ACHIEVING EXCELLENCE IN HEALTH AND SAFETY

A 2012 REPORT ON HEALTH AND SAFETY PERFORMANCE TRENDS AND IMPROVEMENT INITIATIVES

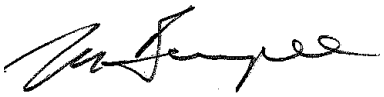
Canadian Electricity Association | Association canadienne de l'électricité

President's Message

It is my pleasure to present the Canadian Electricity Association's first annual Occupational Health and Safety Report, *Achieving Excellence in Health and Safety*. This Report highlights innovative examples of our industry`s continuous commitment to improving health and safety performance.

Electricity is an essential service for all Canadians, and delivering reliable power often requires the performance of work that carries with it an inherent risk of injury. Currently employing approximately 108,000 Canadians, the electricity industry continues to deliver this vital service in a safe, reliable and cost-effective manner. As the industry faces challenges such as the integration of new technologies, an increased rate of worker turn-over, and the need for significant refurbishment and new builds, the foundations of success described in this report are especially critical.

The future is bright for Canadian electricity.



Mr. Jim Burpee
President and CEO
Canadian Electricity Association

Chair's Message

Occupational Health and Safety is a top priority for all electric utilities, and CEA members recognize the value in sharing experiences and tracking performance. The CEA Occupational Health and Safety Committee (OHSC) serves as an industry-wide forum dedicated to defining strategic priorities and initiatives that will improve the overall safety performance of the Canadian electricity industry.

The OHSC is proud to share our industry`s continuous improvement initiatives, which are focused on building stronger health and safety management systems while reducing risks in both the workplace and in the community. We hope that this effort will lead to increased uptake of these practices, both in our own industry and others.

On behalf of the OHSC, I would like thank Cathy Catton, a consultant and former long-serving member of the CEA Occupational Health and Safety Committee, and Mark Ciufo, CEA's OHS Co-ordinator, for their commitment to making this report a reality.

Achieving excellence in health and safety performance is a continuous journey. This report makes it clear that CEA members are committed to moving forward together.

Mr. Harris McNamara
Chair – CEA Occupational Health and Safety Committee
Director, Safety
Emera Inc.

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1. EXECUTIVE SUMMARY

Canadian Electricity Association (CEA) members have demonstrated a long-standing commitment to the health and safety of their workers and to members of the public in the communities in which they operate. Recognizing the inherent risks associated with their business, the industry strives for excellence in health and safety by continually reducing risk factors to minimize injuries to workers and the public.

Over the last five reporting years (2007-2011), significant continuous improvement has been made across the industry. There has been a 32.82 percent improvement in the All Injury/Illness Frequency Rate[1], a 19.96 percent improvement in the Lost-Time Injury Frequency Rate[2], and an 8.18 percent improvement in the Lost-Time Injury Severity Rate[3]. Most importantly, 2011 marked the fifth consecutive year of injury reduction, as measured by the All Injury/Illness Frequency Rate. Unfortunately, last year also saw a slight uptick over 2010 levels for both the Lost-Time Injury Frequency Rate and the Lost-Time Injury Severity Rate, reversing the trend of continuous improvement for these metrics, although only erasing a fraction of the five-year gains. This reinforces the continuous vigilance and innovation required for sustained improvement.

CEA members have achieved this improvement in injury reduction through a commitment to progressive leading-edge programming based on the following four key success strategies:

1. **Building Better Health and Safety Management Systems:** CEA members maintain mature risk-based health and safety management systems consistent with external standards (e.g., OHSAS 18001, CSA Z1000). These systems drive continuous improvement through "Plan→Do→Check→Act" management processes that reduce risk and ultimately result in fewer injuries. Examples of recent innovative improvements implemented by CEA members to further develop their management systems include more effective communications on health and safety responsibilities; increased worker training; the implementation of software systems to improve workplace inspections and access to procedures; more effective audits (including third party audits) and corrective action programs; comprehensive contractor safety management programs; and improved return to work processes for injured workers.
2. **Reducing Health and Safety Risks in the Workplace and in the Community:** The electricity industry has traditionally identified exposure to electrical energy, working at height and driving as the most significant sources of safety risk. These risks have been mitigated through effective prevention programming, and today these sources contribute a low number of injuries as relative to the historical record. In fact, over the last five years worker injuries have typically resulted from overexertion/repetitive motion involving the musculoskeletal system, slips and trips, or impacts with equipment and tools. CEA members have addressed these concerns by implementing programs to reduce the risks associated with these injuries. One success area contributing to overall injury reduction over the last five years is a 9.4 percent reduction in overexertion/repetitive use injuries often impacting the musculoskeletal system. To achieve success, CEA members have focused on preventive programming by increasing employee awareness of musculoskeletal risks through training and communications; conducting ergonomic assessments and implementing employee-based ergonomic changes; providing employee fitness support; and addressing the early signs of pain or discomfort.

   CEA members are also committed to the reduction of risks associated with public contact with electrical equipment. Members actively promote public safety

[1] All Injury/Illness Frequency (AIF) Rate: number of injuries resulting in lost time or requiring medical treatment per 200,000 hours worked.
[2] Lost-Time Injury Frequency (LTIF) Rate: number of injuries resulting in lost time per 200,000 hours worked.
[3] Lost-Time injury Severity Rate: number of calendar days lost from lost-time injuries per 200,000 hours worked.

in their communities through communication campaigns targeted at all sectors of the public who may be exposed to electrical equipment, including emergency responders, children and the general population at home or in the workplace. In one recent initiative, CEA members collaborated with the Royal Canadian Mounted Police to produce a video called *"Electricity… The Invisible Killer"* to educate first responders (police, fire, paramedics) about safety around high voltage electrical utility systems. In June 2012, the video received international recognition when a first responder team from British Columbia, sponsored by CEA, won a Silver Award at an international competition in the Czech Republic with a successful emergency medical response to an electrical injury based on the practices described in the video.

