



**Corporation of the Town of Ingersoll
Council Agenda
Regular Meeting of Council
Town Centre, Council Chambers
Monday, February 11, 2019, 6:00 p.m.**

Call to Order

Disclosures of Pecuniary Interest

Consent Agenda

Items listed under the Consent Agenda are considered routine or no longer require further discussion and are enacted in one motion. The exception to this rule is that a Council Member may request for one or more items to be removed from the Consent Agenda for separate discussion and vote.

February 11, 2019 – [Consent Agenda](#)

Resolution – Committee of the Whole (Councillor Petrie)

Consultants' Reports

- 1) Watson & Associates Economists Ltd. – [Development Charges and Background Study](#)
- 2) Peter Klaassen of Tetra Tech and Barbara Hard of Arcadis – [Presentation on Walker Environmental Assessment](#)

Special Staff Reports

- 1) Council-Staff Relations Policy [C-008-19](#)
- 2) Councillor Pregnancy and Parental Leaves [C-009-19](#)
- 3) BIA Board of Management [C-010-19](#)
- 4) Application for a variance to By-law 01-3989 (Maximum number of dogs) [C-011-19](#)
- 5) Arena Ice Plant – Fernie BC Incident [CS-003-19](#)
 - a) [Presentation from Brad Wilkins from Cimco Refrigeration](#)
- 6) VPCC Annual Stats Report [CS-004-19](#)

- 7) Update on Trillium Grant for VPCC Weight Room [CS-005-19](#)
- 8) Report on 2018 Santa's Village [CS-006-19](#)
- 9) Fusion Centre 2018 Statistics [CS-007-19](#)
- 10) Smoking By-Law [CS-008-19](#)
- 11) Installation of Cansel GPS Station [OP-006-19](#)

Delegations & Presentations – 7:00 p.m.

Correspondence & Resolution

- 1) ERTH - [CEO Breakfast Invitation](#)

Consideration of By-Laws

- 1) [By-Law 19-5034](#) – to amend By-law 06-4327 (Designate Parking – Duke Street)
- 2) [By-Law 19-5035](#) – to authorize an agreement related to funding under the Dedicated Gas Tax Funds for Public Transportation Program
- 3) [By-Law 19-5036](#) – to adopt and confirm all actions and proceedings

Notice of Motion

Notice of Motion from Councillor Lesser – Council Per Diem Policy

I am bringing forward at this time, a notice of motion concerning our per diem and travel policy. I am bringing it forward because I believe our policy needs clearer definitions and some readjustment. There are several points that I would like to bring forward at this time for Council's consideration:

- 1. Leave the per diem for a full day at \$150.00
- 2. For events or meetings of less than ten (10) hours, a half day per diem.
- 3. Per diem covers all costs except hotel and initial travel cost.
- 4. Per diem is for out-of-county meetings and conferences.
- 5. Per diem is for the day of the conference only.
- 6. Travel expense should be paid by the most economical method of travel.
- 7. Travel by car clearly states that any expense you incur is your own responsibility, the Town only pays mileage.
- 8. If any exception to the above policy arises, the Councillor must bring the reason before Council to receive approval before expenses are paid.

Upcoming Council Meetings

Regular Meeting of Council
Monday, March 4, 2019, 6:00 p.m.
Town Centre, Council Chambers

Regular Meeting of Council
Monday, April 8, 2019, 6:00 p.m.
Town Centre, Council Chambers

Council Committee Meetings

Please check the events calendar at www.ingersoll.ca in the event of changes to Committee meeting dates and times

Harvest Festival

4th Wednesday of the Month
Cheese and Agricultural Museum
6:30 p.m.

Transportation Committee

4th Wednesday of Every Other Month
Town Centre, Engineering Board Room
10:00 a.m.

Ingersoll BIA

2nd Tuesday of the Month
Town Centre, JC Herbert Room
6:30 p.m.

