

**Annual Report**  
**Chief Safety and Risk Officer**

**Technical Standards and Safety Authority**  
**Province of Ontario**

**August 2014**

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## Reporting Period

This 2014 Annual Report covers the period May 1, 2013 to April 30, 2014. The timeframe overlaps with the 2013 CSRO Annual Report by several months; however, this most recent schedule enables this report to coincide with TSSA's fiscal year.

The CSRO is required to provide a minimum of two reports every year; a review of TSSA's Annual Public Safety Performance Report and this Annual Report.

For purposes of cross referencing;

- Comments on TSSA's 2012/2013 Annual Report are included in this report;
- Comments on the May 1, 2012 to April 30, 2013 TSSA Public Safety Performance Report (ASPR) were included in the 2013 CSRO's Annual Report of October 2013;
- A separate report commenting on TSSA's May 1, 2013 to April 30, 2014 Annual Public Safety and Annual Report will be issued (estimated October 2014), and;
- A separate benchmarking report will be issued late 2014, early 2015.

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### 1. Summary of Recommendations

- (i) No later than May 1, 2016 TSSA should have at least its elevating devices data publicly available on its website (or alternate location). As much as possible, access and usability of the data should be consistent with other 'Open Ontario' data sets.
- (ii) TSSA should be commended for inclusion of the baseline comparison provided in the 2012/2013 ASPR and proposed for the 2013/2014 ASPR. These comparisons should continue (especially outside Canada); ideally three to seven comparator jurisdictions should be provided for each sector, e.g. with the risk levels in the categories compared per one million Ontarians, or better yet, per one million residents or facility users, e.g. per ski lift usages.
- (iii) If requested by a Government of Ontario agency or designate to participate in 'Innovation District(s),' TSSA should strive to join. TSSA may wish to encourage the formation of such Ontario-based District(s) under the rubric of 'Safe Cities' as this could be complementary to TSSA's overall public safety objectives.
- (iv) A joint review on the growing importance and multi-jurisdictional aspects of elevators, with several agencies and pilot local governments, is warranted, especially in light of recent power outages and mechanics' job action. TSSA should play a key role in any such review.

NB: a separate report on TSSA's 2013/2014 Annual Public Safety and Performance Report (likely issued August 2014) will be provided by the CSRO later in 2014.

## 2. Data Management

Following the 2011 recommendation of Norm Inkster, CSRO, to establish a Chief Information Officer (CIO) position in TSSA a new CIO began June, 2012. A major data management review is underway. Shortcomings with the current system have been identified and steps to remedy and develop a more robust system are proceeding (e.g., see TSSA 20/20 program).

The following suggestions were introduced in the [2013 CSRO Annual Report](#):

- (i) Make elevator inspection schedules public;
- (ii) Review and report on the merits of opening TSSA data on other inspected operators and customers, e.g. boilers and pressure vessels;
- (iii) Prepare a plan for TSSA database(s) to be placed on 'Ontario Open Data';
- (iv) Develop and share analytic tools on risk events and maintenance priorities, particularly with local governments.

The [2013/2014 TSSA Business Plan](#) states as a fiscal year (FY0 target: 'Data cleansing for critical elements in the Elevating Devices Safety Program area complete; accuracy levels determined and targets set; and a roadmap developed for Enterprise Risk Management.' This target is being integrated into the larger initiative of enterprise information architecture. Recognizing the critical nature of data reliability, management processes, and timeliness, an aspirational target specific to elevating device data management should be proposed. The following is suggested:

- (i) No later than May 1, 2016 TSSA should have at least its Elevating Devices data publicly available on its website (or alternate location). As much as possible, access and usability of the data should be consistent with other 'Open Ontario' data sets [date flexible but an aspirational target should be established].

Data management aspects such as: management systems and platforms, 'big data', smart (and safe) cities, Innovation Districts (see Section 3), the role of social media, and application of real-time sensors on critical equipment, are evolving quickly. Management systems and platforms in particular represent significant budget requirements, e.g. TSSA's IT costs exceed 10% of the overall operating budget. Value for money considerations suggest that clear metrics and schedules are needed on progress and public safety enhancements. This is fully consistent with the 2013/2014 Business Plan – Strategy Four (Organizational Effectiveness) and the Objectives of (i) Build a strong foundation to succeed, and (ii) Fully use TSSA resources to optimize performance. Data management appears to be an emerging area of strength for TSSA; public safety enhancements could follow. Development of next-step efforts likely requires broader agency participation, and possibly integration of private sector partners, such as manufacturers, building owners and management companies.

### 3. Baseline Comparisons and Benchmarking

An initial study completed by the CSRO last year investigated similar activities (elevating devices, fuels and BPVs) in other jurisdictions (outside Canada). Preliminary findings for New York, Chicago and Australia provided useful baseline comparisons. Discussions are underway to have this information regularly collected by TSSA, and other safety authorities, e.g. Singapore.