3. **Building a Strong Safety Culture:** CEA members recognize that achieving safety excellence requires the buy-in and engagement of all employees. This fosters individual ownership and a broad-based commitment to safety. CEA members are implementing leading-edge programs based on psychological research and information from employee perception surveys. Examples include programs to develop enhanced supervisory leadership skills; raise all employees' awareness of their safety accountabilities; increase employee involvement in the reporting of safety-related issues and events; improve conversational skills used in discussions to resolve safety issues; and recognize safety leaders for their positive safety actions. There is also a focus on addressing the challenges of a changing workforce through redesigned new-employee orientation and mentoring programs.
4. **Working Together as an Industry to Improve:** CEA members have long understood that achieving health and safety excellence is an industry-wide effort. The CEA Occupational Health and Safety Committee (OHSC) provides a network of experienced health and safety professionals dedicated to developing strategies and initiatives that will improve the overall health and safety performance of the industry. This is accomplished through the open sharing of management system developments, safety culture improvement initiatives, risk reduction best practices, and lessons learned from safety incidents, all of which adds a progressive edge to the industry's safety management practices. To ensure reliable benchmarking on health and safety performance, the industry maintains – and members adhere to – a robust standard for reporting safety injuries/illnesses.

The CEA OHSC's mandate also includes actively working with regulators, national standard setting committees and other industry organizations to strategically enhance worker health and safety legislation and standards in all sectors across Canada. Over the last five years, one of the most notable achievements in this area is the CEA member initiative to raise the bar on workplace electrical safety through the development of a live-working guideline for use by member utilities. CEA then partnered with the national standard setting body, Underwriters Laboratories of Canada (ULC), to transform this guideline into the national standard *CAN/ULC-S801 Standard, Electric Utility Workplace Electrical Safety for Generation, Transmission and Distribution* for use by all utilities in Canada.

The electric utility industry has achieved continuous safety improvement through visible executive commitment; an engaged workforce dedicated to a culture of safety; and the implementation of robust health and safety management systems focused on reducing risk to workers and the public. Each individual utility's effort is magnified through the collective dialogue and sharing facilitated by the CEA. While the progress to date is recognized and celebrated, achieving excellent health and safety performance is a continuous journey that does not allow for the industry to be complacent with its success. These foundations of success described in the Report will be necessary to meet the challenges of a changing industry and workforce to achieve further improvements going forward. Furthermore, this report will enable a dialogue with other Canadian industries, broadening the landscape for the Canadian electric utilities' ongoing pursuit of reduced risk and fewer injuries.

2. INTRODUCTION

Electricity is an essential service for Canadians. It is used to power our businesses and homes and to maintain the economic growth and prosperity of Canadians. The job of generating and delivering electricity is carried out by thousands of workers in the electric utility sector in work-places across Canada. The corporate utility members of the Canadian Electricity Association (CEA) ensure that this product is delivered to Canadians in a manner that protects the safety and well-being of their employees, contractors and the general public.

It starts with visible commitment: Canadian electric utilities have a long-standing commitment to the health and safety of their workers and to members of the public in the communities in which they operate. While the electricity sector faces the strategic challenges of infrastructure renewal and skilled worker shortage, the improvement of workplace and public safety remains paramount.

The commitment to exemplifying safety on a day-to-day basis is demonstrated by leaders in all member utilities, at both the executive and operational levels. Accountability of health and safety programming should resonate with each employee, from the Board of Directors and senior management to the first line supervisor and shop floor worker. Everyone is accountable to execute their health and safety responsibilities appropriate to their role.

The purpose of this Report is to describe CEA's health and safety performance trends (see Section 3) and to try to get to the root of how the industry is accomplishing both workplace and public safety improvements.

The foundation of these improvements is based on four key success strategies:

1. Maintaining risk-based health and safety management systems based on externally recognized standards;
2. Implementing effective programming to reduce safety risks to workers and the public;
3. Building a strong safety culture through progressive programming to engage workers and build buy-in and ownership in the safety improvement efforts;
4. Collectively sharing these best efforts among all CEA members (and beyond) through the CEA Occupational Health and Safety Committee (OHSC).

Examples of progressive programming from CEA member companies in each of these areas will be described in Section 4. In addition, the Section 5 outlines the leadership shown by the electric utility industry to influence health and safety across all sectors in Canada.

3. HEALTH AND SAFETY PERFORMANCE TRENDS

Continuous Improvement at a Glance:

2.02
2011 ALL INJURY/ILLNESS FREQUENCY RATE (INJURIES PER 200,000 HOURS)

32.82%
REDUCTION SINCE **2007**

0.74
2011 LOST-TIME INJURY FREQUENCY RATE (LOST-TIME INJURIES PER 200,000 HOURS)

19.96%
REDUCTION SINCE **2007**

14.81
2011 LOST-TIME INJURY SEVERITY RATE (DAYS LOST FROM LOST-TIME INJURIES PER 200,000 HOURS)

8.18%
REDUCTION SINCE **2007**

3.1 Reliable and Consistent H&S Performance Benchmarking

Since 1990, CEA members have applied a standard injury/illness reporting protocol, the *CEA A-2 Standard for Recording and Measuring Occupational Injury/Illness Experience and Transportation Incidents*, to ensure consistent reporting and reliable performance benchmarking across the industry. This document is based on CEA reporting requirements unique to the industry but is consistent with recognized external standards including:

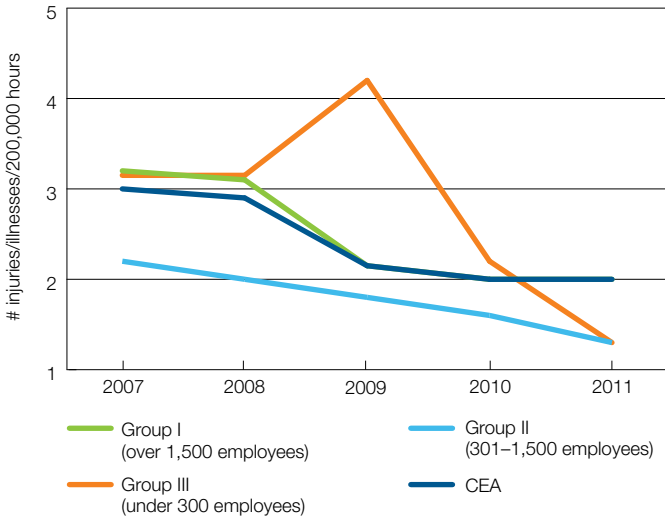
- U.S. Occupational Safety and Health Administration (OSHA) 29 CFR Part 1904 (January 19, 2001), Occupational Injury and Illness Recording and Reporting Requirements: Final Rule; and
- CSA Z795, Coding of Work Injury or Disease Information.

