

Technical Standards and Safety Authority

Annual State of Public Safety Report

2013/2014 Edition

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Summary The Annual State of Public Safety Report (ASPR) is comprehensive well written and presents an important source of information on progress in Ontario’s public safety sector, particularly in the areas Technical Standards and Safety Authority (TSSA) has delegated authority. This year’s ASPR provides the second year of the predictive measure, ‘risk of injury or fatality’, to facilitate prediction of the expected injury burden during the course of the upcoming year (based on the last year) as well as trend analysis over a rolling seven year average. The metric as a common global standard enables cross-sector and cross-jurisdiction comparisons thereby providing a valuable public policy tool. The ASPR is likely to increase in relevance and linkages to other public safety issues outside TSSA’s direct mandate (especially as few other agencies produce similar reports).

Key Comments and Recommendations

- i. Tailoring the Message: The ASPR includes a full report (84 pages), summary report (34 pages) and contracted Risk Benchmarking report from Risk Sciences International, RSI (23 pages). Perhaps in future the report could be targeted to three separate audiences: (i) Full Report TSSA Board and Ministry of Government and Consumer Services (MGCS) include data, message from Directors, trend analysis; (ii) Summary Report of no more than ten pages targeted to general Ontario audience, sector specific summaries (possibly vet through or present to Community Advisory Committees); (iii) Issues in Public Safety, Annual Review – directed at the emerging audience of the public safety community, include summary information and relevance to TSSA on significant risk analysis in other jurisdictions, e.g. Lac-Mégantic train accident, Health Canada, include a futures or trend analysis, e.g. impact to Ontario of the Canada – European Union Free Trade agreement, US-Canada common approach to fuels standards and regulations, and summarize the status of government changes to relevant regulations; signal likely future directions in TSSA programming. This third section might initially be presented as a short annex to the full ASPR.
- ii. Tailoring the Response: As outlined in the elevating devices and escalators section, “The current compliance strategy involves shutting down escalators when certain non-compliances are found during periodic inspections. Another compliance strategy is the high follow up inspection fee when orders remain outstanding. Both these strategies are under review as they have not resulted in improved compliance.” When the majority of escalator violations are public transit facilities and non-compliant elevating devices are in hospitals, homes for the aged and rental/public housing, new approaches may be warranted. Similar to how traffic violations are charged to the driver, not the company owning the vehicle he’s driving, efforts to encourage greater compliance in government agencies may require targeted public education and data publication rather than what amounts to one government agency charging another, or impacting the users rather than facility owners and operators when escalators and elevators are placed out of service in vulnerable areas.
- iii. Sharing Data and Risk Assessments: Risk assessments as provided through the ASPR are predicated on quality data consistent with international best practice. Therefore as much as practicable data should be available for public review as this helps improve data quality and enhances trust over time. Risk assessments should be shared and TSSA’s interpretations and assessments of relevance to Ontario of risk assessments in other jurisdictions should be included and discussed through the ASPR process.

iv. Putting Risk in Context: TSSA's oversight of ski lifts in Ontario provides a good example of the need to place risk assessments in context. TSSA mandated risk and incidences in ski lifts declined 67% over last year. Much of the risk on ski lifts (more than 96%) is attributed to external factors (mainly user behavior). And as highlighted in Annex 2, the risk on the ski hill is significantly greater than on the lifts (there are some 12,000 emergency department visits by skiers and snowboarders in Ontario per year). This is not to diminish the importance of TSSA's mandated risk reduction on ski lifts, but rather highlight how the potential of the clear metrics associated with the ASPR, and proven public information campaigns, can provide comprehensive and at-times much larger risk reduction benefits. Linking risk minimization efforts in one area to related activities in another, e.g. the technical safety of ski lifts in context of the behavior on the ski lift rider and their behavior on the ski hill is challenging, however for the overall safety of Ontarians this appears to be a potential benefit of TSSA's risk metrics and monitoring. This is similar to the working condition of smoke / carbon monoxide detectors in context of CO poisoning, or elevators and fuel usage in special buildings.

v. Safe at Home: Carbon monoxide poisoning is TSSA's largest mandated risk; however most of the risk is manifest in private residences, where TSSA has limited access. Recognizing this, TSSA is already working with the Consumers Advisory Council and industry representatives to develop comprehensive home safety initiatives. Several agencies have similar interests in residential safety programming, e.g. Electrical Safety Authority, Fire Marshal's Office, Ontario Injury Prevention Resource Centre, home heating contractors, insurance industry (especially as homes attempt to increase resilience in response to climate changes). Organizations such as TSSA and MGCS may want to build on their existing 'safe at home' pilot programming to develop campaigns similar to home servicing (and safety enhancement) is treated similar to vehicle servicing, rather than as 'government inspections.' The regions of Durham or Kitchener-Waterloo would likely be keen to pilot the initiative.

vi. Special Buildings: Recognizing the unique nature and disproportionately high-risk profiles associated with some buildings TSSA (fuels sector) has initiated a three-year pilot of targeted inspections. The "Special Buildings Inspections" project will initially focus on inspecting long term care and retirement homes. There may be merit in expanding this pilot in a holistic manner to include targeted elevating device inspections as well, and opening the pilot to other government agencies, such as Ontario Retirement Homes Regulatory Authority and Long Term Care Association. Most of these special buildings are government mandated (and financed) facilities, e.g. hospitals and schools, therefore punitive fees and shutting down elevators and fuel systems, may target the wrong people. A comprehensive program with a consolidated, integrated maintenance program is likely the most effective way to enhance compliance in a cost-effective manner, while also meeting other ancillary facilities requirements. Perhaps a special buildings (noncommercial establishment) advisory committee could be established.

vii. Water Slides and Public Signaling: As water slides represent such a high risk of injury compared to other amusement devices, TSSA should consider publishing injury statistics for key waterslides (after providing owners sufficient time to adjust operations and sensitize clients – the initiative may already be underway).

1. Report Background

This is TSSA's sixth enhanced Annual Public Safety Performance Report; now Annual State of Public Safety Report (ASPR). The first State of Public Safety Report summarized calendar year 2002; the first enhanced report coincided with TSSA's 2008/09 fiscal year. Publication of the annual ASPR is consistent with reporting requirements stipulated in the Technical Standards and Safety Act, 2000. The CSRO's mandate as amended October 25, 2010, includes "review, analyze and report on TSSA's annual safety performance reports."