“Ontario is one of the safest jurisdictions in the world” (stated at the 2013 AGM), or as written in the Message from the CEO in the 2012/2013 ASPR:

*“That’s one of the ways we keep Ontarians safe, every hour of every day in virtually every aspect of daily life. From the dry cleaners where you pick up your cloths, to the furnace that heats your home, to the elevators you ride, and the buildings you learn and work in, we are there to protect you.”*

These statements might be credible, however through risk informed decision-making (RIDM) and other risk metrics, this statement should be validated and placed in perspective (see Section 3.2). How does the safety of Ontario’s elevators compare to Florida, Netherlands or Korea? Is fuel transport and distribution less risky in Ontario than say Australia? Which North American jurisdiction has the fewest incidents on amusement devices? Answering these questions will take time and is a process rather than a definitive statement, however TSSA and other ‘world-class’ public safety agencies should regularly benchmark themselves against peers and against themselves over time.<sup>1</sup>

As discussed in 2012/2013 Annual Public Safety Performance Report (ASPR) the use of RIDM is accepted international best practice. Use of RIDM for risk analysis in the eight TSSA sectors is sound and provides an important platform for others to follow (and compare) in similar risk analysis, e.g. food safety, road safety, and accidental injury such as water safety. DALY – Disability Adjusted Life Years - is a standard international metric that facilitates credible comparisons and baseline monitoring.<sup>2</sup> The metric combines morbidity and mortality thereby providing a more holistic account of safety impact.<sup>3</sup>

TSSA is now also augmenting DALY with an equivalent “risk of injury or fatality.” The risk of injury or fatality, usually presented in a range of 0.03 for ski lifts to 1.12 for fuels per 1,000,000 Ontarians in 2013/2014 (with a global target of 1.0) is an acceptable metric

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<sup>1</sup> Similar to Singapore, a ‘safe cities award’ could be considered (only Ontario-wide or possibly with several peer organizations nationally and around the world).

<sup>2</sup> The term DALY was originally developed by Harvard University for the World Bank in 1990. The term is now widely used in public health and broad health reporting, e.g. the 2012 Global Health Burden Report by the World Health Organization. RIDM – risk informed decision-making – is a general risk industry standard metric that originated in systems engineering.

<sup>3</sup> DALY as used here only pertains to immediate injury of the activity in question, e.g. physical injury using an elevator or amusement device. The possible impact of say, communicable diseases or long-term health impacts that might be associated with the activity, such as long-term exposure to hydrocarbons or cumulative back strains from amusement rides are not captured here: This is standard industry practice.

but could be enhanced perhaps if presented as ‘per 1 million elevator rides or ski-lift uses’ rather than solely by population. Again, providing these comparators is a process not a finished product as considerable interpretation will always be required when comparing risk information across cultures and agencies.

### 3.1 Benchmarking TSSA

A scoping exercise for benchmarking TSSA was completed April, 2014 by Risk Services International (RSI), Ottawa. Proposed candidate jurisdictions for inclusion in an ongoing review included: New York City; Illinois (with emphasis on Chicago); Paris, France; London, England; Hong Kong; Singapore; New Zealand, and; Finland. The intent is to develop an ongoing benchmarking and peer review mechanism that facilitates comparisons across relative risk ratings for target activities, e.g. risk of injury per elevator ride, ‘value for money’ of public safety initiatives, and trend analysis, e.g. are there areas where public safety is markedly declining (or improving) relative to a peer group.

TSSA is unique in its compilation of delegated regulations and standards development, e.g. fuels, elevating devices, and operating engineers are not combined in any of the other proposed peer group jurisdictions (or that we know of in any agency in the world). Also, only New Zealand has a similar delegated (public safety) authority. This benchmarking exercise, over time, may help to better define and understand the respective roles of TSSA (delegated regulatory and standards oversight) and Ministry of Government and Consumer Services (public policy, integration of TSSA’s public safety remit within similar Provincial public safety and economic development objectives).

As outlined in Section 3.3 the provision of ‘public safety’ services is likely to evolve quickly in ‘world class’ jurisdictions. These changes will be driven by at least: (i) new technologies; (ii) data collection and management systems; (iii) desire for efficiencies and cost savings and efforts to engender economic development from public safety provision; (iv) response to events, many of which may be exacerbated by a changing climate, aging demographic, increasingly inter-related and complex systems; (v) social media; (vi) availability of trained personnel, e.g. operating engineers (demographics and willingness/ability to pay); (vi) rapid urbanization globally, and locally increased efforts at urban density with greater reliance on elevators.

### 3.2 Benchmarking Toronto and Ontario

In addition to the global trends mentioned above another important trend was reinforced in February 2014 when Grosvenor, a UK based real estate firm, published its Resilient Cities report. Toronto was touted to be the world’s ‘most resilient’ city.<sup>4</sup> Many people familiar with Toronto, Ontario and Canada’s state of infrastructure, and experience with the December 2013 ice storm, questioned Grosvenor’s findings, however there is no doubt that a global opportunity is emerging for Toronto and Ontario as a secure and safe

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<sup>4</sup> The City of Toronto was rated 2<sup>nd</sup> Least Vulnerable (climate, environment, resources, infrastructure, community) and 2<sup>nd</sup> Most Adaptive (governance, institutions, technical and learning, planning systems, funding structures) for a combined ‘world’s most resilient’ of the 50 of the world’s ‘most important’ cities.

place to reside and locate your business. TSSA, Ministry of Government and Consumer Services, and other local and provincial agencies will likely be tasked in the next several years to buttress the claims of the area being resilient (i.e. safe and secure).

Reports like the Grosvenor study are common; some more definitive than others. For example an excellent and comprehensive urban risk evaluation is Swiss Re's 'Mind the risk: A global ranking of cities under threat from natural disasters.'<sup>5</sup> Urban resilience (metropolitan areas and discrete cities) is emerging as a key economic differentiator and public safety imperative. All large urban areas are actively engaged in identifying the (changing) risk profile and attempting to enhance adaptation capacities. The City of Toronto and Region of Durham, for example, have used down-scale climate modeling and risk profiling by service sector, e.g. vulnerability of electricity supply.