The CEA OHSC maintains this standard and has ongoing oversight on its use by members.

3.2 All Injury/Illness Frequency Rate

The CEA composite All Injury/Illness Frequency (AIF) Rate was 2.02 injuries per 200,000 hours worked in 2011, an improvement of 3.8 percent over 2010. This represents a 32.82 percent decrease compared to 2007, and a fifth consecutive year of improvement (**Figure 1**).

Figure 1
All Injury/Illness Frequency Rate 2007–2011



Every utility is committed to continuously improving AIF performance which ultimately measures the progress of injury/illness reduction. The consistent level of AIF improvement is attributable to the visible commitment of the management of each utility and the progressive programming based on the key success strategies. See **Section 4** for examples of on how these success strategies have been put into action across the industry.

Injury/Illness Trends

Exposure to electrical energy, working at a height and driving are the most significant safety risks for workers in the electric utility sector, and members maintain vigilance in managing these risk areas as each can result in serious injuries. With robust prevention programs in place, these risks result in a relatively low number of injuries. Unfortunately, in 2011 there was a tragic employee fatality at a CEA member utility due to an electrical contact. The industry regrets the tragic loss of life in this instance and strives to ensure that lessons are learned and shared to enhance existing programming and prevent a reoccurrence of this type of incident.

Over the last five years, major contributors to the number of injuries/illnesses have typically involved the following causal factors:

- **Overexertion and Repetitive Motion or Strain** including injuries to the musculoskeletal system involving physical exertion when lifting, pulling, pushing or throwing an object or an injury produced by repeated motion or movement to one or more areas of the body (**See Sidebar on next page**);
- **Falls at the Same Elevation Level** including slips and trips on the same level from slippery surfaces, protruding objects etc.;
- **Bodily Reaction** involving free body motion (voluntary or involuntary) which caused stress or strain on some part of the body;
- **Struck against** including impact between a person and equipment, tool, structure or moving object; and
- **Struck by** including impact from a falling or flying object.

3.3 Lost-Time Injury Frequency & Lost-Time Injury Severity Rate

Since 2007, CEA member companies have improved their Lost-Time Injury Frequency Rate by 19.96 percent and their Lost-Time Injury Severity Rate by 8.18 percent due to their commitment to safety management system improvement initiatives including effective return-to-work programs for injured workers (**Figures 2 and 3**). See Section 4 for examples of these initiatives.

Figure 2
Lost-Time Injury Frequency Rate

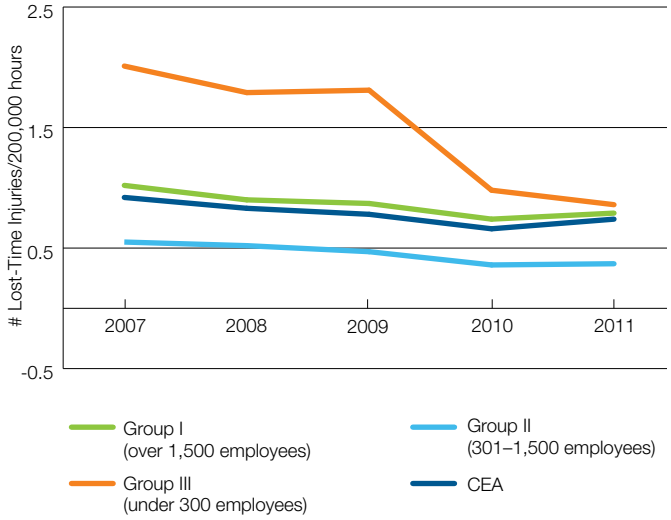
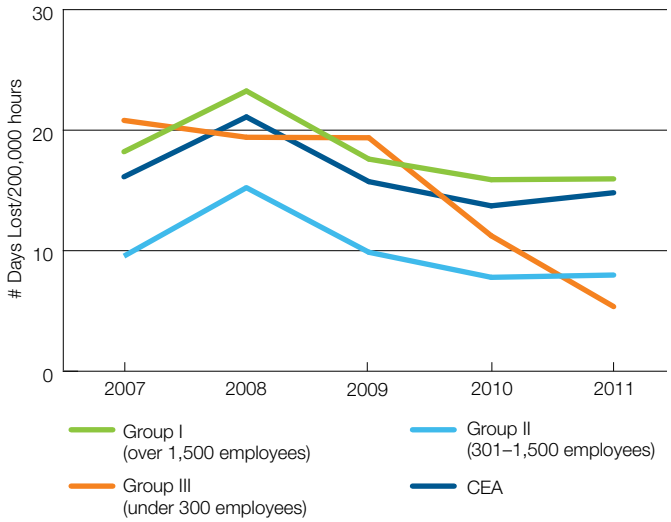


Figure 3
Lost-Time Injury Severity Rate



REDUCTION IN MUSCULOSKELETAL INJURIES

Since 2007, there has been a ***9.4 percent reduction in injuries involving the musculoskeletal system*** as measured by "Overexertion and Repetitive Motion or Strain" injuries, contributing to the AIF Rate improvement across the CEA. This risk area has been a focus area for CEA members. Examples of innovative programming initiatives have included:

Ergonomic Assessments and Change Projects:

- **Hydro Ottawa** provides both self-assessment tools and professional ergonomic assessments on office workstations.
- **Maritime Electric** has conducted ergonomic assessments of the Lines and Forestry work activities identifying areas of improvement in lifting, body positioning, working surfaces/ environment and tools.
- **Ontario Power Generation Inc.** (OPG) promotes employee-driven identification of ergonomic changes to equipment or tasks that can reduce the risk. OPG has developed an Ergonomic Change Database to facilitate the sharing of ergonomic success stories across the corporation with 270 changes inputted to date.

