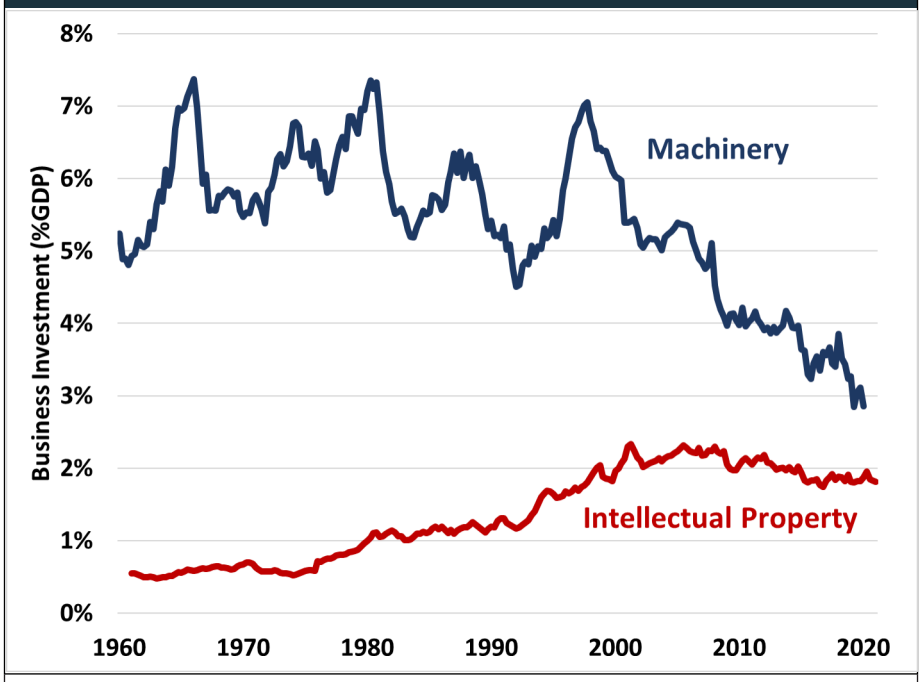
[11] At time of writing, the combined market value of the 5 largest tech companies (Apple, Amazon, Microsoft, Alphabet, and Facebook) was close to $8 trillion — representing close to one-third of the combined market value of the entire New York Stock Exchange. That represents an unprecedented concentration of wealth and economic power in U.S. history.

projects), it is not clear at all that technologicy is accelerating. In fact, it is more likely slowing down.

The U.S. economist Robert Gordon (2016) has argued persuasively that despite the amazing capabilities of new technologies, in totality their influence on observed economy-wide growth and productivity pales in comparison to the great breakthroughs that drove earlier growth and living standards. He lists five inventions that were particularly crucial in powering economic development in the late nineteenth and twentieth centuries: electricity, urban sanitation, chemicals and pharmaceuticals, the internal combustion engine, and telecommunication. The basic discoveries behind these innovations were all made before 1900. And their applications were mostly fully developed and universalized by 1970. Since then, Gordon argues, technological advancement has had more incremental impacts on how we produce and consume things. Productivity growth has slowed down, contrary to what should be happening if workers were being replaced *en masse* by machines. And living standards have been further undermined by problems that have little to do technology: in particular, the rise of income inequality, and the erosion of institutions and programs supporting mass prosperity. In this scenario, not only is it wrong to blame accelerating technology for economic disruptions and social divisions — it cannot even be concluded that technology is speeding up at all.

Figure 3.

Canadian Business Innovation Investment as Share GDP



Source: Authors' calculations from Statistics Canada Table 36-10-0104-01.

This skepticism about presumed technological acceleration is supported by Canadian economic data. In contrast to the assumption that employers are rushing headlong to a technology-intensive future, Canadian businesses in practice are investing considerably less in knowledge (and in the machinery which embodies that knowledge) than in past eras in Canadian history. For example, Figure 3 illustrates the level of business investment in technology as a share of Canadian GDP since 1960. Two series are illustrated. The blue line is investment in tangible machinery and equipment: including computers, assembly lines, robots, and other equipment — generally necessary in order to operationalize new technologies. The red line shows business investment in intangible intellectual property: including research and development, computer software, and other intangible assets.

Both series indicate that despite all the hype about a high-tech future, Canadian businesses actually seem less interested in investing in technology (both knowledge itself, and the machinery required to put knowledge into practice) than in the past. Throughout the last half of the twentieth century, business investment in machinery fluctuated between 5 and 7 percent of total GDP. That was an era when Canada's economy was developing rapidly (in both quantitative and qualitative terms), industrialization was advancing, and the gap in productivity and living standards with the U.S. was closing quickly. Since the turn of the century, however, business M&E investment has fallen steadily – and is now just half those traditional levels. Machinery investment by business represented less than 3 percent of GDP in 2020: by far the lowest in postwar history.

For those tempted to blame Canada's "onerous" taxation or red tape for this long decline, keep in mind that 2001 represented the advent of major business tax cuts — first at the federal level, then supplemented by cuts in many provinces. Since then the combined federal-provincial business tax rate has declined by about two-fifths: from 42.4% in 2000 to 26.1% today.[12] Corporate taxes have thus fallen significantly relative to profits and the overall economy, yet business's investment effort has faltered.[13]

Observed business effort in intangible investment has not fared much better since the turn of the century. Through the last two decades of the twentieth century, business investment in intellectual property assets (including research, computer code, and others) more than doubled, reaching a peak of 2.3% of GDP by 2000. In the wake of the dot-com financial crash of 2001 (and the subsequent decline of Canadian tech heavyweights like Nortel Networks, JDS Uniphase, and eventually Blackberry), Canadian business intangible investments flagged markedly. By 2020 it was just 1.86% of GDP, down about one-quarter (relative to GDP) from the 2001 peak.

Measured more narrowly, Canadian business R&D spending was even smaller.[14]OECD data indicate business R&D in Canada amounted to just 0.79% of GDP in 2019 —

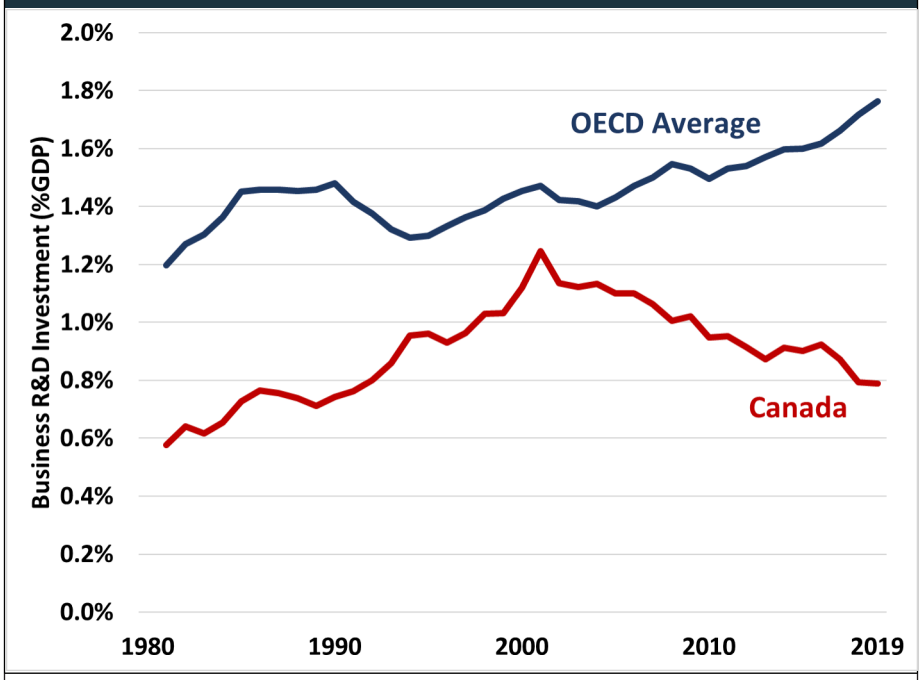
[12] OECD Corporate Income Tax Rates.

[13] See Stanford (2020) for more discussion of the failure of business tax cuts to elicit more capital spending.

[14] Investments in intangible intellectual property illustrated in Figure 3 include some spending on relatively routine intangibles (like software, plant varieties, and others) that does not qualify as innovative research and development expenditure.

Figure 4.

Business R&D Investment as Share GDP



Source: OECD Main Science and Technology Indicators.

down more than one-third from 2001 peaks (Figure 4). That year Canada ranked a miserable 26th out of 37 OECD countries in business R&D performance, with Canadian firms investing less than half as much relative to GDP as the OECD average (which was 1.76% of GDP that year).[15] Until the turn of the century, Canada was converging with other leading industrial countries in terms of technological sophistication and innovation investment. Since then, we are lagging increasingly far behind. There are numerous factors that have contributed to that structural regression: including the disproportionate emphasis on resource extraction and export which dominated Canadian economic policy for much of that time,[16] the continued reliance on foreign direct investment in many domestic industries, and a generally weak culture of innovation in Canadian business. Regardless of its causes, however, the visible erosion of investment by Canadian business in new technology — both tangible machinery and intangible knowledge and intellectual property — immediately casts doubt on the assumption that technology is in fact accelerating so forcefully (at least as reflected in most peoples' day-to-day work lives).

This surprising finding also suggests a rethink is in order regarding the relative attitudes of employers and workers (and their unions) to technological change. In the

[15] Authors' calculations from OECD, Main Science and Technology Indicators.

[16] For more on the negative consequences of resource dependence (centred this century on petroleum) on Canadian value-added production, innovation, and exports, see Clarke et al. (2013).

common popular conception, it is innovative, profit-seeking businesses which drive innovation: constantly seeking new ways to improve efficiency (and hence profits). Unions, to the extent that they figure in the narrative at all, are often portrayed as backward-looking and "resistant to change." We will see in later sections of this report that there is scant evidence of desire by unions to try to block or stop technological change (let alone evidence of any power on their part to do so). To the contrary, through their collective bargaining unions have engaged generally very constructively in attempting to regulate and shape technological change, moderating disruptive impacts on their members, while opening up positive opportunities (for training, for new job positions, and higher wages) to share the benefits of new technology. Meanwhile, it seems that business indolence, reflected in chronically disappointing investment and innovation activity, has been the bigger problem behind Canada's poor technological performance.

II. Technology and the Quantity of Jobs

A **HUGE AMOUNT OF AIRTIME HAS BEEN OCCUPIED** in recent years with commentary on the likelihood that automation and associated incarnations of new technology will displace significant proportions of the Canadian workforce. The awesome potential of new machinery and systems to perform functions with less (direct) labour implies, in some accounts, large numbers of jobs being "replaced" by robots and other forms of automatic machinery. As we have noted above, the claim that human labour can be replaced in any general sense is fundamentally misplaced: machines themselves are conceived, designed, engineered, manufactured, installed, operated and maintained by human beings. So at most we could anticipate a replacement of one kind of labour (more specifically, the direct labour exerted at the point of final production) by other kinds (namely, the indirect labour exerted to develop, produce, and operate automated machinery and other intermediate inputs). Even that sort of reallocation of labour (from direct to indirect functions) could cause significant restructuring of employment patterns. And if the increase in overall labour productivity resulting from new technology was very powerful, that could result in a decline in overall labour demand (across the total of both direct and indirect activities).

Some research has suggested that up to half of all current jobs are highly vulnerable to automation and computerization in coming decades; these findings are discussed further below. Some observers even conclude that work can no longer be the primary means for people to support themselves — leading to all sorts of dramatic policy suggestions ranging from taxing robots (Delaney, 2017) to the introduction of universal basic income to offset the disemployment effects of technology (Allegri and Foschi, 2020; Dermont and Weisstanner, 2020).

Of course, this general fear of technological unemployment is not new. Ever since the industrial revolution, workers have understandably worried what will happen to their jobs when machines can do their work faster, cheaper, or better. Previous periods of accelerating technological change also sparked public concern about technological unemployment; even relatively recently, futurists predicted that technology would make work largely obsolete (for example, Rifkin, 1995).

But historical economic experience gives cause to question pessimistic predictions of mass technological unemployment. In practice, previous waves of technological change have not been associated with long-lived unemployment, for a range of reasons. The labour-displacing effects of new technology can be offset, in whole or in part, by other factors, including:

- New work associated with the development, production, and operation of the new technology itself
- New tasks that become conceivable only as a result of the new technology (for example, due to the growth of new industries which are enabled by that technology)
- The capacity of active macroeconomic policy to boost aggregate labour demand to offset unemployment when needed
- Historic reductions in average working hours (a trend which has stalled in recent years)

Meanwhile, there are many jobs in the economy (especially in human, caring, and personal service occupations) that are not so amenable to automation in the first place.

New Frontiers in Automation

Predictions that machines and robots will "destroy" large numbers of jobs, and impoverish the people who used to perform them, have been made for hundreds of years – dating back to the advent of the spinning jenny and steam power in the early days of the industrial revolution. It is a historical fact that these past waves of innovation did not produce mass technological unemployment as a lasting economic outcome. To be sure, unemployment is a chronic problem in industrial economies, but it has not been correlated with technology; to the contrary, in some instances (such as the postwar decades, or the 1990s), bursts of technology and innovation, by sparking stronger business investment, have been associated with relatively stronger job-creation and lower unemployment. So we should be skeptical about very pessimistic conclusions that future technology will displace masses of workers and cause widespread unemployment.

On the other hand, there are certainly some clear ways in which the current wave of technological change is indeed "different" from those that preceded it. More specifically, current innovations in computing and automation are proving capable of under-

taking whole new sets of tasks, that in the past were not amenable to machine-aided production. Table 2 depicts the expanded scope for labour-saving or labour-replacing automation.

Table 2.

The Growing Reach of Automation

		Type of Task	
		Routine	**Non-Routine**
Form of Work	**Manual**	Routine/ Manual	Non-Routine/ Manual
	Cognitive	Routine/ Cognitive	Non-Routine/ Cognitive

Source: Adapted from Autor et al. (2003).

Computing power continues to become dramatically less expensive, as the technology of microchips and processing continues to advance exponentially. There is nothing new about this trend — famously reflected in "Moore's Law" (1965), which predicted a doubling in the circuit capacity of processors every two years. What has changed, however, is the applicability of ever-cheaper computing power to entire new categories of work. Traditionally, computer-assisted automation required the programmer to be able to specify very precise tasks, in a controlled environment. The programming code could direct the machine to perform an intricate and complex set of functions, directed by an increasingly detailed set of data and prompts. But the functions being automated had to be routine and precisely described. These functions could include manual tasks (involving the movement of objects) or cognitive (involving the manipulation of data). But in either case, automation was only accessible to routine and replicable functions. This set of tasks is illustrated in the third column of Table 2.

The current wave of automation, in contrast, still facilitated by ongoing reductions in the cost of computing power (and exponential increases in the capacity of computers), is allowing computing power to be applied to the mechanisation of non-routine tasks. In other words, the scope of automation is extending rightward in Table 2, to encompass non-routine tasks that require judgment, flexibility, and decision-making capacity, in the face of non-controllable or unpredictable environments and stimuli. These new applications which extend the scope for computer-controlled work include machine learning, data mining, machine vision, computational statistics, artificial intelligence, and mobile robotics. In every case, computers are informed by analyses of large databases of past experience (through the "learning by doing" process

described above), to develop the capacity to make best judgments in the face of unpredictable circumstances. This allows them to undertake non-routine functions, again covering both manual and cognitive tasks. Tasks in the far-right-hand column of Table 2 (non-routine manual and cognitive jobs) now face the prospect of partial or complete automation.

The current wave of automation is allowing computing power to be applied to the mechanisation of non-routine tasks.

Since machine learning and other new computing strategies allow for a wider range of tasks to be computerized, economists have been considering the resulting expanded potential impacts on employment patterns. One approach, pioneered by Frey and Osborne (2013), has been to conduct detailed skills audits of various occupations, to simulate their amenability to computerisation. These audits analyse the specific task content of different jobs, and develop judgments on the extent to which they could be automated on the strength of new capacities to apply computer capacities to non-routine functions.

This approach underpins the now-famous finding that close to half of jobs in modern industrial economies may be highly vulnerable to computerization. Frey and Osborne (2013) find that 47% of all jobs in the U.K. face a 70% or higher likelihood of computerization. This does not mean that 47% of jobs will disappear: as noted above, many countervailing forces will tend to create other work as automation unfolds. But as an indicator of the large number of workers in an industrial economy whose work lives may be fundamentally changed by new technologies, the Frey and Osborne results are provocative, and have sparked a significant literature exploring (and often challenging) their results.

There are other interesting implications of the Frey-Osborne results. Their research suggests that most jobs tend to experience either a high vulnerability to automation, or a low vulnerability; there are relatively fewer jobs in "the middle." This implies a polarizing impact of computerization — whereby some industries and occupations suffer severe consequences, and others suffer no consequences. Indeed, there are clear differences between sectors which seem highly vulnerable to computerization (including transportation, sales, office and administration, and general service functions), and others which seem less vulnerable (including caring and human services such as education and health care, management, and technical functions). Those polarizing impacts imply growing inequality in labour market outcomes, and that in turn has implications for gaps between different segments of society (along class, race, gender, and other lines) in light of the disproportionate allocation of lower-wage and insecure jobs to certain hard-hit segments of the labour force.

Perhaps surprisingly, there is no obvious or consistent correlation in the Frey-Osborne results between the "skill" or qualifications of specific jobs, and their vulnera-

bility to automation. Many traditionally high-skill occupations will soon be automable (such as certain medical, legal, engineering, and other highly-qualified jobs). And there are many jobs considered "low skill" (or at least requiring relatively fewer formal qualifications) that are relatively unlikely to be computerized (including many support functions in human services, and many hospitality and personal service jobs). So it is wrong to assume, as often occurs in popular discourse, that only "low skill" jobs will be affected by automation, nor that the way to "protect oneself" against technological displacement is simply to acquire new skills.

The Frey-Osborne findings have sparked a large body of subsequent research and debate.[17] For example, a major OECD study (Arntz et al., 2016) considered the likelihood of automation based on a *task*-based rather than *occupation*-based mapping of current work. Because specific jobs within given occupations generally incorporate a heterogeneous mixture of various discrete tasks, it may not be possible to automate an entire job — even though some or many of the specific tasks associated with that job can be automated. Using this approach, they find that only 9% of existing jobs in industrial countries are automable, since some occupations considered "highly vulnerable" to computerization according to the Frey-Osborne approach nevertheless incorporate some tasks and functions that are not as amenable to machine-learning technologies and other innovations. However, it may then simply require additional reorganisation and redefinition of jobs (creating a smaller number of jobs oriented around the hard-to-automate tasks) to allow the full potential of computerization to thus be realised, and hence these more cautious findings should not be a cause for complacency.

Pessimists, Optimists, and Agnostics

The widespread fear about the disemployment effects of new technology is typically rooted in logic that goes something like this: The economy produces a certain amount of output. If an advance in technology allows that output to be produced with less labour, then there will be less need for workers and employment will fall. In simple mathematical terms, demand for labour (E) is determined by the amount of output (Q) divided by the productivity of labour (q). Higher productivity, other things being equal, translates into less employment:

$$E = \frac{Q}{q}$$

The core problem with this approach is that the total amount of output (or even its rate of growth, if we are considering change over time) is not fixed. Other factors influence how much total output is produced — not least being how many people are available to help produce it. In theory, if government macroeconomic policy were committed to full employment as its central objective, it could respond to an acceler-

[17] See Autor, 2015; Manyika et al., 2017; and Graetz and Michaels, 2017 for useful overviews of this growing body of research. In the Canadian context, see Lamb (2016), Conference Board of Canada (2021), Royal Bank of Canada (2018), and Oschinski and Wyonch (2017).

ation of productivity growth (resulting from technological advancements) with job-creation measures (such as lower interest rates, expanded government spending, or other interventions) to increase the amount of total output of goods and services while retaining employment levels. Even without active macroeconomic management, economic reactions could spur an increase in total output to absorb labour capacity displaced by new technology: higher business profits could spur more investment, higher wages (which could result from expanded productivity[18]) could spur consumer spending, and enhanced international competitiveness could spur increased net exports.

In contrast, conventional market-oriented (or "neoclassical") economists have typically downplayed concerns about the impact of automation on overall employment levels. For them, the automatic workings of supply and demand forces should ensure that any labour displaced by technology is automatically redeployed in some other, more appropriate endeavours, and people will be better off in the long run. Moreover, because those same market forces ensure that workers are compensated according to their productivity, and that productivity is lifted thanks to the application of more "capital" (referring, in the physical sense, to the composite of machinery, tools and other intermediate goods they use in production), wages will grow, and workers thus share automatically in the benefits of more productive technologies. The focus of policy, according to this view, should merely be to facilitate transition through retraining and mobility assistance, allowing displaced workers to move more easily into the better, alternative occupations that the market automatically opens up.

This view can be summed up with two core relationships underpinning the neoclassical approach to the labour market:

$$L_S = L_D$$

$$w = MP_L$$

The first imposes the condition that in equilibrium, labour supply (L_S, the number of willing and available workers) in equilibrium equals labour demand (L_D, determined by employers' offers of employment). Variations in a flexible price (the wage) ensure that all labour is productively employed, and lasting involuntary unemployment does not exist. The second condition indicates that the competitively-determined wage (w) equals the marginal productivity of labour (MP_L). There are ample reasons to doubt this market-oriented approach. In reality, labour markets do not function so smoothly or efficiently: unemployment and underemployment can persist for long periods of time, displaced workers may not be successful in transitioning into appropriate alternative roles, and income losses from restructuring can be both substantial and long-lasting. Moreover, the substantial shift in aggregate income distribution over the past generation away from workers in favour of businesses and wealth-owners

[18] As discussed further below, there is no guarantee that higher productivity will boost wages, but it is possible.

provides ample proof that increasing productivity is no guarantee that wages and mass living standards will improve over time. So workers are not unreasonable to worry that rapid technological change may undermine their jobs and incomes.

In practice, neither of these extreme approaches provide an accurate depiction of the impact of technological change on labour markets. The pessimistic view that new technology will translate directly into mass unemployment is refuted by both theory and history. But the sanguine assumption that labour markets will automatically adjust to the displacement of work is also unbelievable. Especially far-fetched is the prediction that rising productivity will translate automatically into higher wages: it is clear that wages are determined by a whole set of structural and institutional forces, including labour standards (like minimum wages), the relative bargaining power of workers and employers (shaped by collective bargaining and other institutions), and norms and expectations. If we want to ensure that the disruptions associated with new technologies are managed fairly and effectively, and that both the costs and the benefits of new technologies are broadly shared, this will require pro-active interventions. Those interventions will be necessary at all levels in the economy: individual companies and workplaces, across broader industries and occupations (where sector-specific training and technology policies will be relevant), and at the macroeconomic level (where a sustained commitment to full employment will be vital in ensuring that ample jobs are created even as technology eliminates others).

Increasing productivity is no guarantee that wages and mass living standards will improve over time.

In other words, the final impacts of new technologies on the quantity of work in the economy are not automatic. It all depends on how society chooses to manage those changes.

Canadian Evidence on Technology and Jobs

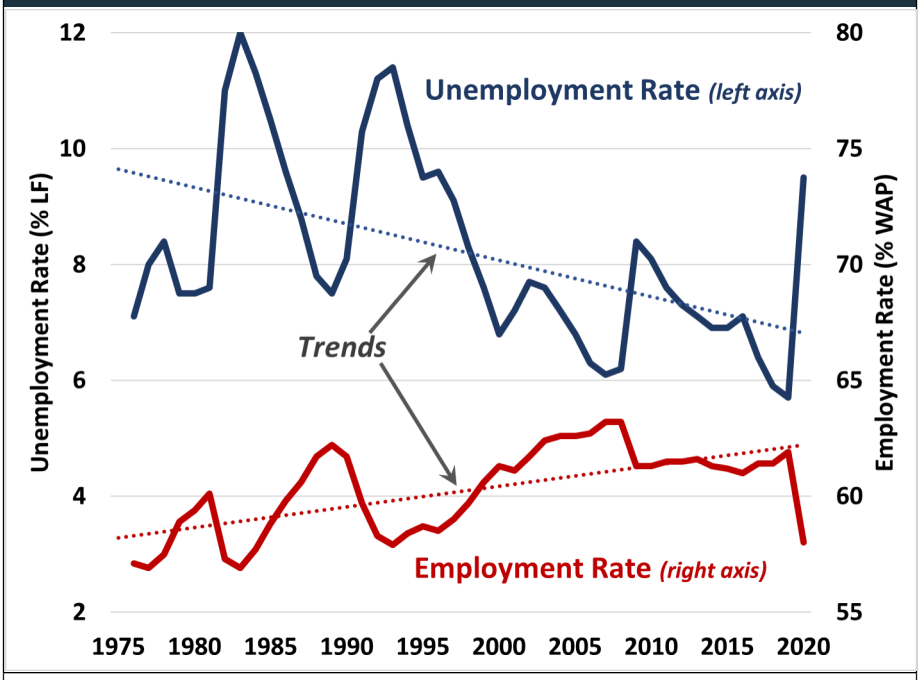
It is especially hard to reconcile pessimistic predictions about the impact of automation and other new technology on overall employment with observed trends in Canada's labour market performance. Of course, as noted above, there are doubts about whether the alleged acceleration of technological change in Canadian workplaces is even happening — at least as measured by aggregate data on investment by Canadian businesses in tangible machinery and intangible research. And there is certainly no overall indication that the modest investment which is occurring is displacing labour in any general sense.

Relative to the size of the labour force, unemployment in Canada has exhibited a long-term gradual decline over the past half-century, interspersed by cyclical fluctuations (see Figure 5, blue line). By 2019, before the onset of the COVID-19 pandemic and recession, unemployment reached 5.7% — the lowest since the advent of Statis-

tics Canada's modern labour force statistical series in 1976. The pandemic sent unemployment surging, averaging almost 10% for calendar 2020. But even that peak was lower than peak unemployment rates experienced in earlier recessions in the early 1980s and early 1990s, and by later in 2020 the unemployment rate fell back to around 8%.

Figure 5.

Unemployment and Employment Rates, 1976 to 2020



Source: Statistics Canada Table 14-10-0327-01.

There are many factors contributing to the gradual decline in Canadian unemployment over the last generation: some positive, some negative. Monetary policy has become more accommodating in the wake of the painful (and ultimately unnecessary) episodes of deliberate disinflation in the 1980s and 1990s — which contributed centrally to very poor labour market performance in those decades. The retrenchment of social programs and income supports over the last generation (most painfully including severe restrictions on access to Employment Insurance benefits) has a side-effect of reducing recorded unemployment rates (mostly through the perverse channel of discouraging labour market participation). Of course, the official unemployment rate is a very misleading indicator of the underlying health of the labour market: it excludes many "hidden" pools of unemployed or underutilized labour (such as workers who want to work but are not "actively" seeking it, or part-time workers who want and need more hours of work). But regardless of the flaws of the official unemployment rate, the long-run decline in joblessness certainly is not consistent with projections of mass technological displacement of workers.

Trends in the employment rate, rather than the unemployment rate, often provide a more accurate depiction of labour market well-being. The employment rate simply measures the proportion of working age Canadians (defined as anyone over 15) who are currently employed. It steps back from the arbitrary and often judgmental requirement that non-working individuals must be actively seeking work in order to qualify as "participating" in the labour market. The employment rate thus captures the deeper trajectory of the labour market: focusing on who is working and who is not, regardless of job search and other criteria. The employment rate has demonstrated a modest upward trend over the last half-century (see red line in Figure 5). However, it declined during the global financial crisis in 2009, and has not recovered since then (stabilizing, until the pandemic, at around 61.5% of the working age population). In addition to modestly stronger employment conditions, the rise in the employment rate in recent decades also reflects demographic factors: balancing women's growing labour force participation (which boosts the employment rate) with the ageing of the population and the growing share of older Canadians (whose participation is lower, hence suppressing the employment rate). Canada's employment rate could certainly be higher — if supported by ambitious job-creation, industry-building, and macroeconomic policies. But there is no evidence of the sort of mass technology-induced displacement from employment feared by more pessimistic interpretations.

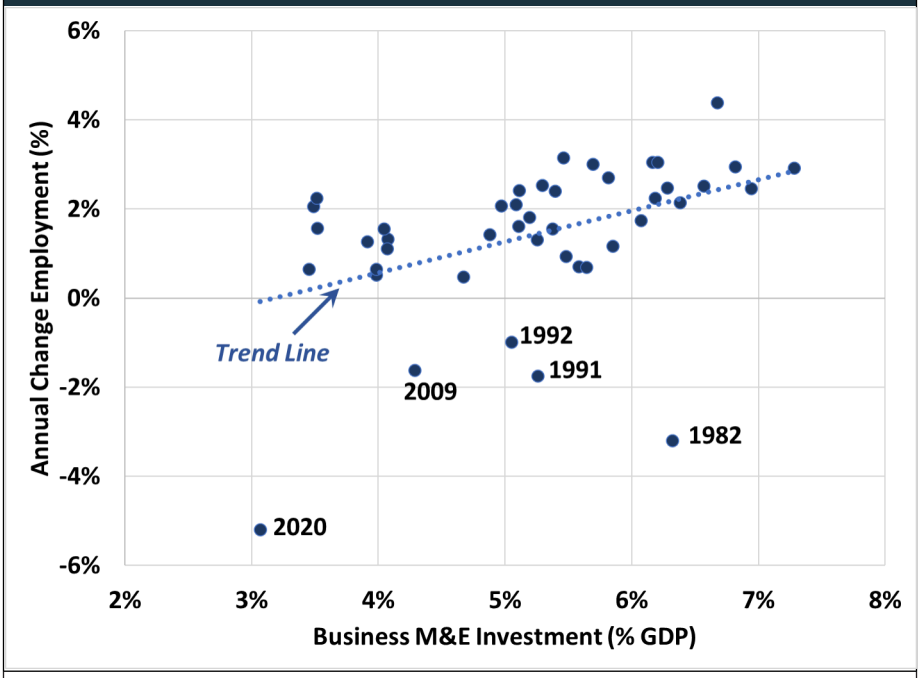
As discussed above, business investment in new machinery and equipment has contradictory effects on the quantity of employment. At the point of direct production, more efficient or automated technology may reduce the demand for labour. This is likely offset (at least in part) by new jobs associated with the operation and maintenance of that new technology. Economy-wide employment trends will also depend on indirect work associated with the development and production of the machinery, and spin-off jobs in new industries opened up by the advent of new technologies.[19] Business investment also plays an important macroeconomic role in initiating production and generating aggregate spending power, which is also positive for employment. Indeed, business investment is usually an important leading indicator of forthcoming trends in GDP and employment: when investment is strong, labour market conditions tend to improve, suggesting that the macroeconomic benefits of investment spending tend to outweigh any labour displacement effects from new technologies. Across all of these diverse effects, it is likely that stronger business investment is net positive for employment, despite the reductions or reallocations in labour demand that may be experienced in specific workplaces or occupations.

This conclusion is consistent with aggregate economic experience in Canada over the past several decades. Figure 6 compares the rate of business investment in new machinery (measured along the horizontal axis) with the pace of job-creation in the overall economy. There is a reasonably consistent but modest positive association between business M&E spending and employment growth, represented by the linear

[19] Good examples of job-creation in new industries that are enabled by new digital technologies include work in digital gaming production and distribution, work associated with developing smart phone apps, and other ancillary tasks related to advances in digital communications technology.

Figure 6.

Machinery Investment and Job Creation, 1976 to 2020



Source: Authors' calculations from Statistics Canada Tables 14-10-0327-01 and 36-10-0104-01.

trend line.[20] (Outlier observations in Figure 6 indicate years of recession, when employment declined for other reasons — the worst, of course, being 2020 when annual average employment fell by 5% due to the COVID pandemic.) This evidence suggests that, on balance, employment in Canada would benefit from more business investment in machinery and equipment, not less. Of course, there are many other factors (including demographic change and participation trends, the stance of fiscal and monetary policy, and Canada's performance in building successful export industries) that are very important to job creation. And while the overall level of employment may not be undermined in a general sense by ongoing technological advancement, this does not deny the displacement and disruption that may occur within specific workplaces, industries, and occupations. Those effects can be severe, and workers need more power to shape how that change is managed.

In summary, the evidence suggests that fears of widespread unemployment arising from the advent of new technologies are misplaced. On balance, new investment in technology is modestly positive for employment trends. New technologies certainly have the potential to displace and disrupt existing employment patterns, with some

[20] The coefficient on that trend line linking job-creation to M&E investment is statistically significant, and explains about one-fifth of the changes in job-creation over this period.

industries and occupations especially vulnerable.[21] But concerns that labour, in a general sense, will be replaced by machines — and hence that employment can no longer be the main means for Canadians to support themselves — are not credible. Labour remains the driving force of production and value-added in our economy. Workers are not "disposable": they are central to our future prosperity. Developing strategies to manage and shape technological change so as to enhance its net benefits, and support effective and fair transitions to new technologies, is the key challenge in building a fairer, more secure high-tech future.

Labour remains the driving force of production and value-added in our economy. Workers are not "disposable": they are central to our future prosperity.

[21] An example of an industry where technological change has had dramatic impacts on the total quantity of employment is longshore services; see Prism Economics (2019) for an overview of massive reductions in employment arising from automatic loading and unloading technologies, and their economic and social implications for key coastal communities.

III. Technology and the Quality of Jobs

WHILE ONGOING TECHNOLOGICAL CHANGE DOES NOT SEEM TO have exerted a visible negative influence on the overall *quantity* of employment in Canada, its impacts may be more visible and concerning regarding the *quality* of work. Some of those impacts reflect the immediate challenges of working with new kinds of equipment, processes, and materials. But some are the indirect result of ways that new technologies interact with employment relationships, power balances in workplaces, and other determinants of job quality and stability. And in that context, workers' collective capacity to intervene in technological decisions, and protect their rights and interests as technology and innovation advance, is critical for limiting negative consequences on job quality — and instead ensure that technology is used to lift standards and create better jobs.

Complex and Contradictory Effects

As with the debate (summarized above) regarding the effects of new technology on the quantity of employment, there are widely contrasting views about how technology will affect job quality. Some observers are very optimistic about the potential for new technologies to lift the quality, safety, and security of work. Others come to more dystopian conclusions, concerned that new technologies will be deployed in ways that undermine job stability and quality — or even disenfranchise workers entirely from traditional, permanent jobs. Also paralleling the preceding discussion about the indeterminate net impacts of new technology on employment levels, there is also a fundamental uncertainty about technology's impacts on job quality. Both positive and negative impacts can be identified, and final outcomes will depend on the net balance of those effects. That balance, in turn, will depend on the relative power of

various labour market stakeholders to protect and promote their own interests as technology evolves.

Table 3 summarizes several dimensions of the potential impacts of new technologies on the quality of work, including both positive and negative channels.

Table 3.

New Technologies and Job Quality

Dimension	Positive Effects	Negative Effects
Safety, Ergonomics	Potential to replace arduous or dangerous tasks with automation Machine-controlled processes may have less errors and accidents	Speed-up and faster pace → more injuries More repetitive work → repetitive strain injuries Unknown risks with new technologies & materials Inadequate training on new machinery → more injuries
Job Content & Autonomy	Some tech jobs have more reliance on judgment, creative input → more autonomy	Fragmentation of tasks → repetition Pace of work controlled by machines
Job Security	Workers with highly demanded skills may have more job security	Technology facilitates contingent or irregular staffing (including gig work)
Skill Content	New skills required to program, operate, and maintain machines New technologies enable new industries & occupations, many with higher skills	Fragmentation of tasks → de-skilling Polarization of labour demand → growing share of work in low-skill service jobs
Compensation	Productivity growth creates economic space for higher wages Higher skill levels → more bargaining power for some groups of workers	Application of digital monitoring & discipline → lower compensation Skill-biased shifts in labour demand → lower wages for less skilled workers Access to global labour pools through distance work → lower compensation
Relationship with Employer	Some sought-after workers receive equity stakes	Digital management technologies facilitate individualization, contingent work, outsourcing

Source: Authors' compilation as described in text.

There are many different potential implications of new technologies for the quality of jobs: both positive and negative. It would be folly to predict the net impact of these contrasting channels of influence. Instead, an open-minded perspective is appropriate: the net impact of technological changes on the quality of work must be assessed on the basis of pragmatic, empirical evidence, weighing the net influence of these varying and contradictory factors.

Consider the impact of new technologies on occupational health and safety. The automation of certain arduous or dangerous tasks creates an encouraging opportunity to reduce the incidence of workplace injuries, across a wide range of industrial and

service settings. Whether this potential is realized, however, depends on how much attention is paid to ergonomic and safety considerations as new technologies are designed and installed. At the same time, there are many potential hazards and dangers that could be created or exacerbated by the roll-out of new technologies. These include safety risks associated with the intensification and fragmentation of jobs (as occurs under some new production processes), unknown dangers from the use of new materials or technologies, and safety hazards caused by inadequate training or preparation when new machinery or processes are introduced.

Similarly contradictory forces will affect the autonomy and creativity of work in the wake of new technologies. Abundant evidence confirms the importance of job autonomy to job satisfaction, happiness, and safety. Will new technologies allow workers more freedom to conduct their work at their own pace, adding a personal touch, and taking breaks when needed? Or will it further constrain work within the dictates of automated schedules and algorithms, to the point of subverting workers' agency to the structures and timelines of machines? Both outcomes are possible, and can be observed in different kinds of jobs today. Whether the high-tech jobs of the future feature creative and individual digital design activities, or hyper-monitored and machine-directed warehouse work, depends entirely on who is in charge of technology as it rolls out, and the relative power of employees, employers, and owners.

The nature of employment relationships is another area where the impacts of technology on job quality are fundamentally uncertain. In some occupations and industries, new technologies (especially digital methods of management, staffing and dispatch) are clearly facilitating a shift toward more contingent and less secure forms of work. The epitome of this trend is the expansion of gig jobs in digital on-demand platforms: web-based technologies have allowed employers to outsource core production functions to nominally "independent" contractors, who have none of the stability or protections of traditional waged employment. This shift toward more precarious employment relationships is visible in many other occupations, as well — both low-tech (like cleaning) and high-tech (like programmers and data analysts hired through on-line platforms like Toptal or Gitcoin). This growth of extreme precarity cannot solely be "blamed" on technology: there are many other contributing factors, including the presence of large pools of desperate labour effectively excluded from other, more appealing jobs (like the young racialized workers who are the main source of gig labour), and the failure of governments and regulators to uphold normal minimum employment standards in these industries. But digital management methods are certainly assisting business efforts to mobilize contingent labour, while avoiding the normal obligations and expenses associated with employment.

The general direction in employment relations is toward precarious arrangements that impose great risk on workers.

At the same time, some groups of specialized technology workers have been able to attain more favourable and lucrative positions within their respective companies. For example, the increasing use of equity-based compensation schemes within tech firms (and in some other industries, as well), even for non-executive positions, reflects an interesting mix of technological and financial influences.[22] These more appealing employment arrangements, however, do not seem generalizable to most jobs in the economy; on the whole, it seems that the general direction in employment relations is toward precarious arrangements that impose great risk on workers and undermine the application of traditional supports (like the minimum wage) for compensation.

In short, across all of the dimensions of job quality summarized in Table 3, new technologies will have complex and contradictory impacts on the safety, stability, and appeal of jobs. Work in a high-tech future might be gratifying, safe, inclusive, and well-compensated. Or it might be intensely monitored and supervised, precarious, and alienating. The outcome depends on whether workers have sufficient say and bargaining power to ensure that new technologies are deployed in ways that are consistent with safe, respectful, stable jobs. Neither the technical features of new machines and processes, nor the self-interested profit motives of businesses, will ensure that is the case. It will require forceful and ongoing interventions by workers, their unions, communities, and governments to ensure that workers' rights to secure, safe, decent work are respected and protected as technology continues to evolve.

Technology, Occupations and Skills

As discussed above, an important impact of automation and other new technologies is to alter the composition of employment: reducing the demand for labour in direct roles at the point of final production of specific goods and services, but increasing the demand for various forms of indirect labour (including work in designing, producing, and operating automated machinery and other related tasks). It is often assumed that the overall impact of technology will be to increase the general requirement for more highly-skilled labour, as a result of this shift from direct to indirect roles. But this is not always the case: there are many so-called "high-skill" jobs that are also vulnerable to displacement from automation and related technologies, and many of the new jobs associated with new technologies have modest skill and training requirements.

In short, it is not reasonable to assume that a high-*tech* future will necessarily be a high-*skill* future for workers. Instead, there are ways in which new technologies may reduce the skill content of jobs — by fragmenting formerly complex and multi-dimensional tasks into repetitive, specialized functions, and by imposing a greater degree of technological control over the production process (including controlling the pace of work, order in which tasks are performed, and more). These de-skilling, autonomy-sacrificing aspects of many technological developments have been well explored in the extensive "labour process" literature.[23]

[22] See Watson (2021) for a discussion of this trend.

[23] See Braverman (1974) and Knights and Willmott (1990) for classic statements.

There is no doubt that the average level of training and education possessed by Canadian workers has been growing. Indeed, by some measures Canadian workers are the best-educated in the world: according to OECD data, a greater share of core-age workers (25-64) in Canada possess a completed post-secondary credential than in any other industrial economy (around 60% in 2019).[24] And individuals with more education certainly have a better likelihood of attaining employment than those with less qualifications.[25] But that correlation of training with employment at the individual level partly reflects the ability of individuals with more credentials to obtain scarce jobs (a phenomenon known as "queuing" or "signaling"), rather than proving that those skills are actually required for those jobs. When the number of workers vastly exceeds the number of jobs, higher qualifications give more educated workers a better chance of being hired. As a result, millions of employed Canadians underutilize their skills; this problem of underemployment is especially prevalent among immigrants to Canada, whose credentials may not be recognized by employers. For all these reasons, acquiring more skills is not a panacea for future labour market success, as technologies continue to evolve. And it is not at all certain that the application of new technologies in actual workplaces will necessarily translate into increased demand for skilled workers.

It is not reasonable to assume that a high-tech future will necessarily be a high-skill future.

An interesting perspective on the surprisingly low-tech nature of much modern job-creation is provided by federal government projections of the occupational composition of future job growth. The government generates these projections (published through the Canadian Occupational Projection System, or COPS) to guide educational institutions, employers, and employment service organizations in developing future labour force development strategies. Table 4 summarizes the main findings from the most recent COPS projection (which extends to 2028). The table presents the 12 occupations with the largest expected growth in total employment.[26] This compilation is surprising, and certainly casts doubt on the common assumption that there will be a general shift in employment opportunities toward high-skill or technology-intensive occupations.

Of the 12 fastest-growing occupations listed in Table 4, only two (ICT analysts and computer programmers) fit the stereotypical category of "high-tech" jobs. Those two occupations are expected to add a combined 85,000 jobs over the decade considered in the projection. That represents under 5% of the total employment growth ex-

[24] OECD, "Educational attainment of 25-64 year-olds," 2019.

[25] In 2019 before the COVID-19 pandemic, the average unemployment rate for Canadians (over 25) with a university degree was 4.0%, compared to 4.5% for those with a post-secondary diploma, 6.0% for those with some post-secondary education, 5.9% for high school graduates, and 8.1% for those with less than high school (authors' calculations from Statistics Canada Table 14-10-0019-01).

[26] Occupations are defined at the 4-digit level in this analysis; at that level of detail there are close to 300 different occupations measured in the system.

Table 4.