Museum Committee

3rd Thursday of the Month
Cheese Museum
6:30 p.m.

Safe Cycling Committee

2nd Thursday of the Month
Town Centre, JC Herbert Room
6.30pm

Police Services Board

4th Monday of the Month Town
Centre, JC Herbert Room 6:00
p.m.

Recreational Trails Committee

3rd Wednesday of the Month
Town Centre, JC Herbert Room
6:30 p.m.

Closed Session

- 1) Minutes of Closed Session meeting on December 20, 2018
- 2) Minutes of Closed Session Meeting on January 14, 2019
- 3) Section 239 (2) (b) personal matters about an identifiable individual, including municipal or local board employees.
- 4) Section 239 (2) (b) personal matters about an identifiable individual, including municipal or local board employees – update on the ERTH Board Director appointment.
- 5) Section 239 (2) (c) a proposed or pending acquisition or disposition of land by the municipality or local board - third party interest in purchasing a municipally-owned building.

Adjournment



Town of Ingersoll Development Charges Background Study

Council Information Session

February 11, 2019



Development Charges

- Purpose of Development Charges (D.C.) is to recover the capital costs associated with residential and non-residential growth within the municipality
- The capital costs are in addition to what costs would normally be constructed as part of a subdivision (i.e. internal roads, watermains, roads, sidewalks, streetlights, etc.)
- Municipalities are empowered to impose these charges via the *Development Charges Act* (D.C.A.)



Study Process

- D.C. Background Study process has been undertaken in conjunction with Oxford County and the area municipalities (excl. Woodstock)
 - Growth forecast and detailed discussions with staff regarding future needs to service growth (Jul. – Dec. 2018)
 - Council Information Session (Jul. 10, 2018)
 - Development Industry Stakeholder Consultation (Aug. 13, and Sep. 5, 2018)
 - Presentation of draft findings and D.C. policy discussion with D.C. Steering Committee (Jan. 18, 2019)
 - **Ingersoll Council Information Session (Feb. 11, 2019)**
 - Joint County and Area Municipal Council Information Session (Feb. 27, 2019)
 - Development Industry Stakeholder Consultation (Mar. 21 and 25, 2019)