This year's ASPR includes 'Full Report' (84 pages), 'Summary Report' (34 pages) and accompanying 'Benchmarking Risk of Injury and Death from TSSA-Regulated Activities against other Jurisdictions' prepared by RSI, Risk Sciences International (23 pages).

2. General Overview

The ASPR provides an important state-of-the-Province risk-metric benchmark the value of which goes well beyond the delegated remit of TSSA. As discussed in last year's review, TSSA's mandated risk reduction efforts represent only about 0.1% of Ontario's fatality rate due to unintentional injuries (see Annex 2, from 2013: 0.23 fatalities/million residents/year for all TSSA activities compared to the 233 fatality rate for all Ontario: data from 2009). And even within TSSA's scope of oversight as stipulated in the Technical Standards and Safety Act, 2000, often more than 95% of the residual risk of injury or fatality is caused by external factors rather than inadequate regulatory systems.

TSSA's risk informed decision making (RIDM) framework and the term "risk of injury or fatality"¹ provides an objective, evidence-based assessment and decision-making approach that helps TSSA's Statutory Directors discharge and assess their regulatory responsibilities (trends and impacts can be readily monitored). The framework also enables development and monitoring of associated educational campaigns; and increasingly, expansion of risk reduction efforts to related activities, for example fuels and carbon monoxide poisoning in residences, and maintenance of ski lifts and ancillary efforts to reduce skiing and snowboarding injuries (e.g., transferring TSSA's risk metrics to assist ski patrols and paediatric applications and behaviour).

About two-thirds of the estimated overall risk under TSSA's review is caused by external factors, largely related to carbon monoxide, CO-poisoning (based on last year's ASPR); most of this in residences. Risk of injury and fatality in ski lifts provides another practical example of the benefits of clear and credible metrics such as TSSA's RIDM framework. The seven-year average of number of occurrences involving ski lifts is about 90 incidents per year. About 4% of this risk of injury or fatality is a result of non-compliance with TSSA's regulatory remit, i.e. about 3 incidents per year. Compare this to the latest Ontario Injury data (Annex 3) – each year in

¹ RIDM – risk informed decision-making – is a general risk industry standard that originated in systems engineering. Complex systems and their human interactions, like amusement devices, ski hills, elevators, and fuel systems can be assessed through RIDM, and quantified by metrics like disability adjusted life year (DALY) or the simpler "risk of injury or fatality" (used within TSSA's ASPR beginning 2012/2013 edition). 'Risk of injury or fatality' denotes a consistent unit that enables comparison of risk across time, societies and activities.

Ontario there are about 12,000 emergency department visits for skiing and snowboarding injuries.

This year's ASPR provides the second year of the predictive measure, 'risk of injury or fatality,' to facilitate prediction of the expected injury burden during the course of the upcoming year (based on the last year) as well as trend analysis over a rolling seven year average. The metric enables cross-sector and cross-jurisdiction comparisons thereby providing a valuable public policy tool.

Application of risk of injury or fatality is useful for TSSA's internal planning and programming as well as reviewing risk analysis across other Ontario sectors. Trade related developments, e.g. the Europe-Canada Trade Agreement, open data sets, and Ontario and Canada-wide risk programming like Health Canada's new initiatives, are all supported by the approach outlined in this year's ASPR (see Section 5).

3. Reducing Risk of Injury or Fatality – Understanding and Managing Causes and Behaviors

Section I.1 outlines how risk of injury or fatality to Ontarians across the different TSSA regulated sectors is estimated primarily using information gathered through two sources: (i) reported and investigated occurrences (incidents and near-misses), and; (ii) information collected through TSSA inspections and other regulatory oversight tools. The sensitivity of TSSA's analysis, and the relatively few incidents, especially related to activities attributed to inadequate regulatory systems, as well as potentially rich information, warrants continued (and ideally expanded) use of 'near miss' data. Perhaps the industry advisory councils could be solicited by TSSA in the upcoming year on how to collect more 'near miss' data from Ontarians as this would further strengthen TSSA's risk analysis work (even provision of anonymous information may be able to help build data sets).

A third set of data that may be useful to include in TSSA's future ASPRs is sector-risk information from other jurisdictions. Jurisdictions such as Finland, Singapore, New Zealand, and US comparators, can provide relevant information on risk findings (manifestation, management and reduction). By ensuring sustained emphasis on quality data and interpretation, TSSA's ASPR is emerging as an industry 'best practice' contribution. Sharing the approach, and building on other jurisdiction findings, will assist all participating jurisdictions.

4. Reviewing the Data

The ASPR and its fundamental underpinning through RIDM are based on probabilistic risk assessments from collected and inferred data. These evaluations, when based on sound and defensible data, are becoming sufficiently robust to enable risk-based responses, e.g. timing of inspections. This can provide significant cost savings (without increasing risk) and help to focus inspections and regulations on areas of greater risk. As much of TSSA's risk profiling is based on available and interpreted data, this information should be as public and readily accessible as possible. Over time this should enhance data quality and public trust in the data, and its application. The ASPR makes a genuine effort to present much of this data – this effort should be

commended, and expanded. The ASPR should also continue to report ‘near misses’ as this supplementary data is important in enhancing observations of trends and impacts.

As TSSA makes its data more available and timelier, other organizations are likely to follow. Risk assessments should be shared as many of the fundamentals are transferrable and provide lessons for other sectors and jurisdictions. Health Canada, Transport Canada, ministries of environment, police services, energy regulatory boards, all undertake risk assessments designed to protect a common client (the public) at as low cost and little intrusion to the activity as possible. The ASPR could be augmented with an annex that summarizes the key risk assessments considered by TSSA during the last fiscal year. Within a few years this annex is likely to emerge as a common and shared document with the more credible and active risk management agencies in Canada and internationally.

5. Trading Risk – an Apple for an Orange

Two important themes emerge in this year’s ASPR: (i) risk metrics and standards across different jurisdictions as trade agreements emerge, and; (ii) ‘apples to oranges’ comparisons when benchmarking different organizations and jurisdictions.