Jobs of the Future: Twelve Fastest-Growing Occupations, 2018-2028

Occupation	New Jobs (000)	Occupation	New Jobs (000)
Nurses	102.8	ECE educators & assistants	30.2
Nursing aides & orderlies	92.9	Computer programmers & media designers	32.1
ICT analysts & consultants	52.7	Light duty cleaners	29.7
Food attendants & helpers	46.2	Transport truck drivers	29.5
Social & community services	38.7	GPs and physicians	28.2
Elementary & kindergarten teachers	33.1	Cashiers	27.2

Source: Authors' calculations from Employment and Social Development Canada (2021). Colour categories: Grey = low-wage private services. Blue = technology-intensive services. Red = public and caring services.

pected in Canada over that period (total employment is expected to increase by 1.75 million positions by 2028). The remaining 10 fast-growing occupations fall into two clear categories:

1. Public and caring service occupations, including a range of health care, education, and social service functions. Six occupational categories in these fields (making up half the top twelve occupations) are expected to create over 325,000 new positions in the decade. That is almost four times as much as the two high-tech occupations.

2. Relatively low-paid and insecure work in private sector services: including food service, trucking, cleaning, and cashiers. These four occupations are expected to add over 130,000 new positions in the decade, also far more than the number of new jobs expected for ICT analysts and computer programmers.

Surprisingly, among the *next* 12 fast-growing occupations, there are *no* categories that correspond to high-tech stereotypes. That next tier of growing occupations includes a mix of managerial positions and lower-paid private service jobs (including in retail, customer service, and food and beverage services). So the assumption that computer and technical skills will be the driving force of future employment patterns seems very much at odds with observed trends in the make-up of future employment.

All of the occupations listed in Table 4 require important skills and training to be performed effectively and safely. It is a mistake to assume that workers in retail, hospital-

ity, and other private service roles are "low-skill." And the leading job-creating occupations in public and caring services are also obviously very skill-intensive — but in a very different way than implied by the technology-infatuated predictions of a robot-dominated future. So the assumption that technical skills like coding and STEM will be the driving force behind the labour market of the future is also disproven by observed trends. Another implication of the projections in Table 4 is the likelihood of a strong polarization in jobs as technology changes: a relatively small proportion of future jobs will embody the high-tech skills required to design and use emerging technologies; those workers might (or might not) have the bargaining power to demand relatively appealing employment conditions and compensation. But most new jobs of the future will be in private and public service occupations, many of which have traditionally been associated with poor pay, security, and working conditions. That implies further growth in labour market inequality, which will undoubtedly have strong racial and gender dimensions (with a disproportionate share of those service roles filled by women and Black, Indigenous, and people of colour).

It is important to note that it is neither inevitable nor inherent that those future service jobs will be "bad" jobs: if workers have bargaining power and statutory protections, service work can provide decent pay, stability, and working conditions. The better conditions of jobs in publicly-funded human and caring services (such as the health care, education, and social service occupations which feature prominently in Table 4) attests to the capacity of collective bargaining to lift the quality of service work. Those same tools will have to be mobilized to improve job quality in private sector service jobs, too (like the cleaning, trucking, retail, and hospitality roles that will also feature prominently in the labour market of the future).

Enhancing training opportunities for workers facing the effects of technological change in their workplaces is a critical priority. But learning new skills is not a "magic bullet".

Given the impact of technological change on the skills mix of future work, access to training will constitute a central component of any strategy to support workers as new technologies are rolled out. And skills strategies are usually given top billing in most policy responses to technological change. This partly reflects the conventional assumption of market-oriented economists that while technology may alter the composition of jobs, market forces will ensure that strong overall employment levels are maintained. Changes in relative wages (with pay for scarce tech workers rising, and pay for "unskilled" positions falling) will merely reinforce the incentives for workers to attain new, in-demand skills.

Unfortunately, apart from misrepresenting how labour markets function (overlooking the normal existence of unemployment), this market-oriented view often underpins a "blame-the-victim" perspective. If employment opportunities are seen as determined

by individual workers' willingness to learn and accumulate "human capital," this leads easily into a judgmental outlook in which individuals who fail to succeed are portrayed as authors of their own hardship. So the traditional emphasis on skills acquisition as the dominant response to technological change needs to be interrogated critically. Moreover, bland statements about the importance of skills by both employers and governments are rarely matched with concrete resources to make training more accessible. This is especially true of vocational education in Canada, which is often overlooked in education policy-making, and has been undermined by employers' focus on reducing training costs (including for apprentices and other formal training pathways) even as they wax eloquent about the importance of future skills.

In this context, there is a need for a pragmatic and balanced approach to skills and training as a response to technological change. Enhancing training opportunities for workers facing the effects of technological change in their workplaces is a critical priority. But learning new skills is not a "magic bullet" that can protect all workers from ill-effects of new technology. Winning concrete rights for retraining (including both time and money to support that training), and access to redeployment and job opportunities afterward, will require concerted pressure on employers to offer more than just lip-service to training and skills opportunities. And an overarching macroeconomic commitment to attaining full employment, along with a multi-dimensional commitment to improving the quality of work (including by strengthening collective bargaining), will be equally essential in ensuring that there are abundant decent jobs available to employ the better-trained workers of the future.

IV. The Indeterminate and Contestable Nature of Technology

THE PRECEDING REVIEW OF THE THEORETICAL AND EMPIRICAL dimensions of technological change and employment suggests that technology poses a combination of opportunities and risks for working people. The fear that employment will be wiped out *en masse* by automation and other technologies (with the very future of employment jeopardized, in more extreme accounts) is misplaced — indeed, in a fundamental sense, it is not possible. Labour is the essential driving force of economic activity: including the work that is required to conceive, develop, engineer, manufacture, install, operate, and maintain automated machinery and other intermediate products. The prominence which the fear of mass technological displacement has received in so many discussions about the future of work (and accompanying policy thinking) is unfortunate, and has distracted attention from more likely and actionable problems.[27] While in general workers cannot be "replaced" by machines, new production technologies (relying on more indirect labour and increasing inputs of intermediate products) can certainly eliminate or transform large numbers of jobs in specific industries and occupations. And new technologies will have complex and often worrisome impacts on many dimensions of job quality.

In short, technology is neither the villain of worrying labour market changes, nor the saviour. Whether it contributes to decent, safer, better-paid jobs, or to displacement, polarization, and exploitation, depends completely on how technology is wielded. If new technology is controlled solely by employers and owners, who are free to deploy new production systems without constraint or input from workers or regulators, then we can expect that its effects will be lopsided: enriching profit margins, but under-

[27] Mishel and Bivens (2017) and Bernstein and Baker (2019) come to a similar conclusion.

mining job security and mass prosperity, and exacerbating inequality (across class, race, gender, and regional lines). On the other hand, if those owners and employers are compelled to negotiate the terms of technological change (both what technologies are developed, and how they are implemented) with other stakeholders, then there is potential for a more balanced and inclusive high-tech future. Union representation and collective bargaining is one especially critical avenue for workers to exercise meaningful voice and influence in their workplaces. So it is natural that issues related to technological change should be an increasing priority for union activity.

This nuanced understanding that the direction and effects of technological change are not pre-ordained, but open to negotiation, contest, and struggle, is surprisingly widespread within the trade union movement, in Canada and globally. The infatuation in popular discourse with whether technology will result in mass unemployment has not been the main focus of labour movement research, dialogue, and activism. Instead, unions have undertaken pragmatic and incremental efforts to engage in shaping technological change: at the micro level (individual workplaces and firms), the meso level (industries and regions), and the macro level (through economy-wide policies and supports). Common stereotypes portray unions as reflexively and blindly "resistant to change," but that caricature is not consistent with the statements or actions of most union bodies. Instead, most unions acknowledge the positive potential of technology and innovation to productivity, economic and social development, and living standards – while still recognizing and countering the risks that new technologies may cause disruptions and adjustments in employment, and be misused to intensify or degrade working conditions, compensation, and job security. In this regard, unions seem ready to participate in the nitty-gritty negotiations, campaigns, and struggles that will determine whose interests prevail in the course of future technological change.

The following summary statements from unions and labour federations confirm their recognition that the nature of the high-tech labour market of the future is contestable, and can be shaped in more humane and sustainable directions by the deliberate actions of unions and other stakeholders:[28]

> "Realizing the potential of technology in the future of work depends on fundamental choices about work design, including reliance on detailed job crafting discussions between workers and management… Governments and employers' and workers' organizations [should] monitor the impact of new technology on work, steer its development in a manner that respects the dignity of workers and consider the adoption of new regulations in this light." (ILO 2019, pp. 43-44)

[28] This expectation that the future high-tech economy will depend on the balance of economic and political power is shared by many other unions and labour federations: see, for example, statements by Meinema (2018), Trade Union Advisory Committee (2016), AFL-CIO (2019), and International Transport Workers Federation (2018).

> Workers have the right to participate in decisions involving technological change. They have the right to understand and anticipate technological change; have a say in its introduction and implementation; have a right to training; and have a right to protections from the impact of new technologies, including adjustment." (Canadian Labour Congress 2021, p. 61)

> Workers deserve to have early notice of upcoming technological changes, the right to participate in and benefit from new opportunities, and the right to negotiate new language arising from those changes." (Unifor 2018, p. 17)

Few unions, it seems, are interested in trying to "stop" technology. Instead, they seek avenues of influence to shape how technology evolves and is used. Collective bargaining is one such avenue: it offers an opportunity for workers to wield collective power in pursuit of agreements with employers that improve all aspects of work (including compensation, safety, representation, and technology). To be sure, there are other avenues through which workers also strive to raise concerns and effect change, including over technology-related concerns — by advocating for policy and regulatory reforms to protect workers, participating in community-based or non-governmental movements and campaigns, and more.[29] But collective bargaining is a critical lever for workers to protect themselves against negative consequences of employer-controlled technological change, and to share more fairly in the potential benefits of new technologies. Addressing the dimensions and effects of technological change is therefore a key priority for the collective bargaining agenda — and we turn now to survey recent efforts by Canadian unions to negotiate the terms of the future high-tech world.

Addressing the dimensions and effects of technological change is therefore a key priority for the collective bargaining agenda.

[29] Stanford and Poon (2021) discuss the variety of ways in which workers' collective voice can be expressed and have effect — but conclude that formal union representation is the strongest and most consistent of those avenues.

V. Collective Bargaining Strategies to Shape Technology

A Key Challenge: Preserving the Capacity to Bargain

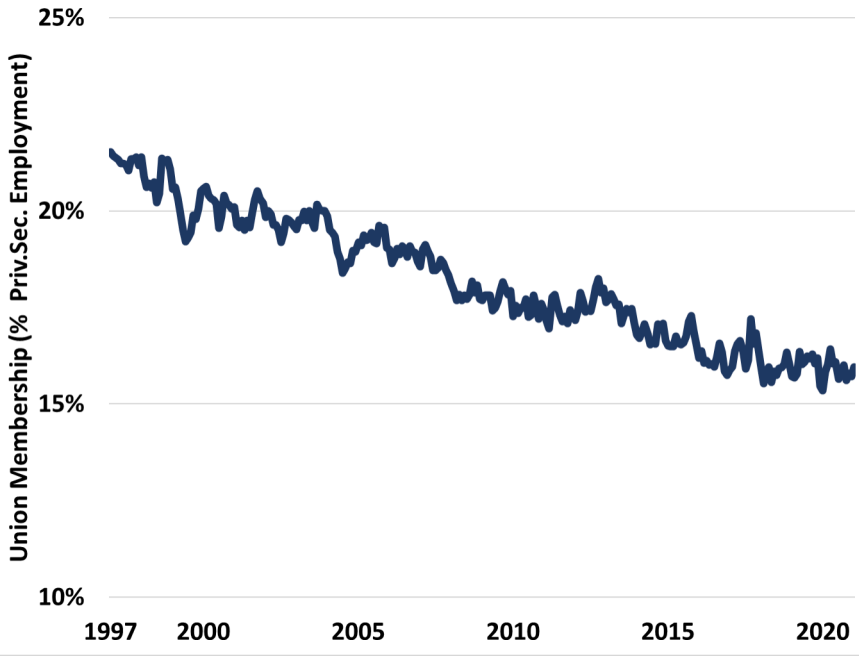
IN ORDER TO INFLUENCE THE DIRECTION AND EFFECTS of technological change through collective bargaining, workers need capacity to negotiate with their employers over the terms and conditions of employment. But in private sector workplaces, a shrinking minority of workers in Canada have access to that fundamental channel for shaping all aspects of their jobs. In the face of vigorous opposition from employers, employer-friendly shifts in labour law in most jurisdictions, and compositional changes in employment (such as the growing importance of smaller workplaces, where union representation is less common[30]), the proportion of workers covered by a union-negotiated contract has been slowly declining in Canada. That erosion of collective bargaining capacity is particularly visible in private sector workplaces; and it obviously and directly limits the extent to which workers can influence future technology through collective bargaining.

Figure 7 illustrates this long erosion of union representation in the private sector — from 22% of total private sector employment in the late 1990s, to just 16% in 2020. The decline in density seems to have leveled off since 2018, but it is too early to tell if that is a lasting result or merely a pause in a longer historical trend. Stopping this erosion of union representation, and finding new ways to extend collective bargaining to more private sector workers, will be a vital priority for anyone concerned with work-

[30] As reported in Stanford and Poon (2021, p. 85), just 14% of workers in workplaces with under 20 workers are represented by a union, compared with 53% of workers in establishments with over 500 workers.

Figure 7.

Private Sector Union Density, 1997-2020



Source: Authors' calculations from Statistics Canada Table 14-10-0069-01.

ers' capacity to shape the nature of their jobs – regarding technological change, or any other concern. Measures which would help to stabilize and restore collective bargaining capacity to private sector workers could include:

- Labour law reforms that are less hostile to union organizing: including measures such as bargaining unit certification on the basis of card recognition,[31] stronger rules against employer interference in organizing campaigns, and better protection for union organizers against dismissal or retribution.

- Provisions to facilitate collective agreements in difficult situations, such as reaching first agreements for newly-certified bargaining units, and compulsory arbitration in very long disputes.

- New structures for collective bargaining in multi-employer situations, including industries with very fragmented and decentralized firm structure (such as franchised businesses, industries marked by rapid turnover of firms, and other sectors where conventional collective bargaining has been prevented).

[31] The restoration of majority card-based certification in the federal labour jurisdiction after 2015 has contributed to significant improvements in union density in air transportation and some other federally regulated industries.

In recent decades, many business-friendly governments have seen union representation and collective bargaining as a "problem" which needs to be restricted and suppressed. This has motivated a series of hostile labour law provisions which have restricted the ability of workers to organize and undertake effective collective bargaining. Other governments have adopted a position of false "neutrality": pretending that governments should stay out of labour-management discussions,[32] worrying only that a neutral, level playing field be created for labour-management dialogues. In an economy in which employers hold most of the cards, pretending that government is somehow "neutral" in the lopsided relationship between workers and their bosses amounts to a ratification of the long erosion of workers' collective power in the private sector.

Pretending that government is somehow "neutral" in the lopsided relationship between workers and their bosses amounts to a ratification of the long erosion of workers' collective power.

The potential benefits — to workers, to firms, and to all of society — from pragmatic collective bargaining over technological change and related issues (including adjustment, retraining, and safety) provide a concrete, modern rationale for governments to extend effective collective bargaining rights to more workers.

Methodology

This section of the report summarizes the findings of an extensive survey of efforts by Canadian unions to negotiate contract provisions dealing with technological change and its various ramifications. A full catalogue of survey results is provided in the Appendix. In total, the survey identified some 350 different contract provisions with relevance to one or more dimensions of technological change in workplaces. Those provisions have been grouped into a dozen subject categories, summarized and analyzed below. The methodology followed in conducting and compiling the survey was as follows:

- We approached 40 major Canadian unions and labour federations, and asked them to submit examples of what they felt were innovative or representative contract provisions dealing with technological change. We received detailed responses from most of those unions.

- We also conducted a systematic search for contract provisions dealing with technological change through specialized databases: including the Negotech database of large collective agreements maintained by the federal government, parallel sites managed by some provincial governments, and the *First Resort* database (which is maintained and offered by the Lancaster House labour relations consulting service).

[32] The common exception, of course, is when workers in various important public and private industries go on strike – in which case governments are often quick to intervene to order them back to work.

- We conducted a literature search for references to new collective agreements containing provisions dealing with technological change through various relevant publications: including the *Workplace Bulletin* (formerly published by the Workplace Information Directorate at the federal government), and commercial publications specializing in industrial relations and related topics (including *Canadian Labour Reporter*, *Canadian HR Reporter*, *HR Observer*, and others).

- We conducted searches of other commercial and academic publications dealing with collective bargaining and technological change, including Statistics Canada reports and law reviews.

- Where possible, specific contract wording was included in the database. We also compiled data on the union and local involved, the employer, and the term or clause number of the agreement.

- Identified provisions were organized into twelve subject categories (each discussed below).

- Within each category, provisions were listed by alphabetical order of the employer or workplace.

- In addition to specific contract provisions included in the database, we also compiled references to relevant and important labour legislations from various jurisdictions in Canada (including provinces and the federal jurisdiction), and decisions from various tribunals regarding the interpretation or enforcement of provisions dealing with technological change. These references were identified through searches of the *First Resort*, *CanLII*, and *Bestcase* databases.

Given the nature of our approach, the resulting database, while large, cannot be considered comprehensive. We have assembled a significant sample of collective agreement provisions dealing with technological change, but others have been missed — perhaps because the provision itself (while relevant to technological change) does not explicitly mention that term and hence may not have been captured in our survey. Moreover, our survey includes many representative provisions which will also be included in many other agreements; the contract language we have identified cannot be ascribed solely to the particular agreements mentioned, but in many cases will also apply in other deals. Our goal is to generate a broad portrait of the issues which have been tackled by union collective bargaining efforts around technological change in Canada, and the provisions which they have managed to negotiate.

We invite readers to submit other examples of technology-related collective agreement provisions, and we will update the database for public access through the Centre for Future Work website. Please send suggestions with relevant details and contact information to info@centreforfuturework.ca.

Bargaining Tech: Twelve Themes

The Appendix provides a complete listing of the approximately 350 technology-related clauses identified in our survey of Canadian unions and collective bargaining agreements. As noted above, this database should be considered as a representative, not exhaustive, catalogue of efforts by Canadian unions to shape and regulate the use of new technology in workplaces through collective bargaining. While it provides a broad portrait of the range of issues addressed in unions' technology bargaining, and the various provisions designed to accomplish desired goals, there are many other union agreements in Canada which have also addressed technology issues.

We have grouped the specific provisions identified in our survey into 12 subject categories. These categories are listed in Table 5, and discussed in the summary text below. For full details on the provisions included in the database, please see the Appendix tables.

Table 5.

Subject Categories of Collective Agreement Provisions (see Appendix Tables for full records)

Table	Topic
A1	Definition and Significance of Technological Change
A2	Notice of Technological Change
A3	Technology Committees and Consultation
A4	Commitment to Negotiate
A5	Adjustment and Job Security
A6	Severance Pay
A7	Other Compensation Issues
A8	Training
A9	Technology-Specific Health and Safety Issues
A10	Surveillance and Monitoring
A11	Working From Home
A12	Other Technology Provisions
A13	Labour Legislation Referencing Technological Change
A14	Important Arbitration Decisions

Source: Authors' compilation as described in text.

1. Definition and Significance of Technological Change

Before substantive measures can be agreed to manage and regulate the application of technological change in the workplace, it is often useful for the parties to a collective agreement to clarify as much as possible their shared understanding of what constitutes technological change. These preliminary provisions may also set out, in general terms, their overarching "attitude" to technological change, including their shared commitment to manage its implementation in mutually acceptable or beneficial ways.

Over 30 examples of these provisions are summarized in Table A1 in the Appendix. They can be separated into two main categories: those generally acknowledging that technological change is necessary and advantageous; and those that are more descriptive of the process and the type of technological changes involved. Generally, the clauses acknowledge the importance of protecting and supporting employees, and reducing negative impacts of technological change, while presenting a generally positive perspective on technological change.

Typically, contract language acknowledges that technology can have far-reaching effects but can be mutually advantageous in improving production systems, enhancing efficiency and productivity, and achieving better working conditions. Clauses will refer to technology as necessary and desirable, while stressing that it must be introduced in such a way as to lessen the effects on earnings and employment security as much as possible. In some cases, the parties agree to encourage and promote technological change.

Technological change is variously defined in these preliminary provisions as:

- automation or mechanization of equipment or duties
- replacement of equipment or materials
- substantive changes in technology and production methods
- new work organization
- substantive difference in job content requiring new or greater skills
- any changes in work method, organization, operations or processes affecting one or more employees
- changes in method of operation or job function which result in employees' services no longer being required in the same capacity, or that would reduce the employee's pay grade

Most definitions include references to the need to consider, avoid, or ameliorate job displacement or job loss, and other adverse effects on the employees.

Some education sector agreements define technological change in a more occupation-specific manner: as a change in work methods that may include, but is not limited to electronic, self instructional, packaged, or pre-programmed educational services, or changes in the modes of learning or delivery.

The CUPW-Canada Post agreement contains a notably ambitious and far-reaching commitment to avoid negative impacts from new technology on workers: "The Corporation agrees to eliminate all injustices to or adverse effects on employees and any denial of their contractual or legal rights which might result from such changes."

2. Notice of Technological Change

An obvious concern of workers regarding new technologies in their workplaces is to receive adequate and appropriate advance notice of employer plans to introduce new equipment, process changes, or other technological change. Our survey identified many representative provisions regarding minimum notice of technological change, methods by which such notice is to be given, and the activation of subsequent consultation or negotiation processes. Table A2 of the Appendix catalogues over 50 such provisions.

Most notice provisions include minimum requirements for the employer to advise employees and their union of upcoming technological changes, specified in days or months (typically ranging between 60 days to six months). Some agreements are less specific, stating only that notice be given "as far in advance as possible or practicable." Some but not all agreements stipulate that the notice must be provided in writing.

An obvious concern of workers regarding new technologies in their workplaces is to receive adequate and appropriate advance notice.

A specified notice period to be given to affected employees is less common, and examples range from three weeks to three months. Some agreements state that it is not always possible to provide notice to the employee.

Notice generally involves the provision of the following information to the union by the employer:

- nature of change
- date change takes effect
- number, classifications, and location of employees affected
- possible effect on working conditions and terms of employment

3. Technology Committees

A key goal of union representation is to compel, and provide regularized channels for, ongoing discussion, consultation, and negotiation between management and union representatives about the operation of the workplace. This is a fundamental characteristic of "workers' voice": having the ability to express concerns, discuss them, and take action.[33] Technology is an obvious and important topic for the operation of such voice mechanisms, and many collective agreements prescribe detailed requirements for how this is to be operationalized. Table A3 of the Appendix catalogues 30 contract provisions with specific detail on the creation and composition of joint committees to discuss and negotiate the implementation and operation of new technology.

In some collective agreements, a specialized Technological Change Committee either exists on an ongoing basis, or must be struck when technological change is to be introduced. In other agreements, consultations and negotiations over technological change are required within the remit of other already-existing committees. Some examples of standing committees which are thus also charged with considering technology matters include:

- Standing union-management committee
- Joint health and safety committee
- Senior-level committee
- Joint committee on training

Where specific joint technological change committees are mandated, their size varies. Among the agreements catalogued in Table A3 of the Appendix, committee size ranges from 4 to 12 members, typically divided equally between union and employer representatives. The most common committee size and composition is three representatives from the union and three representatives from the employer.

Listed responsibilities of joint technology committees include:

- Study and/or review the effects of technological change
- Mitigate the impact of technological change
- Review and discuss the implementation of technological change
- Consider, monitor and analyze changes and long-term plans
- Exchange information
- Communication and consultation
- Plan training programs

[33] See our previous **PowerShare** report for a detailed discussion on the importance and economic effects of workers' voice in Canada (Stanford and Poon 2021).

4. Commitment to Negotiate

Beyond the formation of specific committees to consider technological change (or referral of those matters to other committees), many collective agreements also feature specific requirements on the parties to meet to undertake negotiations regarding the implementation and operation of new technologies. Over 40 examples of such provisions are catalogued in Table A4 of the Appendix. These provisions regarding negotiation vary widely, with a range of enforcement powers:

- The parties agree to bargain in good faith
- Technological change shall not be introduced until the matter is resolved by agreement or arbitration
- Technological change may be introduced after the notice period (typically between 3 and 9 months)
- Mutual recognition of the need for a "cooperative attitude" to technological change

Some provisions specify that upon the introduction of technological changes, the parties are to meet. In certain instances, those discussions and negotiations will occur within the framework of existing committee structures, while in other instances the discussions are undertaken by a specialized technological change committee (discussed above). Some contract language is more vague, simply stating that representatives of the parties will meet.

Where time limits for beginning discussions are established, they typically vary from 14 to 30 days from the date of notification of upcoming technological change. In one instance, the contract specifies that recommendations from the joint technology committee must be submitted within 30 days of that notice.

Topics assigned to be covered in these negotiations include:

- Discuss technological changes and employees affected
- Consult meaningfully
- Discuss redeployment
- Discuss a workplace plan
- Discuss training and reassignment
- Discuss layoffs
- Discuss how new technology interacts with the union and its members

When an agreement is reached between the parties, the agreements and letters shall become part of the agreement.

In cases where agreement between the parties cannot be reached, some agreements refer the matter to the normal grievance and arbitration procedure. Some agreements are silent on the precise method for dispute settlement; other collective agreements refer the matter to either a single arbitrator or a board of arbitration. The timeframe for referring technology matters to arbitration after failure to reach an agreement may range from 15 days to 60 days. The arbitration decision would then also become part of the collective agreement.

5. Adjustment and Job Security

The first sections of this report highlighted that while concerns about the impact of new technology on overall employment levels are misplaced, the introduction of new equipment and production processes may still have dramatic and disruptive effects on employment in specific workplaces and occupational categories. It is thus a natural and central priority of unions in their collective bargaining around technology to specify protections and procedures that will apply in the course of adjustment to new technology. Table A5 in the Appendix lists over 100 collective agreement provisions dealing with adjustment, especially in cases of job loss or restructuring.

The introduction of new equipment and production processes may still have dramatic and disruptive effects on employment in specific workplaces.

These provisions fall into a range of sub-categories, including the following:

Layoff Protection: Unions are naturally concerned with avoiding job loss for existing members as a result of technological change. Provisions restricting the ability of employers to eliminate jobs through implementation of new technologies vary widely in their ambition and force. Illustrative provisions range from aspirational to prohibitive:

- Every effort will be made to avoid layoffs
- Every effort will be made to avoid layoff for employees with 2 years seniority and above
- No employee who has completed the probationary period will be laid off
- No employee will be laid off due to technological change

Several agreements state that no employee will lose employment or be declared surplus as a result of technological change. In some cases, these clauses only apply to employees with seniority of two years or higher, or only to non-probationary employees. In other instances, there is blanket protection against job loss.

Seniority, Job Postings, and Layoffs: Where job loss or headcount reductions occur as a result of technological change, there are numerous provisions aimed at ensuring that adjustment occurs in as fair and supported manner as possible. Such provisions include:

- Right for affected workers to displace more junior employees
- Right for affected workers to fill available positions
- No new employees will be hired until alternate jobs are posted and laid-off employees notified
- The employer will avoid layoffs due to technology through attrition
- Laid-off employees or employees who have been downgraded will have first opportunity to fill new positions created through technological change
- New positions created due to technological change must be posted through existing procedures

Notice: Another central union priority when job loss occurs is to ensure minimum notice is given of upcoming downsizing to affected workers (as distinct from provisions, discussed above, that require employers to provide notice of their general plans for technological change). This prescribed notice period varies widely across agreements:

- 6 weeks notice
- 12 months notice plus an additional 2 weeks notice on expiry of notice period
- Reasonable notice
- Between 6 and 9 months notice dependent upon seniority
- 3 month notice
- 120 day notice
- Within 24 hours of informing the union
- As soon as possible

Early Retirement: Several agreements contain provisions offering early retirement options and incentives in the event of technology-related downsizing. By thus encouraging more senior employees in the workplace to voluntarily leave their jobs, the number of job losses experienced by junior workers can be reduced.

Relocation: Facilitating relocation to other production sites within the company is another important lever that can reduce the scale of involuntary job loss. Relocation allowances and repayment of relocation expenses are included in some agreements.

6. Severance Pay

Where job loss due to technology does occur, most agreements have language on severance pay included in the main Technological Change clause. Some provide for specific severance pay provisions relating to technological change, while others refer back to general severance pay provisions contained in the overall collective agreement. Table A6 catalogues 15 examples of severance provisions specifically linked to technological change events.

Some of these technology-specific severance provisions include:

- 1 week for each year of service to maximum of 26 weeks
- 7 days pay for each to of service to maximum of 30 weeks
- 2 weeks pay for each year of service, no maximum
- 2 months pay or one month pay for each year of service, whichever is greater
- 2.5 weeks pay for each year of service to maximum of 30 weeks
- 1 week pay for every 5 months of service to maximum of 66 weeks, plus a 15% lump sum payment
- 6 months severance pay

Several agreements in the brewery sector provides for a Technological Change Bonus (TCB) of $1000 to be added to severance pay in cases of technology-induced adjustment. Three agreements specify that technology-related severance pay will also be paid to probationary employees.

Lump sum compensation arrangements may also be specified for technology-related adjustments and relocation. In one example, enhanced severance allowances in cases of technology-related restructuring will be paid, ranging between $3,500 and $17,000 (based on seniority).

7. Other Compensation Issues

Adjustments to technological change may involve the redeployment of affected workers to alternative roles within the firm. In these cases, unions have been concerned with protecting the income of workers who make those changes. Table A7 in the Appendix lists several provisions specifying how workers' wages and salaries will be maintained even if reclassified to new positions. In some cases, incomes are protected for specified periods of time (by "red-circling" their wages for some years). In

other agreements, after the specified period of time, there is an additional period during which there is a new pay rate set at a midway point. Seven of the agreements specify there can be no reduction in pay and benefits due to a technology-related redeployment.

Specific compensation-related provisions catalogued in Table A7 include:

- maintenance of earnings benefit for 52 pay periods with a maximum of 104 pay periods plus an additional 26 pay periods at 50%
- regular pay for 3 months and then paid at midway rate for 3 months
- regular pay for 6 months and then paid at midway rate for 6 months
- 1 week for each 6 weeks of services to a maximum of 48 months
- pay not reduced for 2 years

Winning healthy wage increases should be seen as one of the ways in which unions aim to capture a share of the benefits of technological change.

Most agreements also specify that workers' pay will be protected during training for new positions (in one instance this protection is limited to a maximum of 4 months).

Of course, another whole dimension to compensation issues in relation to technological change is the ongoing effort of unions to win a healthy share of productivity gains arising from new technology in the form of wage increases and other benefits. We did not identify examples of contract provisions that trigger specific compensation improvements as a result of new technology. This is not surprising, given the general difficulty of distinguishing between discrete technology-related shifts in productivity and other ongoing determinants of wages. However, the effect of collective agreements in winning healthy wage increases, and providing higher wages for specific classifications (such as those requiring more skills or training, which in turn could reflect the development of workplace technology), should also be seen as one of the ways in which unions aim to capture a share of the benefits of technological change in the form of higher compensation.

8. Training

As discussed above, the introduction of new technologies and equipment often affects the composition of required employment in terms of skills, training, and occupation. We have argued that at the aggregate level, technological change has more impact on the composition and quality of jobs, than on the overall quantity of work (although in some specific workplaces or occupations technological changes can have devastating impact on overall employment levels). In order to assist affected workers to take advantage of new opportunities, unions naturally place great emphasis on ac-

cess to training supports and opportunities. When combined with strong requirements on employers to redeploy internally, and offer new opportunities to existing employees, these training provisions can play an important role in limiting the downsides of technological change — and helping workers participate in the potential upside.

Our survey of collective agreements has identified about 60 different provisions dealing with training and skills issues related to technological changes in the workplace. They are summarized in Table A8 of the Appendix.

It is common in collective agreements to require the employer to provide a training, retraining, or job familiarization period for employees affected by technological change or the introduction of new processes or equipment. In most cases, the training is to be provided during regular working hours at the employer's expense, with no loss of pay or benefits; seniority will continue to accumulate.

There may be time limits on the length of time allowed for this employer-paid training. Specific provisions regarding these time limits range from "a reasonable amount of time," to 60 days, to 4 months to, a full year, in many cases with the possibility of extension. In several agreements, however, no time limit is stated.

Some collective agreements stipulate that training opportunities must be offered to the most senior employees first. Other agreements state that probationary and/or temporary or casual employees, or employees on layoff, are not eligible to participate in training programs. In other collective agreements, any employee affected by technological change may take advantage of training opportunities. One agreement specifies that no additional employees shall be permanently hired to replace any employees affected by a technological change until the employees already working and affected have been allowed a training period to acquire the necessary knowledge or skills, thus allowing them to retain their employment. This is a good example of the union using its influence to ensure its members are not avoidably displaced by new technology, and can gain access to resulting new opportunities.

Some agreements have established training funds which pay an allowance to employees to support training outside of the workplace; other agreements reimburse costs incurred at educational institutions, with limits.

Consultation / Joint Committees: Many agreements require the employer to consult with the union about training:

- discussing training opportunities
- discussing the implementation and extent of training
- discussing the nature and feasibility of the training
- planning training and other specialized programs
- revising existing training programs.

Our survey identified a number of other specific training provisions. Some examples include:

- participate in / request assistance from federal and provincial government training programs
- requests for training shall not be arbitrarily denied
- the company may waive the employee's inability to meet the minimum training prerequisites
- reasonable notice of training
- the employer will not, without training, require an employee to use technological skills other than those agreed to at the time of hiring

9. Technology-Specific Health and Safety Issues

Workplace health and safety is a core priority for all unions. Concerns over safety are often a primary motivation for workers to join unions. And demands to prevent workplace injuries and diseases, improve safety education and practices, and provide better benefits and support for injured workers are a regular feature of collective bargaining. Union efforts to improve workplace safety build on requirements specified in labour law and regulations — including specific rules regarding safe workplace practices, mandated education and training (such as WHMIS), and the requirement that most businesses above a certain size (even non-union firms) must establish joint workplace health and safety committees to monitor and address safety issues on an ongoing basis.[34]

The adoption of new technologies in Canadian workplaces presents employers and workers with a complex set of occupational health and safety (OHS) challenges. These include dangers arising from the use of various forms of machinery, handling and use of new materials, repetitive strain injuries and risks, ergonomic risks associated with new equipment and work organization, mental health risks, and other health and safety challenges. New technologies may also open up opportunities for reducing injuries and safety problems: for example, using new machinery to lift heavy items (including people, in health care settings) has great potential (if properly used) to avoid injuries commonly associated with such tasks.

Naturally, the regular health and safety provisions of collective agreements will be invoked in workplaces to investigate and address health and safety risks potentially associated with new systems, machinery, materials, and hazards. In this regard, standard health and safety provisions — enforced by a well-resourced and well-trained cadre of OHS representatives — are a potent tool for helping ensure new technolo-

[34] As discussed in Stanford and Poon (2021), these mandated joint health and safety committees constitute a rare North American example of a mechanism of "statutory voice": whereby employers are required by law or regulation to establish channels of compulsory consultation and negotiation with their workers, even where no trade union exists. A summary of these requirements is provided by Canadian Centre for Occupational Health and Safety (2021).

gies do not undermine the safety and well-being of workers. And since all OHS provisions are designed to manage the risks associated with the interaction of human labour with machines, materials, or other inputs, they all deal with "technology" in some sense. In other words, all health and safety provisions in collective agreements are relevant to the goal of protecting workers using technology.

In addition to these normal OHS provisions, however, some collective agreements have also included specific language about the adoption of new procedures and techniques to reduce the risk of injury. In some cases, these require the employer to adopt or consult on new procedures and techniques, while in other cases the union may suggest or make representations. For example, one letter of understanding attached to a collective agreement establishes a sub-committee of the standing joint health and safety committee to investigate and address potential health and safety issues associated with the introduction of engineered nanotechnology materials in that workplace.

Health and safety provisions — enforced by a well-resourced and well-trained cadre of OHS representatives – are a potent tool for helping ensure new technologies do not undermine the safety and well-being of workers.

In other cases, collective agreements direct the employer to investigate the application of new technologies in the workplace to reduce risks of existing activities. For example, one agreement commits the employer to investigate replacing material handling vehicles powered by internal combustion engines with electrically powered vehicles (where economically and technologically achievable) to eliminate carbon monoxide exposures inside of the plant.

About 30 collective agreement provisions were identified in our survey containing health and safety provisions explicitly intended to address risks or opportunities associated with new technologies. These provisions are summarized in Table A9 of the Appendix. They include provisions in the following sub-categories:

Equipment & Environmental Monitoring

Some agreements compel the employer to provide:

- industrial hygiene testing equipment
- training and equipment for measuring noise, air quality, temperature, humidity, lighting, and dust levels

Several agreements discuss procedures regarding the introduction of new or relocated equipment, requiring the employer to:

- install health and safety measures
- review plans for major process and equipment layout changes with the Joint Health and Safety Committee
- the Joint Health and Safety Committee will participate in the health and safety review and approval process as it relates to new equipment
- monitor radiation levels from computers
- the employer is to share the results of environmental monitoring with the union

Ergonomics

Safe ergonomic procedures are a standard priority in health and safety bargaining, whether or not a workplace is experiencing technological change. However, new technologies and machines often have implications for work organization, work pace, and other ergonomic issues. Our survey identified several examples of specific provisions addressing the ergonomic dimension of technological change:

- Joint Health and Safety Committee will develop an ergonomics checklist which shall be used in job station designs and/or for the introduction of new processes and procedures
- employer will take objective ergonomic principles into consideration when replacing equipment and/or setting up a new work station

New technologies and machines often have implications for work organization, work pace, and other ergonomic issues.

- both parties agree that the timely and proper application of the principles of ergonomics can help to reduce the likelihood of injury
- committee to jointly develop and assist in the implementation of a complete Ergonomics Program, monitor and provide recommendations to improve the Ergonomics Program, evaluate the effectiveness of the Program by reviewing ergonomic concerns, injury/illness statistics, implement countermeasures for effectiveness and reviewing plant wide ergonomic concerns, and make recommendations

VDTs and Computer Monitors

For many years health and safety negotiators considered in detail potential health and safety issues related to the use of computer monitors and video display terminals (VDTs).[35] While these concerns have become less prominent as computers have be-

[35] The term VDT is less common now, but that specific language remains in some current collective agreements.

come ubiquitous in modern workplaces, the OHS issues raised by unsafe use of computers (including eye strain, repetitive strain injuries, and others) remain serious concerns. And this history provides a good illustration of the ability of unions to respond when a new technology is introduced. Some of the continuing provisions governing use of computers and monitors include:

- the Corporation and the Union recognize the need for operator involvement and training with the introduction and on-going use of VDTs
- training will include the rationale for eye examinations, the rationale for rest or stretch breaks, ergonomic factor awareness, and adjustments of equipment and relaxation exercises
- training course will be a requirement for areas where use of VDTs is considered as continuous
- the employer will work with employees who have reported computer related problems to provide an action plan to improve the situation and such employees will cooperate with management to establish and adhere to the plan
- the employer agrees to make appropriate ergonomic adjustments for employees who express health or comfort related concerns about continuous work performed in front of computer terminals

Specific issues related to the use of monitors and VDTs are also addressed in many collective agreements: including visual health, breaks, pregnancy, and equipment testing.

For example, several collective agreements provide for mandatory eye exams by an optometrist or ophthalmologist for employees regularly using VDTs. The timeframe varies from six months to 24 months, with an annual exam being the most common. In most cases, the employer will cover lost time for appointments and will reimburse costs incurred for the exam. In one case, the employee is to release a copy of the examination report to the employer. It is also common for the employer (directly or through its regular benefits plan) to cover the cost of special or corrective lenses required as a result of that eye exam. One agreement states that in cases when employees who are required to use VDTs and subsequently develop visual impairment or visually related disabilities which limit their ability to perform their job, that will be considered a medical disability and managed accordingly.

Provisions for regular time away from computer terminals are also common. In most cases, contracts allow for alternate work for a specified time, while in some cases, an extra 5-10 minute break/rest period is allowed for workers using monitors. For example, several agreements provide for 5 to 10 minutes of alternate work for every hour of work in front of the monitor. One collective agreement states that, where practi-

cal, jobs involving VDT usage will be designed to avoid continuous usage, and encourages employees to use relaxation exercises.

Protection for pregnant employees is another common component of VDT language (although concerns about these risks have abated in recent years). A pregnant employee may request reassignment or choose not to work on, or near, computer terminals. If possible, the employee will be reassigned without a reduction in pay. If reassignment is not possible, the employee will be granted a leave of absence without pay until the maternity leave commences.

Specific language relating to ergonomics and VDTs/computer equipment is also common. Examples include:

- adjustable keyboards
- adjustable screens
- meet radiation emission standards
- minimize lighting glare
- adjustable work stations and seating and foot rests

As well, some collective agreements provide for annual testing for radiation emissions.

10. Surveillance and Monitoring

A worrisome dimension of new digital technologies is their potential to be used to expand and intensify surveillance, monitoring and supervision of workers — including in cases where the employee is away from the normal workplace. Use of inexpensive, omnipresent surveillance systems can have profound impacts on job quality, mental health, and employment relationships. By facilitating the use of more ubiquitous performance monitoring and discipline, these technologies may encourage employers to rely more on punitive motivation systems (or "sticks") rather than positive incentives ("carrots") to elicit desired workforce performance. Some research has suggested that the wider use of these tools may even have contributed to weaker wage growth: since employers can more easily monitor and evaluate output and performance in far-flung locations, without the cost of hiring more human supervisors, they face less pressure to increase compensation as a positive incentive in attracting and retaining workers.[36] Since the stick has become cheaper and more effective, employers feel less compulsion to improve the carrot. In the extreme, workers can even be "fired" by an app — rather than facing traditional progressive discipline processes run by actual people. This practice is now common, for example, in digital platform businesses (like ride share or food delivery) in which workers can be hired, and fired, without ever meeting a human manager.

[36] See Henderson et al. (2018) for more discussion of the implications of digital monitoring and discipline systems on employment relationships and wage determination.

Concerns about the mis-use of digital monitoring and surveillance systems have become more pressing given the huge expansion in work-from-home arrangements during the COVID-19 pandemic. The prospect of employers being able to monitor whereabouts and activity, and even "see" their staff at any time, is especially concerning when that reach extends into workers' own homes.

Provisions regarding employer surveillance are thus becoming a more common feature of collective agreements. For the most part, these clauses attempt to balance the privacy rights of the employee with rights of the employer to monitor the workplace and protect property and business. Language on employer use of monitoring devices is especially common in the transportation sector.