Increasingly, municipalities looking to strengthen their overall resilience will likely call upon TSSA and Ministry of Government and Consumer Services for advice. An active benchmarking, and global information reconnaissance, may be expected. This would serve two purposes: (i) due diligence and service provision as governments and government agencies are facing more legal challenges as risks are manifested, e.g. flooding in Thunder Bay, and (ii) it provides Metropolitan Toronto and Ontario a unique opportunity to be positioned globally as one of the world's most resilient jurisdictions.

Claiming to be one the world's most resilient jurisdictions, i.e. safe, secure and adaptive, could yield enormous economic benefits, however prior to making this claim a thorough review of possible comparator jurisdictions and the 'fluidity and support' between and among relevant agencies and levels of government should be evaluated, as well as public awareness and support. TSSA and Ministry of Government and Consumer Services would be key agencies in any discussions in this area.

In addition to benchmarking (metropolitan) Toronto and Ontario for the region's ability to be presented as resilient, process benchmarking between TSSA and Ministry of Government and Consumer Services may also be warranted. 'Mind the gaps' is particularly salient in enhancing public safety. Questions with regard to public safety such as: how long do changes to codes and standards take; how does the political process affect scheduling of policy and standards; which agency is best able to maintain the technical strength in policy development; how does the presence of several related (and dissimilar) agencies within one Ministry impact oversight and policy development – *vis a vis* other jurisdictions are important. Benchmarking may not provide all the answers, nor fully comprehensive answers as no two jurisdictions are the same. However as public safety provision is thought to be a strength in Ontario, a robust and open process for these types of questions, comparisons and considerations is sure to be valuable (see Section 6.5).

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<sup>5</sup> Swiss Re's 2013 review evaluated storm, storm surge, river flood, earthquake, and tsunami hazards. Of the 616 metropolitan areas evaluated, Metropolitan Toronto was not in the top 20 North and Central America, or top 120 Global cities for risk (for aggregate natural hazard risk, Metropolitan Toronto is likely in the bottom quintile).

#### 4. Elevating Devices

Members of the International Union of Elevator Constructors across Ontario were on strike from May 1 to July 10, 2013. The strike highlighted the critical role of elevators. During the strike a makeshift sign in a Toronto hospital read:<sup>6</sup>

#### **A note for our patients:**

If you are feeling tired from climbing the stairs, **please rest** for a moment.

We are sorry for the inconvenience.

Inoperable elevators in hospitals, schools and senior's homes during worker actions; inoperable elevators in residential towers and condominiums during power outages -- without elevators city-life as we know it stops quickly. Elevators enable our cities (Bernard, 2014).

Elevating Devices (ED) are a critical aspect of TSSA's mandate<sup>7</sup> however for a comprehensive ED safety regime<sup>8</sup>, support from other stakeholders is critical. Recent experience with the ice storm power outages and mechanics' strike reinforces this growing criticality of elevators. Jurisdictional overlap, differing scales and timeframes, and changing circumstances are combining to warrant a broader review of ED safety in Ontario. This is particularly relevant: (i) in light of recent weather-related events with resulting sustained power outages and loss of life as elevators remained inoperable<sup>9</sup> and; (ii) in consideration of growth in high-rise dwellings: it's estimated more than 150 high-rise residential buildings (in excess of 20 stories) are under development in the Greater Toronto Area.

Elevators, and potential lack of access, are rapidly emerging in the GTA as a critical issue and a possible broad-based public safety risk, e.g. see media coverage of elevator mechanic's strike in 2013. In some buildings, such as hospitals and seniors' homes, elevators are an essential service. Similarly in tall residential towers more comprehensive contingencies likely need to be developed for sustained power outages. Older residential high-rises may also require retrofits for backup power generation specifically for elevators in the event of power outages. These plans and implementation programs will need to be developed in conjunction with several agencies and local governments. In efforts to shift from an emergency evacuation mode to 'shelter in place' elevators and tall residential

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<sup>6</sup> [http://www.huffingtonpost.ca/gerry-som/ontario-elevator-strike\\_b\\_3547294.html](http://www.huffingtonpost.ca/gerry-som/ontario-elevator-strike_b_3547294.html) (accessed 12 June, 2014)

<sup>7</sup> Elevating and amusement devices provided \$20,313,000 to TSSA revenue in FY 2013

<sup>8</sup> 'Safety' of elevators obviously varies by institutional mandate; e.g. for TSSA safety is defined by operational standards, for fire marshal it is safe building (and elevator) evacuation, for building managers and residents, such as seniors living on the 25<sup>th</sup> floor, safety of ED may encompass operational functionality through long term power disruptions.

<sup>9</sup> A Disaster in the Making: Addressing the Vulnerability of Low-Income Communities in Extreme Weather, Tracy Ross, Center for American Progress, August 2013.

buildings will emerge as a critical issue – TSSA should be a key partner in these discussions.

Elevators are also likely to be linked through new apps and data management systems enabling people to know when elevators might be out of service: similar to traffic reports. This might be linked with TSSA's efforts to provide ED licenses and service schedules on an open data platform.

## **5. Safety in Perspective**

Much of Southern Ontario was covered in up to three centimeters of ice as a severe winter storm walloped the region December 2013. Parts of Toronto were without electricity for as long as six days. Hospitals had to be evacuated, almost all basic services were disrupted, costs exceeded \$100 million in the City of Toronto alone. Twenty-seven deaths were linked to the storm, including seven deaths from carbon monoxide poisoning as cold residents improperly used fuel combusting devices indoors (BBC News).