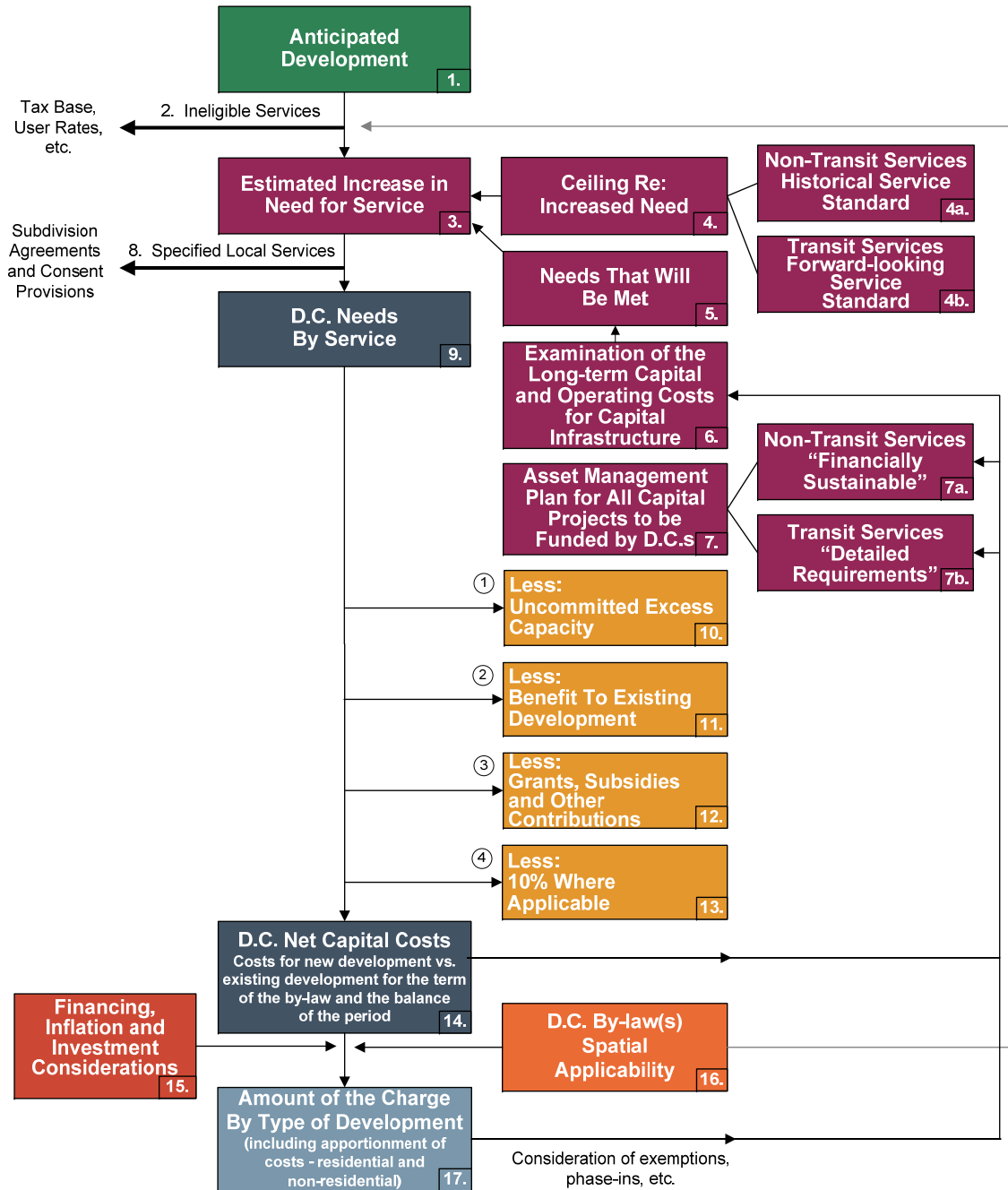
Study Process

Cont'd



- Release of D.C. Background Study, 60 days prior to by-law passage (May 9, 2019)
- D.C. Public Meeting (June 10, 2019)
- Council to consider by-law for adoption (July 8, 2019). Town's current by-law set to expire on July 14, 2019.

The Process of Calculating a Development Charge under the Act that must be followed





Growth Forecast

- The County is currently undertaking an Municipal Comprehensive Review to update the growth forecast for the County and Area Municipalities.
- Growth forecast has been prepared based on January 2019 draft findings for the 10-year period (2019-2029)

Time Horizon	Residential		Non-Residential	
	Net Population	Residential Units	Employment ¹	Sq.m. of GFA
Mid 2019	13,366	5,391	8,323	n/a
Mid 2029	15,318	6,188	9,115	n/a
Incremental Change				
10-year (2019-2029)	1,952	797	792	79,980

¹. Excludes NFPOW and WAH



Increase in Need for Service

- Town-Wide Services
 - Roads and Related (road improvements and public works)
 - Fire Services
 - Parks and Recreation (indoor recreation, parks and trails development)
 - Administration - Studies