Canada’s recent free-trade agreement with Europe and the ‘collective energy agreement’ agreed-to by Prime Minister Harper and President Obama August 2014, will encourage harmonization (and common development) of standards and regulations pertaining to public safety aspects delegated to TSSA. This trend is likely to grow. Through its considerable inspection capabilities, regulatory expertise, data systems, and credible consumer and industry advisory councils, TSSA is well positioned to take an active role in developing these new and more-harmonized standards and regulations. Perhaps, jointly with Ministry of Government and Consumer Services, Electrical Standards Authority, and others, TSSA could include a ‘horizon view’ annex that provides signaling to companies and agencies that might be affected by changes to risk profiling, management and regulation.

Similarly the RSI ‘Benchmarking Risk of Injury and Death from TSSA-Regulated Activities Against Other Jurisdictions’ report outlines the difficulties associated with comparing in an apples-to-oranges manner the risks in Ontario versus those in other jurisdictions. This may be the case, however tables 1A (elevators), 1B (escalators), 2 (amusement devices), 3 (ski lifts), 4 (fuels), 5 (pressure vessels), along with a similar table in RSI’s contribution to last year’s ASPR (Annex 2), are very useful in providing the reader with an overview of injuries and deaths from various jurisdictions. This information should ideally continue to be reported within the ASPR, and a simple ‘risk in context’ discussion placed on TSSA’s website (for year-round public access).

6. Tailoring the Response

Operating plant risk profile (Figure OE-4) highlights the significantly higher potential risk associated with plants located in public services and academic buildings (i.e. 36% and 9% respectively). As these institutions are mainly government agencies, TSSA’s regulatory regime and fee-based approach (with lower overall inspection costs to encourage greater compliance)

might need adjusting and specific tailoring to critical buildings. This is well underway with TSSA's 'special buildings' program, e.g. hospitals, homes for the aged and schools. However stronger partnerships with other government agencies may be needed, rather than sole reliance on fee structures.

7. Sector Reports 2013/2014

Boilers and Pressure Vessels (BPV) – 97% compliance (same as last year); no observed trend in compliance rate; insufficient data for measure of risk of injury or fatality.

Key issues from Statuary Director: similar to last year, rationalizing and completing inventory of insured and non-insured BPVs; standardization of orders and inspection outcomes (including non-TSSA inspections); 2,017 periodic inspections conducted for uninsured. [Can a target date of standardizing all orders be provided by TSSA?].

Page 15 (Full Report): “Once implemented within TSSA, these standardized orders will then be shared with insurance partners.” Can a specific target date be given for this activity? As TSSA is also responsible for the certification of the BPV inspectors employed by the insurance companies (page 13) can the use and submission of common orders be made a condition of future certification?

Operating (Power) Engineers (OE) – 42% compliance rate; no observed trend in compliance rate; 6% of plants identified as ‘high risk’; 2,900 plants and 12,700² operating engineers in Ontario.

Key issues remain continued application of RIDM to refine inspections; addressing the growing shortage of operating engineers (e.g. promotional video launched Sept 2013).

Amusement Devices (AD) – 64% compliance over 5 years; 2,000 devices; about 92% of risk due to external factors over past seven years (outside TSSA regulatory mandate, e.g. user behavior); waterslides represent 50% of total risk on amusement devices (60% of injury burden); no observable trends in fatalities and injuries over the last seven years.

Key issues: specific targeting of reduced risk on water slides; need for more complete reporting of incidents by operators; continued and expanded public safety campaign, e.g. ‘Safety Ambassador’ program.

As recommended last year, within TSSA's public education efforts there may be merit, especially in the ADs sector, to develop a long term program with measureable targets that can be cross referenced with similar efforts in other jurisdictions. The ASPR provides an excellent venue to discuss progress toward reduction of this risk. As water slides represent such a high risk of injury compared to other amusement devices, TSSA should consider publishing injury

² From 2013/2014 ASPR

statistics for key water slides (after providing owners sufficient time to adjust operations and sensitize clients).

The following excerpt referring to amusement devices in Ontario is from the 2013/2014 ASPR (page 23):

“Risk of Injury or Fatality due to Potential Gaps in Regulatory System: Approximately 1% of the risk caused over the past seven years is due to an inadequate regulatory system.

Risk of Injury or Fatality due to Non-Compliance with Regulatory System: 5% of the risk is as a result of non-compliance with the regulatory system.

Risk of Injury or Fatality due to External Factors: Nearly 92% of the risk is attributed to factors external to the regulatory requirements including rider behaviour and actions on rides, and represents a reduction from last year.”

The above three statements are complementary, and likely accurate, and they are similar to those presented in all sectors, however there may be opportunity in future ASPRs to present risk from external factors in a simpler format; for amusement devices as well as other TSSA mandated sectors. The sample size of data (occurrences) may also be insufficient at times to accurately discern these nuanced trends. Also, with growing emphasis on public education from TSSA there is likely an emerging correlation between non-compliance with regulatory systems and overall injuries from external factors (under TSSA’s authority and outside) that could be documented.

Elevating Devices (ED) – approx. 52,000 elevators in Ontario; fatality-equivalents increased by 4% over last year (overall occurrences demonstrate an increasing trend of approximately 14% per year); decreasing trend in compliance; 78% of estimated risk may be caused by factors external to regulatory requirements; one third of ‘high-risk’ devices located in hospitals and rental buildings.

Key Issues: the strategies of (i) shutting down non-compliant EDs, and (ii) high follow up inspection fees when orders remain outstanding are being reviewed as they have not resulted in improved compliance [this may be a function of who is being ‘penalized’ versus who needs to carry out the action]. A more finely-tailored response e.g. the difference in response to a non-compliant elevator in a hospital versus a commercial building may be warranted. Anecdotally this ‘two classes of elevators’ was reinforced during the recent elevator service workers strike as the majority of service disruptions appear to have occurred in hospitals, public housing and rental buildings.

As recommended last year, with 52,000 elevators currently in Ontario – and a fast growing stock – TSSA should develop a plan to have much of this data, e.g. licenses and inspection dates, publicly available; perhaps as part of the Province of Ontario’s ‘Big Data’ efforts. As suggested in this year’s CSRO Annual Report a specific target date (and scope of data publication) should be proposed by TSSA, notionally propose as May 2016. Applicability of this data (e.g. by hospitals, homes for the aged, public housing, schools, rental residential buildings, commercial, etc.) should be assessed. As soon as practicable, TSSA should publish on a public website when elevators (and escalators) are ordered shut-down.