Training and Communication: In 2010–2011, **Newfoundland Power** delivered ergonomics training on injury prevention to administrative as well as trades and technical staff. In 2012 they rolled out poster and safety meeting communications on back injury prevention.

Employee Fitness Support: Hydro Ottawa has implemented an Occupational Athlete Program comprised of a series of functional movement screenings, where each employee is assessed on their physical ability to perform the tasks. Employees who participate receive advice on where they may be at risk of injury and are provided with exercises and access to a fitness specialist to address those risks and support their fitness goals.

The 2011 CEA composite Lost-Time Injury Frequency of 0.74 lost-time injuries per 200,000 hours increased by 12.1 percent, and the Lost-Time Severity Rate of 14.80 days lost per 200,000 hours increased 7.9 percent over 2010 performance. This year-over-year increase in lost-time injuries and days lost reinforces that improvement is a long-term commitment. No company can afford to be complacent about improving their performance. CEA members are committed to preventing injuries that result in lost time and in managing the increasingly complex return-to-work issues that arise.

3.4 Public Electrical Fatalities

Public electrical fatalities are recorded as such when they occur on the line side of the meter or utility owned plant and equipment. With 33 CEA member companies reporting in 2011, there were two public electrical fatalities compared to five in 2010. CEA's OHS Committee recently introduced a number of new pilot indicators to track commitments to reducing public electrical contacts. One hundred percent of member companies indicated that they had a public electrical education program and a commitment to ongoing partnerships with external agencies that contribute to the prevention of public safety incidents. See **Section 4.2.2** for a more detailed description of some of these programs.

3.5 Recognition of Excellent Health and Safety Performance

Each year the CEA recognizes members who have succeeded in achieving top quartile health and safety performance among their peers in both All Injury/Illness Frequency and Lost-Time Injury Severity Rates. Congratulations to the 2011 award winners.

2012 CEA President's Award of Excellence for Employee Safety[4]

Awarded to CEA member utilities for top quartile company-wide safety performance in 2011.

Group I (>1500 employees)	**Ontario Power Generation Inc. –** Bronze Award
Group II (301-1500 employees)	**Brookfield Renewable Energy Partners L.P., AltaLink –** Silver Award
Group III (≤ 300 employees)	**Columbia Power Corporation and Great Lakes Power Transmission L.P., a Brookfield Company –** Silver Award **Maritime Electric Company, Limited –** Bronze Award

Note: In 2012, there were no Gold Award winners with top quartile performance for three consecutive years.

[4] President's and Vice Presidents' Awards Criteria.
Bronze Award - the utility meets the award criteria within the respective reporting group.
Silver Award – the utility meets the award criteria within the respective reporting group for a second consecutive year.
Gold Award - the utility meets the award criteria within the respective reporting group for a third or more consecutive year.

2012 CEA Vice President's Award of Safety Excellence[4]

A new award in 2012, this is awarded to CEA member utilities for top quartile safety performance in their Generation or Transmission & Distribution specific operations in 2011.

Note: Since 2012 is the first year for the CEA Vice President's Award of Safety Excellence, all awards are at the Bronze level.

Generation

Category 1 (≥500 employees)	**FortisBC Inc., New Brunswick Power Holding Corporation –** Bronze Award
Category 2 (<500 employees)	**Columbia Power Corporation, Maritime Electric Company, Limited and City of Medicine Hat, Electric Utility –** Bronze Award

Transmission and Distribution

Category 1 (≥500 employees)	**Newfoundland and Labrador Hydro, a Nalcor Energy company, AltaLink, Nova Scotia Power Inc. –** Bronze Award
Category 2 (<500 employees)	**Yukon Energy Corporation, Maritime Electric Company, Limited –** Bronze Award

4. THE ROAD TO CONTINUOUS IMPROVEMENT

Continuous improvement in the electric utility industry's health and safety performance described in Section 3 is the result of a long term commitment to four key success strategies described below.

The sections below include examples of improvement initiatives and programs from selected CEA members across Canada to demonstrate this commitment. This commitment is shared by all member utilities, regardless of their role in providing electricity to customers, number of employees or geographic location.

4.1 Building Better Health and Safety Management Systems

To execute their commitment to health and safety, CEA member utilities maintain mature risk-based health and safety management systems consistent with recognized standards (e.g., OHSAS 18001, CSA Z1000). By design, these systems drive continuous improvement through Plan➔Do➔Check➔Act management processes that reduce risks and ultimately result in fewer injuries. Key elements common to these health and safety management systems are:

- Strategic and task-based planning activities to identify hazards and assess risk;
- Regular monitoring of the regulatory landscape to ensure compliance;
- Implementation of risk reduction programs such as engineering solutions, work procedures, safety equipment, and personal protective equipment;
- Comprehensive contractor management processes to ensure that continuous improvement in health and safety extends to contracted services;
- Extensive worker training to develop a skilled workforce that is knowledgeable about health and safety requirements;
- Strategies to communicate relevant health and safety information to employees;
- Incident investigation processes to prevent reoccurrences of safety incidents and promote lessons learned; and
- Ongoing assessment and audit processes to identify opportunities to improve the management system and correct health and safety deficiencies.

The following are some examples of improvement initiatives from CEA members to further develop their management systems.