Danger from an ice storm manifests in many ways. Traffic fatalities may be the most obvious but without electricity elevators were quickly out of service (stranding people in their residences); hospital patients had to be relocated as fuel supplies for back-up generators were exhausted; roads and sidewalks were treacherous for vehicles and pedestrians; and as people tried to keep warm and provide alternative electricity, danger of fire and carbon monoxide (CO) poisoning increased markedly.

More than 550,000 Torontonians rent apartments in buildings five-storeys or higher<sup>10</sup>. Fire and building codes require only two hours emergency lighting and are designed for emergency evacuation not for shelter-in-place. CO poisoning is just one of many threats facing residents as they hunker down after a storm, or similar disaster. For example 43 people died in New York City from Super-Storm Sandy. Most died from drowning but about 18 died from complications of loss of electricity in residential apartments (falls, heart and respiratory strain, and loss of medical devices) and CO poisoning. The elderly were particularly hard-hit as about half of those who perished were over 65 (New York Times, November 17, 2012).

Providing public safety in the face of an ice storm or something like Super-Storm Sandy involves scores of agencies, emergency management operations, four levels of government in Ontario, and most importantly, the public. Safety engineering for all activities, including storms, falls into four broad categories – safe design, safety reserves, safe fail, and procedure safeguards (Moller and Ove Hanson). Good public safety requires relatively seamless interfaces between agencies, design, operations, and emergency response. Public safety is a team effort. The 2013 Ice Storm reinforced this while helping to clarify TSSA's role.

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<sup>10</sup> From Statistics Canada and Toronto Star Feb. 1, 2014

When compared to first responders and emergency volunteer workers TSSA's role in an emergency like last year's ice storm may seem peripheral, yet CO poisoning and elevator security are two critical aspects of public safety related to TSSA's mandate in weather-related incidences. Focusing on safety in these two sectors also likely yields significant ancillary safety benefits in all aspects of public safety provision.

Similar to the (seemingly) small but very critical role TSSA played in an event like December's ice storm, TSSA's overall mandated risk reduction efforts represent about 0.1% of Ontario's fatality rate due to unintentional injuries (RSI report in 2012/2013 ASPR). Yet introducing clear metrics and standardized inspection and compliance procedures is likely to enhance public safety across Ontario in other sectors as well thereby increasing the impact of TSSA's work on public safety outcomes.

TSSA's ability to provide large-scale ancillary benefits is also evident in the boiler and pressure vessels (BPV) sector. TSSA is mandated to inspect only about 1% of Ontario's BPVs<sup>11</sup> and yet if an event involving a BPV were to occur, municipal representatives, politicians, the media, and others would likely look to TSSA for explanations and recourse, regardless of where the facility is. This is not unexpected and TSSA has a strong partnership with the insurance industry, however TSSA's requirement to enhance public safety of BPVs is catalytic as well as regulatory. Ancillary benefits of TSSA's BPV monitoring can be considerable.

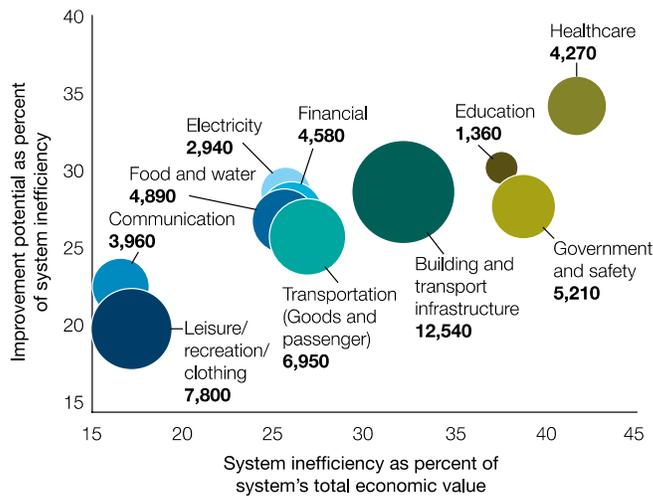
## 5.1 Enhancing Efficiencies in Government and Safety

A survey conducted by IBM of 518 economists suggests that enormous efficiencies are possible in the government and safety sector: as much as 38% of the \$5,210 billion spent globally. Only the Healthcare sector is considered more able to provide savings through efficiency gains (Figure 1). The government and safety sector is broadly defined in the IBM study, with limited – but important – links to TSSA's mandate.

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<sup>11</sup> TSSA routinely inspects 1000 uninsured BPVs while 75k-175k BPVs are insured and therefore do not fall under TSSA's inspection regime. There may be BPVs that are neither insured nor routinely inspected by TSSA (i.e. unknown and un-registered facilities).

**Figure 1: Potential Improvements in Various Service Sectors**



Note: Size of the bubble indicates absolute value of the system in US\$ billions  
 Source: IBM Institute for Business Value analysis based on inefficiency and improvement potential estimates reported during 2009 survey of 518 economists.

From: IBM Global Business Services, 2010

IBM Global Business Strategies describes a \$4 trillion opportunity using a ‘system-of-systems’ approach to build a ‘smarter planet’. The amounts may vary by jurisdiction, however the message is compelling. Worldwide changes should be anticipated in several key systems and sectors – particularly healthcare, education and government and safety.

In Ontario two new public safety enhancements may emerge: Innovation districts and enhanced agency coordination. These would be in addition to efforts already underway through ‘smart cities’ and ‘open data’.

## 5.2 Innovation Districts<sup>12</sup>

Much has been written on ‘smart cities’, ‘big data’, competitiveness, government and business transformation, and the need for innovation. These ideas all remain relatively abstract until they are applied across a specific geography, sector, or communities of interest. Good ideas need to be anchored to a specific location before they can take root and grow into lasting and beneficial changes. Geographically-specific ‘collaborative spaces’ are emerging as critical areas in urban management and the ‘new economy’.