Escalators and Moving Walks – over 2,000 regulated by TSSA; 19% compliance rate (decreasing by 5% per year); 97% of risk may be caused by factors external to regulatory requirements.

Key issues: Continued implementation of standard inspection orders; launch and sustained delivery of an expansive public education campaign; mass transportation facilities represent 16% of Provincial inventory and more than 63% of risk of injury or fatality.

From 2013/2014 ASPR (page 42), “The current compliance strategy involves shutting down escalators when certain non-compliances are found during periodic inspections. These are non-compliances such as annual maintenance tests that the maintaining contractor failed to complete on time. Another compliance strategy is the high follow up inspection fee when orders remain outstanding. Both these strategies are under review as they have not resulted in improved compliance.” Again as with elevating devices the ascribed penalty might not be charged against the individual or agency required to take corrective action.

Ski Lifts – approximately 300 ski lifts in Ontario; 96% of estimated risk caused by factors external to regulatory requirements; no discernible trend for occurrences, fatalities or injuries; 42% inspection compliance rate

Key Issues: understanding and influencing user behavior; addressing major non-compliance through complimentary inspections and regulation; standardizing inspection orders.

Is there merit in linking TSSA ski lift information directly to facility public sites, e.g. a message from TSSA on every snow resort site? Signs and website information may be insufficient to changes user behavior, however as 96% of the risk is exogenous to TSSA’s regulatory scope, ancillary approaches are warranted (above from last year’s review).

Each year about 12,000 individuals visit an Ontario emergency department with skiing and snowboarding injuries. This is much greater than all of TSSA’s residual risk profile in all mandated sectors. As TSSA develops public education programs for ski lift operations (as more than 96% of TSSA’s ski lift risk caused by factors external to regulatory requirements), there is enormous potential to supply ancillary public safety benefits in areas such as behaviour on ski hills.

Fuels – fuels represent the largest risk center under TSSA’s oversight. This risk increased 25% over last year; risk of injury or fatality due to carbon monoxide poisoning has increased nearly 15% over last year at residences; 9,100 licensed sites in in Ontario regularly inspected (frequency of inspection at least once every three years; propane facilities inspected annually); compliance rate for all licensed facilities – 54%; no discernible trend; pipeline strikes no significant quarterly or seven-year trend; approximately 70% of health impacts associated with regulated fuels is in private and multi-unit residences.

Emerging Issues in Fuels Safety:

Liquefied natural gas (LNG) for small plants; refueling and vehicles standards development; stated goal of fuels standards harmonization by Prime Minister Harper and President Obama, August 2014; increasing incidence of carbon monoxide poisoning in residential buildings (where TSSA has limited regulatory capacity); pending revisions to propane regulations (now with Ministry of Government and Consumer Services); ‘Special Buildings Inspections’ (see Section 9); engagement of Natural Gas Advisory Council (formation of a task group) to explore areas of collaboration on enhanced safety in private dwellings (see ‘Home Safe’ and Annex 4).

Upholstered and Stuffed Articles – 19,267 inspection orders issued in 2013/2014, 9 (i.e. less than 0.1%) due to ‘unclean/unsafe filling material’; “other” category includes incidences of articles which were soiled or contaminated and ordered for destruction; insufficient incidences and data to discern risk trends [USA not included in summary document].

Similar to last year the top compliance infraction this year of “Manufacturer not registered in Ontario” (24%) and second highest infraction “No Provincial Label” (18%) infer a safety issue (e.g. potential for unsafe materials to be used based at country of origin) that may be more a trade consideration, rather than presenting a clear safety concern.

As recommended last year a summary note in next year’s ASPR on the difference between trade issues and public safety in USA regulated items would be beneficial. As USA is omitted from this year’s ASPR summary, a case could be made that the sector warrants special consideration in reporting, rather than reporting through the annual public safety report.

8. Risk Profile – This Year Compared to Last Year

Overall Risk Profile 2012/2013: 3.34 fatality equivalent (2:1 residential) for CO poisoning significantly the highest risk under TSSA’s mandate; e.g. all fuel types -- propane and liquid fuels – 1.06 fatality-eq. per million per year; amusement devices – 0.11 fatality-eq.; elevating devices – 0.8 fatality-eq.; escalators and moving walks – 0.15 fatality-eq.; ski lifts – 0.03 fatality-eq. (estimated TSSA overall risk across all sectors 0.83 fatality-equivalents).

Overall Risk Profile 2013/2014: all fuel types -- propane and liquid fuels – 1.33 fatality-eq. per million per year; amusement devices – 0.08 fatality-eq.; elevating devices – 0.83 fatality-eq.; escalators and moving walks – 0.06 fatality-eq.; ski lifts – 0.01 fatality-eq. (estimated TSSA overall risk across all sectors 0.91 fatality-equivalents).

9. Home Safe and Special Buildings

Considering the scale and complexity of CO risk within TSSA’s overall mandate a unique multi-sector multi-agency approach may be needed. In addition to defining TSSA’s role in this sector, the strategy would also serve to catalyze and hopefully coordinate other provincially managed stakeholders such as Ministries of Health and Long-Term Care, Education, Fire Marshall’s Office, Electrical Safety Authority. This effort is apparently already underway.

Carbon monoxide is a good example of an important safety issue that transcends any one agency (or even several). Interventions will need to be both broad and targeted. However like fire prevention a comprehensive public safety program to address carbon monoxide will likely have numerous related and at times overlapping aspects (which is preferable to gaps). Lead roles may also vary by target location, e.g. schools and hospitals versus single family dwellings.

Similar to the need for an integrated and multi-agency approach for carbon monoxide, recognizing the unique nature and disproportionately high risk profiles associated with some buildings TSSA (fuels sector) initiated a three-year pilot of targeted inspections on special buildings. The “Special Buildings Inspections” project will initially focus on inspecting long term care and retirement homes. There may be merit in expanding this pilot to include targeted elevating device inspections as well, and opening the pilot to other government agencies, such as those in the long-term care industry. Most of these special buildings are government mandated (and financed) facilities, e.g. hospitals and schools, therefore punitive fees and shutting down elevators and fuel systems, may disproportionately impact the public. A comprehensive program with a consolidated, integrated maintenance program is likely the most effective way to enhance compliance in a cost effective manner, while also meeting other ancillary facilities requirements. Perhaps a special buildings (noncommercial establishment) advisory committee could be established.