Toronto Hydro Embarks on Successful Journey of Workplace Safety Improvement: It was common ten years ago at Toronto Hydro to have 50 or more lost-time injuries annually. In mid-2012, for the first time in the utility's history, its employees had worked almost one year without a single lost-time injury. Achieving this improvement has been the result of the commitment of Toronto Hydro's leadership to the improvement of their safety management system. The process started by ensuring that all employees understand their responsibilities in the Internal Responsibility System (IRS). In addition, a 2009 third-party IRS audit identified many safety improvement opportunities, all of which were addressed. The IRS message to employees about their safety responsibilities is reinforced daily in safety meetings, internal communications and training, and it is built into job descriptions and employee performance reviews.

Recognizing that it will take continual improvement to reduce injuries further, Toronto Hydro has set out to take its management system to a new level and is working to achieve OHSAS 18001 certification by early 2013. Key improvements

to its safety system have included the establishment of an Enterprise Risk Management system, which identified employee safety as one of the organization's top risks. This has led to additional focus on safety across the utility. This focus is evident at the field level, as all supervisors and managers are required to conduct safety inspections that are tracked monthly and reported as part of their individual performance expectations.

In addition, software has been introduced to help ensure that only the latest safety procedures are available for reference, and to facilitate timely safety incident notification and investigation processes. This software will be expanded later in 2012 with the launch of an inspection module that will enable safe work practices to be audited and analyzed for trends.

Employee engagement and communication is a core principle in achieving Toronto Hydro's safety goals. Employees and leaders from across the organization are engaged in special improvement projects that capture feedback and enable learning.

In summary, Toronto Hydro has created a high performing safety culture that permeates the organization with three critical strategies, the development of people, the implementation of world class systems and strong leadership.

Saskatoon Light and Power Improves their Safety Management System: To ensure continuous improvement in their management system, Saskatoon Light and Power has recently implemented an internal audit process to verify that the elements of their system are operating effectively. To make sure employees are knowledgeable and competent in executing their health and safety responsibilities, they have implemented new safety orientation training for supervisors, as well as completing a comprehensive training needs assessment and strategy to deliver safety training for all positions within the company.

Maritime Electric Implements an Integrated Health Safety and Environment Management System: In 2011, Maritime Electric raised the bar on their health and safety management processes in an effort to continually improve safety performance. To enhance an already strong safety program and culture, they formally integrated health and safety processes into their Environment Management System incorporating requirements from OHSAS 18001. This resulted in a more robust process to manage health and safety, clear expectations at all levels of the organization and an increased awareness of hazards and associated risks across the organization. The initiative is driving a continuous improvement mindset with corrective action processes to prevent recurrence of safety incidents.

Manitoba Hydro Improves Return-to-Work Processes for Injured Workers: Manitoba Hydro's priority is to prevent injuries to the musculoskeletal system through proactive job and equipment modification. They recognize the need to minimize the impact of these injuries when they do occur to benefit both the worker and the utility. As part of a strategy to re-design their Disability Management program, Manitoba Hydro's solution was to develop a Job Demands Analysis (JDA) program to facilitate the early and safe return to work of injured workers.

The first step was to build a JDA database consisting of the physical tasks and ergonomic risks associated with job positions where musculoskeletal injuries were the most prevalent. This information is intended to assist the medical community, rehabilitation coordinators, claims staff, managers and workers in better understanding the ergonomic risk factors associated with these positions, and to address the challenge of designing a return to work program with modified tasks for an injured worker. The JDA database and accompanying video were developed to offer all involved parties a better understanding of the physical demands of a job and to help identify the parts of the job an injured worker can safely perform. Overall, this information results in better post-injury assessments, and identifies the necessary training required to prevent further on-the-job injuries. Supported by a staff physiotherapist, line management has the training and tools to manage the work accommodation and job re-design needs of an injured worker.

Improvements to Manitoba Hydro's 2011 safety performance were significantly linked to this continuous improvement initiative, and resulted in fewer days lost from lost-time injuries. In turn, this achieved a more effective return to work program. Manitoba Hydro will continue to work to prevent these injuries by designing tasks to reduce musculoskeletal risks.

4.2 Reducing Health and Safety Risks

4.2.1 In the Workplace

Through the operation of these health and safety management systems, CEA member utilities have undertaken the following improvement initiatives to reduce key safety risks to both utility employees and contract workers.

Ontario Power Generation Reduces Musculoskeletal Disorders (MSDs): Prior to 2007, musculoskeletal disorder (MSD) injuries accounted for more than 40 percent of Ontario Power Generation's (OPG) medically treated and lost-time injuries. Committed to continuous improvement and safety excellence, OPG's Nuclear business set out to improve on this and make a cultural shift in how MSD risks and injuries were managed. The objective was to set a proper foundation to manage MSD risks like any other hazard area through identification, elimination and control of the hazard.

A five-year, senior management supported, multifaceted strategy was developed to tackle this risk area. Performance metrics and targets were established and tracked to ensure that improvement goals were quantified and well understood by managers. Achievement of these goals was supported by safety resources, with the development of improved work procedures, a computer-based training module completed by all employees, face-to-face presentations to high-risk groups, and frequent web-based or safety meeting communications to educate employees on the risks. This increase in employee awareness supported a key initiative to have employees identify the MSD risks in their day-to-day work environment and develop simple ergonomic changes to equipment or tasks that can reduce the risk significantly and increase employee buy-in. OPG has developed an Ergonomic Change Database to facilitate the sharing of these ergonomic success stories across the corporation, with 270 ergonomic changes already inputted into the database.

The results of this five-year strategy have been remarkable. The nuclear division at OPG has had a major culture shift in managing MSD risks. Signs of pain and discomfort associated with a task are identified early and addressed *before* an injury occurs, and many employee-driven ergonomic changes have been implemented. Over this five year period, the total number of MSD medically treated, as well as lost-time injuries, has dropped 80 percent, with the percentage of all injuries reducing from 41 percent in 2008 to 25 percent in 2011. The foundation has been set for even further improvement moving forward.

OPG Darlington Nuclear Chemical Lab employees make a simple ergonomic change to adjust a standard cart to more precisely fit equipment that is awkward to move.

Saint John Energy's driving program sign on a double bucket line truck.