Innovation areas are emerging as the local manifestation of mega-trends. Not only as receptive areas for the ‘spatial geography of innovation’ but possibly even more importantly, as the drivers of scalable innovation and economic development. A critical service area that is emerging in the innovation districts is public safety. For this reason TSSA may wish to monitor their development in Ontario, and elsewhere. TSSA may also

<sup>12</sup> See The Rise of Innovation Districts: A New Geography of Innovation in America. Brookings, May 2014. Bruce Katz and Julie Wagner

do well in participating in, or jointly encouraging, the development of an innovation district in Ontario (or topic area centre of excellence) that has as an express topic area of public safety provision.

### 5.3 Integrated Service Delivery

An emerging success story in the Ontario public safety sector is the Ontario Regional Common Ground Alliance (ORCGA). The Digsafe and ONICALL combine several utilities and agencies wanting the public to “Call Before You Dig”. Making it easier for the public is an important way to increase compliance.

In Ontario a relatively small-scale company can have more than 30 government inspections per year. These are costly to the company both from a financial and productivity perspective. Coordination and synergies may be possible. Also, significant risk reduction is possible through use of consolidated (and coordinated) data collection. A ‘311 one-call’ type-service is now common in many larger cities. Similar coordination and synergies might be gained by combining provincial mandates, e.g. Labour and Environment, as well as by combining the objectives of various levels of government.

An effort of this magnitude is beyond TSSA’s purview; however, TSSA and MGCS could conduct a review and convene relevant counterpart agencies to explore the merits in combining inspections. A key aspect of this effort will be the need for the revisions to enhance public safety, and improve government service provision. Enhanced public safety and economic development should both be possible: Applying this in an ‘Innovation District’ might be a good start. A cautionary note may however be warranted. ‘Integration’ is a key objective of all governments, however ‘best practice’ examples are sparse. Ontario is well-positioned to promote better integration; however progress may be incremental and requires a long-term focus.

### 5.4 Home Inspections to Home Servicing [from 2013 Annual Report]

Routinely mechanics at local businesses service automobiles. Trust of the process comes from personal experience and confidence in broad government oversight, e.g. auto-mechanic certification 310S under the Ontario College of Trades. The process is now habitual with car owners (*inspection* only occurs at sale and emissions testing [which is being reduced]: *service* is provided during the lifetime of the vehicle and is seen as ‘value for money’ by car owners).

Home inspections are typically carried out at time of sale; often by an accredited member of the Ontario Association of Home Inspectors. Other home inspections include fireplaces and woods stoves (WETT), home heating, energy audits, insurance agents, etc. The scope and frequency of home inspection is particularly relevant to TSSA as this may be the most practical way to address CO poisoning, which is TSSA’s largest public safety risk.

To better address CO and other TSSA-regulated aspects such as home fuel-oil tanks, home *servicing* should become as habitual as automobile servicing. This should also increase homeowner convenience and safety and, as a secondary benefit, would enhance economic development. This change in mindset will take time to implement, as current regulations, individuals and existing businesses, oversight agencies, homeowner habits, and costs will all be impacted. However, from a public safety perspective (e.g. CO poisoning), this appears to be the most likely way to achieve significant and cost effective reductions in this specific risk. The potential ancillary benefits from the approach are large. Therefore there may be significant value for TSSA to review ways to encourage the emergence of an Ontario-wide culture of routine home servicing to augment (and possibly replace) the somewhat ad hoc and growing regime of home inspections and compliance. The program could be similar to an ‘Eco-Audit’. Other partners could include the Electrical Safety Authority (ESA), insurance industry, Fire Marshal’s Office and local utilities.

## **6. Emerging Issues**

Several issues are emerging that may warrant a more comprehensive review in future reports. These include:

### 6.1 Safety and Seniors

Ontario is undergoing a large demographic shift with the median age rising quickly. Ontario’s population over 65 is expected to more than double between 2012 and 2036 (14.6% of the population in 2012 or 2 million seniors, increasing to 24% of population or 4.2 million seniors in 2036: Ontario Ministry of Finance, 2013). This has profound effects on much of TSSA’s public safety mandate.

### 6.2 Special Buildings

Related to the above, the 2013/2014 ASPR highlighted the trend of non-compliance in special buildings such as senior’s homes, hospitals and schools. The 28 deaths associated with a fire in a Quebec senior’s home February 2014 reinforce the vulnerabilities and special needs of this population. As outlined in Figure 1 the Health Sector should anticipate sustained efforts at enhanced efficiencies and cost savings. Ensuring that this does not manifest more risk will be a growing role of public safety agencies.

### 6.3 Public Education (Behavioral Economics)

Men passing through Schipol Airport or Terminal 4 at JFK tend, on average, to miss and spill 80% less when using urinals in the bathrooms. This is because a small fly is emblazoned inside the urinals – inviting (better) target practice.<sup>13</sup> Much of TSSA’s mandated risk can be attributed to human behavior, especially in the case of elevating devices, escalators, amusement devices and carbon monoxide. Public education,

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<sup>13</sup> From Nudge: Improving Decisions About Health, Wealth and Happiness. Richard Thaler and Cass Sustein, 2009.

including the application of behavioral economics – also colloquially referred to as the ‘Nudge Factor’ – is a powerful tool to encourage behavioral changes to reduce risk.