About 50 contract provisions addressing employers' use of technology for surveillance, monitoring, and discipline are listed in Table A10 of the Appendix. The examples listed in Table A10 include provisions in the following areas:

Cameras, Video Surveillance and Audio Monitoring

- employees have the right not to be put under surveillance
- areas where video cameras may be placed are specified, and not in any area where they would be intrusive of employee's privacy
- union to be advised in advance of location of video cameras
- employees will be aware of all video surveillance
- cameras are not to be used to monitor staff or staff performance
- in correctional workplaces, monitoring and surveillance is for the safety and security of staff, inmates, and property
- employees will be advised if surveillance records are to be used
- when surveillance records are to be used, union will be advised and given access to records, and may request copies
- videos will be stored in secure area with restricted access
- retention periods between 30 and up to 'at least' 75 days if video/audio has not been used for law enforcement or public safety purposes
- information may be used for protection against criminal acts
- undesirable or unproductive behaviour discovered in reviewing the tape, that is not criminal, shall not be used for progressive discipline
- surveillance records and audio calls may be used for coaching purposes and for monitoring the quality of service

- employees will not be disciplined as a result of service monitoring except for gross customer abuse, fraud, violation of privacy or consistent failure to meet minimum performance expectations
- limits on the number of audio calls monitored per month
- employee and/or union may review monitored audio calls or surveillance recordings
- unmonitored phones will be available for personal calls
- monitored calls not to be used to establish grounds for discipline
- surveillance information may be submitted as evidence if required as part of an investigation of illegal activity

Observation Systems and GPS

- may not be used to gather evidence to support discipline unless disciplinary measure result from a criminal act
- GPS should not be solely relied upon to constantly monitor location of employees
- data obtained from GPS will not be used to discipline employees
- employees will be made aware of all employer vehicles with GPS
- systems in vehicles may be used to detect criminal and illegal behaviour
- flight data and cockpit voice recorders shall be used for investigating accidents or incidents and to facilitate aircraft maintenance and safety
- flight data and cockpit voice recorders will not be used to monitor a crew member's conduct
- the content of flight data and cockpit voice recorders will not be revealed to the general public or news media without the prior approval of the Crew Member and the Union
- devices installed in trucks may be used to track activity and to process payroll
- company will pay for the installation of the GPS tracking devices and upgrades once a year
- removal of the GPS tracking device will be at the expense of the owner-operator
- the owner-operator will not tamper with, or willfully damage, the GPS tracking device

- use of surveillance cameras will comply with appropriate legislation, such as FOIPOP (Freedom of Information and Protection of Privacy Act) and PIPA (Personal Information Protection Act)
- employees have a reasonable expectation of privacy within the workplace, subject to the rights and obligations of the parties in the collective agreement and/or applicable legislation
- employer agrees to use information and/or surveillance systems in compliance with the policies and protocols of the employer and applicable laws

11. Working From Home

The COVID-19 pandemic led to a dramatic surge in Canadians performing most or all of their paid work from home, instead of at their traditional workplaces. Within two months of initial health restrictions, over 5 million Canadians were working from home (WFH) — roughly triple the pre-pandemic level. At the time that represented over one-third of all employment. As the pandemic continued, and most jobs in traditional workplaces were restored, the absolute number of Canadians working from home remained fairly stable — but home work declined as a share of total employment.[37] There is great uncertainty about how long the surge in home work will last after the pandemic is over. Many surveys indicate that most workers who are able to work from home would like to continue doing so (at least for a portion of normal working hours); one Statistics Canada survey found that 80% of those working from home during the pandemic would like to continue doing so, for at least half of their work time, on an ongoing basis (Mehdi and Morissette, 2021). However, many employers expect their staff to return to normal workplaces once the health risks of working outside of the home have abated. It is likely that even if many workers return to their normal workplaces after the pandemic, there will be some permanent increase in the incidence of home based work. This raises an important set of issues regarding how home work should be organized, supported, and regulated:[38]

- **Space:** What work environment will home-based workers be able to use? Will workers have appropriate equipment, furniture, lighting, temperature control, and other normal amenities?
- **Costs:** Who will cover the costs of providing space, equipment, utilities, data, and other inputs associated with home work?

[37] As of May 2021, most recent data available at time of writing, 5.1 million Canadians, representing 27.5% of all employment, performed most or all of their work from home.

[38] For more discussion of the quality, safety, and fairness dimensions of home work, see Pennington and Stanford (2020).

- **Compensation:** In addition to compensation for operating costs, how will home work affect compensation practices — including overtime or pay premia associated with work outside of normal hours?

- **Safety:** How will safety risks associated with home work (including ergonomic and repetitive strain dangers, lighting and wiring hazards, trips and falls, and broader risks such as domestic violence and mental health injuries) be addressed and prevented? Will home workers be covered by occupational health and safety and workers' compensation provisions?[39]

- **Working Hours:** How will working from home affect working hours? Will employers expect home-based workers to be available outside of normal working hours? Will workers be compensated for work outside of normal hours? Will workers be expected to be continuously on duty during regular working hours?

- **Unpaid Care Work:** Balancing paid work with unpaid family and care responsibilities is both a positive and a negative aspect of work from home. Being at home provides home-based workers with additional flexibility to integrate pieces of care work into their days; this was especially important during the pandemic, when normal school and child care services were disrupted or cancelled. At the same time, trying to perform paid work duties in an environment where caring responsibilities are also present imposes significant stress and disruption, with consequences for both productivity and mental health. Sustainable home work arrangements will require that workers have access to formal child care and other care work supports, rather than trying to "juggle" these duties informally.

- **Surveillance and Privacy:** Employers have increasingly used digital technologies for monitoring, evaluating, and even disciplining staff in ways that raise many ethical and legal issues. When those technologies are applied within workers' own homes, an additional degree of urgency is raised. Will employers be allowed to monitor employees' whereabouts, activity, and communications — even when they are at home?

- **Representation:** People working from home are physically isolated from their colleagues and supervisors, and likely face a more "individualized" work culture as a result of the shift to home work. This may affect their effective access to information, networking, and representation — leaving them more vulnerable to management control or intimidation.

[39] Existing jurisprudence in Canada is clear that employees performing paid work from their own home are indeed covered by OHS and WCB protections, and that employers have a duty of care to monitor, educate, and prevent OHS risks in home work settings. For home-based workers who do not have employee status (eg. contractors and gig workers), these protections are less certain.

- **Right to Work at Home:** Canadians who were required to work from home by health orders during the pandemic may wish to continue doing so even after health restrictions are lifted. That may spark negotiating demands that give workers a right to continue working from home, even if employers wish them to return to traditional worksites.

Our survey identified 25 examples of collective agreement provisions relating to home work, listed in Table A11 of the Appendix, negotiated by 10 different unions. Most of these provisions apply in government or broader public sector settings (including universities, public power utilities, and other public services). Only two of the examples cover private sector entities — both of which (Air Canada and Bell Canada) have a legacy heritage as publicly owned or regulated firms. This concentration of WFH provisions in broader public sector settings likely reflects the dearth of collective representation for most office workers in private sector enterprises. Working from home is much more feasible, and hence likely, for people who work in offices, and perform most of their duties on computers. But union representation is rare among office workers in the private sector (even more so than among other private sector workers). This helps to explain why most of the identified WFH provisions have their roots in public sector (or at least publicly-regulated) settings. For this reason, home based workers in private firms at present have very little capacity to collectively advocate for clear, fair rules regarding home work.

Some agreements specify when working from home (or "teleworking") is permitted:

- It must be a viable work option that benefits both the employee and the employer by allowing the employee to perform their job responsibilities at a location other than their primary work location.
- Jobs suitable for telecommuting are characterized by clearly defined tasks and work products, measurable work activities and require minimal special equipment where an employee's performance is measured by output.

Participation in WFH programs may be limited by classification, department, or work location. Often, a collaborative approach with a supervisor or manager (and ultimately their approval) is required; written requests to participate in WFH may be required. Participation is voluntary, and requests to participate will not be unreasonably withheld.

Working from home days typically must be scheduled in advance. Some collective agreements limit the number of days per week the employee may work from home, while others do not. Regular hours of work and rest and lunch periods are intended to be maintained, and employees are expected to be available during regular work hours. There will be no change in job title or job status. Agreements typically specify that the other terms of the collective agreement will apply: including overtime, WCB, pay and benefits.

Depending upon the collective agreement, employers may be required to provide some, or all, of the following:

- a laptop computer (in some cases to be used exclusively for work-related duties)
- access to the employer's VPN network
- technical support as needed
- access to managers
- space at the regular workplace for days when scheduled to work there
- information on occupational health and safety standards and guidelines
- in some cases, employers will pay for internet, phone connection, and long distance plan
- be liable for cost and repairs of equipment

Again depending upon the collective agreement, the worker may be required to provide or meet the following:

- meet attendance targets
- meet or exceed productivity and quality targets
- follow occupational health and safety and ergonomic standards and guidelines
- adhere to corporate ethics
- maintain adequate or dedicated office space and furniture
- allow access to the home by employer and union representatives, upon appointment and adequate notice, to inspect the workspace to ensure compliance with health and safety standards and guidelines
- have a high-speed internet connection
- have an international long distance plan
- maintain standards and guidelines regarding confidentiality, and the protection of personal information
- provide additional home insurance coverage, if necessary
- ensure that a home office is permitted under zoning by-laws or restrictions

- will properly handle and house the employer's equipment
- will not meet with clients in the home office
- will manage dependent care and personal responsibilities in a way which allows them to successfully meet job responsibilities

In some cases, the employer provides the furnishings and equipment, and will reimburse the employee — or provide a specified monthly allowance — for costs such as additional insurance, long distance phone plans, high speed internet service, and office supplies, while in other cases, equipment and services are the responsibility of the employee. In a number of collective agreements, the employer will provide a cell phone. Certain collective agreements stipulate that the equipment is strictly to be used for work purposes.

In one collective agreement, employees who are authorized to receive work-related telephone calls and/or perform unplanned work remotely outside of normal working hours will maintain a log of the work performed, and shall be compensated at time-and-a-half pay (or time in lieu), rounded to the nearest 15 minutes.

Some collective agreements explicitly include union security language protecting the union's right to bargain for members working at home, and establishing that the terms of the collective agreement apply to WFH.

Most of the agreements addressing WFH arrangements in our survey were negotiated before the COVID-19 pandemic. Collective bargaining around this set of issues is thus in its infancy, and there will likely be many challenging discussions in the years to come.

12. Other Issues

In addition to these identified categories of collective agreement provisions, our survey identified a range of other specific provisions relating to technology and technological change that did not fit easily into the other topic categories. These provisions are listed in the final section of the Appendix. Some of these provisions are very interesting or innovative, including:

- A technological change account created to cover adjustment costs associated with the introduction of technological change
- Reviewing the impact of social media and new technologies on employees
- A method for evaluating workload which may have been affected by technological change
- In the area of union security and scope, an agreement that certain workers will be required for particular jobs and those workers will be union members

- Language to eliminate injustices and adverse effects caused by the introduction of technological change, including guaranteed employment, guaranteed classification and retraining

Discussion and Evaluation

This survey of 350 collective agreement provisions dealing with the implementation of new technology in Canadian workplaces attests to the breadth and ambition of union efforts to influence how technological change occurs, and to moderate or prevent potential negative impacts on their members. Specific strategies and language vary immensely across different unions, industries, and workplaces. From this diverse, detailed database, however, several overarching trends and conclusions are evident.

First, it is abundantly clear that Canadian trade unions recognize that technological change has the potential to fundamentally alter the nature of workplaces, and the stability and quality of the jobs performed by their members. Unions have thus rightly made technological change and related issues an important priority on their collective bargaining agenda. Collective agreements have tackled many different dimensions of technological change — including adjustment, job protections, training opportunities, health and safety, surveillance, and working from home. Technological change is an ongoing process, and unions' bargaining agenda continues to evolve to reflect the new dimensions, opportunities, and threats associated with technology. To be sure, there are many workplaces where unions have yet to adequately identify and respond to the issues posed by new technologies.[40] But in general it cannot be argued that unions have their heads in the sand: to the contrary, there is a diverse and growing body of collective agreement language resulting from their efforts to impose broader and more democratic control over how technology unfolds in Canadian workplaces.[41]

Canadian trade unions recognize that technological change has the potential to fundamentally alter the nature of workplaces, and the stability and quality of jobs.

Moreover, there is a striking absence of contract provisions which aim to somehow prevent or interfere with technological change in workplaces. Indeed, we found no example of a contract provision that prohibits the introduction of a specific technology.[42] This might reflect in part the low likelihood of success for unions trying to im-

[40] Hillstob and Massie (2021) highlight some of the gaps in unions' approach to technological change so far.

[41] And of course collective bargaining is just one of many ways that unions try to bring collective voice and bargaining power to bear on an important issue like technology. Other avenues for union activism in this regard include education (of members and the public), advocacy and political campaigns (for better government policy and regulations), workplace representation, and even the use of new technologies in union organizing and campaign activities. On the latter, see Murray (2017), Carneiro and Costs (2020), and Schoemann (2018).

[42] The closest example is one contract which ratified the *employer's* ability to prohibit a particular technology: namely, use of personal electronic devices in the workplace.

pose a blanket ban on new technology: even if unions wanted to do that, it is unlikely in most circumstances that they would possess the bargaining power to win such a provision. More likely, however, trade unions' constructive engagement in shaping technology (rather than attempting to stop it) reflects their recognition that technological change in and of itself is not the "enemy." Rather, it is the use of technology by employers in ways that are unfair, exclusive, destabilizing, or dangerous that trade unions aim to prevent and regulate.

This generally constructive approach by trade unions to improving how technology is implemented, and how its costs and benefits are shared, contrasts sharply with the popular stereotype of unions as being reflexively "resistant to change." This stereotype is rarely accurate or informative.[43] And in the case of the challenges posed by technological change, it is clear that unions are trying to influence change — not stop it.

A weak commitment by Canadian business to innovation and new technology, not resistance from unions, explains Canada's laggard technological performance.

This generally progressive attitude also stands in contrast to the general failure of Canadian businesses themselves to adequately invest in innovation and technological progress. Recall from the first section of this paper that capital investment commitments by Canadian businesses to intangible research and innovation, and tangible machinery and equipment which embodies that innovation, has been shockingly weak — in the latter case, falling recently to post-war lows. It seems to be a weak commitment by Canadian business to innovation and new technology, not resistance from unions, that explains Canada's laggard technological performance.

Unions' collective bargaining initiatives will need to continue to evolve in response to the emerging dimensions of technological change. Some provisions (like job security and general OHS provisions) are long-standing fundamentals in any union contract; they need to be applied fulsomely and consistently to instances of technological change. Other topics will require more tailoured and innovative attention in future collective bargaining. These would include the health and safety implications of specific new technologies (such as nanotechnology), WFH practices, and the use of digital technologies by employers to monitor and discipline workers.

One important dimension of technological change and jobs that is conspicuously absent from our compilation of technology-related contract provisions is the relationship between new technology and working time. A key promise of new technology is the possibility of allowing workers to have more time off from work, alongside an in-

[43] When unions resist employer or government attempts to degrade or cheapen jobs, then this capacity to "resist change" is a positive thing!

crease in their material standard of living. This has been a traditional demand of the global labour movement,[44] and public opinion polls suggest the idea remains popular with Canadians (see Wasley, 2020). But reducing working hours has largely fallen from the list of top priorities for collective bargaining in Canada. Indeed, our survey did not find any specific contract provisions linking reduced working time to technological change. Of course, most collective agreements include other detailed language on work time (including length and timing of shifts, breaks, paid time off, and related matters); and it would be possible for unions to negotiate reductions in working time (in the wake of new technology and rising productivity) that do not explicitly link technology with working hours, but which nevertheless accomplish the same outcome. Our general review, however, suggests this is not widely happening.

A key promise of new technology is the possibility of allowing workers to have more time off from work, alongside an increase in their material standard of living.

There are many factors that explain the fading prominence of shorter work time in collective bargaining. Strong employer resistance to shorter work time measures, during an era in which employers have consistently held the upper hand in most collective bargaining, has clearly inhibited progress on this issue. And in general, if forced to choose between protecting their current incomes and protecting time off the job, workers have tended to place more emphasis on wages.[45] Progress on shorter work time would be more likely if workers (and their unions) could rebuild enough bargaining power to make significant progress on both wages and work time. Meanwhile, the polarization of working hours in the context of growing precarity of work has also complicated the general demand for shorter work time. Many Canadians do not get enough hours of work to support themselves (given the expansion of part-time, temporary, and other insecure forms of employment): they want more hours of work, not less. In practice, demanding shorter hours of work for regular full-time workers could be quite complementary to demands for more adequate and regular hours of work for those in precarious jobs. But the gap in working time between "core" and "peripheral" segments of the labour force, combined with the general imbalance in bargain-

[44] See Hayden (1999) and Hermann (2014) for useful overviews of the history, economics, and politics of labour's struggle for shorter work time. Skidelsky (2019) stresses the critical role of union activism and collective bargaining in achieving past reductions in working time.

[45] An example of this painful quandary is provided by the abolition of a unique reduced work time initiative in major Canadian automotive plants during the 2009 restructuring of the industry. For 15 years, a program called "Scheduled Paid Absence" (or SPA) provided auto workers with up to two additional weeks of paid time away from work (in addition to normal paid holiday) distributed evenly through the year. This allowed employers to maintain high levels of capacity utilization while still reducing average working hours. The program was explicitly designed to help protect employment in the high-wage auto industry despite strong growth in productivity arising from new assembly technologies. However the program was lost in the cost-cutting required by the federal and provincial governments as a condition for their support for the bankruptcy restructuring of General Motors and Chrysler (with provisions that were eventually replicated at Ford). The union was able to avoid concessions in base wages, but the SPA program was a casualty of the restructuring.

ing power under neoliberalism between employers and unions, has constrained unions' ability to sustain this traditional and crucial demand. This is an important gap in Canadian unions' collective response to technological change that will need to be tackled in coming years.

Legislation and Awards

Finally, our survey of industrial relations databases regarding technological change has also catalogued numerous references to technology-related provisions of labour standards and industrial relations legislation in Canadian jurisdictions, and also to precedent-setting or representative decisions on technology matters arising from arbitration and tribunal processes. Those findings are catalogued in Tables A13 (for legislation) and A14 (for arbitration and tribunal decisions) of the Appendix.

Table A13 includes sections from 10 pieces of labour legislation making specific reference to technological change. That includes the Canada Labour Code, which covers labour practices in federally-regulated sectors of the economy (such as banking, communications, and interprovincial transportation). We also found four sections of provincial labour codes that explicitly reference technological change. Matters covered include:

- Permission for negotiations over technological change matters, even within the term of an existing collective agreement
- Requirements for employers to provide notice of upcoming technological change
- Requirements for joint consultation on adjustment to technological change

New Brunswick's Industrial Relations Act requires all collective agreements to include a provision dealing with technological change, in the absence of which a model clause requiring negotiation and arbitration of issues arising from technological change will be deemed part of the agreement.

These provisions represent initial, small, but incomplete steps toward a broader statutory requirement for employers to negotiate technological change with their employees. We discuss proposals for expanding and strengthening this general requirement (including to apply in non-union workplaces) below.

Finally, every union negotiator knows that the effectiveness of any contract language they negotiate is always tested in the subsequent implementation and enforcement of those provisions. The system of arbitration governing settlement of rights disputes arising from collective agreement provisions thus forms an integral component of the overall process of collective bargaining. Table A14 lists about 50 examples of arbitration decisions (and other tribunal decisions) relating to technological change provisions in Canadian collective agreements. Again, given the nature of the methodology

used to assemble this catalogue, this compilation should be seen as representative not exhaustive; there are many other arbitration decisions with obvious relevance to technological change issues that will not have been captured by our survey.[46]

The tribunal decisions listed in Table A14 cover a wide range of very specific issues and disputes relating to the precise wording of various collective agreement provisions governing adjustment to technological change in workplaces — including whether certain events constitute "technological change" as defined in the contract, whether requirements regarding notice and adjustment have been properly followed, whether job classifications and wage rates were respected, and more. The breadth of this jurisprudence reinforces the need for those negotiating contract provisions to be cognizant of the precision and clarity required for innovative provisions to have real practical force, including in cases where their application is challenged by employers.

[46] And again we invite submission of suggestions for inclusion of other tribunal decisions in future updates to our catalogue; please send suggestions to info@centreforfuturework.ca.

Conclusions and Recommendations

POPULAR DISCOURSE ABOUT THE IMPACT OF NEW TECHNOLOGIES on the future of work have tended to gravitate toward polar extremes: either robots will eliminate the drudgery of mundane work and grant us more leisure time than we know what to do with, or else robots will displace workers *en masse* and usher in a dystopian world of inequality and desperation. Neither extreme provides useful insights into how future labour markets will actually adapt to new technology. And neither provides practical advice for how policy responses could contribute to better technological, economic, and social outcomes.

Ultimately, the general conclusion of this report is cautiously optimistic. Dire predictions that new technologies will lead to large-scale technological unemployment are misplaced. Properly shaped, in ways that are accountable to all stakeholders (not just employers and owners), many emerging technologies have potential to improve jobs and working conditions, lift living standards, and support sustainability. We must remain alert to the risk that technology can be applied in ways that undermine working conditions and living standards — particularly when employers are given too much leeway to unilaterally control technology in the interests of their own profits. This is why it is essential, if a more harmonious and inclusive high-tech future is to be realized, that workers have countervailing power to advance their own interests and priorities as technology evolves.

Giving workers the effective ability to negotiate the terms of technological change is a positive and important feature of Canadian industrial relations, that should be celebrated and strengthened. When employers must consider the interests and perspectives of other stakeholders in their technological decisions, more beneficial and equi-

table economic and social results can be achieved. And when workers are able to exercise collective voice and influence in shaping how technology unfolds, they can enhance the net benefits of technological change, and reduce negative costs and displacements. That would allow for a stronger dynamic of negotiation and collaboration across stakeholders that should reinforce the speed and quality of technological change.

It is essential, if a more harmonious and inclusive high-tech future is to be realized, that workers have countervailing power to advance their own interests and priorities as technology evolves.

Our catalogue of 350 specific collective bargaining provisions dealing with the effects of new technologies in Canadian workplaces confirms that trade unions have both an interest in shaping technology to enhance their members' lives, and the capacity (through the power of collective negotiations) to do so. Collective bargaining provides workers with strong channels for identifying and marshalling shared concerns, negotiating mutually agreeable responses with employers, and then overseeing implementation and enforcement of those provisions. It is a vital tool for offsetting the otherwise unchallenged and unilateral power of employers to run workplaces however they see fit. However, this positive potential is underutilized in Canada, for many reasons — not least being the steady erosion of collective bargaining in private sector workplaces.

Once we recognize the economic and social benefits of workers' ability to negotiate technological change with their employers, then it is logical to consider policy measures which would strengthen the capacity for that to occur. Governments have a particular responsibility to support collective bargaining around technology (and other workplace issues) by setting the legal and regulatory ground rules for industrial relations. We make some specific recommendations in this regard, including:

- Labour law should affirm and support the ability of workers to form unions and negotiate collectively. The combination of active employer opposition and more hostile labour laws is producing a clear downward trend in union density in private sector workplaces (now equal to only about 16% of employment). This eliminates the possibility of mutually beneficial negotiations around technological change. There are several ways in which collective bargaining rules could be reformed to allow more workers an effective opportunity to negotiate collectively with their employers. These include:
    - Extending and realizing freedom of association for workers and unionists, by giving union organizers better access to workplaces, staff lists, and contact information

    - Restoring certification of bargaining units on the basis of signed cards or petitions
    - Arbitration systems to facilitate adoption of collective agreements in difficult conditions or protracted disputes (including first contracts for new bargaining units)
    - Expansion of union certification procedures to include new technologies (such as on-line union cards and voting)
    - Stronger protections against employer reprisals against union sympathizers.

- Learning from the successful experience of mandatory joint health and safety committees, governments should also encourage or require companies to establish ongoing mechanisms of consultation and participation around technology and training issues in workplaces — even non-union workplaces. The broader external benefits to economic performance and social cohesion of regular and constructive workplace dialogue around technology and related issues (including training) justify a role for public policy in pushing employers to undertake these practices — whether the workplace is unionized or not. Workplaces above a certain size should be mandated to form an ongoing joint committee (equally composed of management and elected worker reps) to regularly exchange information on employers' technology plans, discuss likely impacts on employment and skills requirements, and help the workplace prepare for a better transition (including retraining and redeployment opportunities as needed). Experience from other countries affirms the value of regular mechanisms of consultation in supporting the faster and more successful adoption of new technology; the experience of Germany (where joint committees, works councils, and worker representation on company boards of directors are all required by law) is an outstanding example.[47]

Governments should leverage their economic influence to encourage private firms to negotiate the features of technological change with their employees.

- Governments should also leverage their economic influence to encourage private firms to negotiate the features of technological change with their employees. Many businesses receive subsidies, incentives, or direct investments from governments for technology-re-

[47] The design and operation of Germany's structures of statutory voice are described in more detail in Stanford and Poon (2021), pp. 59-64.

lated undertakings: including support for acquisition of new technology, subsidized participation in training programs, expensive tax credits to foster R&D and other forms of innovation, and more. This public support is provided in recognition of the broad social benefits that are generated by successful technological progress among Canadian businesses. But by the same token, those businesses should be expected to be inclusive in how they direct and implement these (taxpayer-supported) technological initiatives. A standard feature of agreements around public subsidies or co-investments should be a requirement on the supported enterprise to establish internal structures of dialogue and consultation around relevant technological matters with its employees.

Canadian unions in general have been pro-active and creative in trying to integrate issues related to technological change into their collective bargaining agendas. However, there are ways in which their efforts could also be strengthened — and some blank spots which their approach to bargaining tech has largely overlooked. In this regard, we make several recommendations to unions to achieve a stronger and more effective engagement with technological issues in their collective bargaining and other activities. These recommendations include:

- Unions should develop an "early-warning" capacity to identify and plan for coming technological changes in their workplaces. These efforts could include regular discussions with employers and workplace union representatives, supplemented by intelligence gathering among industry and supplier contacts, to get advance indications of employers' technology plans. That will enhance the ability of bargaining committees and other union representatives to set up transition systems and practices, negotiate new contract provisions, and (where necessary) undertake public education and advocacy efforts, before new technologies roll out. Too often unions are left trying to respond to major technological changes, and their potentially disruptive effects, after the pain is already being felt. Experience with employment and technology transitions shows strongly that advance planning is vital for anticipating change and responding effectively.

- Unions could strengthen this information-gathering and planning capacity by convening networks among union representatives at different workplaces, companies, and unions. They would share information on coming technological developments and their implications for workers, compare experiences with evolving technologies, and jointly develop innovative collective bargaining responses to new technologies.

- One important "blind spot" in the response of Canadian unions to technological change has been the absence in recent years of active

efforts to reduce regular working hours. Reducing working hours (in line with technology-induced productivity growth and rising hourly wages) is an important lever for ensuring that technology translates into better lives, rather than higher unemployment. The obstacles to reductions in working time are daunting: including employer opposition, and the inequality in working hours which is an especially damaging outcome of the shift to precarious and contingent employment practices. However, Canadians are supportive of long-term reductions in working hours, and a revitalized campaign for shorter (and more fairly distributed) working hours could be an important spark for renewed interest and activism in unions. Unions should seek ways to reintroduce working time reductions as a regular item on the collective bargaining agenda, in ways that reflect the specific conditions (including operational requirements) of particular workplaces and industries. Ongoing technological change and associated productivity growth provides a real economic foundation for reductions in working time, without losses in pay. A renewed priority on reducing working hours would also complement unions' efforts to achieve better work-life balance for Canadian families, and the overarching need to reduce carbon pollution and combat climate change — a goal which is furthered by reduced working hours (as argued by Hayden, 1999).

Unions should seek ways to reintroduce working time reductions as a regular item on the collective bargaining agenda.

In summation, our research confirms that Canadian unions have shown a constructive and effective willingness to engage in shaping technological change in their workplaces in ways that reduce harm and dislocation for their members, and achieve a fairer distribution of both the costs and benefits of new technologies. If we are concerned with the relatively poor pace of innovation and real-world adoption of new technologies in Canadian enterprises, we shouldn't blame unions: they are not trying to stop technology, they are trying to shape and regulate it. The true culprit in Canada's innovation and technology failure has been the weakness of Canadian business investment in research and new machinery and equipment — despite their strong profits, generous fiscal incentives, and access to the best-educated workforce in the world. Redressing that failure will require a suite of strategies and policy interventions that are beyond the scope of this paper. But regardless of whether the real-world roll-out of new technologies is fast or slow, workers need the power to fairly shape how technological change unfolds. And by supporting and strengthening workers' collective capacity to negotiate the terms of the future high-tech labour market, we can foster an innovative economy that is more inclusive, productive, and sustainable.

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Appendix:

Catalogue of Collective Agreement Provisions Dealing with Technological Change

Appendix Tables:

Table A1
Definition Provisions

Union	Local	Employer	Article	Summary / Clause
BCGEU		BC Buildings Corporation	23	Technological Change means the introduction by the Corporation into its work, undertaking, or business, of equipment or material of a different nature or kind than that previously used by the Corporation in that work, undertaking, or business; or a change in the manner, method, or procedure in which the Corporation carries on its work, undertaking, or business that is directly related to the introduction of that equipment or material that significantly decreases the number of regular employees but does not include normal layoffs resulting from a decrease in the amount of work to be done.
BCIT FSA		BCIT	2.5	The introduction or approval by the Employer of a change in the delivery of services by Employees caused by a change in nature, type or quantity of equipment or materials, or a change in work methods, where such change would: significantly alter the working conditions, terms of employment, or security of employment of a member of the Bargaining Unit; or significantly alter the basis on which this Agreement was negotiated; or displace an Employee through elimination of that Employee's current position; or change an Employee's current job function to such an extent that the Employee's level of remuneration would be reduced.
Unifor		Bell Canada		Introduction by the Company into its business of equipment or material of a different nature or kind than that previously utilized by the Company in the operation of its business
Unifor		Bell Canada		A change in the manner in which the Company carries on the business that is directly related to the introduction of that equipment or material.
CUPE		Board of School Trustees of School District No. 43 (Coquitlam)		Both parties recognize that the introduction of computer-based systems can be to their mutual advantage by improving systems, efficiency, and developing better working conditions. This committee shall consist of three (3) representatives from the Union (Local) and three (3) representatives from the employer. The committee shall meet on a regular basis or at the request of the Union or employer to consider, monitor, and analyze: Developments; Changes in working methods and the effects on jobs; and, Any proposed introduction or extension of computer-based systems. This information shall include the employer's long-term plans for the introduction of new technology.
Brandon University Faculty Assoc.		Brandon University	27.8	The Parties recognize that technological change may affect the environment within which the professional duties and responsibilities of Members are undertaken.
CUPE	1169	Calgary Public Library	18	Technological change means the introduction of new methods or machines which lead to a substantive difference in job content requiring new or greater skills than are currently used by present Employees.
CUPW		Canada Post	29.01	In this article, “technological changes” means the introduction by the Corporation in its operations, of equipment different in nature, type or quantity from that previously utilized by the Corporation, a change, related to the introduction of this equipment, in the manner in which the Corporation carries on its operations and any change in work methods and postal services operations affecting one or more employees.
CUPW		Canada Post	29.02	In carrying out technological changes, the Corporation agrees to eliminate all injustices to or adverse effects on employees and any denial of their contractual or legal rights which might result from such changes.
PSAC		Canadian Food Inspection Agency	23.03	"Technological Change" means: a. the introduction by the Employer of equipment or material of a different nature than that previously utilized; and b. a change in the Employer's operation directly related to the introduction of that equipment or material.

				23.03 Both parties recognize the overall advantages of technological change and will, therefore, encourage and promote technological change in the Employer's operations. Where technological change is to be implemented, the Employer will seek ways and means of minimizing adverse effects on employees which might result from such changes.
Capilano University Faculty Assoc.		Capilano University	14.01	For the purposes of this Agreement the term "technological change" shall be understood to mean changes introduced by the University in the manner in which it carries out educational operations and services where such change or changes significantly affects the terms and conditions or security of employment of members of the bargaining unit or alters significantly the basis on which this Agreement was negotiated. Such changes as anticipated above shall include the following where such change or changes significantly affects the terms and conditions or security of employment of members of the bargaining unit or alters significantly the basis on which this Agreement was negotiated: The introduction, because of technological change or development, of equipment, material or processes different in nature, type or quantity from that previously utilized. A change, related to the introduction of this equipment, material or process, in the manner in which the University carries out its educational objectives and operations. Any change in work methods, organization, operations, or processes which affects one or more employees. Any change in location at which the University operates.
Civic Service Union	52	City of Edmonton	11.02	An employee classified as a permanent employee shall be considered displaced by technological change when their services shall no longer be required as a result of a change in plant or equipment or a change in a process or method of operation diminishing the total number of employees required to operate the department in which they are employed.
CEP		City of Winnipeg		Pursuant to Section 51 of the Canada Labour Code, the parties agree that, during the term of this agreement, Section 52, 54 and 55 shall not apply to them. The provisions of this Article are intended to assist Employees affected by Technological Change, as hereinafter defined, to adjust to the effects of such change. In this section "Technological Change" means: The introduction by Employer into its work, undertaking or business of equipment or material of a different nature or kind than that previously utilized by it in the operation of the work, undertaking or business; and a change in the manner in which the Employer carries on the work, undertaking or business that is directly related to the introduction of that equipment or material.
USW	9042	Cummins Eastern Canada	Letter #11	The parties to this Agreement recognize that changes and improvements in the methods, processes and means of operating are desirable and shall therefore be encouraged. However, the parties also recognize that such substantial changes and improvements can have a far-reaching effect on the job status of employees. For the purpose of this Agreement, technological changes shall mean a significant change in methods, process and means of operating which result in a significant effect of the job status of employees.
Emily Carr Faculty Assoc.		Emily Carr University of Art & Design	36	For purposes of this Agreement the term "technological change" shall be understood to mean University implemented changes in the manner in which teaching operations and services are performed, where such change or changes significantly alter the terms and conditions or security of employment of full-time and/or part-time Regular Faculty Members, or alter significantly the basis on which this Agreement was negotiated. "Technological change" shall not refer to changes in teaching operations and services for reasons enumerated in Article 35 dealing with "reduction" in numbers of Faculty Members.
BCGEU		Government of British Columbia	23	Both parties acknowledge the overall advantages and necessity of technological change and the ongoing requirement to facilitate technological change in the Employer's operations. The parties recognize the need to develop orderly procedures to facilitate adjustments to and implementation of changes in technology.

PSAC		Hay River Health and Social Services Authority		The introduction by the Employer of equipment or material of a different nature than that previously utilized; and a change in the Employer's operation directly related to the introduction of that equipment or material.
PSAC		Hay River Health and Social Services Authority		Both parties recognize the overall advantages of technological change. Both parties will therefore encourage and promote technological change and improvements.
USW	7619	Highland Valley Copper	21.01	The Company and the Union agree that technological change is both necessary and desirable for the viability of the Company and the ongoing security of its employees. In recognition of the foregoing, the Company undertakes to reduce the effects of technological change on the job security and earnings of employees who are laid off, or permanently demoted as a direct consequence of technological change. Any dispute regarding the implementation of technological change shall commence at Stage Three of the grievance procedure. For the purpose of this C.B.A., a technological change shall be defined as the automation of equipment, or the mechanization or automation of duties which adversely affects employees in the Bargaining Unit through lay off or demotion from their present job classification.
Kwantlen Faculty Assoc.		Kwantlen University	6.01	For the purpose of this Agreement, the term technological change shall mean change introduced by the Employer in modes of learning, in modes of delivery of learning, or in modes of delivery of related services where such change affects the security of employment of faculty members or significantly affects the terms and conditions of employment of faculty members or alters significantly the basis upon which this Agreement was negotiated.
NSCAD Faculty Union of Support Staff		NSCAD	29.09	For purposes of this Article "Technological Change" is defined as a significant change in equipment, materials or processes to an area or facility which would alter in a substantive way the working conditions, duties, and/or responsibilities of an Employee working in that area or facility.
PEI Union of Public Sector Emplyees		PEI Department of Health		For the purpose of this Article, "technological change" means the introduction of equipment by the Employer into its operations which results in changes that adversely affect the job security of employees.
IAM	869	Rolls-Royce Canada	17.15	Any change brought about in the Company's operations due to the introduction of new machinery or equipment, or modifications to existing machinery and equipment shall be considered as technological changes, all changes in method of work, all introduction of new process or any changes to the actual process resulting from the implementation of the new work organisation. In such cases, the one hundred twenty 120 days notice does not apply
Canadian Assoc. of Profess'nl Emplyees		Treasury Board (Translation)	33.01	In this article "technological change" means: a. the introduction by the Employer of equipment or material of a different nature than that previously utilized; and b. a change in the Employer's operation directly related to the introduction of that equipment or material.
Canadian Assoc. of		Treasury Board (Translation)	33.02	Both parties recognize the overall advantages of technological change and will, therefore, encourage and promote technological change in the Employer's operations. Where technological change is to be implemented, the Employer will seek ways and means of minimizing adverse effects on employees which might result from such changes.

Profess'nl Emplyees				
Univ'y of Fraser Valley Faculty & Staff Assoc.		University of Fraser Valley	33	For purposes of this Agreement, technological change shall be defined as (a) a change in equipment or material or a significant change in procedure which results in the displacement of an employee through the elimination of his or her current position or another current position; (b) a change in equipment or material or a significant change in procedure which results in the change of a current position to such an extent that the employee's services are no longer required in the same capacity.
USW	8782	US Steel Canada Inc. (Lake Erie Works)	18.01	Both parties recognize the importance of lessening as much as reasonably possible the effects of technological change upon the job security and the earnings of an employee who may be displaced from his/her job as a result of such change. However, both Parties also recognize the positive features that technological enhancements can provide. In this regard it is not the intention of the Parties to adversely impact the employment security of an employee who may be affected by the implementation of a technological or organizational change save and except as outlined in the last paragraph of Clause 18.02 of this Section and Item 10.
USW	8782	US Steel Canada Inc. (Lake Erie Works)	18.01	Technological change shall mean: (a) the automation of equipment, or (b) the introduction of new equipment, or (c) the replacement of existing equipment with new equipment, or (d) the mechanization or automation of duties, or (e) the replacement of an existing facility with a new facility which produces the same or similar product, which directly results in the permanent displacement of an employee from a job. The subsequent permanent displacement of junior service employees by an employee directly displaced from a job in accordance with the above shall also be considered to be a direct displacement due to a technological change. The displacement of an employee from a job as a result of depressed business conditions, relocation or reassignment of equipment which is not the direct result of a technological change in such equipment, resource depletion or product obsolescence or market shift which is not the cause or the result of a technological change, fault of the employee, or layoffs caused by any strike, slowdown, lockout, sabotage, Act of God, or breakdown, shall not be considered to be a technological change.
COPE	343	USW	26	Both parties recognize the importance of lessening as much as reasonably possible the effects of technological change upon the job security and the earnings of employees who may be displaced from their jobs as a result of such changes.
Unifor	444	Windsor Casino	75	"Technological Change" is defined as a substantial change in technology to the process, equipment, or methods of operation that differs significantly from those previously utilized by the Company
IAM		Prescribed Language[1]		The introduction by the Corporation in its operations, of equipment different in nature, type of quantity from that previously utilized by the Corporation, a change, related to the introduction of this equipment, in the manner in which the Corporation carries on its operations and any change in work methods and operations affecting one or more employees. A change in the manner in which the employer carries on the work, undertaking or business, that is directly related to the introduction of that equipment or material.

[1] This appendix contains several provisions of prescribed (or model) language developed by the IAM for application by its local union negotiators as best practices of approaches to a range of technological change issues.