Saint John Energy Assesses their Driving Safety Program: This initiative was implemented in 2010 to address the risks associated with driving. The program combined both employee education and a unique assessment process that welcomed the public's input into how safely Saint John Energy employees were driving. Members of the public could call a designated phone number which was

prominently posted on the back of the company vehicle asking "How Is My Driving?" Since its inception, the program has resulted in a 40 percent reduction of complaints, and a 25 percent increase in positive feedback from the public on employee driving. Overall, the impact of the program has bolstered employee safety culture with the emphasis on positive feedback.

TransCanada Develops a Contractor Safety Management Program (CSMP): CSMP was developed to prevent and mitigate occupational health and safety risks associated with the use of contracted services on TransCanada projects, facilities, and worksites. It contributes to TransCanada's on-going due diligence efforts and ensures compliance with applicable safety legislation, regulations, and codes. The overall objectives of this program are to define the roles and responsibilities of the company and prime/general contractors' management; to define the minimum contractor safety objectives to be met at each phase of the project management process; and to describe a proactive and planned strategy to manage contractor safety that ensures continuous improvement in safety performance for all contracted services.

TransAlta Develops New "Best Fit" Safety Eyewear Program: In 2010, TransAlta made a commitment to reduce eye injuries across their fleet. Based on input from both their employees and contractors, and working closely with their vendors, they set out to find the best fitting safety eyewear available to meet workers' needs. This team-driven approach really paid off, resulting in a 30 per cent reduction in eye injuries since the implementation of the new eyewear. The program originally began at the Poplar Creek facility in 2009, where they were looking to reduce the number of eye injuries at that particular site. It proved to be so successful that the program was expanded across the fleet. Based on these results, other companies are now looking to apply the standard in their facilities. TransAlta was recognized as an industry leader in 2011, when it was awarded the Dwight Bowhay Memorial Health and Safety Innovation Award from the Alberta Petro-chemical Safety Council.

4.2.2 Public Safety in the Communities Where We Operate.

CEA members have extended their safety culture to the communities in which they operate. While all utilities are committed to the reduction of public contact with electrical equipment, eliminating public electrical contacts altogether remains a challenge. Members actively promote public safety in their communities through initiatives such as classroom presentations, special safety events, and media campaigns. In fact, many CEA member companies allocate significant resources to public safety awareness, including power line safety and the dangers of water and thin ice at hydroelectric reservoirs.

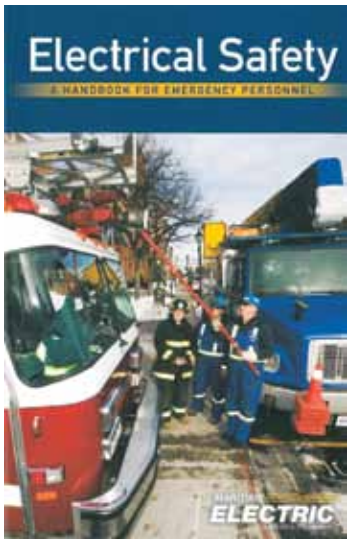
TransAlta's Sundance employees with the Dwight Bowhay Memorial Health and Safety Innovation Award.

"Electricity…The Invisible Killer": CEA members are collectively and individually working with the first responder community (police, fire, paramedics) to raise awareness and promote electrical safety. In collaboration with the Royal Canadian Mounted Police (RCMP), CEA members produced a safety awareness video to educate law enforcement, fire, and emergency medical services personnel about safety around high voltage electrical utility systems. The objective of the video, entitled *"Electricity ... The Invisible Killer"* is to increase the awareness level of first responders about high voltage electrical equipment and facilities, and to reduce the injuries involving high voltage electrical hazards during emergencies. A web portal – **electricity.ca/theinvisiblekiller** – has been set up to obtain more information.

In June 2012, the video received international recognition when a Canadian first responder team from British Columbia, "Team Canada BC", sponsored by the CEA OHSC, competed in the international Rallye Rejviz Medical Rescue Competition in the Czech Republic. Their Silver Award winning entry was a successful emergency medical response to an electrical injury based on the practices described in CEA's "Electricity ... The Invisible Killer" video.

Team Canada BC wins a Silver Medal demonstrating their response to an electrical injury emergency at the Rallye Rejviz Medical Rescue Competition in the Czech Republic.

Maritime Electric Implements a Public Electrical Safety Campaign: Maritime Electric is dedicated to public education within all aspects of its business. In 2011, a corporate strategy was put in place to increase public awareness regarding electrical safety. This included the development of an in-house radio campaign to compliment four existing public safety presentations available to various groups throughout the province. The presentations included "The Shocking Truth", aimed at grade six students in the province, electrical safety for first responders, electrical safety at home and work, and power line hazard awareness.



4.3 Building a Strong Safety Culture

CEA member utilities recognize that building a strong safety culture in which employees take responsibility for the safety of themselves and others is paramount to achieving excellence. It will take a conscious effort to ensure that the strong safety culture built over time in the industry is maintained as the existing workforce ages, new younger workers are hired and contractors are brought in to fill gaps. To address this, innovative programs are being developed to ensure that employees and contractors are actively engaged as partners in health and safety improvement initiatives. Below are some of the innovative initiatives that have been implemented to build this strong safety culture.

New Brunswick Power's Focus on the Psychology of Safety: For over 18 years, New Brunswick (NB) Power's vision has been to *"Create a working environment supportive of the individual wherein the performance of substandard acts and the existence of substandard conditions is simply not possible."* Working in full partnership with their union (IBEW), this vision started with the implementation of foundational safety management system elements. As their systems matured, their strategy then evolved into one with a more psychological focus to move their safety culture from being compliance-based to a more self-sustaining culture rooted in employee commitment.

NB Power has embraced existing psychological research in areas such as "Self Determination", "Participatory Management", and "Mindfulness", and combined it with in-house designed and applied initiatives. A safety perception survey was created to gain a more comprehensive understanding of their workforce. The goal was to better determine what employees need to work safely, and to increase their own sense of ownership and commitment in performing work in accordance with applicable standards. This long-term strategy has provided a better understanding of the many psychological drivers for safety. By applying this understanding they hope to create a far safer workplace than currently exists anywhere, in any industry.