Can a common Business Number (identifier) across Ontario provide better tracking and communication across ministries and agencies, e.g. Ministry of Finance working with TSSA on fuels non-compliances as well as tax avoidance? Can communications help as a compliance tool?<sup>14</sup> TSSA is well underway with public education efforts, particularly in amusement devices and carbon monoxide. For example the four element ‘CO community blitz campaign’ now underway relies on a ‘nudge’ across all stages of behaviors change; increased awareness; enhanced knowledge of individual role; and awareness of actions to take for risk mitigation. Similarly, the Province of Ontario is reviewing behavioral economic techniques in the Economic Regulatory Deputy Ministers’ Committee. Public Education and the considered use of behavioral economics are likely to grow in importance.

#### 6.4 Training Programs

An area that warrants more in-depth analysis is the purported pending shortage of power engineers. This may be partially addressed through amendments to Ontario Regulation 219/01. Only cursory discussions on this topic were held by the CSRO; a more thorough review is proposed. How this is linked with the Ontario Colleges of Trades may also be further reviewed.

#### 6.5 A More Resilient Toronto

As outlined in Section 3.2 Toronto (greater metropolitan area) has a globally unique opportunity to be presented as one of the world’s ‘most resilient cities.’ This could facilitate greater local economic development as industries preferentially locate to more secure regions.<sup>15</sup> Greater Toronto’s ‘flagship’ role for Ontario and Canada is likely to increase as global demographic trends continue (Greater Toronto is currently about the world’s 50<sup>th</sup> largest city – shifting to about the 80<sup>th</sup> largest city by 2050 despite a population increase of some two million residents). A greater emphasis on resilience, key partnerships<sup>16</sup>, inter-government support (especially local governments), real and perceived weaknesses, emergency management operations, and safety standards and regulations, should be anticipated. TSSA and the MGCS will be key stakeholders in discussions focusing on enhanced resilience for Greater Toronto.

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<sup>14</sup> For example, up to one-third of all water-slide injuries apparently occur at one location: would a system similar to publicly displayed health ratings of restaurants yield quick improvements?

<sup>15</sup> The Greater Toronto area is fortuitously blessed by geographic location (climate, water resources, and agricultural lands), reasonably well-hardened infrastructure (particularly electricity generation and natural gas fungibility), mature institutions, cultural norms that largely minimize large-scale social unrest, and relative affluence.

<sup>16</sup> For example a long-term supportive partnership between (metropolitan) Toronto and Chicago (and maybe New York City) could emerge in response to global trends and local aspirations.

## 6.6 Safety and Trade Issues

In reviewing upholstered and stuffed article activities the inter-related issue of safety (from fill material and possible contamination, e.g. rodents and bed-bugs) and trade protection emerges. How does e-commerce affect this issue; what are other jurisdictions doing; what are major trends? These issues are only introduced at this time; follow-on discussions are envisaged.

## **Annex 1: Progress on 2013 CSRO Annual Report Comments and Recommendations**

As outlined in the 2013 CSRO Annual Report, the 2013 ASPR report, with accompanying independent supplement by RSI - 'Risk in Context', is well written and provides a comprehensive overview of TSSA's efforts to address and reduce the risks associated with delegated responsibilities. The introduced predictive measure, 'risk of injury or fatality,' facilitates prediction of the expected injury burden during the course of the upcoming year (or other time-frame). This is a valuable tool for public policy setting and for TSSA (and others) to set meaningful and measurable targets and should be continued in future ASPRs.

[Progress – Risk in Context to be included again in TSSA's 2013-14 ASPR]

Comments provided: (i) The comparative table in this year's ASPR highlighting various risks in Ontario is excellent, and should be provided annually going forward; (ii) Compliance metrics (and degrees of 'non-compliance') are being standardized in all TSSA sectors along with reporting frameworks. This is important as this will help to put findings in context over the full compliance period in the studies, e.g. the nine year period; (iii) The ASPR can provide a framework for Statutory Directors to set (and measure against) clearly defined performance targets for the upcoming year; (iv) More fulsome and regular benchmarking of safety levels and service standards would be beneficial (particularly against jurisdictions outside Canada).

[Progress: (i) table to be included again in 2013/2014 ASPR; (ii) Field Support Services with standardized orders started with elevating devices late 2013; (iii) 2012/2013 TSSA Annual Public Safety Performance Report contains signed messages by each Director; (iv) Benchmarking exercise included in 2013/2014 ASPR and independently by CSRO.]

Suggestions provided to TSSA's ongoing operations: (i) continued data collection and management efforts, with a view to be 'open by default,' perhaps starting with elevating devices; (ii) establishing a time-frame for at least registration of all BPVs in excess of specified capacity ratings by, say, 2017; (iii) integrating standardized inspection procedures with standardized risk metrics consistent with the new fee structure.

[Progress: (i) comprehensive data management review underway by TSSA; (ii) efforts underway to amend regulations, discussions with Ministry of Government and Consumer Services; (iii) standardized inspection procedures began with Elevating Devices late 2013.]

General suggestions provided that could be joint approaches (i.e. Ontario-wide, multi-sector) in areas where TSSA has (partially) mandated responsibilities: (i) the role and vulnerabilities of elevators in residential dwellings in excess of 10 storeys; (ii) home servicing – move to Ontario-wide 'home servicing' paradigm (rather than 'inspections' – encourage broad public support and economic development, and 'one stop servicing' visits combining several residential objectives) - TSSA's primary interest is CO monitoring with fuel burning appliances, furnaces; perhaps partnered with emerging

service areas such as ‘weather hardening’ (pilot climate adaptation program underway in Kitchener-Waterloo Region) and emerging home inspector licensing; (iii) coordinated, and possibly combined, inspections with various agencies representing different government levels, through a culture of safety and resilience rather than compliance and enforcement (while supporting local economic development, e.g. ‘inspection’ version of 311).