Table A2
Notice Provisions

Union	Local	Employer	Article	Summary / Clause
BCGEU		BC Highways Maintenance	23	For the purpose of technological change, the Employer agrees to provide the Union with as much notice as possible, but in any event not less than sixty (60) days' notice of a technological change. Upon receipt of a notice of technological change pursuant to Article 23.2(a) the Joint Labour/ Management Committee shall meet to consult on the impact of the proposed change, a copy of this notice will be sent the employees affected. The written notice identified in Article 23.2(a) will provide the following information: (1) the nature of the change(s); (2) the anticipated date(s) on which the Employer plans to effect change(s); (3) the location(s) and number(s) of employees likely to be directly affected pursuant to Article 23.2(d) below. Where notice of technological change has been given pursuant to Article 23.2(a): (
BCIT FSA		BCIT	2.5	The Employer agrees to notify the Union of its intention as far as possible in advance, and to update the information provided as new developments arise and modifications are made; In any case, at least seventy (70) days before a technological change is to be introduced, the Employer shall provide the Union and the Department(s) likely to be affected, with a description of the change disclosing all foreseeable significant effects on Employees. Notice shall be given in writing and shall contain pertinent data, including he nature of the change; the approximate date on which the Employer proposes to effect the change; the approximate number and type of Employees likely to be affected by the change; and the effect the change is likely to have on the terms, conditions, or security of employment of the Employees affected, or the alteration(s) that may have to be made to the Collective Agreement.
USW	7085	Brunswick Smelter	20.04	The Company will notify the Union in writing at least six (6) months in advance of the proposed technological change and the notice shall indicate: 1. the nature of the change; 2. the date on which the change could take effect; 3. the number of employees who could be affected directly or indirectly; 4. the possible effects of the technological change on the employees concerned; 5. the names of the employees who may be eligible for pre-retirement as per Section 23.01. During the notice period jobs vacated may be filled on a temporary basis if necessary.
OPSEU		CAAT	20	In such circumstances as in 30.01, the College will provide the Union Local and the CESC at least 90 calendar days before the date on which the technological change is introduced with a description of the change and the approximate number of employees likely to be directly affected by the change. The CESC shall meet to discuss the effect on the employment status of employees directly affected and possible measures to reduce adverse effects of the technological change including discussion of developmental opportunities for employees for possible assignment to other positions within the College or assisting in a change of career for employees with suitable qualifications.
CUPE	1169	Calgary Public Library	18	The Board shall give notice of any proposed technological change which is likely to cause problems relating to layoffs and/or reduced hours of work.
Camosun College		Camosun College	29	Technological change shall mean any change in the method of operation or equipment which results in an Employee's services no longer being required in the same capacity. Prior to introducing technological change, the Employer shall notify in writing the Union and the Employee(s) affected of the intended change, with a statement of foreseeable effects

Faculty Assoc.				and repercussions on Employees. Such notice shall be given as far in advance as possible but no less than four (4) months prior to the change being introduced.If, within thirty (30) days of giving notice of technological change, the Employer or the Union identify potential problems, either party may request a meeting to discuss and to endeavor to reach an agreement on the area of concern. Any agreements reached during discussions shall be appended to this contract as Letters of Agreement. Where agreement is not reached within sixty (60) days of the beginning of discussions, either party may file a formal grievance.(c) The Employer agrees to take all reasonable steps so that an Employee shall not lose employment because of technological change. Every reasonable effort will be made by the Employer to utilize normal turn-over of Employees, to the extent that it arises during the period in which changes occur, to absorb Employees displaced because of such change or changes. However, when necessary to reduce staff, it will be done as outlined in Clause 3 of the Agreement.
CUPW		Canada Post	29	Corporation agrees to notify the Union as far as possible in advance of its intention and to update the information provided as new developments arise and modifications are made; and the foregoing notwithstanding, the Corporation shall provide the Union, at least one hundred and twenty (120) calendar days. Notice shall be given in writing and shall contain pertinent data including: nature of the change, date on which Corporation proposes to effect the change, approximate number, type and location of employees likely to be affected, effects the chane may be expected to have on employee's working conditions and terms of employment, and all other pertinent data relating to the anticipated effects on employees
PSAC		Canadian Food Inspection Agency	23	The Employer agrees to provide as much advance notice as is practicable but, except in cases of emergency, not less than one hundred and eighty (180) days written notice to the Union of the introduction or implementation of technological change when it will result in significant changes in the employment status or working conditions of the employees. The written notice provided for in clause 23.04 will provide the following information: a. the nature and degree of the technological change; the date or dates on which the Employer proposes to effect the technological change; the location or locations involved; the approximate number and type of employees likely to be affected by the technological change; the effect that the technological change is likely to have on the terms and conditions of employment of the employees affected.
Unifor	101R	Canadian Pacific Railway	6.21	When new technology is to be implemented which involves supplementary service equipment the respective Regional Union Representative representing the terminal involved shall be notified. When such technology is introduced in a given terminal, on Company owned or leased equipment operated by employees, related training will be provided to employees assigned to supplementary service, pursuant to Rule 31.4.
Canadian Media Guild		CBC	49	120 days notice: reason and nature of chance, date of proposed change, approximate number and type of employees likely to be affected, and the effect the change is likely to have on the terms and conditions or security of employees likely to be affected
ONA	Mas-ter	Central Hospitals	9.1	The Hospital undertakes to notify the Union in advance, so far as practicable, of any technological changes which the Hospital has decided to introduce which will significantly change the status of the nurse within the bargaining unit. The Hospital agrees to discuss with the Union the effect of such technological changes on the employment status of the nurses and to consider practical ways and means of minimizing the adverse effect, if any, on the nurses concerned.
Unifor	899	CFRN-TV and CFCN-TV	25	120 day days notice: nature of change, proposed date, approximate number and type of employees likely to be affected, effect that the technological change is likely to have on the terms and conditions or security of employment of employees affected, and name of employee

CUPE	569	City of St. John's (NL) Outside Workers	29.1	Before the introduction of any technological change the Employer shall notify the Union of the proposed change, no later than sixty (60) days before the introduction of the change.
Toronto Profess. Fire-fighters Assoc.		City of Toronto		At least ninety (90) days prior to the introduction or implementation of substantial technological change, or substantial changes in mechanization affecting members of Local 3888, the City shall, by written notice, furnish the Association with full information of the planned change or changes. Such prior notice shall contain relevant nformation respecting the nature and degree of change, the date or dates on which the City plans to effect the change, and the location or locations involved. Within fifteen (15) days after the foregoing notice has been given, the City shall make disclosure to the Association of the effects of the change or changes on any employee. Following said disclosure, representatives of the parties shall meet forthwith to discuss issues with a view to resolve any issue which may concern the employment status of the employee.
MoveUp COPE	378	Coastal Community Credit Union	17.01	The Employer will provide the Union with not less than three (3) months notice of intention to introduce automation, equipment or changes in administrative procedures which might result in the reduction of personnel and/or changes in job duties sufficient to change job groupings.
BCGEU		College Instructors	22	Where the Employer intends to make a technological change that: Affects the terms and conditions or security, of employment of a significant number of Employees to whom the Collective Agreement applies; and Alters significantly the basis upon which the Collective Agreement was negotiated. It shall give sixty (60) days' notice in writing to the Employees' bargaining agent of the technological change, and the Employer and the Employees' bargaining agent shall, within fourteen (14) days of the date of notice, commence collective bargaining for the purpose of reaching agreement as to the adjustment to the effects of the technological change and in what way, if any, the Collective Agreement should be amended.
College of the Rockies Faculty Assoc.		College of the Rockies	13.2	When the College intends to introduce a technological change it shall notify the Faculty Association in writing as far as possible in advance of its intention, and to update the information provided as new developments arise and modifications are made. The notice mentioned above shall provide pertinent data including: the nature of the technological change; the date on which the College proposes to effect the technological changes; the approximate number, type, and location of regular faculty employees likely to be affected by the technological change; the effects the technological change may be expected to have on regular faculty working conditions and terms of employment; and, other pertinent data relating to the anticipated effects on any regular faculty. Where the College has notified the Faculty Association of its intention of introducing a technological change, the parties will undertake to meet within the next thirty (30) calendar days in an effort to reach agreement on solutions to the problems arising from this change as they affect regular faculty employees.
BCGEU		College Support	24	Where the Employer intends to make a technological change that: is directly related to the introduction of that equipment or material that significantly changes the character of the work to be performed or changes the number of Employees; and/or alters significantly the basis upon which the Collective Agreement was negotiated, it shall give three (3) months' notice in

				writing to the Union of the technological change, and the Employer and the Union shall, within fourteen (14) days of the date of the notice, commence collective bargaining for the purpose of reaching agreement as to the adjustment to the effects of the technological change and in what way, if any, the Collective Agreement should be amended. Technological change shall not include normal layoffs resulting from a decrease in the amount of work to be done.
Comm'ty Social Services Bargaining Assoc. (includes BCGEU)		Community Social Services	23	Sixty days before the introduction of any technological change, the Employer will notify the Union of the proposed change. Within 14 days of the date of the notice under Clause 23.2 (Advance Notice) of this article, the Union and the Employer will commence discussions for the purpose of reaching agreement as to the effects of the technological change and in what way, if any, this agreement should be amended.
USW	9042	Cummins Eastern Canada	Letter# 11	When the Company decides to introduce technological changes, they shall meet with the Union Committee and provide the Committee with data regarding the proposed installation, number and classifications of employees likely to be affected by such change
Douglas College Faculty Assoc.		Douglas College	10.05	When the College intends to introduce technological change or is considering the introduction of technological change, the College agrees to notify the Association as far as possible in advance of its intention and to update the information provided as new developments arise and modifications are made; the foregoing notwithstanding, the College shall provide the Association with at least six (6) months' notice that a technological change is intended, with a detailed description of the change it intends to carry out and with a disclosure of all foreseeable effects and repercussions on employees. The notice and description mentioned in 10.05.a and 10.05.b shall be given in writing and shall contain pertinent data, including the nature of the change; the date on which the College proposes to effect the changes; the approximate number, type, and location of the faculty member or faculty members likely to be affected by the change; the effects the change may be expected to have on the faculty member's or faculty members' working conditions, terms of employment, and security of employment; all other pertinent data relating to the anticipated effects on a faculty member or faculty members; and draft changes and additions to the Agreement consequent to the technological change (see 10.05.e).The notice mentioned in 10.05.a and 10.05.b and the information specified in 10.05.b shall also be given to the faculty member or faculty members who will be affected by the technological change.
NAPE		Eastern Health -Xray staff, support staff	27, 43	Before the introduction of any technological change or new method of operation which affects the rights of employees, conditions of employment, wage rates or workloads, the Employer shall notify the Union of the proposed change. Any such change shall be made only after the Union and the Employer have discussed the matter. The discussion shall take place within twenty-one (21) days of the Employer's notification to the Union.
USW		Forestry Sector, BC Interior	XX.1	The Company shall notify the Shop Committee and the Union not less than six (6) months in advance of intent to institute material changes in working methods or facilities which would involve the discharge or laying off of Employees.
PSAC		Hay River Health and		6 months notice: written, detailed description of the nature of the proposed change, the date on which the Employer proposes to effect the change, the approximate number and type of employees likely to be affected by the change,

		Social Services Authority		including names of employees where available, the effect that the change is likely to have on the terms and conditions or security of employment of the employees affected, and the rationale for the change.
Assoc. of Unions		Health Services and Support – Facilities Subsector	17	The Employer shall consult the Union(s) when it proposes to introduce a restructuring initiative as soon as possible and not less than ninety (90) calendar days before the initiative may be implemented (except where an emergency exists). A restructuring initiative includes an initiative which affects a significant number of employees at a unit or site level in accordance with section 54 of the Labour Relations Code and includes a significant change in plant or equipment, method of operation or change in FTEs, classifications, site or Employer. The Employer will provide the Union(s) with a detailed description and relevant documentation of the proposed restructuring initiative. The Union(s) may request additional information to inform the discussions regarding alternatives and options for affected employees. Confidentiality will be needed until such time as the Employer is prepared to announce the restructuring initiative. However, with notice, either party may publicly disclose both that consultations as to proposed restructuring initiatives have occurred and the Employer's intentions as stated in the consultations. The Union has the ability to discuss impacts, alternatives and options with the affected employees on a confidential basis.
Assoc. of Unions		Health Services and Support – Facilities Subsector	17	Where the restructuring initiative involves consolidating or relocating a service between sites within the same Employer, the Employer shall provide one hundred-twenty (120) calendar days' notice. A regular employee required to relocate to another worksite may decline the transfer and elect to receive displacement notice if the employee has a practical reason not to work at the new site.
USW	7619	Highland Valley Copper	21.03	The Company shall notify the Union in writing not less than six (6) months in advance of intent to institute technological change. The Company shall then meet with the Union to explain the technological change, setting forth the estimated number of employees affected, together with the nature and extent of the change anticipated
MoveUp COPE	378	IAMAW Lodge 140	17.01	Wherever possible, the Employer shall provide the Union with up to six (6) months' written notice of intention to introduce automated equipment and/or procedural change. The Employer agrees to disclose full details of the planned technological and/or procedural changes, which may cause any change to an employee's normal duties or place of employment. The Employer and the Union shall enter into meaningful consultation regarding such technological and/or procedural changes prior to implementation.
Unifor	907	Irving Paper, Saint John, NB	12	The company agrees to advise the Union as soon as possible, and in no case less than six (6) months before the introduction of technological changes and/or automation which will result in lay-offs or other significant changes in the employment status of employees.
Unifor	30	Irving Pulp & Paper	27	The Company agrees to advise the committee as soon as possible, and in no case less than three (3) months before the introduction thereof, of technological changes and/or automation which the Company has decided to introduce and will result in lay-offs. (C) As much notice as possible but a minimum of three weeks, will be given to employees selected for permanent layoff for reasons other than technological change/automation.
Unifor	1959	K+S Windsor Salt, Objibway Mine	15.6	The Company will notify the Union ninety (90) days in advance of any introduction in new technology and will notify the Union in advance of the introduction of new techniques so as to give the affected Bargaining Unit employee (who has the basic knowledge and ability to be trained) the opportunity to become acquainted with the new skill needs so that he will be available to perform the work when needed.

Unifor	250-A	Labatt Breweries Edmonton	11.4	In the event that during this collective agreement, the Company plans to introduce a major technological change which it anticipates will directly resulting in the indefinite layoff of ten (10) or more regular employees, the following shall apply; The company will give the Union notice of such technological change at least sixty (60) days before the date on which the technological change is to be effected. After giving notice, the Company shall identify by Job classification, the number of Jobs to be displaced. The jobs lo be displaced shall be grouped by the Company for the purposes or paragraph (c) herein.
SEIU	1	Labatt Breweries London	29	In the event that during this collective agreement, the Company plans to introduce a major technological change which it anticipates will directly resulting in the indefinite layoff of ten (10) or more regular employees, the following shall apply; The company will give the Union notice of such ll technological change at least sixty (60) days before the date on which the technological change is to be effected. After giving notice, the Company shall identify by Job classification, the number of Jobs to be displaced. The jobs lo be displaced shall be grouped by the Company for the purposes or paragraph (c) herein.
Langara Faculty Assoc.		Langara College	11.2	The College shall notify the Association as far in advance as possible, in writing, of an intended technological change and its potential effect on members of the bargaining unit. Such notice shall be given at least one hundred and twenty (120) days before introducing the intended technological change and shall consist of a detailed description of the change; a proposed implementation date; the approximate number, type and location of faculty members likely to be affected by the change; and the possible effect on working conditions and terms of employment.
BCGEU		Libraries	23	For the purpose of technological change, the Employer agrees to provide the Union with as much notice as possible, but in any event not less than 60 days' notice of a technological change. Upon receipt of a notice of technological change pursuant to Clause 23.2(a), the Labour-Management Committee, established pursuant to Clause 7.5, shall meet to consult on the impact of the proposed change. The written notice identified in Clause 23.2(a) will provide the following information: (1) the nature of the change/s; (2) the anticipated date/s on which the Employer plans to effect change/s; (3) the location/s and number/s of employees likely to be directly affected pursuant to Section (d) below. Where notice of technological change has been given pursuant to Clause 23.2(a), regular employees who are assigned by the Employer to work with the new technology shall receive a period of training and familiarization. Employees involved in training under this clause shall receive their basic pay for the period of training.
Sheet Metal Workers; Internat'l Assoc.	280	Maxam Metal Products (Production Workers)	22	In addition, the Company will, if possible, inform the C01mnittee six (6) months prior to the introduction of any new equipment which will require extensive retraining or will result in loss of employment.
PSAC		Memorial University	24	The University shall provide the Union with sixty (60) days notice prior to implementation of technological changes, except where this is not reasonably practicable due to unforeseen or emergency circumstances, in which case the Union shall be given as much notice as is reasonably practicable. The notice will provide information regarding the nature of the technological change, the employees who will be affected, and the expected date of implementation of the change. During the notice period, at the request of either party, the University and the Union shall meet to discuss the implications arising from the implementation of technological change.

Canadian Union of Brewery and General Workers, NUPGE	325	Molson Coors Toronto	40.01	In the event that, during this Collective Agreement, the Company plans to introduce a major technological change which it anticipates will directly result in the indefinite layoff of ten (10) or more regular employees, the following shall apply: The Company will give the Union notice of such technological change at least sixty (60) days before the date on which the technological change is to be effected. After giving notice, the Company shall identify by job classification, the number of jobs to be displaced. The jobs to be displaced shall be grouped by the Company for the purposes of paragraph (c) herein.
Montreal Newspr. Guild (CWA Canada)	3011 1	Montreal Gazette	8.13	One month notice; shall discuss with union. During the period of such notice, the Employer shall discuss with the Guild any and all ways in which the impact of displacement may be avoided or reduced. Notice shall include information on the number of employees in each classification likely to be affected.
NVITEA		Nicola Valley Institute of Technology	12	When the Employer intends to introduce technological change it shall notify the Union in writing of its intention at least three (3) months in advance, and to update the information provided as new developments arise and modifications are made. The notice given shall contain the following information: • the nature of the technological change, • the date on which the Employer proposes to effect the change, and • the approximate number and type of employees likely to be affected by the change. Where the Employer has notified the Union of its intention to introduce technological change, the parties will meet within thirty (30) calendar days to commence discussions about impacts on employees."
North Island College Faculty Assoc.		North Island College	15.4	When the Employer intends to introduce a technological change: The Employer agrees to notify the Union as far as possible in advance of its intentions and to update the information provided as new developments arise and modifications are made. The foregoing notwithstanding, the Employer shall provide the Union, at least one hundred and twenty (120) calendar days before the introduction of a technological change is intended, with a detailed description of the change it intends to carry out disclosing the anticipated impact on employees. This notice mentioned above shall be given in writing and shall contain pertinent data, including: the nature of the change; the date on which the Employer proposes to effect the change; the approximate number, type and location of employees likely to be affected by the change; the effects the change may be expected to have on the employees' working conditions and terms of employment. The notice mentioned in Article 15.4.3 and the information specified in Article 15.4.4 shall also be given to the faculty who will be affected by the technological change.
UFCW	175	Olymel Bramalea	19.04	In the event that the Company introduces technological change in the form of new equipment, the parties agree that the following will occur: Sixty (60) days prior to production use of the new equipment, the Company will notify the chief steward and provide him or her with a description and impact on the employees of the equipment to be introduced.
UFCW	378W	Pepsico	14.01	If, during the life of the Agreement, the Company wishes to make a technological change in its operations which would have the effect of abolishing existing classifications or creating a new classification, or which would result in the permanent layoff of any employee, the Company will meet the Union, ninety (90) days in advance of such changes, to

				discuss: 1. the nature of the technological change 2. the date upon which the employer proposes to effect the technological change 3. the number and type of employees likely to be affected by the technological change 4. the effect that the technological change is likely to have on the terms and conditions or tenure of employment of the employees affected.
BCGEU		Public Service - Devolved Government	23	For the purpose of technological change as defined in Section 1 of the Public Service Labour Relations Act, the Employer agrees to provide the Union with as much notice as possible, but in any event not less than 60 days' notice of a technological change. Upon receipt of a notice of technological change pursuant to Clause 23.2(a) the Joint Committee established under Article 29—Ministry Joint Committee, shall meet to consult on the impact of the proposed change. The written notice identified in Clause 23.2(a) will provide the following information: (1) the nature of the change(s); (2) the anticipated date(s) on which the Employer plans to effect change(s); (3) the location(s) and number(s) of employees likely to be directly affected pursuant to below. Where notice of technological change has been given pursuant to Clause 23.2(a): (1) Regular employees who are assigned by the Employer to work with the new technology shall receive a period of training and familiarization. Employees involved in training under this clause shall receive their basic pay for the period of training. Where the employee cannot meet job requirements upon completion of the training and familiarization period, the employee shall be offered either the vacancy options, early retirement or severance pay provisions of Article 13—Layoff and Recall. To absorb those regular employees who are not assigned by the Employer to work with the new technology or who are displaced because of such technological change, the Ministry will endeavour to utilize normal turnover of employees within the Ministry geographic location in which the change occurs, to the extent that turnover occurs during the period in which a technological change is being implemented. When necessary to reduce staff due to technological change, it will be done as provided for in Article 13—Layoff and Recall or Article 31—Auxiliary Employees, as appropriate. For purposes of this article, "Technological Change" shall not include normal layoffs resulting from a reduction of the amount of work required to be done. Notwithstanding Clause 23.2(a), the parties recognize that there may be circumstances of statutory obligation where it is not possible to provide the notice set forth in this article. In such circumstances, notice shall be provided as soon as possible.
IAM	869	Rolls-Royce Canada	17.15	Any change brought about in the Company's operations due to the introduction of new machinery or equipment, or modifications to existing machinery and equipment shall be considered as technological changes, all changes in method of work, all introduction of new process or any changes to the actual process resulting from the implementation of the new work organisation. In such cases, the one hundred twenty 120 days notice does not apply
Selkirk College Faculty Assoc.		Selkirk College	12	Should the College intend to introduce such technological changes, the College will inform and discuss the details of such changes with the Association sixty (60) days prior to the proposed implementation date.

TWU		Telus		The Company agrees to inform the Union of any contemplated lay-offs of Regular employees, giving twelve (12) months' notice where the lay-off is necessitated through technological change as defined in the Canada Labour Code. Affected employees will receive two (2) weeks' additional notice upon expiry of the foregoing notice.
Canadian Assoc. of Professn'l Emplyees.		Treasury Board (Translation)	33.03 33.04	The Employer agrees to provide as much advance notice as is practicable but, except in cases of emergency, not less than ninety (90) days' written notice to the Association of the introduction or implementation of technological change when it will result in significant changes in the employment status or working conditions of the employees. 33.04 The written notice provided for in clause 33.03 will provide the following information: a. the nature and degree of change; b. the anticipated date or dates on which the Employer plans to effect change; c. the location or locations involved.
COPE	343	Unifor	20	In the event of new proposed technological changes, including but not limited to, the introduction of computers, computer software or automated equipment of any sort, Unifor agrees to meet with the Union to discuss such changes. No additional employees shall be hired by Unifor until employees who need training to retain their employment or employees on layoff, have been notified of the proposed technological or other changes and allowed a reasonable training period to acquire the necessary knowledge or skill to retain their employment.
USW	8782	US Steel Canada Inc. (Lake Erie Works)	18.08	The Company will provide, as soon as practicable, the estimated time frame for the implementation of any technological change and will advise as to the number of employees potentially affected. Such estimates will be refined by the Company from time to time as information becomes available.
COPE	343	USW	26	The employer agrees as far in advance as possible before the installation of equipment which will affect employment status, to meet and discuss with the union committee any technological changes and to provide the committee with data regarding the proposed installation.
Vncvr Comm'ty College Faculty Assoc.		Vancouver Community College	14.2	The College shall notify the Association as far in advance as possible, in writing, of an intended technological change and its potential effect on members of the bargaining unit. Such notice shall be given at least 120 days before introducing the intended technological change and shall consist of a detailed description of the change; a proposed implementation date; the approximate number, type and location of faculty members likely to be affected by the change and the possible effect of working conditions and terms of employment.
Unifor	444	Windsor Casino	75	60 days notice where possible. Company will discuss: nature of change, approximate number of employees likely to affected, and effect changes may have on working conditions and conditions of employment
YUFA		York University	17.01	…(d) It is further agreed that changes in existing practices at a department level would be without prejudice to changes or lack of changes in existing practices in other departments within a Faculty and would be effected through written notification from the Dean or Associate Dean to the Office of the Provost & Vice-President Academic and then to YUFA through the YUFA Co-Chairperson, JCOAA. (e) (i) In matters not specifically covered by the Collective Agreement where changes in existing practices with respect to computing and information technology would have a significant impact on terms and conditions of employment and/or the professional responsibilities of all, or potentially all employees, changes in existing practices would be effected through written notification as per clause 17.01. (ii) In matters of a Faculty-wide nature where technological change would have significant impact on terms and conditions of employment and/or professional responsibilities, changes in existing practices would be effected through written notification as per clause 17.01.

IAM		Prescribed Language		Employer's whose employees will be impacted by technological change, which includes terms, conditions and/or tenure of employment shall give 90 days' notice to the union The employer must also provide a notice that includes the following information; i. Nature of the technological change ii. Proposed date of implementation iii. Number and type of employees that will be affected iv. The effect technological change will have on terms and conditions or tenure of employment v. Any other information as outlined by regulations and requested by the Minister If an employer fails to communicate the above stated information in 90 days, the employer; i. Cannot proceed with the technological change ii. Must reinstate employees that were displaced iii. Reimburse employees for any loss of pay

Table A3
Technology Committee Provisions

Union	Local	Employer	Article	Summary / Clause
CUPE		Board of School Trustees of School District No. 43 (Coquitlam)		Both parties recognize that the introduction of computer-based systems can be to their mutual advantage by improving systems, efficiency, and developing better working conditions. This committee shall consist of three (3) representatives from the Union (Local) and three (3) representatives from the employer. The committee shall meet on a regular basis or at the request of the Union or employer to consider, monitor, and analyze: Developments; Changes in working methods and the effects on jobs; and, Any proposed introduction or extension of computer-based systems. This information shall include the employer's long-term plans for the introduction of new technology.
Brandon University Faculty Assoc.		Brandon University	27.8	The Parties recognize that technological change may affect the environment within which the professional duties and responsibilities of Members are undertaken. Accordingly, the Parties agree that a Technology Review Committee shall be established to make recommendations, when requested to do so by either Party, regarding changes in technology (hardware and software). Prior to the implementation of such technological change, the Employer shall notify BUFA in writing of the proposed change. The Technology Review Committee shall consist of three (3) persons representing each Party. Quorum for meetings of the Technology Review Committee shall be four (4) members, providing that at least two (2) members from each Party are present. The Chair shall alternate from meeting to meeting, between the Parties, and retain voting rights. Recommendations of this Committee must be submitted to the Employer within thirty (30) calendar days after the notice of the proposed change, or such further period as the Parties may mutually agree. If no such timely recommendation is submitted, the Employer is free to implement the proposed change. Minority, as well as majority, recommendations may be submitted.
OPSEU		CAAT	30	In such circumstances as in 30.01, the College will provide the Union Local and the CESC at least 90 calendar days before the date on which the technological change is introduced with a description of the change and the approximate number of employees likely to be directly affected by the change. The CESC shall meet to discuss the effect on the employment status of employees directly affected and possible measures to reduce adverse effects of the technological change including discussion of developmental opportunities for employees for possible assignment to other positions within the College or assisting in a change of career for employees with suitable qualifications.
Unifor		CAMI		The long term job security of team members and the viability of CAMI are contingent upon constant improvement through team member innovation, introduction of new technology, better tools, methods, processes and equipment as well as a co-operative attitude on the part of all the parties. In view of CAMI's interest in affording maximum opportunity for team members to progress with advancing technology, and to provide for long term job security, CAMI shall make available short-range, specialized training programs for those team members who have the qualifications to perform the new or changed work, where such programs are reasonable and practicable. Therefore, in the event the work performed by team members covered by this Agreement is altered as the result of technological changes so that additional short-range training may be required, CAMI is willing to train such team members where practicable to enable them to perform such work. CAMI agrees to provide advance notice to the Union Committee of technological change, with full discussions on the impact and effect of the change. CAMI also agrees to discuss training for and implementation of the technological change. A New Technology Committee consisting of two (2) team members appointed by the Union and two (2) team

				members appointed by CAMI shall review the impact of the above and make recommendations to the Company on the implementation and training. The Committee will meet quarterly (or as required) to review the above new technologies.
Comm'ty Social Services Bargaining Assoc. (includes BCGEU)		Community Social Services	23	At the request of either the Employer or the Union, the parties shall meet in accordance with Article 7.5 (Union/Management Committee) for the following purposes: planning training programs for those employees affected by technological change; planning training programs to enable employees to qualify for new positions being planned through future expansion or renovation; planning training programs for those employees affected by new methods of operation; planning training programs in the area of general skills upgrading. Whenever necessary, the parties shall seek the assistance of external training resources such as the Human Resources Development Canada and Provincial Ministry of Labour or other recognized training institutions.
USW		Essar Steel Algoma		No major technological change shall be introduced prior to review by the Joint Steering Committee. Technological change is defined as technological changes in the method of operations, materials and process, including the introduction of new or modified equipment which substantially alters the manner in which work is performed. The Joint Steering Committee will evaluate technological changes based on their contribution to achieving the objectives set out in Section 2 and set policies and procedures to be followed in respect of major technological change. Employees who will be affected by a proposed technological change must be involved in the process of designing and implementing that change.
Unifor	707	Ford of Canada	letter	During the course of the 2016 negotiations the parties discussed membership of the Committee on Technological Progress. The parties agreed the number of committee members, will be maintained at twelve (12) persons, six (6) representatives of the union and six (6) representatives of the company.
Unifor	707	Ford of Canada	Statem ent 2012	Both parties reaffirmed their commitments to the local New Technology Training Committees as a means to identify, assess and recommend appropriate training plans for skilled trades employees. The parties acknowledged that a robust process in this regard is important in ensuring that appropriate and timely training is provided to skilled trades employees. Following negotiations, the parties agree to establish a regular and proper cadence for the local New Technology Training Committee so that meaningful discussions to address skilled trades training needs can take place with the objective of identifying immediate gaps to ensure that skilled trades have the necessary knowledge required to perform the work.
BCGEU		Government of British Columbia		For the purpose of technological change as defined in Section 1 of the Public Service Labour Relations Act, the Employer agrees to provide the Union with as much notice as possible, but in any event not less than 60 days' notice of a technological change. (b) Upon receipt of a notice of technological change pursuant to Clause 23.2(a) the Joint Committee established under Article 29-Ministry Joint Committee, shall meet to consult on the impact of the proposed change. The written notice identified in Clause 23.2(a) will provide the following information: the nature of the change(s); the anticipated date(s) on which the Employer plans to effect change(s); the location(s) and number(s) of employees likely to be directly affected pursuant to below.
BCGEU		Government of British Columbia	23	The parties recognize the value of maintaining on-going communication and consultation concerning changes to workplace technology, other than technological change as defined in the Public Service Labour Relations Act and provided for in Clause 23.2(a). Accordingly, the parties agree, pursuant to Article 29-Ministry Joint Committee, to meet to exchange information with respect to such changes at the request of either party.

CUPE		Health Employers' Association of BC		The Employer and the Union shall establish a Joint Committee on Training and Skill Upgrading for the following purposes: for planning training programs for those employees affected by technological change; for planning training programs to enable employees to qualify for new positions being planned through future expansion or renovation; for planning training programs for those employees affected by new methods of operation; for planning training programs in the area of general skill upgrading. Whenever necessary, this Committee shall seek the assistance of external training resources such as the Federal Human Resources Development Canada and Provincial Ministry of Labour, or other recognized training institutions.
Assoc. of Unions		Health Services and Support – Facilities Subsector	17	Where a restructuring initiative would apply to two (2) or more Employers covered by this Collective Agreement, or where services are consolidated and transferred between Employers, the matter shall be referred to the joint HEABC-FBA Alternate Service Delivery Committee (the "Committee") as soon as the restructuring initiative is proposed, and not less than one hundred twenty (120) calendar days before the proposed initiative may be implemented. The Committee will be comprised of four (4) representatives appointed by the FBA and four (4) representatives appointed by HEABC. The Committee may also bring in a reasonable number of subject matter experts in the work performed and/or the proposed restructuring initiative, as required. Where a restructuring initiative impacts multiple Union Bargaining Associations, the Committee may, by mutual agreement, meet with other Union Bargaining Associations. The Committee will be the forum for the discussion of alternatives to the proposed restructuring initiative and /or the options for impacted employees, including posting across Employers in the event additional consolidated services are transferred to another Employer. HEABC will give good faith consideration to the alternatives advanced by the FBA.
Assoc. of Unions		Health Services and Support – Facilities Subsector	17	The Employer and the Union shall establish a Joint Committee on Training and Skill Upgrading for the following purposes: (1) for planning training programs for those employees affected by technological change; (2) for planning training programs to enable employees to qualify for new positions being planned through future expansion or renovation; (3) for planning training programs for those employees affected by new methods of operation; (4) for planning training programs in the area of general skill upgrading. Whenever necessary, this Committee shall seek the assistance of external training resources such as the Federal Human Resources Development Canada and Provincial Ministry of Labour, or other recognized training institutions.
Assoc. of Unions		Health Services and Support – Facilities Subsector	MoA	Health care workers, particularly Care Aides who move and handle patients/residents, experience some of the province's highest rates of musculoskeletal injuries. Appropriate patient/resident handling techniques have had a positive impact in reducing injury rates. The parties agree that within three (3) months of the ratification of the Collective Agreement they will establish a joint committee comprised of four (4) representatives each from HEABC and the FBA. The committee will utilize subject matter experts such as OHSAH. Each party will pay its own costs for participation in the joint committee. The purpose of the committee is to develop strategies and make recommendations to the Joint Engagement Committee on patient/resident handling program(s) with an emphasis on safe techniques for the use of ceiling lifts and other mechanical assisted devices, peer coaching, and mentoring, and an engagement plan for managers and other members of the nursing team to advance the objectives of the program. Improved patient/resident handling techniques will promote a safety culture within the work place.

				The joint committee will finalize their recommendations and present them to the Joint Engagement Committee no later than October 31st, 2010.
USW	7619	Highland Valley Copper	21.04	During and for the term of this C.B.A., the Company and the Union will each appoint three (3) members to a Committee which shall meet at the call of either the Company or the Union for the purpose of making recommendations to the Company with respect to mitigating the impact of technological changes on the employees of the Company. The Company will give due consideration to such proposals.
Unifor	30	Irving Pulp & Paper	27	If a regular employee(s) is to be laid off from the Mill for reasons of automation or technological change, a joint committee shall be established consisting of two (2) persons from management and two (2) persons from the Union. It shall be the function of the committee to study the effects on the employee and on working conditions in the Mill and to make recommendations, to the General Manager to ensure that the interests of the Company and of the employees are fairly and effectively protected.
Sheet Metal Workers; Internat'l Assoc.	280	Maxam Metal Products (Production Workers)	22	In view of the possible impact on manpower and conditions of employment resulting from technological changes and automation, it is agreed that the Parties hereto utilize to the best advantage of the Company and the Employees all scientific improvements and establish a committee to be known as the Committee on Automation, consisting of equal representation by the Employer and the Unions. The Committee's duties shall be to investigate and submit recommendations on all aspects of automation, mechanization and new methods, and to include the following: training and retraining [and] alternate employment opportunities within the Company.
UFCW	175	Olymel, Bramalea	19.04	After the chief steward is notified, the Company agrees, if requested to do so by the Union, to meet with a committee of two (2) representatives of the Union to discuss the impact of the technological change.
BCGEU		Public Service - Devolved Government	23	For the purpose of technological change as defined in Section 1 of the Public Service Labour Relations Act, the Employer agrees to provide the Union with as much notice as possible, but in any event not less than 60 days' notice of a technological change. Upon receipt of a notice of technological change pursuant to Clause 23.2(a) the Joint Committee established under Article 29—Ministry Joint Committee, shall meet to consult on the impact of the proposed change.
BCGEU		Public Service - Devolved Government	23	The parties recognize the value of maintaining ongoing communication and consultation concerning changes to workplace technology, other than technological change as defined in the Public Service Labour Relations Act and provided for in Clause 23.2(a). Accordingly, the parties agree, pursuant to Article 29— Ministry Joint Committee, to meet to exchange information with respect to such changes at the request of either party.
Selkirk College Faculty Assoc.		Selkirk College	12	A Technological Change Committee will be established with equal representation between the College and the Faculty Association to determine the extent and nature of retraining to be offered.
Thompson Rivers University Faculty Assoc.		Thompson Rivers University	9.3	Employees in positions affected by technological change shall be provided with opportunities for retraining to qualify for positions within the University. The extent and nature of the retraining will be determined by a committee composed of the Provost & Vice-President Academic, the relevant Dean or Director, Department Chair, the Chief Steward and the employee.
University of Fraser Valley Faculty		University of Fraser Valley	33	Technological Change Advisory Committee Within ten (10) work days of receipt of the Board's notice regarding technological change, the Association will provide the Employer with the names of not more than three (3) Association members who, along with not more than three (3) members of the Board, will act as an advisory committee to UFV to discuss and recommend any actions necessary to

and Staff Assoc.				ensure a satisfactory implementation of technological change. Such meetings will be called within three (3) work days of receipt of notification.
University of Western Ontario Faculty Assoc.		University of Western Ontario	3	Where the Employer plans or proposes changes in existing practices with respect to ICTs that are likely to have a significant impact on the Academic Responsibilities of Members, the Employer agrees to provide the Joint Committee with information regarding the planned or proposed change, enhancement or discontinuation of any current ICT, or plans or proposals to introduce any new ICT. When proposed by the Employer, such information shall be communicated in writing by the Provost or designate to the Association with a copy to the Chairs of the Joint Committee. Such information shall be provided sufficiently in advance of implementation to allow the Joint Committee to meet and consider the proposed changes before the proposed date of implementation. Joint Committee members may consult with persons whose professional expertise is related to the technology or change. Either the Employer or the Association may propose ICTs to the Joint Committee.
University of Western Ontario Faculty Assoc.: Librarians & Archivists		University of Western Ontario	3	Where changes in existing practices with respect to ICTs may have a significant impact on the Responsibilities of Members, the Parties agree to provide the Joint Committee with information regarding any proposed change, enhancement or discontinuation of any current ICT, or plans or proposals to introduce any new ICT. When proposed by the Employer, such information shall be communicated in writing by the Provost or designate to the Association with a copy to the Chairs of the Joint Committee. Such information shall be provided sufficiently in advance of proposed implementation to allow the Joint Committee to meet and consider the proposed changes before the proposed date of implementation. Joint Committee members may consult with persons whose professional expertise is related to the technology or change. Either the Employer or the Association may propose ICTs to the Joint Committee.
USW	8782	US Steel Canada Inc. (Lake Erie Works)	18.07	The employer agrees as far in advance as possible before the installation of equipment which will affect employment status, to meet and discuss with the union committee any technological changes and to provide the committee with data regarding the proposed installation.
USW	8782	US Steel Canada Inc. (Lake Erie Works)	18.08	The administration of the provisions of Section 18 is placed within the mandate of the Senior Level Committee as referred to in Item 4 of the Basic Agreement.
COPE	343	USW	26	The employer agrees as far in advance as possible before the installation of equipment which will affect employment status, to meet and discuss with the union committee any technological changes and to provide the committee with data regarding the proposed installation.
Unifor	444	Windsor Casino	10.19	Where new technology is to be introduced into the Casino, the “JHSC” will be given the opportunity to review the technological changes and to make recommendations with respect to ergonomic concerns.
IAM		Prescribed Language		Establishment of a committee appointed to address technological change: a) The parties recognize the value of holding regular meetings at the business level to discuss the state of the business and future plans that may impact employees represented by the union. b) The parties agree to meet X times to meet on a confidential basis to discuss development and potential initiatives which may significantly impact the workplace and members of the bargaining unit. Discussions will involve identifying sites/locations that are at risk of major change or closure. c) The Committee shall consist of an equal number of union and employer representatives, each approved by their

				respective organizations. d) The Committee will also be involved in decisions involving any proposed pilot projects, with the employer sharing details of the pilot, and the possibility of modifications to the collective agreement. The details of the pilot shall be set in writing, and approved by a Grand Lodge Rep or Directing Business Representative (DBR) on behalf of the union, and the equivalent of a DBR on the employer's side. Any implementation of a pilot project will not result in the layoff of employees or the reduction of pay of employees assigned to a pilot project that the company will pay for costs such as training. A pilot project can be terminated at any time, by either party with 30 days' notice. Changes and or modifications resulting from technological change include affecting the terms, conditions and security of employment for members of the bargaining unit. e) Before an initiative can be implemented, the employer must advise the union 12 months in advance of the proposed restructuring initiative, and provide updates as new developments arise. The employer must provide a detailed description and documentation of the proposed project initiative. f) The employer shall begin investing in a training fund based on the number of workers that will be trained as a result of technological change to ensure that all training is done during work hours and without cost to the employer. The employer must provide the following information; - The number of employees affected - The number of employees facing job loss - The number of employees to be displaced/transferred - Define a time frame in which job losses, transfers, and displacements are to occur - The kind of automated equipment or specifics of the technological change being contemplated and the department areas affected - The nature of the change - All other relevant information relating to anticipated effects on employees

Table A4
Provisions Regarding Commitment to Negotiate

Union	Local	Employer	Article	Summary / Clause
COPE	397	ATU Local 583	125.1	In the event of proposed technological changes such as the introduction of office machinery, the Employer agrees to discuss with the Union representatives, such changes and further agrees to offer employment to his present Employees before hiring from the outside market.
BCGEU		BC Buildings Corporation	23	If the Corporation and the Union fail to reach agreement in Article 23.2, the matter shall be referred to Step Three (3) of the Grievance/Arbitration Procedure of this Agreement. Further, if the matter is referred to Arbitration it shall be to an Arbitration Board unless the parties mutually agree to a single arbitrator.
Unifor		Bell Canada Communic'ns Sales Employees	29	The parties agree that they will continue the process of consultation in force since 1953 in order to assist employees affected by any technological change to adjust to the effects thereof and that, therefore, Sections 52, 54 and 55 of the Canada Labour Code shall not apply during the term of this Agreement.
Brandon University Faculty Assoc.		Brandon University	27.8	The Parties recognize that technological change may affect the environment within which the professional duties and responsibilities of Members are undertaken. Accordingly, the Parties agree that a Technology Review Committee shall be established to make recommendations, when requested to do so by either Party, regarding changes in technology (hardware and software). Prior to the implementation of such technological change, the Employer shall notify BUFA in writing of the proposed change. The Technology Review Committee shall consist of three (3) persons representing each Party. Quorum for meetings of the Technology Review Committee shall be four (4) members, providing that at least two (2) members from each Party are present. The Chair shall alternate from meeting to meeting, between the Parties, and retain voting rights. Recommendations of this Committee must be submitted to the Employer within thirty (30) calendar days after the notice of the proposed change, or such further period as the Parties may mutually agree. If no such timely recommendation is submitted, the Employer is free to implement the proposed change. Minority, as well as majority, recommendations may be submitted.
USW	7085	Brunswick Smelter	20.04	After notification of the proposed technological change, the Company and Union representatives will meet at a mutually agreed time for the purpose of discussing the probable effects of the technological change on the employees involved. Other meetings if necessary will be held with the minimum delay prior to commencing the technological change to review the specific application of this programme for employees who may be eligible for assistance benefits.
CUPW		Canada Post	29.05	Where the Corporation has notified the Union of its intention of introducing a technological change, the parties undertake to meet within the next fifteen (15) calendar days to hold constructive and meaningful consultations in an effort to reach agreement on solutions to the problems arising from this change.
CUPW		Canada Post	29.06	Agreements reached between the parties under this article shall receive the written approval of the authorized national representatives of the parties.
CUPW		Canada Post	29.07	Where the parties do not reach agreement within forty-five (45) calendar days after the date on which the Union has received notification from the Corporation of its intention to introduce a technological change, and various matters remain unresolved in spite of the efforts of the parties, the parties shall refer such matters to an arbitrator. To this end, the parties shall, in their request for the appointment of the arbitrator, specifically state the matters on which they do not agree and which require the intervention of the arbitrator.
CUPW		Canada Post	29.08	Any agreement concluded between the parties under this article or any decision handed down by the arbitrator under this article shall have the same effect as the provisions of the existing collective agreement and shall be subject to the grievance procedure, up to and including arbitration.