10. Safety in Ontario – Mind the Gaps

As suggested in last year’s ASPR review the public does not readily discern the nuances of regulatory accountability (inspections, licensing, operation) thereby presenting reputational risks to all regulators, insurers and operators in the sector. Regulations, by definition need to be specifically targeted, with discrete orders on execution and coverage. In a few key areas the ASPR could reinforce the proscribed limits to TSSA’s regulatory capacity and highlight potential sector ‘gaps’. For example TSSA’s process of ordering the shutdown of risky elevators may not be the most fulsome approach to reducing risk in a particular building.

Messages from Statutory Directors

The messages from statutory directors are important annual ‘check points.’ They currently provide very useful information and a good overview of the Director’s envisaged key priorities (success in last year and key plans going forward). These sections would still benefit from strengthening in two areas:

1. Directors should present key performance targets for the upcoming year. These performance targets (safety related) should be measureable and results should be reported in the subsequent ASPR. Perhaps at least one of these KPI could be set in the context of another jurisdiction (and comparable using common metrics).
2. Directors have an excellent understanding of their delegated sector: trends, areas of concern, value for (regulatory) money, jurisdictional overlaps and missing aspects. The ASPR provides an excellent venue for Statutory Directors to opine on ‘state of

their sector' in a broad Provincial and even global context (while maintaining their primary focus on matters that directly impact the safety of Ontarians).

References

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Veeramany, Arun and Srikanth Mangalam. Application of disability-adjusted life years to predict the burden of injuries and fatalities due to public exposure to engineering technologies. *Population Health Metrics* 2014, 12:9

Annex 2. Fatality rates for Ontario and Canada, including both voluntary and involuntary risks [from the 2012/2013 ASPR].

Jurisdiction/ Source	Cause/ Years	Fatality Rate (per 1M pop/yr)
TSSA, Ontario	elevating devices 2012-2013	0.076
	Fuels 2012-2013	0.153
	all regulated technologies 2012-2013	0.229
Canada (all provinces but Quebec) 2001-2007 - Chen et al. (2012)	all cause unintentional injury standardized mortality 29.7 per 100,000	297
Ontario 2009 - StatsCan 2009	all unintentional injuries 2009	233
Ontario Injury Data report	all injury causes 2001-2005	297
	Drowning 2001-2005	9
	falls 2001-2005	76
	road motor vehicle 2001-2005	54
	pedal cyclist 2001-2005	2
	motorcycle 2001-2005	4
	ATV 2001-2005	3
	all sports 2001-2005	<1
Ontario - Chen et al. 2007	all causes unintentional injury - average standardized mortality 2001-2007	2.63
Alberta Injuries Report	average annual injury mortality 2008 - 2010	470
	unintentional falls 2010	44
	motor vehicle related 2010	90
	poisoning 2010	97



Action Plan to Address TSSA Undertakings to Chief Safety and Risk Officer (CSRO) Review of Annual State of Public Safety Report for FY14

The following table summarizes the status of pending actions arising from the Chief Safety and Risk Officer's Review of TSSA's Annual Public Safety performance Report for Fiscal Year 2013/2014. For ease of reference, action items that are completed are shaded in grey and will be deleted from the next report.

TSSA Index No.	TSSA Identified Theme	CSRO's Comments	TSSA's Response	Scheduled Completion
2014-1	Communicating TSSA's achievements and Collaborations and comparisons with other Regulatory Authorities	Key Comments and Recommendations: Tailoring the Message: Perhaps in future the report could be targeted to three separate audiences: (i) Full Report TSSA Board and Ministry of Government and Consumer Services; (ii) Summary Report of no more than ten pages targeted to general Ontario audience,; (iii) Issues in Public Safety, Annual Review – directed at the emerging audience of the public safety community, include summary information and relevance to TSSA on significant risk analysis in other jurisdictions. This third section might initially be presented as a short annex to the full ASPR.	TSSA will work with independent risk communication advisors to determine the best means to tailor the report(s) to the three categories of audiences identified.	April 2015



Action Plan to Address TSSA Undertakings to Chief Safety and Risk Officer (CSRO) Review of Annual State of Public Safety Report for FY14

TSSA Index No.	TSSA Identified Theme	CSRO's Comments	TSSA's Response	Scheduled Completion
2014-3	<p>Transparency</p> <p>and</p> <p>Collaborations and comparisons with Other Regulatory Authorities</p>	<p>Key Comments and Recommendations:</p> <p>Sharing Data and Risk Assessments: As much as practicable data should be available for public review as this helps improve data quality and enhances trust over time. Risk assessments should be shared and TSSA's interpretations and assessments of relevance to Ontario of risk assessments in other jurisdictions should be included and discussed through the ASPR process.</p>	<p>TSSA currently shares its risk assessments of specific safety issues with relevant stakeholders including risk reduction groups and industry councils. TSSA will explore other possible options including sharing of safety data and posting risk assessment reports on the TSSA website while considering factors including privacy of information. This will be evaluated as part of the TSSA's 20-20 strategy.</p>	2017
2014-4	<p>Evaluation of compliance strategies & next steps forward to ensuring compliance</p>	<p>Key Comments and Recommendations:</p> <p>Safe at Home: Carbon monoxide poisoning is TSSA's largest mandated risk; however, most of the risk is manifest in private residences, where TSSA has limited access. Recognizing this, TSSA is already working with the Consumers Advisory Council and industry representatives to develop comprehensive home safety initiatives. Several agencies have similar interests in residential safety programming, e.g. Electrical Safety Authority, Fire Marshal's Office, Ontario Injury Prevention Resource Centre, home heating contractors, insurance industry (especially as homes attempt to increase resilience in response to climate changes). Organizations such as TSSA and MGCS may want to build on their existing 'safe at home' pilot programming to develop campaigns similar to home servicing (and safety enhancement) is treated similar to vehicle servicing, rather than as 'government inspections.' The regions of Durham or Kitchener-Waterloo would likely be keen to pilot the initiative.</p>	<p>In addition to continuing delivery its CO awareness campaign, TSSA is currently working with all the identified stakeholders directly or indirectly with a commitment to further engaging many of these and other stakeholders (including a working group of the Natural Gas Advisory Council that is focused on increasing the engagement and alignment of fuels service providers with key safety messages.</p>	



Action Plan to Address TSSA Undertakings to Chief Safety and Risk Officer (CSRO) Review of Annual State of Public Safety Report for FY14