Nalcor Energy Increases Employee Ownership in Safety: To achieve their goal of being world class in safety, Nalcor Energy has undertaken a number of initiatives to increase employee engagement and ownership in safety improvement. The *Safe Workplace Observation Program (SWOP)* was developed to directly involve employees in the reporting of both reactive and proactive safety-related events and issues to ensure that they could address safety hazards before they resulted in injuries. NALCOR built an in-house SWOP electronic reporting system that is accessible to all employees. It provides the means to identify safety events and issues including workplace hazards, unsafe acts and practices, incidents (loss and near miss) and commendations (positive reporting of proactive measures and actions being taken); prioritize the issue based on risk; and develop corrective actions with a responsible party. SWOP also provides a means for trending and analysis of safety events to identify opportunities for continuous improvement in NALCOR's safety program. The results to date have been very promising, with an increase in reporting at all levels of the organization. OHS committees are involved as a team in the reporting and trending process. Most importantly, this initiative has resulted in fewer injuries to date.

Nalcor's *BeSafe Program* provides training to employees to develop the necessary conversational skills so that they can have respectful safety discussions with others. This program, designed to strengthen personal responsibility for safety, allows employees to more clearly communicate their safety concerns with each other, reinforce positive safety behaviours, and engage in a collaborative problem solving approach to overcome potentially unsafe behaviours.

In 2011, Nalcor Energy's Churchill Falls operations introduced a *Green Hard Hat Policy* for new employees. Typically, all Nalcor employees wear white hard hats. This initiative requires that all new employees wear a Green Hard Hat for one year to increase their visibility. The program engages more experienced employees to share their strong safety culture with new employees, and help them become familiar with the required safety practices.

Newfoundland Power's Safety Leader(s) Among Us Program: The *Safety Leader(s) Among Us* Award Program was initiated in January 2011. This award is presented on a nomination basis to any individual or group of employees who have demonstrated their dedication and leadership in the area of Health & Safety. The monthly Safety Leaders are selected based on demonstrated commitment and leadership as seen by supervisors, employees, contractors, and/or the general public. This program profiles individuals and accomplishments through a monthly employee newsletter.

ATCO Electric's Safety Culture Improvement Strategy: ATCO Electric has doubled their number of employees since 2007. However, their safety performance continues to improve. Achievement of this outstanding performance is the result of a culture change strategy called *"Safety First, Always"*, designed to create a "Zero Injury" safety culture across the company. This has set the foundation for continuous improvement in ATCO Electric's safety performance. Using employee feedback obtained through their first safety perception survey in 2007, and an employee involvement approach, teams were launched to focus on proactive culture improvement opportunities identified in the survey. These initial focus areas included developing and measuring safety leadership activities such as job observations and inspections that clearly demonstrate accountability for safety in the workplace; enhancing the Fitness for Duty program with increased drug and alcohol testing; and delivering better safety communications to increase employees' personal responsibility and involvement in safety.

Building on the desire for continuous improvement, the process did not end there. Following two years of implementation, the perception survey was repeated in 2009 and 2011 to measure the effectiveness of the previous culture change initiatives, and to identify new opportunities for improvement. In 2009, the strategy was expanded to include initiatives to increase near miss reporting; delivery of training to provide positive recognition of safe work; and developing a contractor management process where contractors demonstrate the desired safety accountabilities. In 2011, a new employee orientation program was rolled out across the company to deliver a consistent safety message to new employees. Also rolled out was a new driver training program to address the risk of driving both on and off the job.

ATCO Electric's five-year strategy demonstrates that the challenges of a changing workforce need not impact safety performance. Their efforts have paid off as measured by positive employee feedback in safety perception surveys, and most importantly, in fewer injuries as measured by improved Lost-Time Frequency and Lost-Time Injury Severity rates over the five year period.

SaskPower Builds Safety Accountability at Safety Summit: SaskPower recently demonstrated that it takes the commitment of an entire workplace to build "A Total Safety Culture". A 2011 health and safety culture survey identified that increasing employee awareness of their safety accountabilities was a key improvement opportunity for building a stronger safety culture. The 2012 SaskPower *Safety Summit* is a forum where employee representatives from Occupational Health and Corporate Health and Safety Committees, in addition to leadership from across the company, met to discuss health and safety priorities. This presented an ideal opportunity to jointly address this all-important issue of taking personal responsibility for safety.

Bringing the issue even closer to home, the 2012 SaskPower *Safety Summit* was a timely forum for the group to reflect on three critical incidents that had taken place in the month prior. The details of these critical incidents and resulting corrective actions were shared with all attendees to develop lessons learned. Even more impactful, senior executives and employee representatives shared their personal views on their own safety accountabilities and how these cascade throughout the organization. These discussions had a

profound impact, generating a collective "call for action" from all workplace parties to prevent critical safety incidents from occurring in the future.

Not only did the *Safety Summit* generate a common understanding of SaskPower's goal for "A Total Safety Culture", the momentum was then translated into real action. Following the forum, SaskPower's President and CEO called for management action plans to improve safety across the company and to prevent incidents in the future – a blueprint for continuous improvement.

Northwest Territories Power Corporation (NTPC) Enhances Supervisory Training: In 2011, when NTPC set out to strengthen their safety culture, their approach was to further develop the safety leadership skills of their supervisory staff. To accomplish this, NTPC worked in partnership with the Northwest Territories Workers Safety and Compensation Commission (WSCC) to develop a 3 day training program that would further educate supervisors about their safety roles and responsibilities, leadership methods and other safety management fundamentals. With delivery of the training completed in 2012 to both supervisory and lead hand staff (over half of all NTPC staff), NTPC has already seen positive results, with supervisors demonstrating increased ownership in the safety program. The training program has been so successful that WSCC is rolling it out to various industries across the Northwest Territories and Nunavut.