CUPW		Canada Post	29.09 / 29.10	If the parties cannot mutually agree on the selection of an arbitrator, the parties will request the Minister of Labour to appoint an arbitrator. The arbitrator shall commence his or her work within fourteen (14) calendar days after the date on which he or she is chosen by the parties, or the request of the parties to appoint an arbitrator is submitted to the Minister of Labour. The arbitrator shall examine and make decisions on only those matters specifically listed in clause 29.07. The arbitrator shall present his or her report not later than forty-five (45) calendar days after the date on which the parties have chosen the arbitrator or have submitted their request to the Minister of Labour. The report of the arbitrator shall be binding on both parties.
CUPW		Canada Post	29.12	It is understood that all the provisions of this collective agreement shall fully apply at the time of the application or following the application of a technological change and in regard to all new situations created by or following the application of a technological change, unless a written and specific understanding is reached by the parties for amending this collective agreement.
PSAC		Canadian Food Inspection Agency	23.06	As soon as reasonably practicable after notice is given under clause 23.04, the Employer shall consult meaningfully with the Union concerning the rationale for the change and the topics referred to in clause 23.05 on each group of employees, including training.
Capilano University Faculty Assoc.		Capilano University	14.5	Where the University has notified the Union of its intention of introducing a technological change, the parties undertake to meet within the next thirty (30) days and to hold constructive and meaningful consultations in an effort to reach agreement on solutions to the problems arising from this intended change and on measures to be taken by the University to protect the employees from any adverse effects. The University and Union agree to bargain in good faith on all aspects of the intended change.
Capilano University Faculty Assoc.		Capilano University	14.6 / 14.7 / 14.8	Where the parties agree to appropriate solutions to the problems arising out of intended technological changes, the solutions shall be prepared as a Letter of Agreement between the parties and such Letters of Agreement shall have the same effect as the provisions of the existing Collective Agreement and shall be subject to the grievance procedure, up to and including arbitration. FAILURE TO AGREE Where the parties do not reach agreement within sixty (60) days after the date on which the Union has received notification from the University of its intention of introduction of a technological change, and various matters, including compensation in the event of reduction, remain unresolved, the parties shall refer such matters to arbitration within twenty-one (21) calendar days of failure to agree. EFFECT OF DISPUTE RESOLUTION ON INTRODUCTION OF TECHNOLOGICAL CHANGE Technological change shall not be introduced by the University until the matter is resolved by agreement or arbitration.
Canadian Media Guild		CBC	49	Parties will meet to discuss options, and possible alternatives including retraining and including reassignment or relocation. Job posting provisions do not apply in relation to reassignment or relocation
Unifor	899	CFRN-TV and CFCN-TV	25	Upon receipt of such notice by the Union, the parties shall arrange a meeting within three (3) weeks for the purpose of conducting discussions relating to technological change. This time period may be extended by mutual agreement.
BCGEU		College Support	24	Where the Employer intends to make a technological change that: is directly related to the introduction of that equipment or material that significantly changes the character of the work to be performed or changes the number of Employees; and/or alters significantly the basis upon which the Collective Agreement was negotiated, it shall give three (3) months' notice in writing to the Union of the technological change, and the Employer and the Union shall, within fourteen (14) days of the date of the notice, commence collective bargaining for the purpose of reaching agreement as to the adjustment to the

				effects of the technological change and in what way, if any, the Collective Agreement should be amended. Technological change shall not include normal layoffs resulting from a decrease in the amount of work to be done.
Belleville Profess'nl Fire-fighters Assoc.		Corporation of the City of Belleville		If agreement has not been reached within 15 days after disclosure by the CORPORATION of the effects of the change or changes on any employee, either party may submit any outstanding issue to a Board of Arbitration which shall be constituted in a manner provided for by Section 53 of the Fire Protection and Prevention Act. The time limits provided in Section 53 shall apply. The Board of Arbitration shall have full remedial powers to deal with any unresolved issues.
ATU		Corporation of the City of Peterborough		When the Corporation introduces new technology to the workplace, the Corporation will meet with the Union to explain how this technology interacts with the Union.
Emily Carr Faculty Assoc.		Emily Carr University of Art & Design	36	Where the University has notified the Faculty Association of its intention of introducing a technological change, the Parties will undertake to meet within the next thirty calendar days and to hold constructive and meaningful consultations in an effort to reach an agreement on solutions to the problems arising from this intended change and on measures to be taken by the University to protect Regular Faculty Members from any adverse effects. The University and Faculty Association agree to bargain in good faith on all aspects of the intended change.
Emily Carr Faculty Assoc.		Emily Carr University of Art & Design	36	Where the Parties agree to appropriate solutions to the problems arising out of intended technological changes, the solution shall be prepared as a Letter of Agreement between the Parties. Such Letter of Agreement shall have the same effect as the provisions of the existing Collective Agreement and shall be subject to the grievance procedure, up to and including arbitration. Where the Parties do not reach an agreement within sixty calendar days after the date in which the Faculty Association has received notification from the University of its intention of introduction of a technological change, and various matters, including compensation in the event of reduction, remain unresolved, the Parties shall refer such matters to arbitration within twenty-one calendar days of failure to agree. Technological change shall not be introduced by the University until the matter is resolved by agreement or arbitration.
Unifor	707	Ford of Canada	Appendix J Apprenticeship Plan	In the event the layoff is due to unusual circumstances, including, but not confined to: a transfer or discontinuance of an operation, major technological developments, the elimination or consolidation of classifications, the discontinuance of a shift, or a drastic reduction in the level of work resulting in a heavy reduction in the skilled work force; the parties shall mutually agree to an acceptable layoff and recall plan. Such a layoff plan may provide for reducing the ratio below one to ten, or for laying off all apprentices in a particular trade.
Unifor	707	Ford of Canada	Letter	The company agrees to advance discussions with local unions at locations planning the introduction of new or advanced technology so as to permit meaningful dialogue as to its impact, if any, upon skilled or non-skilled employees. Examples where advance discussions should take place are: a) the first introduction of a technology as compared to previously existing plant technology; b) introduction of a new, more advanced generation of existing technology having a significant impact on the workforce; and c) introduction of a new application of existing technology which has a significantly different impact on the workforce. The parties at each location will determine the persons to be responsible and involved in the discussions. Included among the information to be provided for discussion is a description of the technology involved, the equipment being introduced, its intended use, the anticipated installation date and the extent, if any, to which such technological changes may affect the size of the workforce.
Unifor	707	Ford of Canada	Letter	...Finally, the parties agreed that a cooperative attitude towards continued technological progress would be enhanced through the establishment of a regular communication forum that encourages open and meaningful dialogue between

				the parties. Accordingly, the company agrees to meet with the Ford National Bargaining Council once per year unless otherwise agreed. The purpose of these meetings will be to review and discuss the development of new technology at the corporate level and its possible impact upon the scope of the bargaining unit. As necessary and appropriate, other matters concerning new or changed technology referred by local unions or by local managements may also be discussed.
PSAC		Hay River Health and Social Services Authority		Where the Employer has notified the Union that it intends to introduce a technological change, the parties undertake to meet and to hold constructive and meaningful consultations in an effort to reach agreement on solutions and administrative procedures to deal with problems arising from the change.
Assoc. of Unions		Health Services and Support – Facilities Subsector	17	The Government, through the Deputy Minister of Health and HEABC, will arrange a meeting on an annual basis between the Leadership Council and the leadership of the FBA. The purpose of such an annual meeting will be to discuss, on a confidential basis, developments and potential initiatives which significantly affect the health sector and which may have an impact on the members of the FBA. Such meetings will be timed to coincide with budget and planning cycles. Each Health Authority/Providence Health Care will arrange a meeting two times a year between the leadership of the Health Authority/PHC and the leadership of the FBA. The purpose of such meetings will be to discuss developments and potential initiatives which may arise within the Health Authority/PHC and which may have a significant impact on the membership of the FBA. Such meetings will be timed to coincide with budget and planning cycles.
Assoc. of Unions		Health Services and Support – Facilities Subsector	17	After commencement of the consultation process, the Union will be provided an opportunity at the appropriate project level to discuss alternatives to the proposed restructuring initiative and/or options for impacted employees. Employers will give good faith consideration to any alternatives advanced by the Union, including return of service. In addition to any other options proposed by the Union, the Employer, at its discretion, may consider early retirement incentives, or voluntary recognition of the Union.
Assoc. of Unions		Health Services and Support – Facilities Subsector	17	Where a restructuring initiative would apply to two (2) or more Employers covered by this Collective Agreement, or where services are consolidated and transferred between Employers, the matter shall be referred to the joint HEABC-FBA Alternate Service Delivery Committee (the "Committee") as soon as the restructuring initiative is proposed, and not less than one hundred twenty (120) calendar days before the proposed initiative may be implemented. The Committee will be comprised of four (4) representatives appointed by the FBA and four (4) representatives appointed by HEABC. The Committee may also bring in a reasonable number of subject matter experts in the work performed and/or the proposed restructuring initiative, as required. Where a restructuring initiative impacts multiple Union Bargaining Associations, the Committee may, by mutual agreement, meet with other Union Bargaining Associations. The Committee will be the forum for the discussion of alternatives to the proposed restructuring initiative and /or the options for impacted employees, including posting across Employers in the event additional consolidated services are transferred to another Employer. HEABC will give good faith consideration to the alternatives advanced by the FBA.
Assoc. of Unions		Health Services and Support – Facilities Subsector	17	Once the Employer makes a decision under the process set out in this provision, the FBA will be notified of the decision in writing. If the Employer makes a decision to proceed with the proposed restructuring initiative, the parties agree that they will move to the process set out in Article 17.03. Technological, automation and other types of initiatives will be communicated to the Union at the decision stage but before a decision has been finalized. The Union may discuss and propose alternatives and other suggestions.
USW	7619	Highland Valley Copper	21.01	Any dispute regarding the implementation of technological change shall commence at Stage Three of the grievance procedure.

USW	7619	Highland Valley Copper	21.03	New jobs created by technological change shall be evaluated in accordance with Article 15 sub section 15.03.
MoveUp COPE	378	IAMAW Lodge 140	17.01	The Employer and the Union shall enter into meaningful consultation regarding such technological and/or procedural changes prior to implementation.
Kwantlen Faculty Assoc.		Kwantlen University	6.05	Where the Employer has notified the Union of its intention to introduce a technological change, the parties shall meet within fifteen (15) days of the notice and shall endeavour to reach agreement on solutions to the problems, if any, arising from the intended technological change and on measures to be taken by the Employer to protect the faculty members from any adverse effects.
Kwantlen Faculty Assoc.		Kwantlen University	6.06 / 6.07 / 6.08	Agreements reached between the parties under Article 6.05 shall be concluded in writing and such agreement shall have the same effect as the provisions of the existing Collective Agreement. Grievances over the application, operation, or alleged violation of Article 6 shall commence at the level of the University President (see Article 17.02(g)). Technological change shall not be introduced by the Employer until the matter, including any question as to whether or not the change in dispute is in fact technological change, has been resolved by agreement under Article 6.06 or arbitration. Notwithstanding the foregoing, the Employer may introduce the technological change nine (9) months after the notice in Article 6.02 was given.
Unifor	250-A	Labatt Breweries, Edmonton	11.4	The Company will meet and discuss with the Union the redeployment of the affected regular employees in accordance with the provisions of the Collective Agreement and the provisions as set out in the Guaranteed Wage Plan (GWP); and, in so doing, shall designate the employees to be indefinitely laid off
SEIU	2	Labatt Breweries, London	29	The Company will meet and discuss with the Union the redeployment of the affected regular employees in accordance with the provisions of the collective agreement and the provisions as set out in the Guaranteed Wage Plan (GWP); and, in so doing, shall designate the employees to be indefinitely laid off
BCGEU		Libraries	23	Upon receipt of a notice of technological change pursuant to Clause 23.2(a), the Labour-Management Committee, established pursuant to Clause 7.5, shall meet to consult on the impact of the proposed change.
Cdn Union of Brewery & General Workers, NUPGE	325	Molson Coors, Toronto	40.01	The Company will meet and discuss with the Union the re-deployment of the affected regular employees in accordance with the provisions of the Collective Agreement and the provisions as set out in the Guaranteed Wage Plan (G.W.P.); and, in so doing, shall designate the employees to be indefinitely laid off.
UFCW	378W	Pepsico	14.02	On receipt of notice from the company of technological change, the company and union shall meet for purposes of discussing a workplace adjustment plan.
Canadian Assoc. of Profess'nl Emply'ees		Treasury Board (Translation)	33.05	As soon as reasonably practicable after notice is given under clause 33.03, the Employer shall consult with the Association concerning the effects of the technological change referred to in clause 33.03 on each group of employees. Such consultation will include but not necessarily be limited to the following: a. The approximate number, class and location of employees likely to be affected by the change. b. The effect the change may be expected to have on working conditions or terms and conditions of employment on employees.
COPE	343	Unifor	20	In the event of new proposed technological changes, including but not limited to, the introduction of computers, computer software or automated equipment of any sort, Unifor agrees to meet with the Union to discuss such changes.

IAM		Prescribed Language		Labour-Management Meetings on Changes Once the union has been notified of technological changes, the parties agree to meet within 15 calendar days of the notice to hold constructive and meaningful consultations to reach an agreement on solutions that arise as a result of technological change. Agreement between The Parties Once an agreement is reached, the agreement will be signed by national representatives of each of the parties. Disagreement between The Parties Where the parties do not reach an agreement within 60 calendar days following the original notice of technological change, the parties reserve the right to refer the matter to an arbitrator. In requesting services of an arbitrator, the parties will outline outstanding issues and those requiring intervention of a third party. During this period, all implementation initiatives shall be put on hold. Right to Grieve Any agreement reached by the parties, or any decision rendered by an arbitrator shall have the same effect as the provisions of the existing collective agreement, and shall be subject to the grievance procedure, up to and including arbitration.

Table A5
Adjustment Provisions

Union	Local	Employer	Article	Summary / Clause
COPE	397	ATU Local 583	125.1	In the event of proposed technological changes such as the introduction of office machinery, the Employer agrees to discuss with the Union representatives, such changes and further agrees to offer employment to his present Employees before hiring from the outside market.
BCIT FSA		BCIT	2.50	In the event of a reduction in the number of Regular Employees as a result of technological change, the procedures specified in Article 18 shall be followed.
BCIT FSA		BCIT	25	An Employee shall not be relocated or reassigned within the Institute as a result of technological change without the Employee's written consent."
ILWU - Canada		B.C. Maritime Employers Association	14.00	Re-location of Union members of the work force, who may be affected by technological change or by the shift of work to other areas covered by this Agreement, to places where it may be possible to employ them, as required by the Association.
ILWU - Canada		B.C. Maritime Employers Association	14.00	Voluntary early retirement where an employee qualifies in accordance with the Waterfront Industry Pension Plan.
ILWU - Canada		B.C. Maritime Employers Association	14.00	Retirement at age 62 by employees who qualify under Supplementary Pension Plan may be required by the association. Retirement of an employee at age 62, who is fully qualified under the Supplementary Pension Plan, may be required by the Association in the event of technological change or a decline in work opportunity.
USW	7085	Brunswick Smelter	20.04	If the change in operation does not result in a reduction of employees working in the area where the change takes place, or if it results in job combination and new job classifications created, senior employees who are performing these jobs shall have preference to be trained on the new job. In such cases, the jobs involved will not be posted.
USW	7085	Brunswick Smelter	20.04	To be eligible for assistance benefits under this programme, an employee must: 1. Have completed his probationary period. 2. Be displaced from his regular job due to a technological change.
USW	7085	Brunswick Smelter	20.04	When an employee is displaced from his regular job through the application of the technological change programme he will have the opportunity to: 1. Displace another employee according to Section 9.04 (a). 2. Be eligible for training on a production job provided he has the seniority to displace an employee in that job and provided that within that training period he can meet the job specifications and be trained to perform the job chosen. The maximum training period allowable under this clause is six (6) months. After successful completion of the training programme and provided he fills the requirements for the job, he will displace the most junior employee in that job according to Section 9.04 (a).
OPSEU		CAAT	30.00	Following the effective date of the technological change a reduction of employees resulting therefrom shall be carried out pursuant to 27.05 (vii) and 27.06.
CUPE	1169	Calgary Public Library	18.00	No permanent full-time Employee shall have their employment terminated by the Board for reasons of technological change and/or the contracting out of any process or procedure to companies or individuals offering this type of service.
Camosun College Faculty Assoc.		Camosun College	29.00	The Employer agrees to take all reasonable steps so that an Employee shall not lose employment because of technological change. Every reasonable effort will be made by the Employer to utilize normal turn-over of Employees, to the extent that it arises during the period in which changes occur, to absorb Employees displaced because of such change or changes. However, when necessary to reduce staff, it will be done as outlined in Clause 3 of the Agreement.

CUPW		Canada Post		(e) Relocation For greater certainty, it is understood that the provisions of Article 53 shall apply when positions are rendered surplus to requirements as a result of technological changes.
CUPW		Canada Post	29.11	In order to render effective the principle established in clause 29.02, the Corporation agrees to the following provisions, which are designed to protect all employees covered by this collective agreement: sub articles follow
CUPW		Canada Post	29.11	(a) Guaranteed Employment Except as otherwise provided in this collective agreement, the Corporation guarantees continuous employment to all employees covered by the agreement until the signing of the next collective agreement between the parties.
CUPW		Canada Post	29.11	(b) Guaranteed Classification For the period of continuous employment guaranteed in the previous paragraph, an employee shall retain his or her classification and the corresponding wage scale, regardless of any reassignment to other duties or any reclassification of the duties performed by the employee at a lower level. The foregoing notwithstanding, an employee may accept a voluntary reassignment to another classification, but shall retain such new classification and the corresponding wage scale from the date of voluntary reassignment and for the duration of this collective agreement.
CUPW		Canada Post	29.11	(f) Displacement When an employee is displaced permanently from a working place to another, he or she shall be entitled to a lump sum compensation of four hundred dollars ($400) or eight hundred dollars ($800) depending on whether the distance between his or her residence at the time of the transfer and his or her new working place has increased by three point two (3.2) or six point five (6.5) kilometres, (two (2) or four (4) miles), respectively.
Capilano Univ'y Faculty Assoc.		Capilano University	14.9	In the event of a reduction in the number of regular employees in consequence of technological change, such reduction shall be governed by the reduction sequence provisions of this Agreement contained in 11.8. During the period of employment between notice of reduction and reduction taking effect (as provided for 11.8), an employee shall retain his/her placement on the salary scale and level of earnings regardless of any transfer or reduction of duties performed by the employee.
Capilano Univ'y Faculty Assoc.		Capilano University	14.1	An employee cannot be relocated or reassigned within the University as a result of technological change without the written consent of the employee.
Canadian Media Guild		CBC	49.00	Six weeks notice to employee and Staff Redundancy clause applies.
Civic Service Union	52	City of Edmonton	11.02	An employee classified as a permanent employee shall be considered displaced by technological change when their services shall no longer be required as a result of a change in plant or equipment or a change in a process or method of operation diminishing the total number of employees required to operate the department in which they are employed.
Civic Service Union	52	City of Edmonton	11.02	Permanent employees so affected will be given reasonable advance notice in order that they may take advantage of all available opportunities commensurate with their abilities.
Civic Service Union	52	City of Edmonton	11.02	The City agrees that, wherever possible, no employee shall lose employment because of technological change; however, whenever it is necessary to reduce staff, it will be done in accordance with the layoff procedures outlined in this Agreement.
London Profess'nl Fire-fighters		City of London		No employee covered by this Agreement shall suffer loss of his/her employment as a result of the exercise by the Corporation of its right to introduce or implement technological change, mechanization change, or changes in operating methods or organization, provided the said employee was in the employ of the Corporation at the time the aforementioned notice was given by the Corporation.

Assoc.				
CUPE	1289, 569	City of St. John's (NL)	25.03	An employee who is displaced from their job by virtue of technological change or improvements or statutory or regulatory changes requiring different qualifications to perform the work will be given the opportunity to fill other vacancies for which they are qualified, according to their seniority or have the option of exercising their displacement rights in accordance with Article 13.
CUPE	1289, 569	City of St. John's (NL)	25.01	No regular employee shall be dismissed by the Employer because of mechanization or technological or other changes or statutory or regulatory changes requiring different qualifications to perform the work.
CUPE	569	City of St. John's (NL) Outside Workers	29.10	An employee who is displaced from a job by virtue of technological change or improvements or statutory or regulatory changes requiring different qualifications to perform the work will be given the opportunity to fill other vacancies for which he/she is qualified, according to their seniority
CUPE	569	City of St. John's (NL) Outside Workers	29.10	No additional employee(s) shall be permanently hired by the Employer to replace any employee(s) affected by the technological change until the employee(s) already working and affected by the change have been notified and allowed a training period to acquire the necessary knowledge or skill for the trainee(s) to retain their employment.
CUPE	569	City of St. John's (NL) Outside Workers	29.1	No additional employee(s) shall be permanently hired by the Employer to replace any employee(s) affected by the technological change until the employee(s) already working and affected by the change have been notified and allowed a training period to acquire the necessary knowledge or skill for the trainee(s) to retain their employment.
CUPE	569	City of St. John's (NL) Outside Workers	29.1	No regular employee shall be dismissed by the City because of mechanization or technological or other changes or statutory or regulatory changes requiring different qualifications to perform the work.
Toronto Profess'nl Fire-fighters Assoc.		City of Toronto		The City shall endeavor to place in other positions any employees of the Toronto Fire Services coming within the 3888 Unit who may be displaced by technological improvements in the operation of the said Services. No such employee who has completed the probationary period will be laid off or have his/her employment terminated by reason thereof. No employee shall suffer any reduction of salary as a result of such change.
MoveUp COPE	378	Coastal Community Credit Union	17.3	In cases where the retraining of an employee is not practical, the employee shall elect: a) to exercise their bumping rights in accordance with Article 13.1; b) to be placed on the recall list in accordance with Article 13.3; c) to terminate employment.
MoveUp COPE	378	Coastal Community Credit Union	14.9	A full-time regular employee, bumping into a part-time position as a result of a lay-off as outlined in Article 13 or technological change as outlined in Article 17, shall retain their right of recall as outlined in Article 13, Section 4.
College of the Rockies Faculty Assoc.		College of the Rockies	13.20	In the event of intended or actual regular employee reduction as a result of technological change, the reduction provisions outlined in Articles 13.1 shall apply."
BCGEU		College Support	24.00	An Employee who is displaced from his/her job by virtue of technological change will be given the opportunity to fill other vacancies.

Comm'ty Social Services Bargaining Assoc. (includes BCGEU)		Community Social Services	23.00	A regular employee who is displaced from their job because of technological change will be considered to be laid off according to Article 13 (Layoff and Recall).
Comm'ty Social Services Bargaining Assoc. (includes BCGEU)		Community Social Services	23.00	No additional employees required because of technological change will be hired by the Employer until the employees affected are notified of the proposed technological change and allowed a training period to acquire the necessary knowledge or skill for retaining their employment.
USW	9042	Cummins Eastern Canada	Letter #11	Right to displace employees with lower seniority: An employee, who is rendered redundant or displaced from his/her job as a result of technological change, shall have the right to displace employees with less seniority provided he/she has the required threshold qualifications and ability to immediately perform the required work without trial or training. Threshold is defined as the minimum requirements necessary for an employee to perform the basic functions of the position.
Douglas College Faculty Assoc.		Douglas College	10.05	In the event of a reduction in the number of regular faculty members as a consequence of technological change, such reduction shall be governed by the procedures for obsolescence/redundancy set out in Article 13.03.
NAPE		Eastern Health -Xray staff, support staff	27, 43	No employee will be laid off because of technological change or new method of operation unless such employee refuses, without good reason, to avail of additional training provided to equip the employee with the new or greater skills required by the technological change or new method of operation.
NAPE		Eastern Health -Xray staff, support staff	27, 43	An employee who is displaced from his/her job by virtue of technological change or new method of operation will be given the opportunity to fill other vacancies according to seniority, ability and qualification.
NAPE		Eastern Health -Xray staff, support staff	27,43	No additional employee(s) shall be hired by the Employer to replace any employee(s) affected by the technological change or new method of operation, until the employee(s) already working, and affected by the change have been notified and allowed a training period to acquire the necessary knowledge or skill for the trainee(s) to retain their employment, as provided for in clause 27.06.
NAPE		Eastern Health -Xray staff, support staff	27, 43	An employee who is displaced from his/her job by virtue of technological change or new method of operation will suffer no reduction in normal earnings, unless such employee has refused, without good reason, to avail of additional training provided to equip the employee with the new or greater skills required to prevent displacement.
NAPE		Eastern Health -Xray staff, support staff	27, 43	No additional employee(s) shall be hired by the Employer to replace any employee(s) affected by the technological change or new method of operation, until the employee(s) already working, and affected by the change have been notified and allowed a training period to acquire the necessary knowledge or skill for the trainee(s) to retain their employment, as provided for in clause 27.06.

Emily Carr Faculty Assoc.		Emily Carr University of Art & Design	36	In the event of a reduction in the number of Regular Faculty Members as a consequence of technological change, such reductions shall be governed by the reduction sequence provisions of this Agreement contained in Article 35.02.
Emily Carr Faculty Assoc.		Emily Carr University of Art & Design	36	A Regular Faculty Member cannot be relocated or reassigned within the University as a result of technological change without the written consent of the Faculty Member.
Emily Carr Faculty Assoc.		Emily Carr University of Art & Design	36.00	Should a Regular Faculty Member not be relocated, reassigned, or retrained, advance notice of termination shall be given as follows: Regular Faculty Members with less than six years of continuous employment with the University will be given a minimum of six months advance notice of the date of their termination. Regular Faculty Members with less than eight years of continuous employment with the University and more than six years will be given a minimum of eight months advance notice of the date of their termination. Regular Faculty Members with more than eight years of continuous employment with the University will be given a minimum of nine months advance notice of the date of their termination. Where the University fails to give the required notice of termination to an eligible Faculty Member under Article 36.11.1 it may give the Faculty Member a shorter advance notice of the date of termination, provided it continues payment after the basis until the applicable notice period is met by any combination of advance notice, and the monthly base salary payments.
Emily Carr Faculty Assoc.		Emily Carr University of Art & Design	36	A Regular Faculty Member cannot be relocated or reassigned within the University as a result of technological change without the written consent of the Faculty Member.
Unifor	707	Ford of Canada	Appdx J	In the event the layoff is due to unusual circumstances, including, but not confined to: a transfer or discontinuance of an operation, major technological developments, the elimination or consolidation of classifications, the discontinuance of a shift, or a drastic reduction in the level of work resulting in a heavy reduction in the skilled work force; the parties shall mutually agree to an acceptable layoff and recall plan. Such a layoff plan may provide for reducing the ratio below one to ten, or for laying off all apprentices in a particular trade.
BCGEU		Government of the Province of British Columbia	23.00	To absorb those regular employees who are not assigned by the Employer to work with the new technology or who are displaced because of such technological change, the ministry will endeavour to utilize normal turnover of employees within the ministry geographic location in which the change occurs, to the extent that turnover occurs during the period in which a technological change is being implemented. When necessary to reduce staff due to technological change, it will be done as provided for in Article 13-Layoff and Recall or Article 31-Auxiliary Employees, as appropriate.
BCGEU		Health Services and Support – Community Subsector	13.00	Any employee classified as a regular employee shall be considered displaced by technological change when his/her services shall no longer be required as a result of a change in plant or equipment, or a change in a process or method of operation diminishing the total number of employees required to operate the department in which he/she is employed. Where notice of displacement or layoff actually results in a layoff, and prior to a layoff becoming effective, a copy of such notice shall be provided to the designated union representative within 24 hours of the time it is provided to the employee.
Assoc. of Unions		Health Services and Support –	17.00	After commencement of the consultation process, the Union will be provided an opportunity at the appropriate project level to discuss alternatives to the proposed restructuring initiative and/or options for impacted employees. Employers will give good faith consideration to any alternatives advanced by the Union, including return of service. In addition to

		Facilities Subsector		any other options proposed by the Union, the Employer, at its discretion, may consider early retirement incentives, or voluntary recognition of the Union.
Assoc. of Unions		Health Services and Support – Facilities Subsector	17.00	During the consultation process, the Employer shall not lay off impacted employees, however, where the parties are aware that displacement(s) are likely to occur, notice pursuant to Article 17.06.01 may run concurrently with the consultation process. Displacement options meetings cannot occur until the conclusion of the consultation process.
Assoc. of Unions		Health Services and Support – Facilities Subsector	17.00	Where the restructuring initiative involves consolidating or relocating a service between sites within the same Employer, the Employer shall provide one hundred-twenty (120) calendar days' notice. A regular employee required to relocate to another worksite may decline the transfer and elect to receive displacement notice if the employee has a practical reason not to work at the new site.
Assoc. of Unions		Health Services and Support – Facilities Subsector	17.00	Any employee classified as a regular employee shall be considered displaced by technological change when her/his services shall no longer be required as a result of a restructuring initiative, including a change in plant or equipment, or a change in a process or method of operation diminishing the total number of employees required to operate the department in which she/he is employed. Displaced regular employees shall have one (1) of the following options: 1. Opportunity to select a vacancy, including those created as a result of an Employer canvass of employees willing to voluntarily sever their employment. Where such departure will result in the retention of an employee who would otherwise be laid off, (the employee who voluntarily severs their employment is entitled to severance as set out in Article 43.02 and 43.03). The Employer, after consultation with the Union, will retain the discretion to determine the scope of the canvass. 2. Posting pursuant to Article 16.03. 3. Bumping pursuant to Article 17.04 Employees in a consolidated service as per Appendix X who have no option to bump within their worksite, shall have the option to register with any Health Authority/PHC within their worksite, for the purpose of applying for vacancies as an internal applicant for the duration of their layoff notice period. Seniority with the displacing Employer shall apply to postings as per Article 14.01 Selection Criteria. Where the employee has seniority with both employers, the highest number of seniority hours shall be applied. Once an employee accepts a posting under this provision there shall be a seamless transfer of employment including service and seniority with no interruption in pay and benefits. Employment with the displacing Employer shall be terminated, and any other displacement options under 17.03 shall no longer be available. An employee who is unsuccessful in their qualifying period, and their layoff notice has not yet expired, shall be reinstated to their displacing employer and shall be entitled to resume bumping and other displacement options under this article. An employee who is unsuccessful in their qualifying period after their layoff notice has expired shall be registered on a casual list with the new employer. If within thirty (30) days of the end of their layoff notice period, the employee has not obtained a regular status position, they shall be entitled to resume bumping options under Article 17.04 with the displacing Employer. The employee will continue to be considered an internal applicant for vacancies at the Health Authorities/PHC at which they have registered until the end of their layoff notice period.

				4. A regular employee who has no option under 1, 2, or 3, above, shall be entitled to apply for an unfilled regular on-going vacancy across any Health Authority/PHC or Health Sector Employer. (a) Benefits: a laid-off regular employee who successfully posts into a regular on-going vacancy will be entitled to coverage under the medical, dental, and extended health care plans effective the first day of the month following employment. (b) Relocation Expenses: an employee who accepts a regular on-going position in the Health Sector in a location that is more than fifty (50) kilometres from his/her previous worksite and who chooses to relocate will be entitled to relocation expenses of five hundred dollars ($500) for a move of up to two hundred and forty (240) kilometres and eight hundred dollars ($800) for a move of beyond two hundred and forty (240) kilometres. Relocation expenses must be claimed from his/her former Employer within six (6) months of the start date of the regular position and must be supported by receipts. 5. Register for work under the Addendum - Casual Employees on one casual list in any Health Authority/PHC or Health Sector Employer provided the employee is qualified to perform and capable of performing the work. (a) An employee who registers under the Addendum – Casual Employees shall be eligible to apply for regular on-going vacancies. (b) A laid-off regular employee who registers for work under the Addendum – Casual Employees has the option to enroll in the health and welfare benefit plans as per Section 14 of the Addendum without having to work one hundred and eighty (180) hours. (c) In addition, a laid-off regular employee who registers for work under the Addendum – Casual Employees will be entitled to access the benefits set out in Section 15 of the Addendum at the Health Authority/PHC or Health Sector Employer.
Assoc. of Unions		Health Services and Support – Facilities Subsector	17.00	Port Service & Seniority: a laid-off regular employee who successfully posts into a regular on-going vacancy, or registers for work under the Addendum – Casual Employees prior to the expiry of their recall period under the process in this article shall port her/his service and seniority to the receiving Employer. The ability to port is not available to an employee who receives an Enhanced Severance Allowance under paragraph 7, above. Re-employment with Previous Health Sector Employer: a regular employee laid off as a direct result of a restructuring initiative, who successfully applies on a posting for a regular on-going position at his/her previous Health Sector Employer within one (1) year from the effective date of the end of the recall period will have his/her previous health sector service and seniority restored. If the employee received a Severance Allowance or elected to waive the recall period to receive Severance Allowance, Article 43.02 (c) of the Facilities Subsector Collective Agreement will continue to apply. This provision will not apply to an employee who has ported service and seniority to another Health Sector Employer within one (1) year from the effective date of the end of the recall period.
Assoc. of Unions		Health Services and Support – Facilities Subsector	17	Port Service & Seniority: a laid-off regular employee who successfully posts into a regular on-going vacancy, or registers for work under the Addendum – Casual Employees prior to the expiry of their recall period under the process in this article shall port her/his service and seniority to the receiving Employer. The ability to port is not available to an employee who receives an Enhanced Severance Allowance under paragraph 7, above. Re-employment with Previous Health Sector Employer: a regular employee laid off as a direct result of a restructuring initiative, who successfully applies on a posting for a regular on-going position at his/her previous Health Sector Employer within one (1) year from the effective date of the end of the recall period will have his/her previous health sector service and seniority restored. If the employee received a Severance Allowance or elected to waive the recall period to receive Severance Allowance, Article 43.02 (c) of the Facilities Subsector Collective Agreement will continue to

				apply. This provision will not apply to an employee who has ported service and seniority to another Health Sector Employer within one (1) year from the effective date of the end of the recall period.
MoveUp COPE	378	IAMAW Lodge 140	17.3 17.4	In cases where the re-training of employees is not practical, or where other positions with the Employer are not available, the employee(s) shall elect for termination of employment or shall elect to be placed on the recall list. An employee on recall under this Article, shall receive all the benefits he/she had accrued during employment at the end of the recall period as set out in Article 14.05 or at such earlier time as he/she may elect to terminate. A specified extension of the recall period, where recall is applied under Article 17.03 above, may be mutually agreed by the employee and the Employer, subject to written approval by the union.
Kwantlen Faculty Assoc.		Kwantlen University	6.09	In the event of a reduction in the number of regular faculty members as a consequence of technological change, such reduction shall be governed by the procedures for lay-off and recall set out in Article 7.
Unifor	250-A	Labatt Breweries, Edmonton	11.40	During the first 30 days of notice period, the company will canvass employees eligible for special early retirement. If the eligible employees retire within 30 days, they will receive the Technological Change Bonus (TCB). The TCB will be determined by dividing the total amount of the separation pay entitlement of all the employees designated for indefinite layoff by the total number of employees so designated. If more employees opt for special early retirement, the TCB will not exceed number of jobs permanently displaced and TCB will be paid only to most senior.
SEIU	2	Labatt Breweries, London	Section 29	During the first 30 days of notice period, the company will canvass employees eligible for special early retirement. If the eligible employees retire within 30 days, they will receive the Technological Change Bonus (TCB). The TCB will be determined by dividing the total amount of the separation pay entitlement of all the employees designated for indefinite layoff by the total number of employees so designated. If more employees opt for special early retirement, the TCB will not exceed number of jobs permanently displaced and TCB will be paid only to most senior.
Langara Faculty Assoc.		Langara College	11.50	Faculty members potentially affected by the intended technological change shall be notified of the impending change by the College and advised of any agreements reached under Article 11.4 hereof.
USW		Marine Atlantic		The terms operational and organizational change shall not include normal reassignment of duties arising out of the nature of the work in which the employees are engaged nor to changes brought about by fluctuation of traffic or normal seasonal staff adjustments. In addition to all other benefits contained in this Agreement which are applicable to all eligible employees, the additional benefits specified in Articles 5.9 and 5.10 are available to employees who are materially and adversely affected by technological, operational or organizational changes instituted by the Company.
Sheet Metal Workers; Internat'l Assoc.	280	Maxam Metal Products (Production Workers)	22	In view of the possible impact on manpower and conditions of employment resulting from technological changes and automation, it is agreed that the Parties hereto utilize to the best advantage of the Company and the Employees all scientific improvements and establish a committee to be known as the Committee on Automation, consisting of equal representation by the Employer and the Unions. The Committee's duties shall be to investigate and submit recommendations on all aspects of automation, mechanization and new methods, and to include the following: training and retraining [and] alternate employment opportunities within the Company.
Sheet Metal Workers; Internat'l Assoc.	280	Maxam Metal Products (Production Workers)	22	Both Parties further agree to any further requirements stated m the Labour Relations Code on Technological Change.

Memorial Univ'y Faculty Assoc.		Memorial University	31.27	The provisions of Article 26 with respect to layoff and academic program redundancy do not apply to ASM-CFEs.31.28 For the purposes of this Article, "layoff shall mean the temporary cessation of employment of an ASM-CFE due to a reduction in the number of students, technological change, and/or a change in the programme.
Canadian Union of Brewery & Gen. Workers, NUPGE	325	Molson Coors, Toronto	40.01	During the first 30 days of notice period, the company will canvass employees eligible for special early retirement. If the eligible employees retire within 30 days, they will receive the Technological Change Bonus (TCB). The TCB will be determined by dividing the total amount of the separation pay entitlement of all the employees designated for indefinite layoff by the total number of employees so designated. If more employees opt for special early retirement, the TCB will not exceed number of jobs permanently displaced and TCB will be paid only to most senior.
Montreal Newspr. Guild, CWA Canada	30111	Montreal Gazette	8.13	The Employer agrees that every effort will be made to avoid layoffs and to accomplish necessary staff reductions through attrition.
Montreal Newspr. Guild - CWA Canada	30111	Montreal Gazette	8.13	Dismissal or layoff of employees whose jobs are not protected under the terms of section 8.13.1 above shall be made in accordance with the provisions of this Article governing layoffs for reasons of economy, including those provisions covering seniority in layoffs, bumping, rehiring list, voluntary resignations, temporary employees and freelancers. The notice and discussion requirements shall be those contained in section 8.13 above.
Montreal Newspr. Guild - CWA Canada	30111	Montreal Gazette	8.13	While the proposed organizational changes may take place before the expiration of the one (1) month notice period required by section 8.13 of this Article, there will be no layoffs of affected staff during this period.
Montreal Newspr. Guild - CWA Canada	30111	Montreal Gazette	8.12	Notwithstanding the generality of 8.03 of this Article, no regular employee shall lose employment because of technological change.
Montreal Newspr. Guild - CWA Cda	30111	Montreal Gazette	8.13	Notwithstanding the generality of 8.03 of this Article, no regular employee in the employ of the Employer prior to July 1st, 1984 shall lose employment because of organizational change.
Mount Royal Faculty Assoc.		Mount Royal University	4.14	An Employee may be declared redundant due to changes in curriculum, courses or programs, technological change, reduction in the Academic Unit, reorganization of work, insufficient enrolment, or upon an order or directive of the appropriate ministry that it is necessary to cancel courses of instruction.
NSCAD Faculty Union of		NSCAD University	29.09	The parties acknowledge that Technological Change may result in a reclassification of existing jobs.

Support Staff				
UFCW	175	Olymel, Bramalea	19.04	Where an employee has been laid off due to technological change, no new employee will be hired until the job has been posted, the employee on layoff has been notified (by mail to his last known address) and given an opportunity to bid for such position under the terms and conditions of the Collective Agreement.
CUPE		Participating Hospitals		Employees with one (1) or more years of continuous service who are subject to lay-off under conditions referred to above, will be given notice of the impending change in employment status at the earliest reasonable time in keeping with the notification to the Union as above set forth and the requirements of the applicable law
PEI Union of Public Sector Emplyees		PEI Department of Health		No additional employees shall be hired by the Employer until employees affected by the technological change have been notified of the proposed technological change and allowed a reasonable training period to acquire the necessary knowledge or skill to retain their employment.
UFCW	378W	Pepsico	14.02	If a regular employee should be displaced from his job by reason of a technological change in the Company's operations, and provided the employee has the necessary qualifications to perform the work available after a reasonable training period, the Company shall arrange for him to receive such training and the employee shall have the opportunity to exercise his seniority within the bargaining unit
BCGEU		Public Service - Devolved Government	23.00	Where notice of technological change has been given pursuant to Clause 23.2(a): (1) Regular employees who are assigned by the Employer to work with the new technology shall receive a period of training and familiarization. Employees involved in training under this clause shall receive their basic pay for the period of training. Where the employee cannot meet job requirements upon completion of the training and familiarization period, the employee shall be offered either the vacancy options, early retirement or severance pay provisions of Article 13—Layoff and Recall. To absorb those regular employees who are not assigned by the Employer to work with the new technology or who are displaced because of such technological change, the Ministry will endeavour to utilize normal turnover of employees within the Ministry geographic location in which the change occurs, to the extent that turnover occurs during the period in which a technological change is being implemented. When necessary to reduce staff due to technological change, it will be done as provided for in Article 13—Layoff and Recall or Article 31—Auxiliary Employees, as appropriate. For purposes of this article, "Technological Change" shall not include normal layoffs resulting from a reduction of the amount of work required to be done. Notwithstanding Clause 23.2(a), the parties recognize that there may be circumstances of statutory obligation where it is not possible to provide the notice set forth in this article. In such circumstances, notice shall be provided as soon as possible.
CUPE		Queen's University Library		An employee who is displaced from his/her regular position because of technological, organizational or operational change will suffer no reduction in normal earnings and shall remain employed in a position covered by this Collective Agreement.
Unifor		SaskTel		In the event permanent employees are declared surplus as a direct result of technological change, the Company will make every reasonable effort to ensure that no permanent employee on staff as of August 11, 1988, or who obtains two (2) years or more of service, is laid off as a result of technological change.

Selkirk College Faculty Assoc.		Selkirk College	12.00	If an employee laid off or displaced as a result of technological change is qualified and suitable for another vacant position within the bargaining unit, the employee will be given the right of first refusal to fill the position. The provisions of Article 5 will apply to any employee who is laid off as a result of technological change.
BCGEU		Sherwood House	23.00	This article will not interfere with the right of the Employer to make such changes in methods of operation as are consistent with technological advances in this industry. The purpose of the following provisions is to preserve job security and stabilize employment and to protect as many regular employees as possible from loss of employment. Any employee classified as a regular employee shall be considered displaced by technological change when their services shall no longer be required as a result of a change in plant or equipment, or a change in a process or method of operation diminishing the total number of employees required to operate the facility in which they are employed. Employees affected by technological change will be given reasonable notification in advance and allowed a training period to acquire the necessary skills for retaining employment within the facility, consistent with their seniority and ability. The Employer agrees that, whenever possible, no employee shall lose employment because of technological change, utilizing normal turnover of staff to absorb such displaced employees. However, when necessary to reduce staff, it shall be done in accordance with Article 13, Layoff and Recall.
TWU		Telus		The Company agrees to inform the Union of any contemplated lay-offs of Regular employees, giving twelve (12) months' notice where the lay-off is necessitated through technological change as defined in the Canada Labour Code. Affected employees will receive two (2) weeks' additional notice upon expiry of the foregoing notice.
TWU		Telus		An employee who has been downgraded as a result of technological change will be given the first opportunity to qualify for a position in their former classification or equivalent prior to outside recruitment.
TWU		Telus		No regular employees who attain two years of regular service will lose their employment as a result of technological change.
Thompson Rivers Univ'y Faculty Assoc.		Thompson Rivers University	9.30	Should the University intend to introduce a technological change which might result in displacement or reduction of employees, the University will give the Union and the affected employees at least three (3) months notice in writing.
Thompson Rivers Univ'y Faculty Assoc.		Thompson Rivers University	9.30	If an employee displaced by technological change is qualified and suitable for another available position within the University, he/she shall be given the opportunity to fill the position.
Thompson Rivers Univ'y Faculty Assoc.		Thompson Rivers University	9.3	No regular employee will be laid off as a direct result of the introduction of distributed learning or education technology.
Trent Univ'y		Trent University	IV.10	There shall be no reduction in employment for a librarian member as a result of automation or other technological change.

Faculty Assoc.				
COPE	343	Unifor	20.00	Unifor agrees that no employee will be laid off as a direct result of technological change taking place throughout the office.
Univ'y of Fraser Valley Faculty and Staff Assoc.		University of Fraser Valley	33.00	Options In the Event of Substantial Change in a Position In the event that the Board decides to implement a technological change as defined in Article 33.1(b) (TECHNOLOGICAL CHANGE: Definition), thirty (30) days before implementation of the proposed change, the Board will give notification in writing to affected employees of one of the following offers: (a) offer retraining to affected employees, during which the Board will pay the employees full salary; the employees will continue to accumulate seniority; and retraining costs will be the responsibility of the Board; or (b) offer the employees an existing equivalent or superior vacant position for which they are already qualified, if they are the successful candidates following the provisions of ARTICLE 11: (VACANCIES WITHIN THE BARGAINING UNIT); or(c) offer the employee six (6) months' pay from the date of notice of layoff, if (b) above is not available or if the employee fails retraining. If an employee refuses an offer made by the Board in (a) or (b) above, the employee shall either accept six (6) months' pay from the date of notice of layoff and waive the right to recall under Article 16.9 (Recall Rights and Obligations), or waive the six months pay and shall be deemed to have been laid off, with the provisions of Article 16.9 applying. Affected employees will notify the Employer in writing within ten (10) work days of their decision regarding the offer made by the Board.
USW	8782	US Steel Canada Inc. (Lake Erie Works)	18.02	...the replacement of an existing facility with a new facility which produces the same or similar product, which directly results in the permanent displacement of an employee from a job. The subsequent permanent displacement of junior service employees by an employee directly displaced from a job in accordance with the above shall also be considered to be a direct displacement due to a technological change.
USW	8782	US Steel Canada Inc. (Lake Erie Works)	18.01	Both parties recognize the importance of lessening as much as reasonably possible the effects of technological change upon the job security and the earnings of an employee who may be displaced from his/her job as a result of such change. However, both Parties also recognize the positive features that technological enhancements can provide. In this regard it is not the intention of the Parties to adversely impact the employment security of an employee who may be affected by the implementation of a technological or organizational change save and except as outlined in the last paragraph of Clause 18.02 of this Section and Item 10.
Vancvr. Comm'y College Faculty Assoc.		Vancouver Community College	14.50	At least 90 days before introducing a technological change, faculty members potentially affected by the intended change shall be notified of the impending change by the College and advised of any agreements reached under Article 14.4, (Resulting Agreements) hereof.
Unifor	444	Windsor Casino	75.00	Exercise right to displace junior employee; decline right to displace, resign and receive $1000.00 per year of service,
Unifor	444	Windsor Casino	75.00	Employees unable to displace junior employee, or do not want to resign, will be eligible to be given education/training allowance of $2000.00/year to a maximum of $4000.00 and 24 months.
Unifor	444	Windsor Casino	75.00	New positions created through tech change will be posted.
Unifor	444	Windsor Casino	75.00	Employees displaced from their jobs by tech change will have the right to displace junior employees as per the collective agreement

IAM		Prescribed Language		New Positions As a result of technological change(s) Any new positions that arise out of the implementation of technological change as defined by article xx, shall remain within the bargaining unit, and shall be performed by bargaining unit members, who either have existing skills or who are suitable for re-training for new positions in the order based on seniority. New positions will first be offered to existing bargaining unit members based on seniority and skill level, before hiring new employees.
IAM		Prescribed Language		Employees are entitled to extended recall rights with priority preference for other job openings in or out of the bargaining unit that employees are qualified for.
IAM		Prescribed Language		When an employee is displaced permanently from a working place to another, he or she shall be entitled to a lump sum compensation of four hundred dollars (x) or x amount of dollars depending on the distance between his or her residence at the time of the transfer and his or her new working place has increased by x kilometers or x kilometers. Displaced employees will receive a notice 6 months in advance of changes to the worksite location.
IAM		Prescribed Language		In cases where the union agrees that training is not an option, employees are entitled to severance that is accrued in the following manner, three (3) weeks for every one year of service. A retention bonus package is to be based on years of service, including 6 months of health benefits, in cases where an employee is ever laid off due to technology.
IAM		Prescribed Language		Protection of Employees In order to protect employees from any adverse effects, or to make it possible to minimize adverse effects resulting from technological change(s), the employer agrees to introduce changes incrementally and agrees to the following provisions; Guaranteed Employment The employer agrees to employ all employees covered by the agreement until the signing of the next collective agreement between the parties. Guaranteed Classification For the period of continuous employment guaranteed in the previous paragraph, an employee shall retain his/her classification and the corresponding wage scale, regardless of any reassignment to other duties or any reclassification of the duties performed by the employee at a lower level. An employee may accept a voluntary reassignment to another classification, but shall retain such new classification and the corresponding wage scale from the date of voluntary reassignment and for the duration of this collective agreement. Guaranteed Pay. The employer agrees full pay and benefits for regular working hours as defined by the collective agreement, for the full period of continuous employment guaranteed subsection (a) of this article.