TSSA Index No.	TSSA Identified Theme	CSRO's Comments	TSSA's Response	Scheduled Completion
2014-5	Evaluation of compliance strategies & next steps forward to ensuring compliance	<p>Key Comments and Recommendations:</p> <p>Special Buildings: Recognizing the unique nature and disproportionately high-risk profiles associated with some buildings TSSA (fuels sector) has initiated a three-year pilot of targeted inspections. The "Special Buildings Inspections" project will initially focus on inspecting long-term care and retirement homes. There may be merit in expanding this pilot in a holistic manner to include targeted elevating device inspections as well, and opening the pilot to other government agencies, such as Ontario Retirement Homes Regulatory Authority and Long Term Care Association. Most of these special buildings are government mandated (and financed) facilities, e.g. hospitals and schools, therefore punitive fees and shutting down elevators and fuel systems, may target the wrong people. A comprehensive program with a consolidated, integrated maintenance program is likely the most effective way to enhance compliance in a cost-effective manner, while also meeting other ancillary facilities requirements. Perhaps a special buildings (non-commercial establishment) advisory committee could be established.</p>	<p>The elevating devices inspections currently fall under TSSA's risk based inspections process and building types including special buildings are already considered in the context of the approach.</p> <p>TSSA has begun consultations with its other government partners including the Retirement Homes Regulatory Authority and reached out to the Ministry of Health and Long-Term Care with regard to special inspections of retirement homes and long-term care homes. TSSA will reach out to the Ministry of Education ahead of inspections of schools next year.</p>	ASPR 2015



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2014-6	Transparency	<p>Key Comments and Recommendations:</p> <p>Water Slides and Public Signaling: As water slides represent such a high risk of injury compared to other amusement devices, TSSA should consider publishing injury statistics for key waterslides (after providing owners sufficient time to adjust operations and sensitize clients – the initiative may already be underway).</p>	TSSA is currently working collaboratively with the Amusement Devices Advisory Council and the newly established waterslides association ((Ontario Chapter of the World Waterpark Association) on opportunities to enhance its public awareness activities in this sector. These recommendations will be considered as part of these discussions.	ASPR 2015
2014-7	Transparency	<p>3. Reducing Risk of Injury or Fatality – Understanding and Managing Causes and Behaviors</p> <p>Perhaps the industry advisory councils could be solicited by TSSA in the upcoming year on how to collect more 'near miss' data from Ontarians as this would further strengthen TSSA's risk analysis work (even provision of anonymous information may be able to help build data sets).</p>	TSSA will continue to engage the advisory councils and communicate the need for reporting on near-misses for the purposes of RIDM and ensuring objectivity in TSSA's regulatory decisions. In particular, TSSA will identify this as a key element when presenting on the results of the annual and quarterly safety reports.	Ongoing
2014-8	Transparency and Collaborations and comparisons with other regulatory authorities	<p>3. Reducing Risk of Injury or Fatality – Understanding and Managing Causes and Behaviors (2nd paragraph)</p> <p>By ensuring sustained emphasis on quality data and interpretation, TSSA's ASPR is emerging as an industry 'best practice' contribution. Sharing the approach, and building on other jurisdiction findings, will assist all participating jurisdictions.</p>	TSSA has identified validation and recognition of its approach as one of the initiatives under its business plan. TSSA is working on establishing a small international group of regulators for benchmarking and sharing of best practices and will have a template model ready by the end of the fiscal year. TSSA has been asked to consider exploring the possibility of cohosting a risk workshop in collaboration with other partners to share best practices.	April 2015



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2014-9	Transparency	<p>4. Reviewing the Data As much of TSSA's risk profiling is based on available and interpreted data, this information should be as public and readily accessible as possible. Over time, this should enhance data quality and public trust in the data, and its application. The ASPR makes a genuine effort to present much of this data – this effort should be commended, and expanded. The ASPR should also continue to report 'near misses' as this supplementary data is important in enhancing observations of trends and impacts.</p>	See response to "Sharing of Risk Assessments" (2014-3) above.	
2014-10	Transparency and Collaborations and comparisons with other regulatory authorities	<p>4. Reviewing the Data (Second paragraph) Risk assessments should be shared as many of the fundamentals are transferrable and provide lessons for other sectors and jurisdictions. all undertake risk assessments designed to protect a common client (the public) at as low cost and little intrusion to the activity as possible. The ASPR could be augmented with an annex that summarizes the key risk assessments considered by TSSA during the last fiscal year. Within a few years this annex is likely to emerge as a common and shared document with the more credible and active risk management agencies in Canada and internationally.</p>	See responses to "Sharing of Risk Assessments" (2014-3) above.	



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2014-11	Transparency and Communicating TSSA's achievements and Collaborations and comparisons with other regulatory authorities	5. Trading Risk – an Apple for an Orange Through its considerable inspection capabilities, regulatory expertise, data systems, and credible consumer and industry advisory councils, TSSA is well positioned to take an active role in developing these new and more-harmonized standards and regulations. Perhaps, jointly with Ministry of Government and Consumer Services, Electrical Standards Authority, and others, TSSA could include a 'horizon view' annex that provides signaling to companies and agencies that might be affected by changes to risk profiling, management and regulation.	See response to 2014-8 above. TSSA is actively participating with the National Public Safety Advisory Committee (NPSAC) to develop best practice approaches to harmonising standards and regulations. A couple of pilots are already underway. TSSA will include updates as appropriate in the annual safety reports in the future.	Ongoing
2014-12	Transparency and Collaborations and comparisons with other regulatory authorities	5. Trading Risk – an Apple for an Orange (para 2) This information should ideally continue to be reported within the ASPR, and a simple 'risk in context' discussion placed on TSSA's website (for year-round public access).	See 2014-3 above.	