[Progress: These initiatives need to be led by agencies other than TSSA, e.g. Ministry of Government and Consumer Services. TSSA is open to participation and could provide targeted as well as comprehensive leadership, e.g. CO poisoning awareness. Enhanced public safety and efficiency of service provision should be clearly demonstrated prior to TSSA participation. A compliance strategy and ‘audit approach’ vs ‘inspection approach’ warrants further investigation. The recent changes to Ministry of Government and Community Services (from Ministry of Consumer Services) may also impact progress, e.g. schedule of regulatory revisions during 2014 Provincial election].

## **Annex 2: Annual Work Plans – Chief Safety and Risk Officer**

### **Agreed: Fiscal Year 2013/2014**

1. Support a risk management practitioners' workshop to review risk metrics, e.g. RIDM, local and global best practices, and solicit expert opinions on priorities for Ontario. Possible priority sectors include road and food safety. [Convened by MGCS, attended by TSSA staff including David Scriven and Srikanth Mangalam – follow-on expected]
2. Work with TSSA to establish on-going information collection practices to enable benchmark comparisons of TSSA relative to Canadian and international jurisdictions. Possibly start a program (ideally on TSSA website) where this baseline is published and regularly updated. [In progress: (ongoing) benchmarking review expected in 2014 ASPR and follow-on CSRO Benchmarking Report]
3. Convene or attend at least one workshop on data management looking at TSSA's requirements and contributions relative to other agencies operating in Ontario.
4. Prepare a draft discussion brief (key contact, TSSA-CIO). [Attended several workshops, including a Province-wide Ministerial review, December, 2013. Regular discussions with CIO held.]
5. Review and respond to the TSSA Annual Report and Annual Public Safety Performance Report. [Completed, 2013. Ongoing.]
6. Monitor and where appropriate comment on: (i) Draft amendments to Ontario Regulation 219/01 (Power Engineering Regulation) and BPV Options Paper; (ii) the Ontario Propane Safety Review, November 2008 (follow-on to recommendations), and; (iii) TSSA Strategic Plan. [Ongoing. Provision of comments as requested. Early discussions underway for (iii)]
7. Review and where appropriate comment on the integrated nature of regulations and standard practices pertaining to elevating devices. [Ongoing].
8. Meet with representative Advisory Councils and conduct field visits with TSSA inspectors; possibly include a visit to look at issues specific to Northern Ontario. [Visit to Northern Ontario anticipated summer 2014]
9. Attend occasional TSSA staff, management and Board meetings; complete tasks that may be assigned by the Minister of Government and Consumer Services. [Ongoing. No requests to-date from MGCS.]

Budget: \$43,107 (18 days @1880/day + 13% HST; \$5000 commissioned RSI Benchmarking Review)

## **Proposed: Fiscal Year 2014/2015**

1. Review Key Reports. Review and provide comments on the 2013-2014 Annual Public Safety Performance Report (ASPR) and TSSA Annual Report.
2. Benchmarking. Conduct primary research and assist TSSA in contracted services to assess global practices in some five to seven jurisdictions on BPV, AD, ED, and Fuels. Include 'watching briefs' on (i) operating engineers, (ii) 'special' buildings and populations, e.g. seniors' residents and schools, (iii) USA, especially e-commerce aspects, and (iv) risk informed regulatory development (ongoing review of the role of RIDM).
3. Prepare CSRO's Annual Report. Consolidate reviews and recommendations and summarize observations for the year. Discuss report with TSSA staff and the Board, as well as MGCS.
4. Data Management. Continue to review TSSA's data management system both in terms of (possible) specific enhancements as well as possible integration and support with other Provincial agencies; comment on data robustness. Key contact TSSA's CIO.
5. Monitor and where requested comment on safety policy proposals.
6. Attend representative Advisory Council meetings, review minutes, and conduct random field visits with TSSA inspectors. Attend TSSA staff meetings and Board meetings as requested. Conduct at least one visit to Northern Ontario.
7. Respond to possible requests from the TSSA Board and/or Minister of Government and Consumer Services.

Estimated Budget: \$82,605 (33 days @ \$1880/day + 13% HST; \$12,500 research assistance, expenditures, travel)

### **Annex 3: Chief Safety and Risk Officer Mission**

The Chief Safety and Risk Officer's (CSRO's) mission is to provide the Board of Directors with an independent review of safety activities related to the public safety responsibilities assigned to the Technical Standards and Safety Authority (TSSA) pursuant to the Technical Standards and Safety Act (Act). To this end, the CSRO will furnish analysis, recommendations and information concerning the safety activities reviewed within the scope outlined below. In performing his or her role, the CSRO will strive to be an advocate for public safety and take a forward-looking approach based on current best practices and trends.

#### **Chief Safety and Risk Officer Charter**

**Role.** The CSRO function and primary duties are established under the Act and supplemented by the Memorandum of Understanding (MOU) between TSSA and the Minister of Government and Consumer Services (Minister). This independent function, which is not performed by an employee of TSSA, reports to the Board of Directors with oversight provided by the Governance, Safety and Human Resources Committee (GSHRC).

**Authorization and Responsibilities.** Authorization is granted for full and complete access to any of the organization's records (either manual or electronic), physical properties and personnel relevant to the CSRO's engagement. Documents and information given to the CSRO during a periodic review will be handled in the same prudent and confidential manner as by those employees normally accountable for them.