Table A6
Severance Pay

Union	Local	Employer	Article	Summary / Clause
BCGEU		BC Highways Maintenance	23.00	Wages shall be red-circled except that the employee shall receive fifty percent (50%) of the negotiated increase unless the new job is at a higher rate of pay, or the employee may opt for severance pay in the amount of three (3) weeks' pay for each year of seniority to a maximum of six (6) months' pay. Where an employee opts for severance pay the regular vacancy will be filled pursuant to Article 12.
USW	7085	Brunswick Smelter	20.04	If, as a result of a technological change, an employee loses his employment with the Company and provided he is eligible for benefits under this programme, he will be entitled, at the time of termination, to severance pay. 1. Two (2) weeks pay (eighty (80) hours at standard hourly rate) for each year of service completed at the Company since his last hiring, or 2. The benefit described in Article 23 (Voluntary Early Retirement Plan).
IUOE	882	Canada Bread Company (Langley Plant)	10	In the event of amalgamation, closure of the plant or a department thereof, or reduction in work force due to automation or technological advances causing a regular full-time employee to lose his employment, the Company hereby agrees to pay such an employee severance pay at his regular rate of pay according to the following schedule: Full Time Consecutive Service Severance Pay Up to 2 years One week Over 2 years One week's pay for every year of full-time service to a maximum of twenty (20) weeks. The foregoing shall be in addition to the regular week's notice or week's pay in lieu thereof to which such employee may be entitled. This clause does not apply to a temporary lay-off.
MoveUp COPE	378	Coastal Community Credit Union	17.4	Severance pay as provided for in Section 5, shall be due and payable immediately upon termination to an employee who elects for termination of employment pursuant to Section 3.
USW		Forestry sector BC Interior	XX.2	Employees discharged, laid off or displaced from their regular job because of mechanization, technological change or automation shall be entitled to severance pay of seven days' pay (a day is defined as 8 hours straight time pay) for each year of service with the Company. The amount calculated under such entitlement shall not exceed a maximum of thirty (30) weeks' pay, 49 (maximum 210 days, with a day defined as 8 hours straight time pay). This Section shall not apply to Employees covered by Section 3(b) below. Employees entitled to severance pay under this section shall have the option to terminate their employment and accept severance pay either (a) at the time of layoff, or (b) at the point seniority retention expires.
Unifor		Globe and Mail		When dismissal to reduce staff is by reason of the introduction of new processes and/or equipment and/or methods, or skill redundancy the employee shall receive: dismissal pay in a lump sum equal to one (1) week's pay for every five (5) months' continuous service or major fraction thereof up to a maximum of sixty-six (66) weeks' wages plus a further fifteen per cent (15%) of said lump sum plus a further … dollars ($…).
Association of Unions		Health Services and Support – Facilities Subsector	17.00	Displaced employees with no other option but to relocate more than 50 km from their current worksite for regular ongoing employment shall have the option to select layoff and enhanced severance as follows: (a) An Enhanced Severance Allowance shall be paid to each regular employee who is displaced due to a restructuring initiative, with no other option but to relocate more than 50 km from their current worksite for regular ongoing employment. The Enhanced Severance Allowance will be based on the exact same formula and process as the Severance Fund established in the May 2, 2004 Memorandum of Agreement as outlined in the November 26, 2004 agreement

				letter from the FBA to HEABC as set out below: Less than 1 year of service $3,500 Between 1 and 4 years of service $11,000 Between 5 and 14 years of service $13,000 Between 15 and 24 years of service $15,000 Between 25 and 29 years of service $16,000 30 years of service and over $17,000 (b) A regular employee who is re-employed by a Health Sector Employer within six (6) months of the effective date of layoff will not be entitled to receive an Enhanced Severance payment subject to the conditions set out below. If the Enhanced Severance payment is made to an employee who is re-employed within six (6) months of the effective date of layoff in the health sector, he/she will reimburse the Employer a prorated amount of the Enhanced Severance payment based on the length of time before re-employment (e.g., one month before re-employment means a repayment of 5/6th of the Enhanced Severance payment).
USW	7619	Highland Valley Copper	21.03	Employees who terminate, are laid off or displaced from their regular jobs because of technological change shall be entitled to one week of severance pay for each year of service with the Company. The amount calculated under such entitlement shall not exceed a maximum of twenty-six (26) weeks pay.
MoveUp COPE	378	IAMAW Lodge 140	17.5	Employees whose services are terminated because of automation, changes in procedures, mergers or suspension of business shall receive severance pay. The amount of such severance pay shall be two (2) weeks per year of service to a maximum of twenty-four (24) weeks total severance payable. Severance pay shall be payable to an employee immediately upon termination.
Unifor	250-A	Labatt Breweries, Edmonton	11.40	Affected employees may elect to terminate employment and receive severance pay. Severance pay, including probationary employees, will include extra $1000.00
SEIU	2	Labatt Breweries, London	Section 29	Affected employees may elect to terminate employment and receive severance pay. Severance pay, including probationary employees, will include extra $1000.00
Canadian Union of Brewery and General Workers, NUPGE	325	Molson Coors, Toronto	40.02	Affected employees may elect to terminate employment and receive severance pay. Severance pay, including probationary employees, will include extra $1000.00
North Island College Faculty Association		North Island College	15.40	In the event that the College implements technological change as defined in Article 15.4.1 and Article 15.4.2, following the one hundred and twenty (120) calendar day notice period, the College will: offer the employee an existing, equivalent, vacant position provided the employee is qualified in accordance with the selection criteria for the position, or the employee shall be given the option of selecting either: severance, as defined in Article 6.7 of this Agreement, or layoff and having his/her name placed upon the recall list, and then being subject to the full recall and displacement rights as defined in Article 6.6.5 of this Agreement. During the period of employment between notice of reduction on account of technological change and reduction taking

				effect, employees shall retain their level of earnings regardless of any transfer or reduction of duties performed by the employee."
IAM		Prescribed Language		In cases where the union agrees that training is not an option, employees are entitled to severance that is accrued in the following manner, three (3) weeks for every one year of service. A retention bonus package is to be based on years of service, including 6 months of health benefits, in cases where an employee is ever laid off due to technology.

Table A7
Other Compensation Provisions

Union	Local	Employer	Article	Summary / Clause
USW	7085	Brunswick Smelter	20.04	The Company will establish a Technological Change Account which will be used to pay the costs of benefits as provided for in Section 20.04. At the end of each pay period, the Company will credit this account with two cents (2¢) for each hour worked by the Bargaining Unit employees during the said pay period to a maximum credit of thirty thousand dollars ($30,000) per year. Maximum credit of two hundred and twenty five thousand dollars ($225,000). If this amount should decrease the account will be credited again by the Company. If benefits are insufficient, will be pro-rated. Subject to grievance procedure and arbitration.
USW	7085	Brunswick Smelter	20.04	An eligible employee will be entitled to have his basic hourly rate maintained at the hourly rate he was receiving at the time of his displacement; duration of the benefit period to be one (1) week for every six (6) weeks of service with the Company with a maximum benefit period of forty-eight (48) months.
CUPE	1169	Calgary Public Library	18	In the event that the Board introduces technological change which requires new or greater skills than are possessed by the present Employee, such Employee shall be able to apply for a transfer, or, at the expense of the Board, be given sufficient training to perfect or acquire skills necessitated by the new method of operation. The nature, specifics, and duration of the training period, up to a maximum of four (4) months, is to be determined by the Employer. The training will be provided by the Employer and shall be provided during the Employee's regular scheduled shifts whenever possible. There shall be no change in salary rates or wages during the training period of such Employee. The Employee shall have no reduction in pay upon being reclassified in the new position for a maximum of eight (8) months.
CUPW		Canada Post	29.11	(c) Guaranteed Pay To further clarify the intent of this clause, the Corporation guarantees full pay and benefits for normal working hours as defined in this collective agreement for the full period of continuous employment guaranteed in paragraph 29.11(a).
Capilano University Faculty Assoc.		Capilano University	14.9	During the period of employment between notice of reduction and reduction taking effect (as provided for 11.8), an employee shall retain his/her placement on the salary scale and level of earnings regardless of any transfer or reduction of duties performed by the employee.
CUPE	1289, 569	City of St. John's (NL)	25.02	An employee who is displaced from their job by virtue of technological change or improvements will suffer no reduction in normal earnings.
Toronto Professn'l Fire-fighters Assoc.		City of Toronto		The City shall endeavor to place in other positions any employees of the Toronto Fire Services coming within the 3888 Unit who may be displaced by technological improvements in the operation of the said Services. No such employee who has completed the probationary period will be laid off or have his/her employment terminated by reason thereof. No employee shall suffer any reduction of salary as a result of such change.
BCGEU		College Support	24	Any Employee who is displaced from his/her job by virtue of technological change will suffer no reduction in his/her normal earnings.
NAPE		Eastern Health -Xray staff, support staff	27, 43	An employee who is displaced from his/her job by virtue of technological change or new method of operation will suffer no reduction in normal earnings, unless such employee has refused, without good reason, to avail of additional training provided to equip the employee with the new or greater skills required to prevent displacement.
USW		Forestry sector BC Interior	XX.2	(a) An Employee who is set back to a lower paid job because of mechanization, technological change or automation will receive the rate of his regular job at the time of the setback for a period of three (3) months and for a further period of three (3) months he will be paid an adjusted rate which will be midway between the rate of his regular job at the time of

				the setback and the rate of his new regular job. At the end of this six (6) month period the rate of his new regular job will apply. However, such Employee will have the option of terminating his employment and accepting severance pay as outlined in Section 2 above, providing he exercises this option within the above referred to six (6) month period. (b) Following an application of (a) above, where an Employee is set back to a lower paid job because of an application of Article X - Seniority brought on by mechanization, technological change or automation he will receive the rate of his regular job at the time of the setback for a period of three (3) months and for a further period of three (3) months he will be paid an adjusted rate which will be midway between the rate of his regular job at the time of the setback and the rate of his new regular job. At the end of this six (6) month period the rate of his new regular job will apply.
NLNU		Govt. of Newfoundland and Labrador		A permanent employee who is displaced from her/his job by virtue of technological change or new method of operation will suffer no reduction in her/his regular salary unless such an employee refused, without good reason, to avail of additional training provided to equip the employee with the new or greater skills required to prevent displacement.
USW	7619	Highland Valley Copper	21.03	An employee who is set back to a lower paid job as a result of technological change will receive the rate of their regular job at the time of the setback for a period of three (3) months. For a further period of three (3) months, the employee will receive an adjusted rate which will be midway between the rate of their regular job at the time of the setback and the rate of their new job. At the end of this six (6) month period the rate of their new regular job shall apply.
Unifor	30	Irving Pulp & Paper	27	If an employee with two years of more continuous employment is set back to lower paid job as a result of tech change or automation, rate of pay will be maintained for 6 months. Midway rate will be applied for further 6 months. Regular rate for job to apply after 12 months.
IBEW		Manitoba Hydro-Electric Board		A redundant employee or an employee affected by a technological or organizational change, who is displaced or bumped[,] who bids, is placed, transferred, bumps or is recalled to a lower classification, will be afforded salary protection. This protection provides for salary progression and general salary adjustments based on the former classification as long as the employee remains in the position into which he/she was placed, or one of equal pay.
PSAC		Memorial University	24.05	There shall be no reduction in the earnings of a Graduate Assistant due to technological change introduced during the term of a graduate assistantship.
North Island College Faculty Assoc.		North Island College	15.4	In the event that the College implements technological change as defined in Article 15.4.1 and Article 15.4.2, following the one hundred and twenty (120) calendar day notice period, the College will: offer the employee an existing, equivalent, vacant position provided the employee is qualified in accordance with the selection criteria for the position, or the employee shall be given the option of selecting either: severance, as defined in Article 6.7 of this Agreement, or layoff and having his/her name placed upon the recall list, and then being subject to the full recall and displacement rights as defined in Article 6.6.5 of this Agreement. During the period of employment between notice of reduction on account of technological change and reduction taking effect, employees shall retain their level of earnings regardless of any transfer or reduction of duties performed by the employee."
UFCW	1118	Olymel, Red Deer	14.01	Where an employee is transferred to work where the job rate is lower, as a direct result of the introduction of new equipment, or where an employee remains on a job reduced in value following a technological change, his rate shall not be reduced for a period of two (2) years, including layoff, provided that the employee accepts all opportunities to post to work where the job rate if higher, unless it is unreasonable to expect such employees to apply due to such things as age, health, working conditions, and the employee's ability to learn the job. Where an employee after a sincere effort is unable to qualify, his rate protection shall not be affected.
CUPE		Participating Hospitals		Where new or greater skills are required than are already possessed by affected employees under the present methods of operation, such employees shall be given a period of training, with due consideration being given to the employee's

				age and previous educational background, during which they may perfect or acquire the skills necessitated by the new method of operation. The employer will assume the cost of tuition and travel. There shall be no reduction in wage or salary rates during the training period of any such employee. Training shall be given during the hours of work whenever possible and may extend for up to six months.
CUPE		Queen's University Library		An employee who is displaced from his/her regular position because of technological, organizational or operational change will suffer no reduction in normal earnings and shall remain employed in a position covered by this Collective Agreement.
IAM	869	Rolls-Royce Canada	17.15	An employee changing to a lower group or classification due to technological changes will have his salary maintained for a two (2) year period;
TWU		Telus		In the event of a lay off due to technological change, any employee choosing to accept a job in a lower classification shall not have their wage rate reduced but shall continue to be paid the same rate until the applicable rate in the lower job equals or is higher than they are receiving. Thereafter, they shall progress on the applicable scale in the lower group.
COPE	343	Unifor	20	There shall be no reduction in wages or salary rates and benefits during the training period.
USW	8782	US Steel Canada Inc. (Lake Erie Works)	18.01	Both parties recognize the importance of lessening as much as reasonably possible the effects of technological change upon the job security and the earnings of an employee who may be displaced from his/her job as a result of such change. However, both Parties also recognize the positive features that technological enhancements can provide. In this regard it is not the intention of the Parties to adversely impact the employment security of an employee who may be affected by the implementation of a technological or organizational change save and except as outlined in the last paragraph of Clause 18.02 of this Section and Item 10.
IAM		Prescribed Language		The employer agrees full pay and benefits for regular working hours as defined by the collective agreement, for the full period of continuous employment guaranteed subsection (a) of this article.
IAM		Prescribed Language		When an employee is displaced permanently from a working place to another, he or she shall be entitled to a lump sum compensation of four hundred dollars (x) or x amount of dollars depending on the distance between his or her residence at the time of the transfer and his or her new working place has increased by x kilometers or x kilometers. Displaced employees will receive a notice 6 months in advance of changes to the worksite location.

Table A8
Training Provisions

Union	Local	Employer	Article	Summary / Clause
COPE	397	ATU Local 583	125.1	The Employer further agrees to institute a training program for those Employees who wish to accept employment except as hereinafter provided.
BCGEU		BC Highways Maintenance	23	Where notice of technological change has been given pursuant to Article 23.2(a): (1) Regular employees who are assigned to the Employer to work with the new technology shall receive a period of training and familiarization. Employees involved in training under this section shall receive their basic pay for the period of training.
ILWU - Canada		B.C. Maritime Employers Association	14	Training and retraining of union members who have necessary ability and aptitude as may be required by the Association.
CUPE	1169	Calgary Public Library	18	In the event that the Board introduces technological change which requires new or greater skills than are possessed by the present Employee, such Employee shall be able to apply for a transfer, or, at the expense of the Board, be given sufficient training to perfect or acquire skills necessitated by the new method of operation. The nature, specifics, and duration of the training period, up to a maximum of four (4) months, is to be determined by the Employer. The training will be provided by the Employer and shall be provided during the Employee's regular scheduled shifts whenever possible. There shall be no change in salary rates or wages during the training period of such Employee. The Employee shall have no reduction in pay upon being reclassified in the new position for a maximum of eight (8) months.
CUPW		Canada Post	29.11	(d) Retraining Any employee either voluntarily or compulsorily reassigned or reclassified as a result of these changes shall be provided with whatever amount of retraining he or she requires during his or her hours of work with full pay from the Corporation and at no additional cost to the employee. Any employee unable to follow a retraining course shall maintain his or her classification, or its equivalent, in the bargaining unit.
PSAC		Canadian Food Inspection Agency	23.06	If Employer determines that employee requires new skills or knowledge, the employer will make every reasonable effort to provide training during employee's working hours, without loss of pay, and at no cost to the employee
Unifor	101R	Canadian Pacific Railway	6.21	When new technology is to be implemented which involves supplementary service equipment the respective Regional Union Representative representing the terminal involved shall be notified. When such technology is introduced in a given terminal, on Company owned or leased equipment operated by employees, related training will be provided to employees assigned to supplementary service, pursuant to Rule 31.4.
Unifor	101R	Canadian Pacific Railway	31.4	With introduction of new technologies, it is important that advanced planning be made to anticipate skills, needs, and training required. The Company will assume the cost of "on-the-job" training to afford bargaining unit employees who have the basic knowledge and ability to be trained to keep current with the restructured, modernized trades, new methods, tools, machines and technology affecting their assigned work and job security. Senior employees assigned to jobs requiring training in the new technology will, based on operational requirements, be given preference under this clause.
ONA	Mstr	Central Hospitals	9.02	Reviewing and making recommendations regarding the existing nursing continuing education programs; and on the use of technology to enhance access
ONA	Mstr	Central Hospitals	9.1	Where computers and/or new computer technology (e.g. computer charting) are introduced into the workplace that nurses are required to utilize in the course of their duties, the Hospital agrees that necessary training will be provided at no cost to the nurses involved, in accordance with Article 9.07.

Unifor	899	CFRN-TV and CFCN-TV	25	Affected employees may invoke seniority rights, avail himself/herself of any training/retraining program, accept severance pay
Unifor	899	CFRN-TV and CFCN-TV	52	Where an employee has been displaced by technological change and where there is a reasonable expectation that the employee would be able to perform satisfactorily in another job after a reasonable training period, the Company will provide reasonable retraining
CUPE	1289, 569	City of St. John's (NL)	25.04, 25.05	In the event that the Employer should introduce new methods or machines which require new or greater skills than are possessed by employees under the present method of operation, such employee, shall, at the expenses of the Employer, less any other allowance provided for such training by any other Government Agency, be given a period of time not to exceed one (1) year, during which they may perfect or acquire the skills necessitated by the new method of operation. There shall be no change in wage or salary rates during the training period of any such employee and no reduction in pay upon being reclassified in the new position. In the event that statutory or regulatory changes require an enhancement in qualifications to perform the work, the City agrees to meet and discuss the feasibility of training to meet the new requirements. Should the introduction of new methods of operation or statutory or regulatory changes create a need for the perfection or acquisition of skills requiring a training period longer than one (1) year, the additional training time shall be subject to discussion between the Employer and the Union.
CUPE	569	City of St. John's (NL) Outside Workers	29.1	In the event that the Employer should introduce new technology which requires new or greater skills than are possessed by employees under the present method of operation, such employee shall, at the expense of the Employer less any allowance provided such training by any other Government Agency, be given a sufficient period of time not to exceed one (1) year during which they may perfect or acquire the skills necessitated by the new technology. There shall be no change in wage or salary rates during the training period of any such employee. Should the introduction of new technology or statutory or regulatory changes requiring different qualifications to perform the work create a need for the perfection or acquisition of skills requiring a training period longer than one (1) year, the additional training time shall be subject to discussion between the City and the Union.
CUPE	569	City of St. John's (NL) Outside Workers	29.1	No additional employee(s) shall be permanently hired by the Employer to replace any employee(s) affected by the technological change until the employee(s) already working and affected by the change have been notified and allowed a training period to acquire the necessary knowledge or skill for the trainee(s) to retain their employment.
CEP		City of Winnipeg		An Employee who is displaced through Technological Change may: 1. Seek to invoke any seniority job rights they may hold pursuant to the Agreement; or 2. Avail themselves of any training program offered by the Employer which provides re-training for Employees so affected; or 3. Accept severance pay as hereinafter provided.
MoveUp COPE	378	Coastal Community Credit Union	17.2	Wherever practical, an employee becoming redundant due to new equipment or procedures shall be eligible for retraining to qualify for the operation of such new equipment or procedure, or to qualify for new positions. Such retraining shall be provided by the Employer without cost and without loss of pay to the affected employee.
BCGEU		College Support	24	In the event that the Employer should introduce new methods which require new or greater skills than are possessed by the Employees under present methods of operation, such Employees shall at the expense of the Employer, be given a period of time not to exceed one (1) year, during which they may undergo retraining/orientation in order to acquire the skills necessitated by the new method of operation. There shall be no reduction in an Employee's rate of pay during the training period and no reduction of pay upon being reclassified in the new position. Additional Training

				Should the introduction of new method of operation create a need for the perfection or acquisition of skills requiring training periods longer than one (1) year, the additional training time shall be subject for discussion with the Employer and the Union.
Comm'ty Social Services Bargaining Assoc. (includes BCGEU)		Community Social Services	23.00	No additional employees required because of technological change will be hired by the Employer until the employees affected are notified of the proposed technological change and allowed a training period to acquire the necessary knowledge or skill for retaining their employment.
Comm'ty Social Services Bargaining Assoc. (includes BCGEU)		Community Social Services	23	Where technological change may require additional knowledge and skill on the part of regular employees, such employees will be given the opportunity to study, practise and train to acquire the knowledge and skill necessary to retain their employment, provided the regular employee can qualify for the new position within a training period determined by the Employer. The Employer agrees to pay the cost of such training.
Comm'ty Social Services Bargaining Assoc. (includes BCGEU)		Community Social Services	23	At the request of either the Employer or the Union, the parties shall meet in accordance with Article 7.5 (Union/Management Committee) for the following purposes: planning training programs for those employees affected by technological change; planning training programs to enable employees to qualify for new positions being planned through future expansion or renovation; planning training programs for those employees affected by new methods of operation; planning training programs in the area of general skills upgrading. Whenever necessary, the parties shall seek the assistance of external training resources such as the Human Resources Development Canada and Provincial Ministry of Labour or other recognized training institutions.
USW	9042	Cummins Eastern Canada	Letter #11	In consultation with the Union, and subject to the provisions of the Agreement, the Company shall provide training opportunities which include, but are not restricted to, adult education programs for employees whose jobs may be affected, in order that such employees may have the opportunity to become qualified to perform other bargaining unit jobs to 64 which their seniority would entitle them if any, and for which they are fully qualified.
USW	9042	Cummins Eastern Canada	Letter #11	Time and opportunity for upgrading and training on new product will be made available to all employees based on department, classification and seniority.
NAPE		Eastern Health -Xray staff, support staff	27, 43	In the event that the Employer should introduce new methods or machines which require new or greater skills than are possessed by employees under the present method of operation, such employees shall, at the expense of the Employer, be given a reasonable period of time in the opinion of the Employer, during which they may perfect or acquire the skills necessitated by the new method of operation. There shall be no change in wage or salary rates during the training period of any such employee.
NAPE		Eastern Health -Xray staff, support staff	27, 43	No additional employee(s) shall be hired by the Employer to replace any employee(s) affected by the technological change or new method of operation, until the employee(s) already working, and affected by the change have been

				notified and allowed a training period to acquire the necessary knowledge or skill for the trainee(s) to retain their employment, as provided for in clause 27.06.
Unifor	707	Ford of Canada	Letter	During these negotiations the parties discussed the broadly based concerns regarding the introduction of new technology in the plants and the impact such technology would have on the workforce. Recognition was given to the need for a cooperative attitude on the part of all parties in that continued technological progress is essential to the company's growth and its ability to compete effectively. The company understands the union's legitimate concern that advances in technology may alter, modify or otherwise change the job content and responsibilities of bargaining unit employees at plant locations. Accordingly, the company agrees to advance discussions with local unions at locations planning the introduction of new or advanced technology so as to permit meaningful dialogue as to its impact, if any, upon skilled or non-skilled employees. Examples where advance discussions should take place are: a) the first introduction of a technology as compared to previously existing plant technology; b) introduction of a new, more advanced generation of existing technology having a significant impact on the workforce; and c) introduction of a new application of existing technology which has a significantly different impact on the workforce. The parties at each location will determine the persons to be responsible and involved in the discussions. Included among the information to be provided for discussion is a description of the technology involved, the equipment being introduced, its intended use, the anticipated installation date and the extent, if any, to which such technological changes may affect the size of the workforce. In view of the continuing interest in affording maximum opportunities for employees to progress with advancing technology, as part of the discussion, the parties shall seek to identify appropriate specialized training programs so that employees will be capable of performing the new or changed work. Joint apprenticeship committees shall update and revise classroom and shop training, as appropriate, to accommodate the new technology.
Unifor	707	Ford of Canada	Statement 2012	During 2012 negotiations, the company and the union had several discussions concerning training for skilled trades employees, particularly as it pertained to new equipment and technologies. Both parties acknowledged the importance of having a trained skilled trades workforce, capable of adapting to current, new and evolving technologies in order to fully support lean manufacturing principles. Furthermore, both parties reaffirmed their commitments to the local New Technology Training Committees as a means to identify, assess and recommend appropriate training plans for skilled trades employees. The parties acknowledged that a robust process in this regard is important in ensuring that appropriate and timely training is provided to skilled trades employees. Following negotiations, the parties agree to establish a regular and proper cadence for the local New Technology Training Committee so that meaningful discussions to address skilled trades training needs can take place with the objective of identifying immediate gaps to ensure that skilled trades have the necessary knowledge required to perform the work.
PSAC		Hay River Health and Social Services Authority		Where an employee requires new or different skills as a result of technological change, the Employer shall make every reasonable effort to provide the required training courses at no cost to the employee.
Assoc. of Unions		Health Services and Support – Facilities Subsector	17	The Employer and the Union shall establish a Joint Committee on Training and Skill Upgrading for the following purposes: (1) for planning training programs for those employees affected by technological change; (2) for planning training programs to enable employees to qualify for new positions being planned through future expansion or renovation;

				(3) for planning training programs for those employees affected by new methods of operation; (4) for planning training programs in the area of general skill upgrading. Whenever necessary, this Committee shall seek the assistance of external training resources such as the Federal Human Resources Development Canada and Provincial Ministry of Labour, or other recognized training institutions.
Assoc. of Unions		Health Services and Support – Facilities Subsector	17	Employees will be entitled to access training funds subject to the Memorandum of Agreement, Re: Joint Retraining Fund.
Assoc. of Unions		Health Services and Support – Facilities Subsector	17	Reimbursement of Educational or Re-Training Costs: regular employees who are issued displacement notice on or after April 1, 2010 and laid off as a result of a restructuring initiative, may apply to their Employer for reimbursement of educational or re-training costs, subject to the following conditions: (a) Reimbursement will be provided for the costs of courses incurred at an educational institution up to a maximum of $1,000 (pro-rated for regular part-time employees based on their full-time equivalent); (b) Reimbursement will be provided upon presentation of receipts submitted before the expiry of the employee's Collective Agreement recall period; and (c) Regular employees who are laid off and who request to be added to one casual list within the Health Authority (as per paragraph 5 above) are not eligible for these funds.
USW	7619	Highland Valley Copper	21.03	The Company will cooperate with the Provincial or Federal Governments and participate in every way possible in training or re-training of employees affected by technological change. This shall include educational Leaves of Absence for re-training, if required.
MoveUp COPE	378	IAMAW Lodge 140	17.2	The Employer agrees that Employees affected by the introduction of any technological change or affected by technological redundancies, shall be entitled, based on ability and seniority, in that order, to retraining provided by the Employer. Such re-training will be provided by the Employer without loss of pay, to the affected Employee. Such training shall be offered in accordance with the job selection criteria referred to in Article 14.
Unifor	1959	K+S Windsor Salt, Objibway Mine	15.6.1	Parties agree that with the introductionof new techniques and technologies, it is important that advance planning be made to anticipate skills, needs and training required so that Skilled Trades employees can perform the duties of their trade.
Unifor	1959	K+S Windsor Salt, Objibway Mine	15.6.2	Company to continue practice of affording workers affected by new technologies the opportunity to apply themselves to the new skills and technologies so they can perform duties of their trade
Unifor	1959	K+S Windsor Salt, Objibway Mine	15.6.3	The Company will continue to pay the cost of the training to afford Bargaining Unit employees (who have the basic knowledge and ability to be trained) the opportunity to keep current with new methods, tools, machines, and new technology affecting their work and job security.
Langara Faculty Association		Langara College	11.7	Where technological change may require additional knowledge and skill on the part of a regular faculty member, such regular faculty member shall be given the opportunity to study, practice and train to acquire the knowledge and skill necessary to retain his/her employment, provided the regular faculty member can qualify for the new work within a reasonable training period. The College agrees to pay regular faculty members at their prevailing rate of pay with benefits during such training period."

BCGEU		Libraries	23	Where notice of technological change has been given pursuant to Clause 23.2(a), regular employees who are assigned by the Employer to work with the new technology shall receive a period of training and familiarization. Employees involved in training under this clause shall receive their basic pay for the period of training.
Sheet Metal Workers; Internat'l Assoc.	280	Maxam Metal Products (Production Workers)	22	In view of the possible impact on manpower and conditions of employment resulting from technological changes and automation, it is agreed that the Parties hereto utilize to the best advantage of the Company and the Employees all scientific improvements and establish a committee to be known as the Committee on Automation, consisting of equal representation by the Employer and the Unions. The Committee's duties shall be to investigate and submit recommendations on all aspects of automation, mechanization and new methods, and to include the following: training and retraining [and] alternate employment opportunities within the Company.
Sheet Metal Workers; Internat'l Assoc.	280	Maxam Metal Products (Production Workers)	22	In addition, the Company will co-operate with the Unions and the Government in matters of training and retraining.
PEI Union of Public Sector Employees		PEI Department of Health		No additional employees shall be hired by the Employer until employees affected by the technological change have been notified of the proposed technological change and allowed a reasonable training period to acquire the necessary knowledge or skill to retain their employment.
UFCW	378W	Pepsico	14.02	If a regular employee should be displaced from his job by reason of a technological change in the Company's operations, and provided the employee has the necessary qualifications to perform the work available after a reasonable training period, the Company shall arrange for him to receive such training and the employee shall have the opportunity to exercise his seniority within the bargaining unit.
BCGEU		Public Service - Devolved Government	23	Where notice of technological change has been given pursuant to Clause 23.2(a): (1) Regular employees who are assigned by the Employer to work with the new technology shall receive a period of training and familiarization. Employees involved in training under this clause shall receive their basic pay for the period of training. Where the employee cannot meet job requirements upon completion of the training and familiarization period, the employee shall be offered either the vacancy options, early retirement or severance pay provisions of Article 13— Layoff and Recall.
IAFF		Regional Municipality of Wood Buffalo		The Employer agrees that whenever possible, no Employee shall lose employment because of Technological Change and, therefore, agrees that a reasonable period should be provided in order that they may take advantage of all available re-training and other internal employment opportunities.
IAM	869	Rolls-Royce Canada	17.15	The Company will provide training to employees affected by these changes in coordination with the training committee, as stipulated in Article 28.
IAM	869	Rolls-Royce Canada	17.15	Company and union to meet within 15 days before the layoff with view to finding solutions to: location of vacancies or potential vacancies within the Company for which the individuals possess the necessary aptitudes and qualifications to be reloated, location of vacancies or potential vacancies within the Company for which the individuals possess the necessary dispositions, aptitudes and qualifications to be re-trained in coordination with the training committee, as stipulated in Article 28 (Joint Training Committee), advisory assistance leading to relocation
Unifor		Sasktel		Where Technological Change will result in reassignment, relocation or transfer to another town or city, reclassification, layoff or demotion, such changes shall be made in the order of inverse seniority, provided that the senior employees have the merit and ability to perform the duties of the remaining positions. It may be necessary to do a reasonable

				amount of retraining to assist senior employees to acquire the skills necessary in some of the new technologies. Where the Company can identify suitable alternative positions which will become available within a reasonable time period, through vacancies or growth, normal training will be provided to employees meeting minimum training prerequisites to allow them to qualify for these positions. In the selection of employees for such training, first consideration will be given to the employee(s) having the most seniority. Where it can be reasonably expected that the employee could satisfactorily perform the duties of an alternative position as referred to in Clause 10 at the completion of the training period provided by the Company, the Company may waive the employee's inability to meet the minimum training prerequisites.
Canadian Assoc. of Profess'nl Employees		Treasury Board (Translation)	33.06	When, as a result of technological change, the Employer determines that an employee requires new skills or knowledge in order to perform the duties of the employee's substantive position, the Employer will make every reasonable effort to provide the necessary training during the employee's working hours and at no cost to the employee.
Unifor	636	TRW	Letter of Intent #7	Company agrees to consider, as the need arises, formal and/or on-the-job training that will assist employees in maintaining their respective areas of responsibility
COPE	343	Unifor	20	In the event of new proposed technological changes, including but not limited to, the introduction of computers, computer software or automated equipment of any sort, Unifor agrees to meet with the Union to discuss such changes. No additional employees shall be hired by Unifor until employees who need training to retain their employment or employees on layoff, have been notified of the proposed technological or other changes and allowed a reasonable training period to acquire the necessary knowledge or skill to retain their employment.
COPE	343	Unifor	20	Training shall be provided during the hours of work, wherever possible and the cost shall be borne by Unifor. There shall be no reduction in wages or salary rates and benefits during the training period. All employees associated with the new system will be given sufficient training in the broad principles of the system and the purpose of their own task in relation to the system as a whole. Employees becoming redundant due to technological and or procedural changes shall be eligible for retraining to equip them to qualify for different positions. Such retraining will be provided by Unifor without loss of pay or seniority to the affected employees.
Vancouver Comm'ty College Faculty Assoc.		Vancouver Community College	14.7	Where technological change may require additional knowledge and skill on the part of a regular faculty member, such regular faculty member shall be given the opportunity to study, practice and train to acquire the knowledge and skill necessary to retain employment, provided the regular faculty member can qualify for the new work within a reasonable training period. The College agrees to pay regular faculty members at their prevailing rate of pay with benefits during such training period."
Unifor	444	Windsor Casino	75	Employees unable to displace junior employee, or do not want to resign, will be eligible to be given education/training allowance of $2000.00/year to a maximum of $4000.00 and 24 months.
Unifor	444	Windsor Casino	75	An employee who does not accept other options will be eligible for training for any new positions before new employees hired. Eligible in order of seniority. Training offered on positions where training can reasonably be completed in 60 days. Training will not exceed 60 days.
Unifor	444	Windsor Casino	75	Where new or greater skills are required, such employees shall, at the expense of the Company, be provided with a reasonable period of training.
IAM		Prescribed Language		The employer shall begin investing in a training fund based on the number of workers that will be trained as a result of technological change to ensure that all training is done during work hours and without cost to the employer.

IAM		Prescribed Language		Any employee either voluntarily or compulsorily reassigned or reclassified as a result of these changes shall be provided with whatever amount of training he or she requires during his or her hours of work with full pay from the Corporation and at no additional cost to the employee. Any employee unable to follow a retraining course shall maintain his or her classification, or its equivalent, in the bargaining unit. Seniority provisions will apply when workers are being considered for training.

Table A9
Technology-Specific Health and Safety Provisions

Union	Local	Employer	Article	Summary / Clause
COPE		BBF		The Employer agrees to make reasonable and proper provisions for maintenance of high standards of health and safety in the workplace including a properly heated, lighted and designed working environment. The Employer shall comply with minimum applicable federal, provincial and municipal health and safety legislation and regulations, including the Occupational Health and Safety Act and Regulations thereto. A pregnant worker shall have the right to be transferred away from the VDT without loss of pay or benefits. The Union agrees to assist the Employer in relocating another Employee from within the bargaining unit to fill the pregnant Employee's position. The Employer agrees to reimburse the cost of one ophthalmologic eye examination every six (6) months to all Employees regularly required to work at a video display terminal as set out under the terms of the Employee Benefit Plan. The Employer further agrees that if any deterioration of eyesight occurs as a result of working on a VDT, the Employee shall be reimbursed for the cost of corrective lenses upon production of a medical certificate from a qualified ophthalmologist and/or optometrist. The Employee will not be deducted wages for time spent for an examination. These examinations will be excluded from time allotted for medical appointments as covered under "Article 12.13". In the event that the eye test provided above results in special lenses being prescribed, the Employer will assume the costs of such lenses if they are not covered under the terms of the Employee Benefit Plan. The Employer shall provide Employees with the information of all hazardous materials or substances used in the workplace. Each VDT shall be inspected for radiation emissions both ionizing and non-ionizing on an annual basis. The results of these tests shall be submitted to the Union after the Employer has received the results of the tests. An Employee shall not be required to operate a machine which the Employee and Employer has reason to believe may be defective or inadequate or improperly maintained.
Unifor		Bell Canada		It is the Company's responsibility to adopt and introduce, as circumstances may require, reasonable procedures and techniques to provide for the safety and health of employees while at work. The Union may make suggestions regarding safety for consideration by the Company.
CUPE		Camosun College		Employees who operate VDTs on an ongoing basis shall have a ten (10) minute reassignment of duties away from the VDT after each hour of continuous operation. Continuous operation shall be defined as operation of the terminal without interruption from members of the public, the need to consult with supervisors, the need to access student paper files and other similar activities. A pregnant employee who uses VDT equipment or is exposed to chemicals not proven safe for pregnancy may assume alternate available work for which she is qualified, or elect to take an unpaid leave of absence. An employee assuming alternate work shall be paid at the step of the pay grade of the new assignment that results in the least loss of pay but shall maintain the benefit plans associated with the previous assignment. The College shall make every reasonable effort to: 1. ensure the new VDTs have adjustable keyboards and screens; 2. minimize lighting glare; 3. arrange for an annual test for radiation or harmful emissions; comply with WorkSafe BC publications entitled "Guidelines for Video Display Terminal Workplaces" and "Working with Video Display Terminals".

CUPW		Canada Post		The Joint Health and Safety Committee will ensure that the instruments necessary for measuring the temperature, humidity, noise, carbon monoxide, lighting and dust levels are available at each divisional office and in major postal facilities; in other postal facilities, the necessary instruments shall be available upon request where there are serious reasons to believe that the environment standards are not being complied with.
PSAC		Canadian Centre for Occupational Health and Safety	45.03	The Employer will take objective ergonomic principles into consideration when replacing equipment and/or setting up a new work station.
PSAC		Canadian Centre for Occupational Health and Safety	45.04	An Employee who is required to perform computer work on a continuous basis, or where the computer work is essentially the major component of the job, shall be entitled to a relief break period of five (5) minutes per hour for each hour of computer work performed. It is understood that this break period is not a break from duties but is a break away from the computer to move around and change activity. It is understood that this relief break period is not cumulative and is to be taken on an approximate hourly basis.
PSAC		Canadian Centre for Occupational Health and Safety	45.05	The Employer will work with affected Employees who have reported computer related problems to provide an action plan to improve the situation and such Employees will cooperate with management to establish and adhere to the plan.
PSAC		Canadian Centre for Occupational Health and Safety	45.06	The Employer will, upon the request of the Joint Occupational Health and Safety Committee, arrange to have radiation emissions from specifically identified computers monitored.
PSAC		Charlottetown Airport Authority		The Employer shall make reasonable provisions for the occupational safety and health of employees. The Employer will welcome suggestions on the subject from the PSAC, and the parties undertake to consult with a view to adopting and expeditiously carrying out reasonable procedures and techniques designed or intended to prevent or reduce the risk of employment injury.
IAFF		City of Regina		The City shall observe all reasonable precautions and provide all safety devices or appliances that may be reasonably required for the ample protection of employees. All employees shall cooperate with the City in the prevention of accidents and will, from time to time, as the occasion requires, make such representations to the City as to the prevention of accidents as may be considered necessary. The parties agree to establish and maintain an Occupational Health Committee in accordance with the terms and conditions of the Occupational Health and Safety Act.
CUPE	1936	Collingwood Neighbourhood House	26.09	The Employer agrees to make appropriate ergonomic adjustments for employees who express health or comfort related concerns about continuous work performed in front of computer terminals.
PSAC		Fort Smith Housing Authority		The Employer and the Committee shall ensure that the necessary instruments for measuring the quality of the work environment are available when required, and that the results are acted upon appropriately, in order to correct any problems identified by said tests and/or measurements.