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2014-13	Evaluation of compliance strategies & next steps forward to ensuring compliance and Collaborations and comparisons with other regulatory authorities	6. Tailoring the Response As these institutions are mainly government agencies, TSSA's regulatory regime and fee-based approach (with lower overall inspection costs to encourage greater compliance) might need adjusting and specific tailoring to critical buildings. This is well underway with TSSA's 'special buildings' program, e.g. hospitals, homes for the aged and schools. However, stronger partnerships with other government agencies may be needed, rather than sole reliance on fee structures.	See response to "Special Buildings" (2014-5) above.	
		7. Sector Reports 2013/2014		
2014-14	Transparency	BPV - Key issues from Statutory Director: [Can a target date of standardizing all orders be provided by TSSA?].	Work with respect to design and use of standardized orders for the program has been completed. Automation of these orders for inspectors to use will be part of TSSA's 20/20 initiative. The timing and critical path for this component will be shared with the CSRO once identified.	To be determined
2014-15	Transparency	Page 15 (Full Report): "standardized orders Can a specific target date be given for this activity? As TSSA is also responsible for the certification of the BPV inspectors employed by the insurance companies (page 13) can the use and submission of common orders be made a condition of future certification?"	See above (2014-14)	



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2014-16	Transparency	Amusement Devices (AD) Key issues: specific targeting of reduced risk on water slides; need for more complete reporting of incidents by operators; continued and expanded public safety campaign, e.g. 'Safety Ambassador' program.	See response above (2014-6)	
2014-17	Transparency and Collaborations and Comparisons with other regulatory authorities	As recommended last year, within TSSA's public education efforts there may be merit, especially in the ADs sector, to develop a long-term program with measureable targets that can be cross-referenced with similar efforts in other jurisdictions. The ASPR provides an excellent venue to discuss progress toward reduction of this risk. As water slides represent such a high risk of injury compared to other amusement devices, TSSA should consider publishing injury statistics for key water slides (after providing owners sufficient time to adjust operations and sensitize clients).	See response above (2014-6).	
2014-18	Transparency	There may be opportunity in future ASPRs to present risk from external factors in a simpler format; for amusement devices as well as other TSSA mandated sectors. The sample size of data (occurrences) may also be insufficient at times to accurately discern these nuanced trends. Also, with growing emphasis on public education from TSSA there is likely an emerging correlation between non-compliance with regulatory systems and overall injuries from external factors (under TSSA's authority and outside) that could be documented.	As part of an enhanced ASPR summary report, TSSA will provide information regarding the composite risk of injury or fatality across the three causal categories in a simpler format for the next year. In particular, TSSA will provide meaningful commentary for the drivers for each of the individual categories and state changing risk profile over time across these categories as recommended.	ASPR 2015



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2014-19	Evaluation of compliance strategies & next steps forward to ensuring compliance	Elevating Devices - Key Issues: the strategies of (i) shutting down non-compliant EDs, and (ii) high follow up inspection fees when orders remain outstanding are being reviewed as they have not resulted in improved compliance [this may be a function of who is being 'penalized' versus who needs to carry out the action]. A more finely-tailored response e.g. the difference in response to a noncompliant elevator in a hospital versus a commercial building may be warranted.	See response on "compliance strategy" above (2014-2). TSSA's risk based inspection program for elevators accounts for specific categories of risk including taking into account the building types.	
2014-20	Transparency	As recommended last year, with 52,000 elevators currently in Ontario – and a fast growing stock – TSSA should develop a plan to have much of this data, e.g. licenses and inspection dates, publicly available; perhaps as part of the Province of Ontario's 'Big Data' efforts. As suggested in this year's CSRO Annual Report a specific target date (and scope of data publication) should be proposed by TSSA, notionally propose as May 2016. Applicability of this data (e.g. by hospitals, homes for the aged, public housing, schools, rental residential buildings, commercial, etc.) should be assessed. As soon as practicable, TSSA should publish on a public website when elevators (and escalators) are ordered shut-down.	TSSA considers this comment as one of the objectives of its 20/20 initiative. The ability to create an appropriate platform for sharing data and making it available is a critical element of the strategy. The proposed work plan for the 20/20 initiative will be shared with the CSRO when available.	Unknown
2014-21	Evaluation of compliance strategies & next steps forward to ensuring compliance	Escalators and Moving Walks - Escalators and Moving Walks Both these strategies are under review as they have not resulted in improved compliance." Again as with elevating devices the ascribed penalty might not be charged against the individual or agency required to take corrective action.	See response on "compliance strategy" above (2014-2).	



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TSSA Index No.	TSSA Identified Theme	CSRO's Comments	TSSA's Response	Scheduled Completion
2014-22	Transparency	<p>Ski Lifts Is there merit in linking TSSA ski lift information directly to facility public sites, e.g. a message from TSSA on every snow resort site? Signs and website information may be insufficient to changes user behavior, however as 96% of the risk is exogenous to TSSA's regulatory scope, Ancillary approaches are warranted (above from last year's review).</p> <p>Each year about 12,000 individuals visit an Ontario emergency department with skiing and snowboarding injuries. This is much greater than all of TSSA's residual risk profile in all mandated sectors. As TSSA develops public education programs for ski lift operations (as more than 96% of TSSA's ski lift risk caused by factors external to regulatory requirements), there is enormous potential to supply ancillary public safety benefits in areas such as behaviour on ski hills.</p>	TSSA will continue to reinforce its public education campaigns with respect to use of ski lifts. As part of its collaborative relationship with Ski Resort operators, TSSA continues to offer its expertise in support of enhancing safety overall	Ongoing



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2014-23	Transparency	<p>Upholstered and Stuffed Articles "Manufacturer not registered in Ontario" (24%) and second highest infraction "No Provincial Label" (18%) infer a safety issue (e.g. potential for unsafe materials to be used based at country of origin) that may be more a trade consideration, rather than presenting a clear safety concern.</p> <p>As recommended last year a summary note in next year's ASPR on the difference between trade issues and public safety in USA regulated items would be beneficial. As USA is omitted from this year's ASPR summary, a case could be made that the sector warrants special consideration in reporting, rather than reporting through the annual public safety report.</p>	<p>The USA program is undergoing a regulatory review process by the MGCS. Any further direction in reporting will be dictated by the decisions made as part of the regulatory review.</p>	To be determined