The CSRO has no direct responsibility or any authority over any of the activities or operations that they review. In particular, the CSRO will not:

- *report or comment on any finding of liability or fact or on any investigation, whether initiated by the corporation or another enforcement body, any legal proceeding, or reasonably foreseeable legal proceeding involving the corporation or the Ministry;*
- *report or comment on any action, or decision, by a statutory director under the Act, nor interfere in any duty, or power of a statutory director;*
- *investigate or review specific incidents, or individual complaints; or*
- *accept any statutory, regulatory, administrative or enforcement responsibilities.*

The scope of the CSRO's engagement encompasses the following activities:

- *pursue any safety matters that the Board or the Minister may request or any safety matters as determined by the CSRO to be in the public interest;*
- *review the adequacy and effectiveness of TSSA's public safety risk management systems;*
- *review established public safety risk management systems, policies and procedures to ensure the organization is operating consistent with best practices;*
- *appraise TSSA's report on the adequacy and effectiveness of the organization's safety management framework to ensure compliance with the delegated act and regulations;*
- *appraise public safety strategies TSSA has established to ensure that the regulatory framework continues to meet the needs of public safety;*
- *appraise TSSA's report to the Board of Directors on recent developments involving the regulatory framework under which TSSA operates, including the proposed annual regulatory plan that outlines priorities and supporting rationale;*
- *review, analyze and report on TSSA's annual safety performance reports;*

- *provide draft reports and meet with the GSHRC annually or as required to report on the delivery of responsibilities and maintenance of independence; and*
- *submit an annual report to the Board of Directors.*

### **Reporting Accountabilities**

The CSRO shall prepare a report on his or her independent review of TSSA's safety activities or proposed safety activities related to TSSA's delegated responsibilities under its Act, including comments on TSSA's annual safety performance report.

The CSRO shall also prepare a report on an annual basis and this report shall include an overview of the CSRO's activities and operations highlighting key recommendations arising out of any other report issued by the CSRO in the preceding year, and any other safety matter the CSRO considers relevant consistent with the Act, MOU and this mission and charter.

The CSRO may also be required to prepare other reports as may be requested by the Board or the Minister.

The CSRO may also prepare a report on any matter related to TSSA's safety activities or proposed safety activities if the CSRO considers it in the public interest to do so.

Where either the Board or the Minister requests a report, the CSRO shall provide the report within the time indicated by the Board or the Minister as the case may be. For all CSRO reports other than reports requested by the Minister, the following process will be followed:

*The CSRO will advise the Chair, GSHRC when a draft report has been prepared and TSSA management will be given an opportunity to correct any factual errors for the CSRO's consideration. In addition, management may provide comments on the draft report that will be included as an addendum when the report is reviewed by GSHRC.*

*Following GSHRC's review, the finalized report will be provided to the Board of Directors (with a courtesy copy of the report provided to the Deputy Minister) for review, and acceptance. Following Board review, the CSRO will provide the Board accepted report to the Minister for review.*

For reports requested by the Minister, the following process will be followed:

*The CSRO will acknowledge the Minister's request for a report in writing and provide a draft Terms of Reference for review and approval by the Minister. A draft of the report will be provided to the Deputy Minister and TSSA management at the same time for factual review. The final report will be submitted concurrently to the Board and the Minister prior to its public release.*

Final reports of the CSRO will include management's response as an addendum, if any. The CSRO will provide the Minister with thirty days to review all reports prior to public release. All reports will be made available at the corporation's annual meeting and otherwise made available to the public by such means as determined by the CSRO.

The CSRO will be reviewed and assessed on an annual basis by the Board of Directors.

## **Clarification of Organizational Responsibilities**

The Board of Directors is accountable to the Minister for TSSA's safety performance, regulatory governance, including the appointment of the CSRO with the consent of the Minister and approval of the CSRO work plan and supporting budget.

The GSHRC assists the Board of Directors in fulfilling its responsibilities related to safety performance, regulatory governance and oversight of the CSRO, including making recommendations to the Board of Directors regarding the CSRO's appointment, mission and charter, work plans and budget, performance and independence.

The President and CEO is ultimately responsible and assumes ownership for the delivery of effective safety performance, regulatory governance, while acknowledging the independence of the CSRO and statutory directors appointed under the Act.

The Vice President, Operations, has responsibility and accountability for the delivery of the organization's safety services in all programs, contributes to organizational strategy and direction, and establishes and delivers on organizational goals and objectives.

The Program Directors combine the responsibilities of the statutory director with those of an operational director with the following responsibilities:

- *making independent statutory decisions as required by the Act and regulations;*
- *managing safety risks borne by the public;*
- *managing the quality of TSSA's regulatory performance with respect to its contribution to public safety risk management; and*
- *managing non-safety aspects of financial performance, organizational effectiveness, human resources, customer satisfaction, and other corporate goals.*

The Senior Advisor, Public Safety and Risk Management (PSRM) is TSSA's internal safety accountability advisor. The Senior Advisor, PSRM works with the statutory directors to enhance the quality of public safety decision making by giving strategic advice that promotes objective, quality decision making and providing formal risk management tools and processes.

## **Work Plans**

Annually the CSRO will develop and provide a work plan to GSHRC for review with input from management and approval by the Board of Directors. In addition, to the required annual review of safety performance reporting, the plan will identify the areas or safety activities of the organization selected for review. The areas and safety activities selected will be based on perceived risk to public safety with respect to TSSA's regulatory responsibilities. Other input for consideration includes:

- *prior CSRO report findings; and*
- *requests by the Board and/or Minister;*

The work plan will highlight the scope of the proposed review, estimate associated time to complete and detail applicable costs to the organization.

## References

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