Unifor		General Motors of Canada	Letter	Unifor and General Motors agreed to an ongoing process to investigate and address potential health and safety issues associated with the use of engineered nanomaterials (such as advanced carbon materials) in the workplace, including through a special sub-committee of the existing joint health and safety committee.
Unifor		General Motors of Canada		The Company agrees to provide: Industrial Hygiene testing equipment Equipment and training for measuring noise, air contaminants and air flow, including smoke tubes which will be available for use by the representatives of the Local Joint Committees on Health and Safety, established pursuant to Section V hereof. It is agreed that separate sets of such equipment will be provided for all locations covered under the Master Agreement. Direct reading detector tubes necessary for that plant and approved by the Master Committee will be available as requested for use by the representatives of the Local Committees.
Unifor		General Motors of Canada		Safety measures for new or relocated equipment. Priority will be given by management to install in a timely fashion occupational health and safety measures for new or relocated equipment. In addition, management representatives will review with local Health and Safety Committees, plans for major process, equipment and lay-out changes. Furthermore, management encourages members of the local Health and Safety Committees to participate in the Health and Safety review and approval process of machinery and equipment at the manufacturer's location where practicable, and in the plant prior to start up for production with a view to providing constructive recommendations to management. During these review processes, management representatives will give consideration to comments from Local Health and Safety Committee Representatives, when the health and safety of employees may be affected.
Unifor		General Motors of Canada		The Company and the Union discussed the replacement of internal combustion engine powered material handling/unique vehicles with electric vehicles for in-plant use when such vehicles require replacement. The parties also discussed the emissions from the use of internal combustion engine material handling vehicles inside of plants and taking appropriate action, where necessary to control carbon monoxide exposure levels. The Company advised the Union it would consider the replacement of material handling vehicles powered by internal combustion engines with electrically powered vehicles to control carbon monoxide exposures from material handling vehicles used inside of the plant where this is economically and technologically achievable.
Unifor	88	General Motors of Canada, CAMI	Letter #30	CAMI and the Union agreed that Kaizen activities, jointly developed and accomplished by Production Associate(s) and Maintenance Associate(s), will be implemented so as to improve safety conditions, ergonomic conditions, quality performance and equipment reliability. Mutual areas of concern were discussed regarding the roles of Production Associates and Maintenance Associates and their respective scope of work in the Kaizen Shop(s). CAMI and the Union agreed Kaizen projects that involve the following key elements will be performed by the Skilled Trades group; i) Safety – work involving the installation or modification of safety devices, guarding or railings, including the installation of equipment; ii) Overhead Work – installation of overhead equipment that must be secured to structural components; iii) Electrical work – installation of photoeyes, proximity switches, electrical fixtures, wiring and related components; 153 iv) Movement under force – installation and use of air and hydraulic driven motors and cylinders, and related components.
Unifor	88	General Motors of Canada, CAMI	Letter #39	Both parties agree that the timely and proper application of the principles of ergonomics can help to reduce the likelihood of injury and thus help to protect the health and safety of all team members. The parties recognize that a functioning Committee is an essential part of the success of the Ergonomics Program and thus have agreed to the formation of an Ergonomics Committee as follows: 1. Lineside Ergonomics Representative 2. JHSC Worker Representative on shift at the time of the meeting 3. Management Representative for Ergonomics 4. Management

				Representative for Safety 5. Management Representative for Production The Committee shall meet monthly or at such other frequency as the Committee may determine. The Committee's mandate is as follows: 1. Jointly develop and assist in the implementation of a complete Ergonomics Program. 2. Monitor and provide recommendations to improve the Ergonomics Program. 3. Evaluate the effectiveness of the Program by: a. Reviewing open/closed and contained ergonomic concerns. b. Reviewing injury/illness statistics. c. Reviewing countermeasures for effectiveness. d. Reviewing plant wide ergonomic concerns (tools, processes, etc.) 4. Make such recommendations as may be appropriate in the circumstances. 5. Periodically report to the Plant Safety Review Board. 6. CAMI shall prepare and distribute signed minutes of the Committee's Meetings. 7. The Management Representative for Ergonomics will maintain a list of Ergo interventions implemented under the Ergonomic Program. The Committee may invite representation from appropriate departments (e.g. Industrial Engineering, GMS etc.) to attend Committee meetings to provide information to assist the Committee in its work. To ensure ergonomic considerations are factored into changes on the shop floor, the Production Hazard Assessment or the GEST sheet shall be completed prior to making the change or moving the job. This information shall be communicated and provided to the affected team(s) in advance of the change to ensure a smooth transition.
OPSEU		Government of Ontario		After each hour of continuous operation of a VDT, a VDT operator shall be relieved of such duties for a period of ten (10) minutes to perform other duties away from the VDT. At the beginning of assignment to a VDT and every twenty-four (24) months thereafter, a VDT operator who is regularly required to operate a VDT for two (2) hours or more per day shall be required to undergo an eye examination by an optometrist or an ophthalmologist who is qualified to conduct the following tests: 1. unaided visual acuity (letter chart test); 2. refractive findings; 3. corrected visual acuity; 4. amplitude accommodation; 5. suppression; 6. muscle balance (near, one metre, distant); 7. slit lamp biomicroscopy The cost of the eye examination, not to exceed $… for such examinations, shall be borne by the Employer, and the VDT operator shall authorize release of a copy of the examination report to the Employer. A pregnant VDT operator who operates a VDT that contains cathode ray tubes may request reassignment from VDT duties for the remainder of her pregnancy by forwarding a written request to the Employer together with a certificate from a legally qualified medical practitioner certifying that she is pregnant. Upon receipt of the written request specified in Article 9.7.1, the Employer shall, where possible, assign the employee to a vacancy in the bargaining unit within her ministry, provided that she is able and qualified to perform the required duties and the salary maximum of the vacancy is not greater than the salary maximum of the classification of her position. Where more than one such vacancy is available, the Employer shall assign the employee to the vacancy with the highest salary maximum. The assignment of a surplus employee to a vacancy, in accordance with Article 20 (Employment Stability), shall have priority over an assignment under Article 9.7. Where an employee is assigned to a vacancy in accordance with Article 9.7, the provisions of Article 6 (Posting and Filling of Vacancies or New Positions) shall have no application. Where an employee is assigned, under Article 9.7.2, to a position in a classification with a lower salary maximum than the salary maximum of the classification of the position from which she was assigned, she shall be paid at the rate within the salary range of the classification of the position to which she has been assigned under Article 9.7.2, which is closest to but not more than the rate she was receiving immediately prior to the assignment. Where it is not possible to assign an employee in accordance with Article 9.7.2, the employee shall, upon written request, be granted a leave of absence without pay to cover the period preceding the date on which she would be entitled to commence pregnancy leave of absence in accordance with Article 50 (Pregnancy Leave).

				An employee who does not accept an assignment made in accordance with Article 9.7.2, may elect either to continue work in her original position or request leave of absence in accordance with 9.7.5. Video display terminal work stations shall be equipped with tables or stands for the terminal to permit it to be at a height appropriate to the circumstances of its use and the seating available for the operator. The chair provided shall have a seat which is adjustable in height, a back rest which is adjustable in height, and a foot rest where necessary to accommodate a particular operator. Where appropriate to the nature of the work, paper stands or work stands shall be provided.
LIUNA		Greater Toronto Sewer and Watermain Contractors Association	11.12	2 No entertainment devices - such as cell phones, Blackberries, iPods, and/or similar devices - shall be used during working hours; nor shall they be turned on, except during lunch breaks, regular work breaks, job-site emergencies, or when prior approval is obtained from the employee's supervisor.
PSAC		House of Commons		The Employer will carry on its operations in a manner that will not endanger the health and safety of any of its employees and shall adopt and carry out reasonable procedures and techniques designed or intended to prevent or reduce the risk of physical injury in its operations. An employee shall take all reasonable and necessary precautions to ensure their own safety and the safety of their fellow employees. The working environment and facilities will be maintained in a clean and sanitary condition by the Employer.
COPE		ICBC		The Corporation and the Union believe it is in the best interests of the employee and the Corporation to develop and administer a policy addressing the use of video display terminals (VDTs). The following policy outlines the considerations that will apply in regard to VDT operation. Training The Corporation and the Union recognize the need for operator involvement and training with the introduction and on-going use of VDTs. The Workers' Compensation Board of British Columbia Industrial Health and Safety Regulations state that every employer shall ensure the adequate direction and instruction of workers in the safe performance of their duties and that supervisors are responsible for proper instruction of workers under her/his direction, and for ensuring that their work is performed without undue risk. The Corporation will develop and administer, as part of its educational offerings, a course entitled "Ergonomics and Human Factors" which will incorporate - what VDTs are; an overview of work processes in the unit/department where VDTs are used; the rationale for eye examinations; rationale for rest or stretch breaks; ergonomic factor awareness and adjustments of equipment and relaxation exercises. The course will be used subsequently by the supervisors as a training/ orientation module for subordinate staff. The course will be a requirement for areas where use of VDTs is considered as continuous or intermittent and will be elective for areas where usage is determined to be casual. Provisions for Pregnant Employees Where practical, and upon written request from a pregnant employee, the Corporation will endeavour to place the employee in another non-VDT associated position in accordance with the following: Temporary Lateral Exchange of Employees This will be a voluntary, mutually agreed upon, action at the employee's request. There will be no expenses paid by the Corporation. The exchange transfer must be at equal job levels. The exchange transfer must be between employees who are each imminently capable of performing the new job (i.e. no more than one week's orientation). Such exchange transfer shall not be unreasonably denied. Temporary Exchange of Employees

				This will be a voluntary, mutually agreed upon, action at the employee's request. There will be no expenses paid by the Corporation. The exchange transfer must be between employees who are each imminently capable of performing the new job (i.e. no more than one week's orientation). Such exchange transfer shall not be unreasonably denied. Where such placement is to a lower level position the employee's salary will be treated in accordance with Article 11.10 of the Collective Agreement. Temporary Vacancy Placement This will be a voluntary, mutually agreed upon, action at the employee's request. The basis of alternate job placement will be the employee's imminent ability to perform the job in question (i.e. no more than one week's orientation). There will be no expenses paid by the Corporation. Where such placement is to a lower level position the employee's salary will be treated in accordance with Article 11.10 of the Collective Agreement. Alternatively, or in the event reassignment is not deemed practicable, the employee will be permitted to commence a leave without pay through to the beginning of her normal period of maternity leave. Stretch Breaks Where practical, jobs involving VDT usage will be designed to avoid continuous usage (where continuous usage is defined as use which is uninterrupted by alternate work assignments, with all work assignments relating to dedicated attention to the VDT). In the interests of avoiding occupational fatigue which may arise from the continuous and dedicated usage of VDT equipment, employees are encouraged to use relaxation exercises from time to time (see "Simple Exercises for the VDT Operator"). Employees whose work requires the continuous usage of VDTs will be allowed stretch breaks for this purpose as needed, within the guidelines of a five (5) minute break in every one (1) hour of continuous usage. Scheduled rest breaks as provided for in the Collective Agreement will be considered as satisfying the need for a stretch break in the applicable time period. Visual The Corporation will provide a baseline ophthalmological examination to all regular employees whose usage of VDTs on a continuous basis exceeds 1 hour per day or whose intermittent usage exceeds 4 hours per day. Follow-up examinations will be the employee's responsibility. Corrective lenses, where necessary, will be the employee's responsibility to procure (in most instances under the extended health care plan). Employees who are required to use VDTs and who develop visual impairment or visually related disabilities which limit their ability to perform their job will be handled on the basis of a medical disability - provided they have functioned in the position for at least 6 months. Ergonomics The Corporation will select VDT equipment/hardware, work station layout, lighting, etc., in accordance with Federal, Provincial, and WCB Safety Standards. The Corporation relies principally on testing information provided through suppliers and other bona fide independent sources in assessing the quality of any new equipment purchase. The Corporation will make available to the Joint Worksite Occupational Health and Safety Committee listings of machine types in use. Employees who experience technical difficulty or malfunction with VDT equipment are encouraged to contact the ISD help desk. Responses to such calls are principally diagnostic in nature. Employees who continue to have concerns or complaints respecting any particular device will be encouraged to report the concern to their supervisor in writing, with a copy to the Joint Worksite Occupational Health and Safety Committee.
BCGEU		Mainroad Lower		When a majority of an employee's daily work time requires monitoring such VDTs, such employees shall have their eyes examined by an ophthalmologist of the employee's choice at the nearest community where medical facilities are

		Mainland Contracting LP		available prior to initial assignment to VDT equipment and after six (6) months, a further test and annually thereafter if requested. The examination shall be at the Employer's expense where costs are not covered by insurance. Where requested, the Employer shall grant leave of absence with pay. Employees who are required to operate VDTs on a continuous basis shall be entitled to two (2) additional ten (10) minute rest breaks per workday to be scheduled by agreement at the local level. Employees required to continuously operate VDTs for three and one-half (3 1/2)consecutive hours or longer but less than their full shift shall be reassigned to alternate work duties for one (1), ten (10) minute period. Where alternate work duties are not available, employees shall receive a ten (10) minute rest break. Pregnant employees shall have the following options: 1. not to continue monitoring VDTs, or 2. not working in the area of one (1) meter of VDTs which use cathode ray tubes, or 3. to work at a shielded VDT should one [be] present in the worksite. When a pregnant employee chooses not to monitor such VDTs, or chooses not to work in such an area, if other work at the same or lower level is available within the offices within her headquarters area, she shall be reassigned to such work and paid at her regular rate of pay. Where work reassignment in (2) above is not available, a regular employee will be considered to be on leave of absence without pay until she qualifies for maternity leave. Where employees are on leave of absence pursuant to (c) above, and opt to maintain coverage for medical, dental, extended health, group life and long-term disability plans, the Employer will continue to pay the Employer's share of the required premiums. The Employer shall ensure that new equipment shall: 1. have adjustable keyboards and screens; meet the most stringent emission standards of the Federal Radiation Emitting Devices Act and other standards established by the Federal Health and Welfare, the BC Workers' Compensation Board or the provincial Ministry of Health. The Permanent Joint Occupational Health and Safety Committee shall review and make recommendations to ensure that the lighting and the above standards recommended by the Ministry of Labour, Occupational Environment Branch, as outlined in the publication "Working with Video Display Terminals" are being met. The Employer shall ensure that any new office equipment required for use in conjunction with VDTs shall meet the standards recommended by the Ministry of Labour, Occupational Environment Branch, publication "Working with Video Display Terminals". The Employer shall continue to upgrade all existing equipment and facilities to meet the standards recommended by the Ministry of Labour, Occupational Environment Branch, publication "Working with Video Display Terminals".
CUPE		Simon Fraser University		For the purposes of (b) through (d) below "Video Display Terminal" (VDT) shall mean a terminal which uses a cathode ray tube. For all employees who work at video display terminals, a ten (10) minute alternate work assignment as a visual relief shall be allowed after each hour of continuous operation on a VDT. An employee whose work requires or will require regular and consistent use of VDTs shall be entitled to two (2) hours off work without loss of pay once each calendar year for an eye examination by an ophthalmologist. A pregnant employee or an employee who notifies the University in writing of her intent to conceive shall not be required to operate VDTs against her will and such an employee (i) may elect to take alternative work which may be offered by the University, or (ii) if she is a continuing employee, shall be granted an Extended Leave Without Pay

				under the provisions of Article 44 except 44.01(b); the above options to last until the commencement of Maternity Leave for a continuing employee or until the termination date of a temporary employee's assignment.
Unifor	114	Viking Air	11.17	The Company shall promptly supply the results of environmental monitoring it conducts and the results of any monitoring by any government agency to the Committee and shall post the results in a conspicuous location.
Unifor	114	Viking Air	11.18	The OH&S Committee will develop an ergonomics checklist which shall be used in job station designs and/or for the introduction of new processes and procedures.
YUSA		York University		At an employee's written request to the [Union] the parties agree to meet without delay in a Labour/Management setting with a pregnant or nursing Employee with a view to resolving her concerns relating to her health and safety at work which may also include working with a computer workstation.
IAM		Prescribed Language		Time Motion Studies In instances where management plans to undertake a time motion study, or a project involving a time motion study, or the equivalent of, the employer shall; - Notify the union 30 days in advance - Identify the purpose of the study - Identify the location of the study and the members that will be affected - Share findings with the union representative and health and safety committee

Table A10
Surveillance Provisions

Union	Local	Employer	Article	Summary / Clause
Unifor		3M Canada		The company will not use [video surveillance equipment] to monitor routine employee activities.
CUPE		ABC Day Nursery		The retention period for information that has not been viewed for law enforcement or public safety purposes shall be 30 calendar days, following which it is to be routinely erased such that it cannot be constructed or retrieved.
Unifor		Air Canada		The parties recognize that employees have a reasonable expectation of privacy within the workplace, subject to the rights and obligations of the parties in the collective agreement and/or applicable legislation.
ACPA		Air Canada	10.08	Air Canada and the ACPA agree to a telephone monitoring system in the System Flight Crew Scheduling Department. The purpose of the system is to provide a record of conversations between system flight crew schedulers and Pilots covered by the Collective Agreement in the course of performing their duties. It will be referred to when situations such as those listed below, are brought forth by either party: incident reports (contractual disputes/violations); letters of complaint; and grievances. The following parameters have been agreed to by both parties: The system will not be used to monitor the performance or initiate discipline on an employee. When a situation described in A10.08.03 above occurs, ACPA or Crew Scheduling may request a review of a recording by providing a written request to the Manager, System Flight Crew Scheduling. This request will be initiated within 30 days of reasonable knowledge of this situation by ACPA or crew scheduler. When there is a requirement to review a recording, at least one representative of the Company and one representative of ACPA will be present. The affected employee(s) may also attend the review An unmonitored telephone line will be provided for calls from ACPA representatives to System Flight Crew Scheduling concerning matters arising from the Collective Agreement or other official business between the Company and ACPA. Recorded calls will be kept for at least 75 days.
Teamsters	1999	Air Inuit	26.04	Flight data recorders and cockpit voice recorders shall be used solely for the purpose of investigating accidents or incidents and to facilitate aircraft maintenance and safety. Under no circumstances shall these two (2) devices be used to monitor or check a Crew Member's conduct during a flight. During the investigation of an accident or incident, the Company shall not reveal the content of these devices to the general public or the news media without the prior approval of the Crew Member concerned and the Union.
Teamsters	1999	Air Inuit	26.14	An automated flight information reporting system (AFIRS) is a satellite-based information system that enhances flight safety, monitors engine trending and tracks flights in real time via satellite communication services. The Company has installed and may use an AFIRS on its entire fleet for the purposes described above. The AFIRS system's objective is not to monitor or verify the behavior of a Crew Member during a flight, its main objective is to allow the Company to track its flights, to establish operational tendencies and to optimize operations.
MoveUp (COPE)	378	BC Hydro	MOU 66B	The purpose of quality monitoring is to ensure consistency of service among employees designated by the Employer, in terms of the correct dissemination of information, the application of established policies and procedures the development and promotion of best business practices, and the delivery of service to our customers. Quality monitoring includes the recording of business related telephone calls between employees and customers or a client representative, the capturing of computer screen images directly associated with a business process related to the employee's job description and flip post service call surveys. Employees, for the purposes of this Memorandum of Understanding, include Electric Service Coordinators also known as Express Connect Coordinators' and Workleaders.

				Prior to adding to the list of roles/departments that mav be included in duality monitoring or the means by which additional monitoring may take place. BCH will meet with the Union to discuss the terms of expanded monitoring. Quality monitoring will occur from a remote location, a local observation point or by means of a recording device. BCH agrees to provide the Union and employees with notice of equipment and facilities which are to be utilized for the purpose of monitoring and measuring individual employee performance as part of a regular performance monitoring program, BCH further agrees to advise the Union and employees of the monitoring and measuring capabilities of all fob related equipment prior to the application of those capabilities. It is understood that the general purpose of quality monitoring will be to provide instruction and coaching in order to improve Quality of services through the measuring and reviewing of performance metrics. In situations where the existence of employee performance difficulties is evident, such that more frequent monitoring is required, the employee and the Union will be advised. For the purposes of performance difficulties the Quality Listeners shall only be workleaders or management personnel. The Employer agrees not to compel any employee in the Bargaining Unit to testily before either an arbitrator of the Labour Relations Board of BC or any of its successors. Monitoring and work-related statistics will be used to provide the Company with information needed to determine the level of service to customers and to establish staff requirements: and enhance the ability of managers, workleaders and Electric Service/Express Connect Coordinators to work cooperatively in providing high quality work: and complement employee training and development. Quality monitoring is not to establish grounds for disciplinary action. Rather, monitoring is to determine whether an employee's performance falls within the expected service parameters that are established bv BCH. If an employee's performance does not fall within the expected service parameters. BCH will determine whether the employee needs additional assistance such as coaching, training, set expectations, or a performance improvement plan. BCH shall ensure that the impact of its quality monitoring on privacy is proportional to the purposes for which it is being implemented. BCH shall establish protocols to ensure that personal employee information is not unintentionally collected or disclosed and that in the event of a breach of employee privacy due to quality monitoring, the employee or employees about whom the information pertains is/are notified and that the breach is limited as much as possible. BCH shall take the same precautions and steps with respect to information that is related to Union business, except that BCH shall notify the Union in the event of a breach. Business lines in the Express Connect Centres will be equipped to enable quality monitoring of calls related to the BCH's business. Any and all private calls will be deleted. To ensure employee privacy, dedicated phones with unmonitored access have been provided for personal use. Personal calls made from these facilities will not be monitored. Nothing in this Memorandum of Understanding prevents BCH from exercising its legitimate management rights or the union from exercising its rights under the collective agreement. Nothing in this Memorandum of Understanding expands BCH's right to collect, use, or disclose information bevond what is permitted under applicable privacy legislation.
Unifor		Bell Canada (Atlantic)	29.02	The parties agree that the Company has the right to monitor the quality of service that employees provide to customers. The objective of monitoring the quality of service is to ensure effective coaching and development of employees. For the life of this Agreement, the Company agrees to certain restrictions on remote service monitoring as per the Letter of Agreement on Contact Centre Service Monitoring. The Company commits to provide feedback to employees after the monitoring is completed and to provide appropriate coaching and/or training to address any skill and knowledge gaps identified. Where monitoring results

				impact performance review ratings, it will only be in the circumstances permitted by the Letter of Agreement, and only where there is a consistent trend over the review period. No employee will be disciplined as a result of service monitoring except for gross customer abuse, fraud, violation of privacy or consistent failure to meet minimum performance expectations.
Unifor		Bell Canada (Atlantic)	Appendix K, Letter	1. There will be a Remote Monitoring Program which applies to the following front-line employees: • Front-line Business Service Representatives, Consumer Service Representatives, Helpdesk Representatives, Operators, and Telesales Representatives who have phone contact with external customers in the following Queues (regardless of language): • Residential Inbound (including TV, FibreOP and Retention), Accounts Receivable Management Inbound and Outbound, Telesales, Small Business Inbound, Directory Assistance, Toll and Ancillary Services, and External Enterprise Customer Queues 2. The Remote Call Monitoring Program will consist of a set number of customer calls being recorded, and then reviewed and scored by a Quality Assurance Representative (QAR), with the results being used for the purposes set out in this agreement. 3. The Remote Call Monitoring Program will be implemented for the Consumer Service Representative Queues before being implemented for any other Classification. 4. The Remote Call Monitoring Program will be put through a trial run of three (3) months, after which any problems or issues will be reviewed with the CIF before the Program is finalized. This three (3) month trial will be completed before the introductory period (described below) can begin for any Queue. Use of Remote Call Monitoring Program Results 5. (a) For an introductory period (defined further below), call monitoring results will be used solely for the purposes of employee coaching by the manager. Following the introductory period, call monitoring results will be integrated into the employee performance management process. (b) The introductory period will be twenty-four (24) months for each Queue, beginning with the first use of the program in that Queue. (c) If the Council agrees, the introductory period may be reduced to eighteen (18) months for any or all Queues. (d) The introductory period does not begin until after the three (3) month trial period mentioned above has passed. (e) For greater certainty, even during the introductory period, the parties agree that call monitoring results may be used for employee discipline in the circumstances outlined in Article 29.02 of the Collective Agreement. Remote Call Monitoring Program Details 6. (a) The Remote Call Monitoring Program will monitor up to ten (10) calls per month for each employee in the program. (b) Monitored calls will consist of customer interaction calls, and will not include personal calls or calls made on the employee's secondary line. (c) Monitored calls will be scored by a Quality Assurance Representative by measuring against scoring criteria. The results will be given to the employee's direct manager. (d) The manager will review the call scores with the employee within two (2) weeks from the date of the call, including listening to the actual recorded calls (where technology permits). (e) Where an employee wishes to review a specific call for development purposes, the employee will identify the call details to the manager, and both will listen to the call and discuss (where technology permits).

				(f) A manager and employee may also review a recorded call together in response to a customer complaint, for the purposes of reviewing what happened on the call (where technology permits). (g) Where an employee disputes the results of the call scoring, the employee can appeal the score to the Remote Call Monitoring manager, who will have the final say in determining the score. The details of the appeal process will be determined by the appropriate Joint Union Management Committee.
CUPW		Canada Post	41.02	The watch and observation systems cannot be used except for the purpose or protecting the mail and the property of the Corporation against criminal acts such as theft, depredation and damage to property. At no time may such systems be used as a means to evaluate the performance of employees and to gather evidence in support of disciplinary measures unless such disciplinary measures result from the commission of a criminal act.
CUPW		Canada Post	41.03	Geo-Positioning Systems (GPS) or other tracking or localization technology shall not be used to gather evidence in support of disciplinary measures unless such disciplinary measures result from the commission of a criminal act.
PSAC		Canada Revenue Agency		Call monitoring is intended to improve performance by providing guidance and feedback to the employee. When the Employer makes reference to a call recording, upon request, the employee will be given access to review the call recording that is being referred to. Coaching and development feedback resulting from call monitoring shall be provided in a timely and meaningful fashion.
PSAC		Canada Revenue Agency	Appendix Y	In response to concerns related to call monitoring in the CRA call centres, raised by the Bargaining Agent during the last round of bargaining, the parties agree to the conditions outlined in this Memorandum of Understanding (MOU). Accordingly, the parties agree: (a) to establish a joint committee to discuss call monitoring in the CRA call centres (b) that the joint committee members will meet within sixty (60) days of the ratification of the tentative agreement to establish the terms of reference of the committee. The Employer commits to engage in meaningful consultation with the Bargaining Agent and to take into account the recommendations brought forward by the joint-committee in the development of fair and transparent guidelines concerning the use of call monitoring in CRA call centres. It is also agreed that time spent by the members of the committee shall be considered time worked. All other costs will be the responsibility of each party. The parties agree to continue the practice of working collaboratively to address concerns with respect to call monitoring through the Call Centre Committee
SIU		Canada Steamship Lines	LOU FIRM Project	1. The Company may place video cameras on CSL vessels for the sole purpose of supporting CSL'S FIRM project; 2. Any other use of video cameras, other than specified in this Letter of Understanding, is prohibited; 3. Video cameras will only be placed in the engine room, cargo spaces and on open decks; 4. Under no circumstances will video cameras be placed in any area where they would be intrusive of a crew members' privacy (e.g. eating area, crew members' cabins, toilets, showers, etc.); 5. Signage will be placed in each location where a video camera is installed so crew members can and will be aware of the presence of video camera monitoring; 6. Video cameras and recordings will not be used to monitor crew members or support discipline of crew members and will not be used against any crew member in any disciplinary action or grievance; 7. Whenever possible, CSL will advise the Union at least 14 days in advance of a vessel being equipped with video cameras and of the location where each video camera will be installed; 8. Video cameras shall not be used to replace rounds and/or any other supervision traditionally done by crew.
Unifor	101R	Canadian Pacific Railway	Appendix 16	GPS technology should not be solely relied upon as a measure to constantly monitor the locations of employees or to continually check on the performance of employees in the workplace. The Company did assure the Union that the

				GPS technology would not be used as a replacement to active management, or the requirement to perform proficiency testing. By way of example, the parties did agree that the use of information generated by GPS technology could be used to investigate the cause of an incident. As such, GPS generated information could be used as evidence in a formal investigation.
CUPE		Carlton University		Surveillance cameras and related equipment may be installed by the Employer to protect critical areas of the Employer's premises from theft, and/or to enhance the personal safety of members of the Carleton University community. Surveillance cameras and related equipment shall not be used in employee-occupied areas during normal working hours without the knowledge of the employees in the area and of CUPE 2424 if the employees are members of CUPE 2424. The Employer shall not be allowed to use surveillance cameras to monitor the work of employees and no information obtained through the use of this equipment shall be used against employees at any time unless such information constitutes evidence of criminal acts.
ATU		City of Niagara Falls		All video cameras installed on property or equipment is for health and safety and security purposes, as well as for the review of accidents.
CUPE		City of Prince Rupert		The use of surveillance cameras will comply with appropriate legislation, such as FOIPOP [Freedom of Information and Protection of Privacy Act] and PIPA [Personal Information Protection Act].
ATU		City of Sault Ste Marie		Cameras are not used to monitor employee performance.
SEIU		Community Living Burlington		Video cameras will only be installed in public areas.
SEIU		Community Living Burlington		The Employer will keep the videos in a secure location, accessible only to the Executive Director or permanent management designate.
ATU		Corporation of the City of Peterborough		The Corporation is committed to public safety, crime prevention, and protection of city staff and assets. The Union recognizes that the City may use electronic surveillance systems in City-owned or operated vehicles, buildings or facilities to deter and detect crime and illegal behaviour. (b) The Employer shall not use electronic surveillance information to monitor employee performance. (c) Should the surveillance information be required as part of an investigation of illegal activity, such information may be submitted as evidence. (d) When the Corporation introduces new technology to the workplace, the Corporation will meet with the Union to explain how this technology interacts with the Union.
IUOE		Direct Transportation and Direct Distribution Centres	LOU 6	Where the Company issues communications equipment (Blackberry, etc.) to an employee, it is to be used for work-related purposes. Use of the equipment will be subject to monitoring and review by the Company. Any monthly bill that is more than plan, and reflects excessive use, may be subject to discipline or repayment by the employee. Employees will not be responsible for damages for normal wear and tear to equipment. Willful damage or loss of equipment may result in progressive discipline
OPSEU		Government of Ontario		The parties agree to the following regarding use of surveillance and electronic equipment in the workplaces: Purpose. The purpose of electronic monitoring and surveillance of Correctional workplaces is for the safety and security of staff, inmates and property of the respective ministry. Information obtained may be used for protection against criminal acts such as theft, depredation and damage to property. Advisement. The Employer shall notify the Union of any increases in use of surveillance equipment. In instances that the Employer is relying upon any type of electronic audio or video recordings for discipline or investigative purposes, the Employer shall notify the Union prior to holding a meeting with the employee for the purpose of investigation,

				that the Employer is in possession of electronic audio or video recordings that will be used for discipline or investigative purposes. Prior to a disciplinary meeting, the Employer will provide a copy of such recording to the Union, as soon as reasonably practical, upon request. The use of electronic monitoring/surveillance equipment is not to be used as a replacement for supervising or managing; or as a means to evaluate employee performance. Any disputes regarding surveillance in a Correctional workplace by the Employer shall be referred to the appropriate [Ministry Employee Relations Committee] for discussion and resolution.
SEIU		Imperial Parking		Where a grievance has been filed, relevant copies of the video surveillance [if utilized in the case] shall be made available upon request to the union. Un-desirable or unproductive behaviour discovered during the review of the tape that is not criminal shall not be used for progressive discipline.
Teamsters		Ken Johnson Trucking	9	Wherever reasonably possible, trucks shall have installed steps or devices to allow reasonable access.
Teamsters		Ken Johnson Trucking	9	All tractors operating on the line-haul shall be equipped with properly functioning Electric Onboard Monitoring.
Unifor	114	Landmark Cartage Transportation	Letter	On July 20, 2017, representatives for the Company and the Union met to discuss the installation of GPS tracking devices and monitoring services for Owner-Operators employed through the Company in accordance with Article 5.04 of the Collective Agreement. Through those discussions, the Company and the Union have agreed to the following: • The Company will pay for the installation of the GPS tracking devices; • The Company will pay for the installation of the GPS tracking devices for a new equipment change up to one (1) time per year; • Removal of the GPS tracking devices will be at the expense of the Owner-Operator; • The Owner-Operator agrees not to tamper with the GPS tracking devices and will be responsible for any "willful" damage to the units; • Owner-Operator will pay $10 per month after installation and will receive training on the "App" and effective use of the tracking services being provided; • The rate of $10 per month will be guaranteed for a period of five (5) years, starting on September 1, 2017. The Union and the Company also agree to meet periodically to discuss any unforeseen issues that arise as a result of this Agreement.
Unifor		Loblaw's Distribition Centre, Ajax		If the Company intends to use video surveillance in a particular circumstance it will be shown to the Union Chairperson or his designate, or Union National Representative before the action is taken.
Unifor		Logistics in Motion		If the Company intends to use video surveillance in particular circumstances it will be shown to the Union Chairperson or his designate, or Union National Representatives before the action is taken.
PSAC		McGill University		The Employer agrees to use information and/or surveillance systems in compliance with the policies and protocols of the University and the applicable laws. The Union and the employees agree to comply with the policies and protocols of the University and the applicable laws governing the use of information and/or surveillance systems.
USW		National Steel Car		The Company has advised the Union that the introduction of video cameras was motivated out of genuine concerns for workers' safety, theft, vandalism and sabotage in the plant.
CUPE		Pacific Blue Cross		The Union will be advised of the location of all video surveillance equipment.

PSAC		Purolator Courier	Letter	The Company will ensure that a notice is placed in a visible area in any workplace with union members which has video surveillance cameras by July 31, 2017.
CUPE		Regional District of Nanaimo		Employees will be made aware of all video surveillance. Employees will be made aware of all employer vehicles with GPS.
Unifor		Regional Municipality of Waterloo		The installation of surveillance cameras is to improve the safety of our employees and customers and the protection of company property. The use of surveillance cameras is for the public safety, crime prevention, security purposes and for the protection of its employees and assets.
Faculty Association		St Thomas University		Employees have the right not to be put under surveillance.
Manitoba Teachers' Society		St. James-Assiniboia School Division	12	The Division shall not use data obtained from GPS (Global Positioning System) technologies to discipline employees.
Teamsters	879	Tandet Logistics	20.02	All Drivers shall comply with the Company's directives regarding the operation of all equipment monitoring devices. Devices installed in trucks that are used to track activity may be used to process payroll. Failure to accurately use the equipment affecting payroll processing may delay the processing of payroll, for which the Company will address as quickly as possible. Any time required by the driver to correct/develop payroll processing information will be at the driver's cost.
CUPE		Town of Uxbridge		Video surveillance will not be used to monitor staff.
CUPE		Town of Uxbridge		Cameras will not be placed in any area where there is a reasonable expectation of privacy.
ATU		Transit Windsor		The Employer believes that the installation of surveillance cameras is a critical measure in improving the safety of our Employees, Customers, and protection of Company property. This Section shall confirm the Employer’s intent that the use of surveillance cameras is for the public safety, crime prevention, and for protection of its Employees and assets only. Cameras installed on Company vehicles or property shall be for security purposes and shall not be used to monitor an Employee’s performance or for entrapment. The Employer agrees it cannot use camera surveillance to discipline Employees or in arbitration hearings for a complaint that does not result in criminal charges. Employees should be advised that surveillance records may be reviewed to confirm a complaint of a criminal nature, to confirm a complaint to Human Rights Commission, or in response to a request by the police. The President of ATU Local 616 or their designate shall be notified and given the opportunity to review the tape.
ATU		Transit Windsor		Surveillance cameras and related equipment presently installed by the Employer is for the purpose of ensuring employees' and the public[s safety, as well as for the protection of the [company's] facilities and property.
ATU		Transit Windsor		In instances where the Employer is going to use information from the surveillance equipment with respect to a Union member, (the only exception is criminal matters or the deliberate tampering of video equipment) the President of A.T.U. Local 616 or their designate will be notified and given the opportunity to review the tape.
Teamsters		TST Overland Express		The Company agrees that the surveillance system will not be used to evaluate the productivity of employees, however, in the event discipline is issued by the Company for a violation of company rules and or policies which happened within their tour of duty, the surveillance system may then be used to support the violation.
University of Western Ontario		University of Western Ontario	Appendix J	During the life of this collective agreement, the parties agree that UWO will provide to UWOSA on a quarterly basis a list of the general locations (number of cameras, building, floor and department – see example) of all known video monitoring devices in the workplace. Despite this, the UWO is not obliged to disclose the location of video monitoring devices which are utilized for specific investigations of employee misconduct, which use of video

Staff Association				monitoring devices will comply with Article 18.03; and/or excluding sensitive scientific and secure areas. It is understood that these devices will not be used for performance evaluation purposes.

Table A11
Work From Home Provisions

Union	Local	Employer	Article	Summary / Clause
Unifor	2002	Air Canada	LOU #34	The Company has in place a Work At Home program for Customer Relations. This program is available to Customer Relations Representatives and Lead Customer Relations Representatives. The conditions of this program are limited to the Work At Home program in Customer Relations and will not form a basis for implementation of a Work At Home program in Call Centres. Participation in this program is voluntary and employees can cancel their participation at any time upon informing local Management. Lead Customer Relations Representatives as well as the Customer Relations Representatives assigned to Triage/sortingsorting duties and/or sorting duties are required to work from the Customer Relations Centre. However, these employees may be eligible to work from home on an ad hoc basis, subject to approval by local management. Approval of such requests will not be unreasonably withheld. Note: Administrative Clerks are excluded from the Work At Home program. All employees participating in the Work At Home program must, with the agreement of local Management, establish in advance, the scheduled days worked at home and the scheduled days worked in the Customer Relations Centre.
Unifor	2002	Air Canada	LOU #34	Air Canada commits to support employees participating in the Work At Home program by providing the following: a) A laptop to be used exclusively for work-related duties (any other equipment must be supplied at the employee's expense and must be compatible with the equipment provided by the Company); b) VPN service to access all Air Canada required programs; c) Technical support for issues related to the use of the laptop or any of the work-related programs; d) Access to Management and Lead Customer Relations Representatives; e) Space within the Customer Relations Centre on the days they are scheduled to work in the Customer Relations Centre; and f) Guidelines regarding occupational health and safety standards for Work At Home locations.
Unifor	2002	Air Canada	LOU #34	An employee will be eligible to participate in the Work at Home program provided the employee meets the following criteria: a) Has an attendance record at or below the target corporate absenteeism level; b) Meets or exceeds productivity and quality of work targets; c) Follows corporate guidelines and checklists regarding a safe and ergonomic work environment including guidelines regarding occupational health and safety standards for Work At Home locations; d) Has an adequate work space available within their home and provides their own appropriate office furniture (e.g. desk, chair, lamp, etc.); e) Allows access to the Company, upon appointment, to inspect the home office to ensure compliance with occupational health and safety standards. This inspection will include the Unifor Health and Safety Representative or their designate. Forty-eight (48) hours' notice will be provided prior to any home inspection. f) Has appropriate Hi-Speed internet connection as determined by local management. (i.e. download speed of 7.5 mbps, upload speed of 512 mbps and monthly minimum of 60 gb); g) Provides for an international long distance plan; h) Maintains corporate standards and guidelines regarding confidentiality, and the protection of personal information;

				i) Maintains additional home insurance, if necessary; and j) Ensures that a home office is permitted under zoning by-laws or restrictions. All employees who participate in the Work At Home program must meet the following criteria in order to remain in the program: a) Meet or exceed productivity and quality of work targets; b) Adhere to their scheduled start and finish times as well as the duration of their daily scheduled breaks and meal period; c) Maintain an attendance record that is at or below the target corporate absenteeism level; d) Be readily available during scheduled working hours when called upon; e) Adhere to Company policies regarding safety requirements in the work space and protection of personal information. In the event that an employee fails to maintain the standards above, the Company will cancel the employee's participation in the Work At Home program and the employee will return to work at the Customer Relations Centre and participation in this program will cease for a minimum period of six (6) months
Unifor	2002	Air Canada	LOU #34	Work schedules within Customer Relations will provide seven (7) day coverage.
BCGEU		BC Buildings Corporation	Appendix 15	This Memorandum applies to bargaining unit members who are involved in any pilot projects undertaken by the Corporation over the life of this Collective Agreement. The Corporation agrees not to enter into any other telecommuting arrangements/agreement unless mutually agreed to by both parties. Telecommuting is defined as performing regular work duties from a location that is remote from the employee's main office. Teleworkplace is the location at which the employee and the Corporation have mutually agreed the employee will telework. It does not include a workplace maintained and operated by the Corporation. Telecommuting is voluntary and may be terminated with two (2) weeks' notice by either the employee who is telecommuting or the excluded manager. The parties agree that no employee shall be required to telecommute. While involved in telecommuting, individuals continue to be employees of the Corporation and retain all rights and benefits of the Collective Agreement. Employee status, salary, benefits and job responsibilities will not change due to participation in telecommuting. Details of the telecommuting arrangement will be recorded in an agreement signed by the employee and excluded manager. A copy of this agreement will be provided to the Union. Employees shall telecommute no more than three (3) days a week without mutual consent of the employee and the excluded manager. The Corporation and employee will mutually set the hours of work. The Corporation will provide the equipment necessary to perform the tasks identified for telecommuting. Liability for cost, maintenance or replacement of the equipment will be the Corporation's. The employee will be expected to properly handle and house the equipment. Such equipment and supplies shall remain the property of the Corporation and must be returned if the employee's employment is terminated or if the telecommuting arrangement is terminated. The employee will also ensure that all long distance costs associated with the provided business line are for Corporation business purposes only, and that the home based office is maintained from a safety and health perspective. The employee will ensure that the equipment and supplies provided by the Corporation are used only for the purpose of carrying out the Corporation's business. Employees who work at home will manage dependent care and personal responsibilities in a way which allows them to successfully meet the job responsibilities. Telecommuting is not a substitute for dependent care.