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<p>2014-24</p>	<p>Evaluation of compliance strategies & next steps forward to ensuring compliance</p> <p>and</p> <p>Collaborations and comparisons with other regulatory authorities</p>	<p>9. Home Safe and Special Buildings</p> <p>Considering the scale and complexity of CO risk within TSSA's overall mandate a unique multisector multi-agency approach may be needed. In addition to defining TSSA's role in this sector, the strategy would also serve to catalyze and hopefully coordinate other provincially managed stakeholders such as Ministries of Health and Long-Term Care, Education, Fire Marshal's Office, Electrical Safety Authority. This effort is apparently already underway. Carbon monoxide is a good example of an important safety issue that transcends any one agency (or even several). Interventions will need to be both broad and targeted. However, like fire prevention a comprehensive public safety program to address carbon monoxide will likely have numerous related and at times overlapping aspects (which is preferable to gaps). Lead roles may also vary by target location, e.g. schools and hospitals versus single-family dwellings.</p> <p>The "Special Buildings Inspections" project will initially focus on inspecting long-term care and retirement homes. There may be merit in expanding this pilot to include targeted elevating device inspections as well, and opening the pilot to other government agencies, such as those in the long-term care industry. Most of these special buildings are government mandated (and financed) facilities, e.g. hospitals and schools, therefore punitive fees and shutting down elevators and fuel systems, may disproportionately impact the public. A comprehensive program with a consolidated, integrated maintenance program is likely the most effective way to enhance compliance in a cost effective manner, while also meeting other ancillary facilities requirements. Perhaps a special buildings (non-commercial</p>	<p>TSSA appreciates this feedback. The CO strategy constantly undergoes continuous improvement.</p> <p>The initial focus is on specific locations, so that analysis can be conducted, following which targeted maintenance and compliance programs can be developed. The eventual aim of this initiative is to expand the analysis across various sectors.</p> <p>TSSA has begun consultations with its other government partners including the Retirement Homes Regulatory Authority and reached out to the Ministry of Health and Long-Term Care with regard to special inspections of retirement homes and long-term care homes. TSSA will reach out to the Ministry of Education ahead of inspections of schools next year.</p>	<p>ASPR 2015</p>
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		establishment) advisory committee could be established.		
2014-25	Transparency and Evaluation of compliance strategies & next steps forward to ensuring compliance	10. Safety in Ontario – Mind the Gaps As suggested in last year's ASPR review the public does not readily discern the nuances of regulatory accountability (inspections, licensing, operation) thereby presenting reputational risks to all regulators, insurers and operators in the sector. Regulations, by definition need to be specifically targeted, with discrete orders on execution and coverage. In a few key areas, the ASPR could reinforce the proscribed limits to TSSA's regulatory capacity and highlight potential sector 'gaps'. For example, TSSA's process of ordering the shutdown of risky elevators may not be the most fulsome approach to reducing risk in a particular building.	See compliance strategy discussion above (2014-2).	
2014-26	Transparency and Evaluation of compliance strategies and next steps forward to ensuring compliance	<u>Messages from Statutory Directors</u> These sections would still benefit from strengthening in two areas: 1. Directors should present key performance targets for the upcoming year. These performance targets (safety related) should be measureable and results should be reported in the subsequent ASPR. Perhaps at least one of these KPI could be set in the context of another jurisdiction (and comparable using common metrics). 2. The ASPR provides an excellent venue for Statutory Directors to opine on 'state of their sector' in a broad Provincial and even global context (while maintaining their primary focus on matters that directly impact the safety of Ontarians).	With clearly identified safety priorities, the ASPR informs the statutory directors to establish strategies with clear goals and targets. For example, TSSA has developed a project plan for addressing each of the 4 strategic priorities, which will be reviewed periodically by the newly constituted Safety Strategy Steering Committee (SSSC). Status on the strategies will be included as part of TSSA's periodic reporting including the ASPR. TSSA will also provide specific updates to the CSRO on a semi-annual basis on the plan the results.	Ongoing



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	<p>Evaluation of compliance strategies and next steps forward to ensuring compliance</p> <p>and</p> <p>Transparency</p>	<p>Elevating Devices: An agreed-to metric (before the new fee is fully enacted) would be useful to verify if as suggested by TSSA "the new fee schedule for EDs has a marked effect on getting non-compliances found in periodic inspections resolved in the given time lines". With 49,000 elevators currently in Ontario – and a fast growing stock – TSSA should develop a plan to have much of this data, e.g. licenses and inspection dates, publicly available; perhaps as part of the Province of Ontario's 'Big Data' efforts.</p>	<p>TSSA will assess the impact of the fee changes on compliance using existing compliance metrics.</p> <p>Status: The assessment of the impact of the fee changes on compliance is described in the ASPR and is currently ongoing. In addition, TSSA's business plan includes initiatives that are expected to provide additional insight into this review.</p>	<p>ASPR 2015</p>
	<p>Collaborations and comparisons with other regulatory authorities</p>	<p>As proposed in last year's ASPR review, contextualizing TSSA's delegated risk reduction efforts in relation to other common risks is useful. The inclusion this year of RSI's independent 'Risk of Injuries and Deaths from TSSA-Regulated Activities in the Context of Other Risks' is welcome. An annual summary, e.g. Table 1, in all future ASPR's would increase the usefulness even more as this would capture risk related trends, both within TSSA and across Ontario.</p>	<p>Agreed.</p> <p>Status: Preliminary work to provide contextual information is underway in certain regulated sectors. Results of this work is anticipated to be included in the 2014/2015 ASPR</p>	<p>ASPR 2015</p>



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	<p>Transparency</p> <p>and</p> <p>Communicating TSSA's achievements</p> <p>and</p> <p>Collaborations and comparisons with other regulatory authorities</p> <p>and</p> <p>Evaluation of compliance strategies and next steps forward to ensuring compliance</p>	<p>The messages from statutory directors are important annual 'check points'. They currently provide very useful information and a good overview of the Director's envisaged key priorities (success in last year and key plans going forward). These sections would benefit from strengthening in two areas:</p> <p>Directors should be encouraged to present key performance targets for the upcoming year. These performance targets (safety related) should be measureable and results should be reported in the subsequent ASPR. Perhaps at least one of these KPI could be set in the context of another jurisdiction.</p>	<p>Agreed, TSSA currently does attempt to measure the effectiveness of initiatives, for example a Director's Order was issued for natural draft boilers. These efforts are limited by the data that TSSA is able to collect.</p> <p>Status:</p> <p>Statutory director commentary in the 2013/2014 ASPR includes additional detail.</p> <p>To further address this recommendation, TSSA has formed a Safety Strategies Steering Committee to review and monitor strategies for identified priority safety issues. These strategies include the CSRO suggestions and will be shared with the CSRO. Consideration will be given to including additional detail based on the strategies in the 2014/2015 ASPR.</p>	<p>September 2015</p>