AltaLink's Safety Management Initiative: Within organizations, conversations about safety can sometimes be limited to the executive suite and field operations. AltaLink recognized the only way to create a safety-centric, inclusive culture was to involve all employees in the conversation. In its *Safety Management Initiative (SMI)*, AltaLink resolved to take the necessary steps to ensure all employees felt responsible for the company's safety performance.

The two-year initiative set out to identify areas for improvement and engage employees in the development and implementation of change management initiatives. Employees from across the organization identified several areas in need of improvement, and categorized them into four working streams. The areas in the working streams were then assigned to employee groups tasked with the research and development of sustainable improvements. The teams were responsible for implementing change management initiatives to the organization.

Each working group was successful in utilizing the Plan→Do→Check→Act process for creating and implementing safety programs, standards and technical training content that addressed the four areas of improvement: safe work procedures, safety training, safety measures and safety culture. The result of the *SMI* was enhanced safety operations that secured AltaLink's safety performance. Empowering employees to affect change in safety initiatives has led to a a positive shift in AltaLink's safety culture.

A key element to the success of the initiative was the creation of a Safety Leadership team consisting of senior management. The team provided leadership and guidance to each *SMI* working group and gave the approvals to move forward with their programs. The Safety Leadership team continues to provide AltaLink with a consistent and structured process to identify and review safety improvements and initiatives.

4.4 Working Together to Improve

The CEA Occupational Health and Safety Committee (OHSC) is committed to the open sharing of best practices and lessons learned from safety incidents within the electrical utility sector. An External Standards & Regulation Working Group of the OHSC was formed in 2011 with the mandate to facilitate this process through the development of the following specific tactics over the next several years:

- A best practices database for CEA members to easily share information on improvement initiatives;
- Industry-wide "best-practice" guidelines as appropriate to assist members in achieving agreed-to health and safety standards. An example of this is the CEA OHSC's partnership with Underwriters Laboratories of Canada (ULC) to maintain the *CAN/ULC-S801 Standard, Electric Utility Workplace Electrical Safety for Generation, Transmission and Distribution* on behalf of the industry;
- OHSC forums to share safety successes and challenges among members;
- Critical incident reporting processes to provide lessons learned on incidents to prevent reoccurrences; and
- Communications to increase public awareness of safety risks associated with the electrical utility sector.

5. PROVIDING LEADERSHIP IN HEALTH AND SAFETY

CEA members' work towards excellence in health and safety does not stop with the electrical utility industry. Acknowledged as a leader in health and safety, CEA members share their experience and lessons learned with other industries through their support of national and international improvement initiatives with regulatory and standard setting bodies.

Raising the bar through participation in external OHS standards

CEA members provide industry representation on external OHS standards setting advisory committees including:

- Canadian Standards Association (CSA) Occupational Health and Safety Steering and Technical Committee, providing industry input to the national OHS standard setting agenda; and
- Canadian IEC/TC 78 Live Working Secretariat to develop international standards for those working on or near live electrical power lines.

CEA members are also sought after to participate as industry representatives on OHS standard setting technical committees. Over the last five years, CEA members have made a significant contribution to raising the bar on electrical safety practices in all industries across Canada through participation in the development of two national standards:

- *CAN/ULC S801, Electric Utility Workplace Electrical Safety for Generation, Transmission and Distribution:* Partnering with ULC, this standard was developed by CEA members and published in 2010 to specify robust workplace electrical safety practices for the electrical utility industry, recognizing their long-standing experience in managing electrical hazards and their unique work environment.
- *CSA-Z462, Workplace Electrical Safety:* Published in 2008 and 2011, CEA members have actively participated on this technical committee providing their unique expertise to raise the bar on electrical safety across other industries in Canada.

CEA members are also actively involved as technical committee members in the development of other national OHS standards. These include:

- *CSA-Z463, Guideline on Maintenance of Electrical Systems;*
- *CSA-Z1001, Occupational Health and Safety Training;*
- *CSA-Z1002, Occupational Health and Safety – Hazards and Risk assessments;*
- *CSA-Z1004, General Workplace Ergonomics;*
- *CAN/CSA-Z1000, Occupational Health and Safety Management;*
- *CAN/CSA-Z94.4-11, Selection, Use, and Care of Respirators;*
- *CAN/CSA-Z460-05 – Control of Hazardous Energy – Lockout and Other Methods; and*
- *CAN/CSA- Z259, Fall Protection Series.*

Implementation of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS)

For over 10 years, CEA has provided valuable industry representation on Health Canada's Workplace Hazardous Materials Information System (WHMIS) Current Issues Committee (CIC) to provide the industry's perspective on the implementation of Canada's WHMIS legislation. During this time, CEA has played an important role in this multi-stakeholder forum to influence the necessary changes to the Hazardous Products Act (HPA) and Controlled Products Regulation to facilitate implementation of the GHS in Canada over the next three to five years.

6. CONCLUSION

This Report has described CEA members' progress to date in achieving continuous improvement in health and safety performance and injury reduction. The success strategy to maintain the momentum of this injury reduction is built on a foundation consisting of:

- Visible executive commitment in all member utilities;
- Implementation of health and safety management systems based on externally recognized standards;
- Identification of key safety risks and mitigation thereof through targeted leading-edge programming;
- Development of a strong safety culture based on engaging workers and building buy-in and ownership in the safety improvement efforts;
- Commitment to the collective sharing of these best efforts among all CEA members; and
- A willingness to share with and learn from other sectors committed to worker safety.

While success and progress to date is recognized and celebrated, achieving excellent health and safety performance is a continuous journey where the industry can never be complacent with its success. The foundations of success described in this Report will be necessary to achieve further health and safety performance improvements going forward as the industry faces the challenges of a changing industry, new workers, and infrastructure renewal. The electricity industry has faced similar challenges in the past and has maintained a steadfast commitment to the health and safety of its workers and the public. The success of the electricity industry and a commitment to injury reduction go hand-in-hand. Both the industry and all Canadians expect no less.

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