				The employee who works at home is responsible for adhering to all local bylaws and zoning requirements and providing dedicated office space with adequate office furniture for use during telecommuting days. The employee is also responsible for establishing and maintaining a safe work space which is free from hazards and other dangers to employees and equipment.
Unifor		Bell Canada		It is agreed that no change may be made to the job titles of employees because of their participation in teleworking…. During the employees' participation in Teleworking, all provisions of the Collective Agreement shall continue to apply, except the following: The assignment shall be considered a temporary special assignment for the purposes of Article 22. During their participation in Teleworking, employees shall not be entitled to the travel allowance provided for in Article 23 when they travel to and from their usual work center. When, at the Company's request, participants perform work which does not immediately precede or follow their scheduled tour of duty, they shall be remunerated for the overtime hours. If a participant who must work overtime does not receive prior notice as per article 19.09(a), he shall be paid an additional hour of wages, unless the provisions of section 18.09 apply. The terms of article 19.08 of the collective agreement do not apply for Teleworkers.
Unifor		Bell Canada		The telephone and computer systems may be used only by Teleworkers and strictly for their work for the Company. Long distance calls shall be kept to a strict minimum and may be made only for Company purposes.
Unifor		Bell Canada		Participants shall be considered to be at work in the same way as if they were at their normal place of work. They shall therefore take all reasonable measures to ensure their safety, in accordance with Company practices.
International Fed'n of Professional & Technical Engineers		Bruce Power		The terms and conditions of the Collective Agreement will apply except where modified by agreement among Bruce Power, The Society and the employee…. Teleworking will not change the employment status of the teleworker.
International Fed'n of Professional & Technical Engineers		Bruce Power		Bruce Power shall provide all furnishings/equipment it deems necessary to meet job expectations. Bruce Power will pay for additional insurance costs, if required. If the teleworking arrangement is terminated then the employee will be entitled to relocation assistance as provided in the Collective Agreement.
International Fed'n of Professional & Technical Engineers		Bruce Power		Bruce Power will provide appropriate health & safety advice and guidance to the teleworker.
CWA		CBC		Employees shall have the right of Union assistance in negotiating the terms and conditions of any work at home agreement.
CWA		CBC		Where the work at home arrangement is at the Corporation's request, the Corporation shall provide equipment and services necessary for the employee to perform work at home. The employee shall exercise reasonable care in the security of such equipment. The Corporation will be responsible for the insurance of such equipment. Where the work at home arrangement is at the employee's request, the employee and employer shall meet to

				determine what equipment and services are available and appropriate for the employee to perform work at home. The employer is not obliged to incur any duplication of costs but may provide equipment and services in accommodating the employee. Where the Corporation requests a work at home arrangement, the employee will be provided with a monthly allowance to compensate for expenses related to working at home. Such allowance will be reviewed after an initial three (3) month period to ensure it is appropriate.
Civic Service Union	52	City of Edmonton	6.12	Employees who are authorized by their Department to receive work related telephone calls and/or perform unplanned work remotely outside of normal working hours will maintain a log of the work performed and shall be compensated at the rate of one and one-half times their regular hourly salary or the equivalent time in lieu for the total time engaged in such work rounded to the nearest 15 minutes. This clause refers to telephone calls and/or remote access work and is not applicable when someone is called out as per 6.02.03.
BCGEU		Government of the Province of British Columbia	Information Appendix II - 5.2	Telework is a working arrangement where employees work away from their official workplace for a portion of their regular workweek. Either the employee or the Employer may initiate flexible work arrangements. Telework arrangements usually involve employees working at their homes, but the employee's point of assembly, headquarters or geographic location continues to be the official workplace, regardless of where they may work on a particular day. Prior to approving a telework agreement, managers are to: determine that the telework arrangement will meet the provisions of this policy and relevant collective agreements (if applicable); establish that teleworking is operationally feasible and it makes sense, from an operational perspective, to have the work done at the teleworkplace; ensure that services and/or productivity are maintained or improved; determine that no additional net costs will be generated and upfront costs can be recouped over a reasonable period; establish that the teleworkplace meets all requirements of WCB Industrial Health and Safety Regulations; and, include an inventory of all ministry assets provided by the Employer and ensure it is updated as required. Telework equipment, supplies and furniture remain the property of the Employer and must be returned if the telework arrangement or employment is terminated. On entering into a telework agreement, employees will agree to: maintain the teleworkplace (such as homeowner or tenant insurance, heat and hydro); provide dedicated office space for use during teleworking days and maintain the office space in a clean, professional and safe condition; allow joint teleworkplace visits by ministry personnel and union representatives (including local occupational health and safety committee members), upon reasonable notice; secure and protect the property, documents and information belonging to the Employer. Employees will not be liable for loss or damage to such property or information except where the employee has failed to take reasonable precautions to secure it, or where the loss or damage is the result of a willful act by the employee or a member of their family; follow safe work practises and ensure prompt notification to appropriate ministry personnel of any job related accidents that occur at the teleworkplace; and, ensure that any meetings with clients are not held in the employee's teleworkplace.
COPE		ICBC		Working from home is voluntary. Each working from home arrangement will be confirmed in a letter which lays out the details of the arrangement. The letter will contain a start and end date. A copy of the letter will be sent to the union in each instance.
COPE		ICBC		Because telework arrangements often involve some departure from general collective agreement terms, workplace parties may find it desirable to state explicitly what general provisions of a collective agreement do and do not apply to such arrangements. Parties may also wish to negotiate requirements for the terms of a telework arrangement to

				be in writing and that the union be involved in discussions between the employer and individual employees and/or be provided with notice of telework arrangements. These measures are aimed at preserving the union's right to be the exclusive bargaining agent for employees in all matters related to employment and to protect the collective agreement rights of teleworking employees.
COPE		ICBC		Employees working from home must manage dependent care and personal responsibilities separately from work, in a way that allows them to meet job requirements. Employees will not be expected to perform work from home while on sick leave. The Corporation will not use working from home as a return to work mechanism.
COPE		ICBC		The Corporation will provide employees with the equipment necessary to work from home and will bear the cost of maintenance of corporate property. Employees will bear the cost of any required internet connection. Employees will be provided a cellular phone for the purposes of making business related calls.
COPE		ICBC		The Corporation will ensure that locations where employees work from home meet applicable safety standards. Where considered appropriate, the Corporation will provide training to employees working from home concerning safe work practices while working from home. Employees who work from home must continue to comply with their obligations under the Workers Compensation Act, the Occupational Health and Safety Regulation, and with any safety policies and procedures that may be instituted by the Corporation to the extent that they are applicable to the working from home arrangement. The Corporation will ensure that at least one Union appointed member of the Joint Safety Committee will participate in a visit to the employee's place of residence to ensure a working environment which meets applicable safety and information privacy standards. Where a site visit is not practicable, an employee shall provide Employee Health & Wellness photographs or video of their home work location. Employees must implement the recommendations made by the Joint Safety Committee concerning a safe environment. The Joint Safety Committee shall have the right to inspect the employee's place of residence from time to time to ensure ongoing compliance with the requirements of [the] Workers Compensation Act, the Occupational Health and Safety Regulation, and with the Corporation's Occupational Health and Safety policies and procedures provided at least forty-eight (48) hours' notice is given.
IBEW		Manitoba Hydro Electric Board		Telecommuting: Employees who, on a periodic basis during their scheduled work hours, fulfill their job responsibilities at a work site other than their primary work location. Telecommuting is a viable work option that, when appropriately applied, benefits both the employee and the Corporation by allowing the employee to perform their job responsibilities at a location other than their primary work location. The principles of telecommuting are: telecommuting is a cooperative arrangement between supervisors and employee, and is based on: the needs of the job, work group and the Corporation; the employee's past and present levels of performance. Jobs suitable for telecommuting are characterized by clearly defined tasks and work products, measurable work activities and require minimal special equipment; An employee's performance is measured by output; The terms and conditions of employment with the Corporation and the collective agreement still apply; Each telecommuting arrangement is voluntary and jointly agreed to by the supervisor, employee and Union by signing a Telecommuting Agreement which may be terminated, at will, at any time either by the supervisor or the employee or the Union. In each telecommuting arrangement, the supervisor and employee determine the need for telecommuting equipment. The employee normally provides all telecommuting equipment, including telephone, computer and internet connection. EXCEPTION: The Corporation will provide telecommuting equipment if justified based on the

				needs of the Corporation and the nature of the work assignment. If the supervisor determines that the employee should have Corporate-owned equipment in their off-site location, the equipment may be provided with the Department Manager's approval. If approved, the installation, repair and maintenance of telecommuting equipment becomes the Corporation's responsibility. The supervisor tracks the equipment's use in meeting the department's specific goals. If the supervisor determines that the employee should have a highspeed internet connection at his/her off-site location, the Corporation will pay for the basic service with the Department Manager's approval.
Unifor		McMaster University		The [work from home] arrangement must be pre-approved by the Supervisor and documented in writing to address the impact of the Collective Agreement and its provisions; with copies of the arrangement to be forwarded to the Unit 1 Chairperson and Human Resources Services.
PSAC		National Gallery of Canada		This agreement is not intended by either party to abrogate their respective obligations under their collective agreement, Employer policies, statutory requirements, or any other instrument dealing with the Employer/Employee relationship.
PSAC		National Gallery of Canada		The Employee is not expected to carry extra home insurance; however, the Employee should review his/her home insurance policies, to ensure that it will not be invalidated by a Telework arrangement. The use of the residence as an office and any equipment owned by the Employer may not be covered by existing home insurance policies. Any increase in home insurance coverage as a result of a Telework arrangement is the responsibility of the Employee. In the event that the Employee claims the lost item belonging to the Gallery on their home insurance policy, it is expected that the Employer will recover the awarded claim.
PSAC		National Gallery of Canada		Under the current version of Part II of the Canada Labour Code the Employer has a general duty (Section 124) to ensure that the safety and health of every person employed by the Employer is protected. With respect to Telework, the Employer is required to take whatever action is required to demonstrate due diligence in adherence to the Canada Labour Code. The Employer is thus responsible for ensuring that the Employee knows and understands what is involved in Telework and given guidance on the practical considerations of Telework, where it is considered appropriate or necessary. This should include giving guidance on how to establish a safe and ergonomic working environment and adequacy of work station and facilities (keyboard placement and wrist support, type of chair and chair adjustments, proper lighting, availability of first aid supplies, etc.). Duties of Employees are outlined under Part II, Section 126 of the Canada Labour Code and apply while at work for the Employer. As such, the Employee is responsible for ensuring that the Telework place is adequately equipped from a safety and health point of view, and that all work-related accidents or any risks to safety and health are promptly reported to a supervisor or the Health and Safety Officer at the Gallery. The Employee should also make certain that a Telework arrangement does not contravene the municipal zoning by-laws and residential leases that may apply to the Telework place. Under the Government Employees Compensation Act, and consistent with jurisprudence on the subject of workers' compensation, Employees who are injured in the course of their duties are to be compensated for their work-related illnesses or injuries. This applies whether the illness or injury takes place at the Employer's designated workplace or at any other agreed location, including the Employee's residence. This is consistent with the Canada Labour Code, which defines the "work place" as any place where an Employee is engaged in work for the Employer (see "Definition of Telework Place"), including an Employee's residence. The Employee must bring any accident or injury occurring in a Telework situation to the immediate attention of their supervisor.

PSAC		NAV Canada		In order that they are mutually understood, the terms and conditions of a Telework arrangement shall be agreed in writing by NAV CANADA, the employee and the Institute.
PIPSC		NAV Canada		All terms and conditions of a Telework arrangement shall be consistent with the provisions of the Collective Agreement.
CUPE		WSIB		To ensure effective levels of health and safety: The employee will have a home office environment that poses no greater risk of injury or illness than exists in the current WSIB work environment. The employer and employee will ensure that the home office meets appropriate health & safety standards (noting ergonomic standards). The employee will agree to complete the attached checklist. Commencement of the program is conditional upon the completion of the form and correction of any identified deficiencies as well as the employee's commitment to maintaining health & safety standards. All existing accident investigation/reporting requirements continue to apply. The employee will participate in yearly health and safety training programs provided by Corporate Health Centre and required of WSIB staff. The employee and employer will establish and institute suitable responsibility systems for accident prevention. Subject to individual department protocols and needs, and in keeping with existing travel and business expense policies, the employee and the employer will establish mutually satisfactory methods for transporting work materials. This may include return courier delivery service or reimbursement for the employee's travel costs where transportation of the work materials may pose a health & safety hazard. The local Joint Health and Safety Committee will also monitor the ongoing safety issues relating to the Home Office Program and make recommendations it considers appropriate to minimize any health and safety risks identified.

Table A12
Other Technology-Related Provisions

Union	Local	Employer	Article	Summary / Clause
USW	7085	Brunswick Smelter	20.04	The Company will establish a Technological Change Account which will be used to pay the costs of benefits as provided for in Section 20.04. At the end of each pay period, the Company will credit this account with two cents (2¢) for each hour worked by the Bargaining Unit employees during the said pay period to a maximum credit of thirty thousand dollars ($30,000) per year. Maximum credit of two hundred and twenty five thousand dollars ($225,000). If this amount should decrease the account will be credited again by the Company. If benefits are insufficient, will be pro-rated. Subject to grievance procedure and arbitration.
OPSEU		CAAT	11.02	Prior to the establishment of a total workload for any teacher the supervisor shall discuss the proposed workload with the teacher and complete the SWF, attached as Appendix I, to be provided by the College. The supervisor shall give a copy to the teacher not later than six weeks prior to the beginning of the period covered by the timetable excluding holidays and vacations. It is recognized that if the SWF is subsequently revised by the College, it will not be done without prior consultation with the teacher. The College may, where a change in circumstances requires it, amend assignments provided to a teacher after the original assignment, subject to the teacher's right to refer any matter to the College Workload Monitoring Group (WMG) referred to in 11.02 B 1 and if necessary, the Workload Resolution Arbitrator (WRA) referred to in 11.02 E 1 and appointed under 11.02 F 1. The WMG shall in its consideration have regard to such variables affecting assignments as: … introduction of new technology;
CUPW		Canada Post	29.02	In carrying out technological changes, the Corporation agrees to eliminate all injustices to or adverse effects on employees and any denial of their contractual or legal rights which might result from such changes.
CUPW		Canada Post	29.12	It is understood that all the provisions of this collective agreement shall fully apply at the time of the application or following the application of a technological change and in regard to all new situations created by or following the application of a technological change, unless a written and specific understanding is reached by the parties for amending this collective agreement.
CUPW		Canada Post	Appendix T	Job creation, training, pilot project funding, including seed money and funding positions; under jurisdiction of arbitrator as per collective agreement; Service Expansion & Innovation & Change Fund funded quarterly by Corporation to a maximum of $6,000,000.00
CUPW		Canada Post	Appendix AA	Has been used to contract in work. Committee works on a project-by-project basis.
SIU		Canada Steamship Lines - Self-Unloaders	Mobile Electro Technician Addendum	The minimum number of Mobile Electro Technician Employees for Canada Steamship Lines shall be one (I) for every Two (2) vessels built after the year 2000 and fitted with technology that is suitable for such a position. The Company and Union shall meet to discuss each new vessel prior to its entry into Canada. Mobile Electro Technicians may be used to relieve each other for the purpose of time off The Company may add employees to augment its minimum number of Electro Technician Employees should they require more than one (I) for every two vessels. Additional or temporary Mobile Electro Technician Employees must be SIU members in good standing.
Unifor	899	CFRN-TV and CFCN-TV	Appendix E	Company and the Union acknowledge that new plains of broadcasting, social media and other news related technologies and platforms exist and are ever evolving. Based on this understanding, the Company and the Union agree to periodically review the impact and demand on the employees of these new approaches. All assigned work required to be completed on social media or other platforms shall be considered work hours and subject to the collective agreement. The Company in no way shall pressure employees to perform these tasks outside of work hours. Individuals

				shall be allowed to volunteer their time to update these platforms. Volunteered time will not be considered included in calculating the thirty two (32) hour maximum averaging outlined in Article 4.3 for part-timers.
MoveUp COPE	378	IAMAW Lodge 140	17.6	The Employer agrees that no computer equipment shall be placed in an employee's residence.
IAM		Prescribed Language		In carrying out technological changes, the Corporation agrees to eliminate all injustices to or adverse effects on employees and any denial of their contractual or legal rights which might result from such changes. Technological change will not be used to justify a change of job status within the bargaining unit
IAM		Prescribed Language		The employer shall begin investing in a training fund based on the number of workers that will be trained as a result of technological change to ensure that all training is done during work hours and without cost to the employer.
IAM		Prescribed Language		New Positions As a result of technological change(s) Any new positions that arise out of the implementation of technological change as defined by article xx, shall remain within the bargaining unit, and shall be performed by bargaining unit members, who either have existing skills or who are suitable for re-training for new positions in the order based on seniority. New positions will first be offered to existing bargaining unit members based on seniority and skill level, before hiring new employees.
IAM		Prescribed Language		The terms and conditions of this collective agreement shall fully apply at the time of the application or following the application of a technological change and in regard to all new situations created by or following the application of a technological change, unless and written and specific understanding is reached by the parties for amending this collective agreement.
IAM		Prescribed Language		Time Motion Studies In instances where management plans to undertake a time motion study, or a project involving a time motion study, or the equivalent of, the employer shall; - Notify the union 30 days in advance - Identify the purpose of the study - Identify the location of the study and the members that will be affected - Share findings with the union representative and health and safety committee

Table A13 Compendium of Labour Legislation Provisions Referencing Technological Change			
Jurisdiction	**Statute**	**Summary**	**CanLII Link**
Federal	Canada Labour Code, RSC 1985, c L-2	Mid-term negotiations permitted in the event of a technological change. An employer must give advance notice of technological change and a union may give notice to bargain collectively in mid-term in order to negotiate measures to deal with technological change, but these legislative provisions may not apply where the collective agreement already contains technological change procedures, or where the employer has given notice of the technological change in sufficient time that the issue can be addressed during regular negotiations.	https://canlii.ca/t/7vhv#sec55
Federal	Canada Labour Code, RSC 1985, c L-2	Notice: An employer who is bound by a collective agreement and who proposes to effect a technological change that is likely to affect the terms and conditions or security of employment of a significant number of the employer's employees to whom the collective agreement applies shall give notice of the technological change to the bargaining agent bound by the collective agreement at least one hundred and twenty days prior to the date on which the technological change is to be effected."	https://canlii.ca/t/7vhv#sec51
Federal	Canada Labour Code, RSC 1985, c L-2	In this section and sections 52 to 55, technological change means (a) the introduction by an employer into their work, undertaking or business of equipment or material of a different nature or kind than that previously utilized by the employer in the operation of the work, undertaking or business; and (b) a change in the manner in which the employer carries on the work, undertaking or business that is directly related to the introduction of that equipment or material.	https://canlii.ca/t/7vhv#sec51
British Columbia	Labour Relations Code, RSBC 1996, c 244	There is a recognition that an opportunity to bargain should be afforded whenever significant change occurs, whether or not it is technological; in particular, the employer is required to give the union 60 days' notice if it is planning to introduce any measure, policy, practice or change that affects the terms, conditions or job security of a significant number of employees.[5] Once notice has been given, the parties are required to meet in good faith to develop an adjustment plan. If an adjustment plan is negotiated, it becomes enforceable as if it were part of the collective agreement. However, if none is negotiated, the Labour Relations Code does not compel the employer to take any further action.	https://canlii.ca/t/844z#sec54
British Columbia	Labour Relations Code, RSBC 1996, c 244	British Columbia's legislation is not restricted to changes related to the introduction of equipment or material; it requires joint consultation regarding an "adjustment plan" on the introduction of any "measure, policy, practice or change that affects the terms, conditions or security" of employment.	https://canlii.ca/t/53mjf
Manitoba	Labour Relations Act, CCSM c L10	Mid-term negotiations permitted in the event of a technological change. An employer must give advance notice of technological change and a union may give notice to bargain collectively in mid-term in order to negotiate measures to deal with technological change, but these legislative provisions may not apply where the collective agreement already contains technological change procedures, or where the employer has given notice of the technological change in sufficient time that the issue can be addressed during regular negotiations.	https://canlii.ca/t/8gkt#sec83
Manitoba	The Labour Relations Act, CCSM c L10	"technological change" means (a) the introduction by an employer into his work, undertaking or business of equipment or material of a different nature or kind than that previously used by him in the operation of the work, undertaking or business, and (b) a change in the manner in which the	https://canlii.ca/t/8gkt#sec1

		employer carries on the work, undertaking or business that is directly related to the introduction of that equipment or material; (« changement technologique »)	
New Brunswick	Industrial Relations Act, RSNB 1973, c I-4	Requires that provisions dealing with technological change be included in every collective agreement. If not, a model clause which requires the parties to submit any differences regarding technological change to final and binding arbitration is deemed to be part of the collective agreement.	https://canlii.ca/t/88qc#sec55.1
Saskatchewan	Saskatchewan Employment Act, SS 2013, c S-15.1	Mid-term negotiations permitted in the event of a technological change. An employer must give advance notice of technological change and a union may give notice to bargain collectively in mid-term in order to negotiate measures to deal with technological change, but these legislative provisions may not apply where the collective agreement already contains technological change procedures, or where the employer has given notice of the technological change in sufficient time that the issue can be addressed during regular negotiations.	https://canlii.ca/t/54b50
Saskatchewan	Saskatchewan Employment Act, SS 2013, c S-15.1	"technological change" means: (i) the introduction by an employer into the employer's work, undertaking or business of equipment or material of a different nature or kind than previously utilized by the employer in the operation of the work, undertaking or business; or (ii) a change in the manner in which the employer carries on the work, undertaking or business that is directly related to the introduction of the equipment or material mentioned in subclause (i).	https://canlii.ca/t/54b50

Table A14 **Technology-Related Tribunal Decisions**		
Alteration of Wage Rate	Continental Can Co. of Canada v G.A.U., Local 121, 10 L.A.C. (2d) 35	New equipment was installed which resulted in alteration of duties and an increase in responsibility in one classification. Notice was provided and union and employer met to discuss working conditions and wages. Agreement was reached on working conditions but not wages. At subsequent meeting, employer agreed to union's requested wage increase. Agreement rejected by union membership. Board of arbitration awarded agreed-upon rate. 'The mere fact that the new operation may result in substantial savings to the company does not, in the context of a set of wage rates in an existing collective agreement, [make] a persuasive reason for increasing the rate of a particular classification. By the same token, if it were supposed that the company were required to install certain expensive and inefficient machinery which resulted in increased costs and reduced profits, we would not consider that, in the context of a grievance of this sort, a reason to reduce the employees' wages!'
Bargaining Unit Work	Miramichi Pulp & Paper Inc. v C.P.U., Local 689, 35 L.A.C. (4th) 289	Company introduced technological change to the Steam and Power Plant operation resulting in restructuring the operations. As a result, a bargaining unit position was phased out and two new positions, one in the bargaining and one managerial, were created. Union claimed supervisors were improperly doing work normally performed by members of bargaining unit. Board of arbitration found that Shift Supervisors in the Steam and were not performing work normally performed by members of the bargaining unit. Note: 'It has long been recognized that management has the right to change, vary and alter the organization of its workforce. It must do so in good faith and for purposes of business efficacy and comply with any strictures imposed by the terms of a Collective Agreement. Job classifications found within an Agreement are not frozen and in both content and structure maybe altered as required by management to ensure the efficient operation of its enterprise.'
Bargaining Unit Work	Irving Pulp & Paper Ltd. v CEP, Local 30, 2006 CarswellNB 820, 88 C.L.A.S. 74	Employer reassigned all the work of the Causticizing Department formerly performed by CEP members to IBEW recovery line members. Integrated line of progression would improve staffing utilization. Technological change provisions acknowledged. Arbitrator found that, given that the collective agreement contemplated the reassignment of work across bargaining unit lines, the transfer of five percent of the work as a result of technological change, with a concomitant reduction in staffing requirements, was not unreasonable.
Change of Headquarters Location	Canadian National Railway Telecommunications v Canadian Telecommunications Union, 6 L.A.C. (2d) 308	Company changed the headquarter location for a number of employees from the town where they resided to the radio site where the majority of the work was performed. Board of Arbitration found no technolgocial or organizational change took place as the work duties did not change and job security was not affected.
Collective Agreement Limitations, Addition of Job Task	Homewood Health Centre v U.F.C.W., Local 175, 49 L.A.C. (4th) 300	Additional job tasks were added to positions. Arbitrator found job tasks fell within standards of practice and did not constitute technological change.
Collective Agreement Limitations, Management Rights Displacement	U.S.W.A. v AltaSteel Ltd., 220 L.A.C. (4th) 371	The replacement of a furnace resulted in permanent displacement of employees. Employer acted in good faith and followed collective agreement. Arbitrator found that the right to make technological changes includes within it the right of the Employer to displace employees. Note: 'It is the Employer who makes the ultimate business decision in such matters, subject to the fair treatment of affected employees that the Collective Agreement prescribes.'

Collective Agreement Limitations, Office Closure	B.C. Telephone Co. v T.W.U., 7 L.A.C. (4th) 75	Company closed office, offered transfers to another office. Grievors did not accept transfer. No casual link found between office closure and technological change. Technological change provisions not applicable.
Collective Agreement Limitations, Prior Changes	Canadian Forest Products Ltd. v P.P.W.C., Local 25, 132 L.A.C. (4th) 300	Company deleted position and reassigned duties. Union claimed material change in working conditions under technological change clause. Arbitrator found the changes did not amount to material change within the meaning of the article.
Collective Agreement Limitations, Work Assignment	Dickson's Food Services Co. v U.F.C.W., Local 2000, 7 L.A.C. (4th) 241	Employer introduced computerized equipment in 1986. In 1987, the company re-organized the workforce, union and non-union, and changed sales model to a more efficient system. Union filed a bargainng unit work complaint. Found: 'But in its zeal to protect its members it cannot prohibit the employer from bona fide management decisions affecting its operation methods in the absence of very clear and specific language.'
Collective Agreement Limitations, Work Assignment	Canadian National Railway v Teamsters Canada Rail Conference, 196 L.A.C. (4th) 207	Company seeked to gain operational efficiencies by the utilization of longer trains, made possible by technological changes. Company invoked material change provisions to justify assignment of work across collective agreements. Changes contrary to entire history and evolution of bargaining between parties. Arbitrator found that the material change provisions of the four collective agreements do not extend to permitting the Company to assign employees who hold seniority and work under one territorial collective agreement to perform work over lines which fall under another territorial collective agreement, any such arrangement must be the subject of negotiation and agreement with the Union.
Collective Agreement Limitatons, Definition	St. Boniface General Hospital v MNU, [2010] M.G.A.D. No. 25 (QL) (Peltz),	The implementation of a single new computer software program was found not to amount to technological change under the collective agreement. Arbitrator found that it was not a change "in the manner in which the employer carries on the work", as employees already made frequent use of computers and the technology simply replaced a paper-based system with an electronic one.
Collective Agreement Limitatons, Layoff	New Brunswick (Board of Management) v CUPE, Local 1190, (2005), 110 Can. L.R.B.R. (2d) 39 (N.B.L.E.B.) (Bladon)	Found: in the absence of clear language, an employer cannot rely on a technological change clause to justify measures introduced during the statutory "freeze" period, particularly where those measures result in layoffs.
Contracting Out	Canadian Forest Products Ltd v USWA, Local 1-424, [2005] B.C.C.A.A.A. No. 154 (QL) (Moore)	The union grieved that the employer had contracted out work contrary to the collective agreement. The employer argued that the loss of full-time jobs was the result of a technological change with respect to which it gave notice under the collective agreement and no contracting out had occurred, that the purpose and function of the work performed by the bargaining unit had not been transferred to the contractors. The arbitrator found that the work is still being performed in the workplace, albeit by mechanical means, and that the work performed by the contractors was substantially and materially different from that previously performed by the bargaining unit.
Contracting Out, Collective Agreement Silent	Nabob Foods Ltd. v Canadian Allied Manufacturers Wholesale & Retail Union, Local 1600, 5 L.A.C. (3d) 256	A contracting out grievance was filed: collective agreement silent on contracting out. Union's alternate position was that three of four instances of contracting out constituted technological change within the meaning of the Labour Code, R.S.B.C. 1979, c. 212. The two pre-conditions of the operation of the technological change provisions were not met.

Contracting Out, Notice	Ottawa-Carleton (Regional Municipality) v C.U.P.E., Local 503, 46 L.A.C. (4th) 251	The employer transferred management of service delivery to a regional agency. Contracting out not found. Company breached the technological change notice -- six months in advance of organizational or technological change -- provision of the collective agreement. Withholding of information was also breach of obligation. Declaration of breach notice made.
Contracting Out, Notice, Failure to Consult	Dominion Stores Ltd. V R.W.D.S.U., 4 L.A.C. (3d) 127	Stock taking was contracted out to outside firm. Union grieved failure to consult prior to introducing major experiments or innovations. The arbitrator found the union lost the opportunity to try and persuade the employer not to make the change in advance. Union entitled to declaration and damages.
Criteria Collective Agreement, Limitations, Layoff	Insurance Corp. of British Columbia and COPE, Local 378, 264 L.A.C. (4th) 395	Redundancies did not meet criteria for technological change defined in collective agreement. Work was re-organized for cost-shaving and efficiencies. Layoffs not due to technological change.
Criteria, Layoff	N.A.P.E. v Newfoundland & Labrador (Government Purchasing Agency), 143 L.A.C. (4th) 169	The union submitted that the employer introduced a new method of operations at the Government Purchasing Agency resulting in the elimination of seven positions, and in reassignments. The employer submitted that there was no new method of operations and the reassignments were within the management rights clause. Arbitrator found redistribution of work, not a technological change.
Criteria, Notice, Layoff / Severance	Coastline Forestry Group Inc. and USW, Local 1-1937, 294 L.A.C. (4th) 401	Company introduced tethered felling machines. Union alleged the felling machines constituted change in working methods. Resulting change in working methods triggered employer's obligations under technological change clause; notice required. Introduction of felling machines amounted to technological change, and affected employees entitled to severance pay. Employees entitled to full pay and benefits for 6-month period due to loss of notice period. Damages to union for lack of notice and breach of provision in the amount of $2,000.00 to provide a meaningful incentive to comply in the future.
Definition, Criteria	Canadian Broadcast Corp. and N.A.B.E.T., 34 L.A.C. (3d) 140	Employer introduced an improvement to existing technology by purchasing Betacam equipment resulting in redundancies. Union alleges that the employer violated the technological change provisions with the introduction of the Betacam. Arbitrator found that the introduction of the Betacam constitutes an improvement in existing technology and an updating of equipment, but does not constitute a technological change for the purposes of the article.
Definition, CIRB	Ottawa-Carleton Regional Transit Commission v ATU, Local 1502, [1982] 1 Can. L.R.B.R. 172 (C.L.R.B.) (Dorsey)	The Canada Labour Relations Board held that, when determining whether the technological change legislation applies to workplace changes, it will consider both whether a change "substantially and adversely" affects some employees and whether the change affects a "significant number of employees".
Definition, CIRB	Manitoba Pool Elevators v GSU, (1985), 62 di 179, 85 C.L.L.C. ¶16,061 (C.L.R.B.) (Keller)	The Canada Labour Relations Board has ruled that technological change should be measured by its impact on all of the employees bound by the collective agreement and not by its impact on employees in a specific job classification.
Definition, Contracting Out	Sunnybrook Health Science Centre v Sunnybrook Hospital	Hospital planned to contract out food service management. Union alleged violation of contracting out provision. Hospital argued that change was allowed under the technological change clause, the purchase of a new kind of food product to fit a new kind of

	Employees' Union, Local 777, 63 L.A.C. (4th) 227	food delivery system. Arbitrator found it unnecessary to define the product as anything other than food, involving the purchase of food products from outside suppliers and the layoff of Hospital cooks, therefore it was contracting out.
Definition, Introduction of New Equipment	Catalyst Paper Corp. v PPWC, Local 2, [2007] B.C.C.A.A.A. No. 243 (QL) (Steeves).	The introduction in a pulp and paper mill of "point-of-use" machines (POUs) to distribute mill "stores" material in various locations around the mill, instead of "over the counter" by store's employees in the mill "stores" area, was found to constitute a technological change as defined in the collective agreement because the POUs were a form of mechanization or process change that involved introduction of equipment of a different nature or kind than previously utilized. However, the introduction of a maintenance project called "data cleansing" to make an existing computer program and technology more efficient and accessible was found not to amount to technological change, as it could not be said that there was "automation, mechanization and process change" or any other change in the employer's operation, or involve the introduction of equipment or material of a different nature or kind than previously utilized.
Definition, Wage Rates	Federal Pioneer Ltd. V I.B.E.W., Local 258, 32 L.A.C. (4th) 284	Employees bumping into lower-level job due to technological change entitled to have pay red-circled. Arbitrator found both technological change and plant closure occurred.
Definition, Wage Rates	Ellehammer Industries Ltd. v C.E.P., Local 433, 48 L.A.C. (4th) 26	The company introduced changes to the computer system that resulted in layoffs. The union filed several grievances. This decision dealt with the definition of technological change, the union proposing a broad definition. The arbitrator found that the changes to the computer system did not constitute technological change.
Definition, Layoff, Notice	Jim Pattison Sign Co. v IBEW, Local 213, [2005] B.C.C.A.A.A. No. 181 (QL) (Dorsey)	The employer's decision, and the implementation of that decision, to either discontinue entirely, permanently contract out to third parties, permanently transfer the work to other locations within or outside British Columbia or any combination of these was "a measure, policy, practice or change" under section 54 of the *Labour Relations Code*. The arbitrator found that the employer did not give the 60-day required notice, and failed to fulfill its obligation to meet in good faith with the union and endeavour to develop an adjustment plan. Note: 'As a consequence, the union was deprived of the opportunity to which it is entitled to present to an open-minded employer suggestions and compromises as alternatives to the change the employer intended to make, including amendments to the collective agreement, and other aspects of an adjustment plan. Among other things, the union lost the opportunity to address the employer's decision for operational, efficiency and regulatory reasons it would use only electricians to do installation and sign removal work...'
Definition, Temporary Relocation of Work	Slater Steel Industries Ltd. V U.S.W.A., Local 4752, 4 L.A.C. (2d) 31	Technological change occurred where the employer introduced equipment which had the effect of temporarily reassigning 18 employees without invoking bumping rights. Company directed to reimburse the workers an amount equal to the difference in the amount they received during the period. Note: 'Technological change is not an absolute thing. It may take place progressively over a period of time.'
Elimination of Employees from Position	Benson & Hedges (Canada) Ltd. v T.W.I.U., Local 325, 17 L.A.C. (2d) 20	Union alleged that the elimination of employees from the Classification "Relief Operator" constitutes a change in production methods. Board of arbitration found a change in the way that the company operated or directed its working forces and not a change in production methods.
Elimination of Position, Notice, Bargaining Unit Work	F.F.A.W.-C.A.W. v Ocean Choice International LP, 213 L.A.C. (4th) 58	Watchmen positions made redundant by technological change, including installation of surveillance cameras and automatic gate. Task of opening gate now performed by management. Grievance denied: employer not estopped by oral agreement that watchmen positions would be eliminated through attrition; notice requirement met; work done by management considered insignificant.

GPS, Privacy	Schindler Elevator Corporation, 2012 BCIPC 25 (CanLII)	The company installed a GPS and engine status data system in its service vehicles and collected data from these systems. Service vehicles were assigned exclusively to the mechanics. The mechanics travelled from their homes to job sites on assigned routes. The vehicles were kept at the mechanics' homes. The GPS component of the system recorded a vehicle's location and movements, as well as the time and date of its locations. The engine status component recorded the vehicle engine's start and stop times, as well as excessive speeding, braking, acceleration, etc. Among other things, the company collected and used this information for employment management purposes. The information collected is personal information. The Information and Privacy Commissioner for British Columbia found that the company did not collect or use employee personal information for purposes beyond those set out in the GPS Policy, and that the company performed its duties under PIPA respecting the collection, use, and disclosure of GPS data and engine status data. Note: the commissioner, as an aside and not part of her findings recommended that the company 'revise its GPS Policy to account for the outcome of this inquiry, by capturing my findings and setting out comprehensively the purposes for which employee personal information may be collected, used or disclosed through the Fleet Complete system. The revised policy would also offer a desirable single source of notice to existing (and new) employees of Schindler's purposes. The September letter elaborated on the GPS Policy in one respect, but it is desirable at this stage for there to be a single, comprehensive, policy statement.'
Interim Relief, Privacy, Telematic Devices	Otis Canada Inc. v I.U.E.C., Local 82, 192 L.A.C. (4th) 143	Company introduced telematic devices for use in vehicles. Union sought an interim order to preserve the status quo between the parties pending a full adjudication of the Union's grievance on its merits. Interim order denied.
Introduction of New Equipment, Layoff	N.A.B.E.T. v Canadian Broadcasting Corp., 23 L.A.C. 428	The company introduced a new automatic switching device in the central television control room, resulting in redundancies. The union argues that these changes brought about a complete transformation of the work regime. Arbitrator found that the specifications of the job had been sufficiently altered as to reflect a material change in the functions and responsibilities of these technicians, and that there had been a violation of the collective agreement on the part of the company.
Introduction of New Equipment, Wage Adjustment	Canadian Bank Note Co. v Teamsters, Local 41, [2006] O.L.A.A. No. 294 (QL) (Chodos)	The union submitted that the company introduced new equipment and methods of operation that required a significant increase in the effort, skill, and responsibility of the employees. Arbitrator found there has been a change in the essential, substantive character of the job performed by the operators. Note: 'One indicator of whether technological change has occurred is whether the new equipment or processes demand a significant increase in the required effort, skill or responsibility of employees. Clearly, from the company's perspective, there would be no point in incurring the considerable expense involved in these new technological changes if they were offset by increased costs in terms of wages. However, it is equally clear from the collective agreement that the employees should reap some of the benefits of these changes when it results in a significant increase in the demands placed on them.'
Job Evaluation, Change in Duties	Pacific Northern Gas Ltd. and IBEW, Local 213 (Measurement Technicians, 292 L.A.C. (4th) 95	There was a gradual evolution in technical demands of measurement technician job and incumbents learned new ways to perform core duties rather than new skills. Job descriptions were part of the collective agreement. Job descriptions anticipated ongoing adaptation to technological change. Arbitrator found that union did not meet the onus of demonstrating that job was changed by "permanent addition of major duties or responsibilities".
Job Evaluation, Change in Duties	Shaw Media Inc. and CEP (Ramsay), 223 L.A.C. (4th) 289	Classification grievance: whether the employer is obliged to establish a new classification with new terms and conditions of employment for the Art Director position. Position was vacant for ten years. Analysis of changes to position complicated by inevitable technological changes in industry as whole. Arbitrator found major changes took place when position was vacant and under a previous collective agreement and beyond the reach of the grievance.

Layoff	Canadian Broadcasting Corp. v CEP, [1996] C.L.A.D. No. 214 (QL) (M.G. Picher)	A layoff was found to be "because of" technological change, even where the employer's decision to reduce staff in favour of automation was motivated by budgetary concerns. Note: had the technological change not been introduced, the employees would not have been laid off.
Layoff, Collective Agreement Limitations	Powell River School District No. 47 v C.U.P.E., Local 476, 96 L.A.C. (4th) 411	Accounting clerk was laid off. Union filed individual grievance alleging improper layoff and failure to consult with union and offer training or transfer, and a policy grievance under technological change provision alleging insufficient notice and lack of discussion and no opportunity for retraining. Employer took position that it was a financial decision and the use of debit cards was not a technological change. The arbitrator found that the union did not demonstrate a casual connection between the layoff and technological change, and grievances was dismissed on the basis that the layoff grievance was not caused by technological change.
Layoff, Criteria, Definition	Peace River North School District No. 60 v CJA, Local 2397, [2002] B.C.C.A.A.A. No. 308 (QL) (Jackson)	As a result of funding cuts and layoffs, the same workload was redistributed among different or fewer workers. Arbitrator found that this did not constitute a new "process" within the meaning of the term "technological change". In some circumstances, a new process may be introduced that is "different in nature or type from that previously utilized", but generally "technological change" involves an alteration in operations associated with the introduction of new equipment.
Layoff, Merger	Canadian Newspapers Co. v Vancouver Typographical Union, Local 226, [1981] 5 W.L.A.C. 415, 29 L.A.C. (2d) 85	Merger between two newspapers resulted in layoffs. Union alleged caused by technological change as defined in the legislation as a 'change in work'. Arbitrator found that the layoff for 20 out of 24 positions was caused by technological change and ordered reinstatement and compensation.
Layoff, New Equipment	U.S.W.A., Local 1500 v Ontario Malleable Iron Co., 11 L.A.C. 131	Collective agreement stated that workweek to be reduced prior to layoffs. Department shut down for three weeks for installation of new equipment. Two workers redeployed and a third laid off during installation. All three returned to department when installation complete. Fourth worker laid off and filed grievance under 'share the work provision'. Found: 'A shut-down for installing new equipment is not the same as a reduction of work available. Consequently a 'share the work' provision requiring a reduction of the work week before any employees are laid off when it is necessary to reduce the working force does not apply.
Layoff, Criteria	Canadian Forest Products Limited v Communications, Energy, and Paperworkers Union, Local 446, 2013 CanLII 62042 (AB GAA)	The Employer upgraded machinery in the planer mill. The parties agreed that the upgrade constituted a technological change under the collective agreement. Nineteen employees across three shifts held jobs in the obsolete positions and, under the collective agreement, were given the choice of accepting a severance payout, or using their seniority to bump into other positions with time limited red-circling. Concurrent with the installation of the new machinery, the graveyard shift was eliminated. Employees on the graveyard shift were offered the opportunity to use their seniority to bump into other positions on the two remaining shifts, but they were not given the option of a severance payout or red-circling. Arbitrator found that members of the graveyard shift were directly laid off because of the technological change and that they meet the preconditions.
Notice	Coastal Community Insurance Agencies Ltd. v O.P.E.I.U., Local 15, 112 L.A.C. (4th) 132	Insurance Company discontinued Saturday operations resulting in layoff of one full time employee. Union position that longer notice required as closure was a result of technological change. Arbitrator found Saturday closure was a result of loss of business and layoff caused by economic change, not technological change.
Notice, Expansion of Video Surveillance	Cargill Foods v. U.F.C.W., Local 633, 175 L.A.C. (4th) 213	Employer expanded existing video surveillance system which constituted an improvement in methods of operations. Significant change required advance notice and discussion with union and employer did not comply with notice requirements. The union did not object to the presence of security cameras covering entrances and exits to the plant or specific pieces of equipment, or that members of the bargaining unit may be recorded as they pass through, or remain for a brief period within, the area covered by

		such cameras. The Union's main objection was that the newly-introduced cameras cover areas of the plant where members of the bargaining unit work all day at fixed workstations, and cover the main hallway through the plant. The arbitrator found that the expansion of the video surveillance system was an improvement in method of operations and a significant change, and that the employer failed to comply with its obligations to provide the union with advance notice of this change, and to engage in meaningful discussions prior to implementing the change. The arbitrator further noted that 'Employees at work in industrial plants, where they are subject to supervision, do not have a reasonable expectation of privacy in the sense of freedom from observation. Nevertheless they do have an interest in personal privacy which may be infringed by intrusive means of observation or inappropriate uses of the product of observation.'
Notice, Transfer of Work	Saskatoon Credit Union Ltd. v U.F.C.W., Local 1400, 38 L.A.C. (4th) 302	Company closed two branches and discontinued lending operations at one branch, resulting in layoffs. Union claimed the closures and discontinuance were as a result of technological change. Arbitration Board found that the closures and discontinuance of service were not as a result of technological change.
Privacy, Telematic Devices, Collective Agreement Limitations	Otis Canada Inc. v I.U.E.C., Local 1, 2010 CarswellBC 2413, [2010] B.C.W.L.D. 7681, [2010] B.C.W.L.D. 7682, [2010] B.C.W.L.D. 7707, [2010] B.C.C.A.A.A. No. 121	Company installed telematic devices in vehicles owned by them and driven by elevator mechanics. Using satellite technology, the devices collect information about vehicles when they are operated by the mechanics. The mechanics use the vehicles to attend various worksites and they are also permitted to use the vehicles to drive to and from home. Union alleged that the devices violate the privacy rights of the elevator mechanics. Union further submitted that the introduction of telematic devices is contrary to the technological change provisions in the collective agreement. The arbitrator found that the employer's decision to install telematics devices in company vehicles did not have a "significant" effect on the terms and conditions or security of employment, and that increased scrutiny over work, was within the employer's purview, even if the data obtained from the devices could be used to discipline employees.
Remedies, Damages	B.C. Packers Ltd. v. U.F.A.W.U., 67 L.A.C. (4th) 237	Company introduced a new process into one of its plants. The union requested compensation as a result of the change. The arbitrator found that the language of the collective agreement and the bargaining history surrounding its development and evolution point directly to the conclusion that this is a procedural and not a substantive provision and one which cannot be relied upon to justify an award of damages.
Seniority, Criteria	International Nickel Co. of Canada v U.S.W.A., 1 L.A.C. (2d) 85	Company closed two sites and opened a new site resulting in job loss. Only one operation considered permanently closed. To be considered major technological change, three criteria to be met: (1) there must be a decision of permanent discontinuance; (2) that decision must affect a department or a substantial portion of a department; and (3) it must be a result of major technological change. Criteria met at one of the operations.
Technological Change, Change in Job	Eastern Regional Integrated Health Authority v Newfoundland and Labrador Association of Public and Private Employees, 2012 CanLII 52764 (NL LA)	The collective agreement required that notice be given not only of technological change, but of any "new method of operation". The union submitted that the requirement to complete the Medication Administration and Health Assessment courses, together with the skill mix changes, which included the assignment of additional duties to LPNs, affected the rights of employees and conditions of employment, and was a new method of operation. The arbitrator defined the latter phrase as a difference in the series of acts used to perform an operation or a requirement that employees acquire new or greater skills or necessary knowledge. The arbitrator found that the course requirements did not trigger the new method of operation provisions, but the employer did implement a new method of operation applicable to Licensed Practical Nurses affected by skill mix changes.
Training	Arthritis Society v Hospital Employees' Union, Local 180, 1 L.A.C. (4th) 372	The employer commenced computerizing a number of functions within the workplace, causing a number of jobs to be eliminated, creating some new ones, and combining one position with another former position. The grievor claimed she was denied the position of payroll statistics clerk by the employer. According to the union, the posting arose because technological changes eliminated the grievor's former job as statistics clerk, and merged that position with that of payroll clerk. The grievor had the necessary qualifications and seniority to fill

		the post, according to the union, but the employer hired a person from outside the bargaining unit. The union alleges the employer failed to give the grievor the necessary training which would have allowed her to fill the new position. Board of arbitration found that the training period referred to in the article refers to the training period required with regard to the technological changes, that is, the computer training, not the training required for the grievor to become a payroll clerk.
Video Surveillance, Privacy	Eastmond v Canadian Pacific Railway, 2004 FC 852 (CanLII)	Company installed video surveillance cameras. Employee filed a complaint with the Office of the Privacy Commissioner of Canada. Commisioner found that the loss of privacy was minimal as the recordings are never viewed unless there is a triggering event.

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