Anticipated Capital Needs

Roads and Related Services



Prj .No	Increased Service Needs Attributable to Anticipated Development 2019-2028	Timing (year)	Gross Capital Cost Estimate (2019\$)	Net Capital Cost	Less:	Potential D.C. Recoverable Cost		
					Benefit to Existing Development	Total	Residential Share 71%	Non-Residential Share 29%
	Roads							
1	Fuller Street Extension	2024	1,957,000	1,957,000	-	1,957,000	1,389,470	567,530
2	Haines Street Extension	2027	33,000	33,000	22,000	11,000	7,810	3,190
3	Clark Rd. E. Reconstruction - Harris to Boundary Rd.	2024	1,146,700	1,146,700	764,467	382,233	271,386	110,848
4	Intersection Upgrade - Clark Road East	2021	56,200	56,200	-	56,200	39,902	16,298
5	NPV Principal - King Street West Reconstruction	2019-2023	470,723	470,723	282,434	188,289	133,685	54,604
6	NPV Interest - King Street West Reconstruction	2019-2023	83,972	83,972	50,383	33,589	23,848	9,741
7	NPV Principal - Street Light Expansion	2019-2025	950,495	950,495	868,946	81,549	57,900	23,649
8	NPV Interest - Street Light Expansion	2019-2025	81,214	81,214	74,246	6,968	4,947	2,021
	Public Works							
9	Salt Brine Tankage & Containment	2022	25,000	25,000	20,000	5,000	3,550	1,450
10	Salt Storage Expansion	2025	100,000	100,000	-	100,000	71,000	29,000
	Reserve Fund Adjustment					(291,515)	(206,976)	(84,539)
	Total		4,904,304	4,904,304	2,082,476	2,530,313	1,796,522	733,791

Anticipated Capital Needs

Fire Services



Prj .No	Increased Service Needs Attributable to Anticipated Development 2019-2028	Timing (year)	Gross Capital Cost Estimate (2019\$)	Net Capital Cost	Less:	Potential D.C. Recoverable Cost		
					Benefit to Existing Development	Total	Residential Share 71%	Non-Residential Share 29%
1	54-04 Aerial Truck Replacement and Upgrade	2022	1,500,000	1,500,000	1,224,000	276,000	195,960	80,040
2	Gear for additional volunteer firefighters (3)	2023	31,500	31,500	-	31,500	22,365	9,135
	Reserve Fund Adjustment					(51,830)	(36,799)	(15,031)
	Total		1,531,500	1,531,500	1,224,000	255,670	181,526	74,144

Anticipated Capital Needs

Parks and Recreation Services



Prj.No	Increased Service Needs Attributable to Anticipated Development	Timing (year)	Gross Capital Cost Estimate (2019\$)	Post Period Benefit	Net Capital Cost	Less:	Subtotal	Less:	Potential D.C. Recoverable Cost		
						Benefit to Existing Development		Other (e.g. 10% Statutory Deduction)	Total	Residential Share	Non-Residential Share
2019-2028									95%	5%	
Indoor Recreation											
1	Construction of 2nd Ice Pad at Arena										
	Land Acquisition for 2nd Ice Pad at Arena	2022	382,500	76,749	305,751	-	305,751	30,575	275,176	261,417	13,759
2	2nd Ice Pad Construction	2022-2028	9,617,500	9,413,609	203,891	-	203,891	20,389	183,502	174,327	9,175
3	Victoria Park Fitness Equipment replacement and expansion	2019	150,000		150,000	134,900	15,100	1,510	13,590	12,911	680
4	Victoria Park -Parking Lot Upgrades	2019	76,500	-	76,500	66,731	9,769	977	8,793	8,353	440
Parkland											
5	Riverfront Park & Trail Development - Phase 1	2021	100,000	-	100,000	-	100,000	10,000	90,000	85,500	4,500
6	Cheese Museum Pavillion	2019	65,000	-	65,000	56,699	8,301	830	7,471	7,097	374
7	Installation of New Water Feature - Splash pad	2019	25,500	-	25,500	22,244	3,256	326	2,931	2,784	147
8	Washrooms\New Change Rooms- Vic Park	2021	127,500	-	127,500	111,218	16,282	1,628	14,654	13,921	733
	Reserve Fund Adjustment						(591,696)		(591,696)	(562,111)	(29,585)
	Total		10,544,500	9,490,358	1,054,142	391,791	70,655	66,235	4,420	4,199	221

Anticipated Capital Needs

Administration - Studies

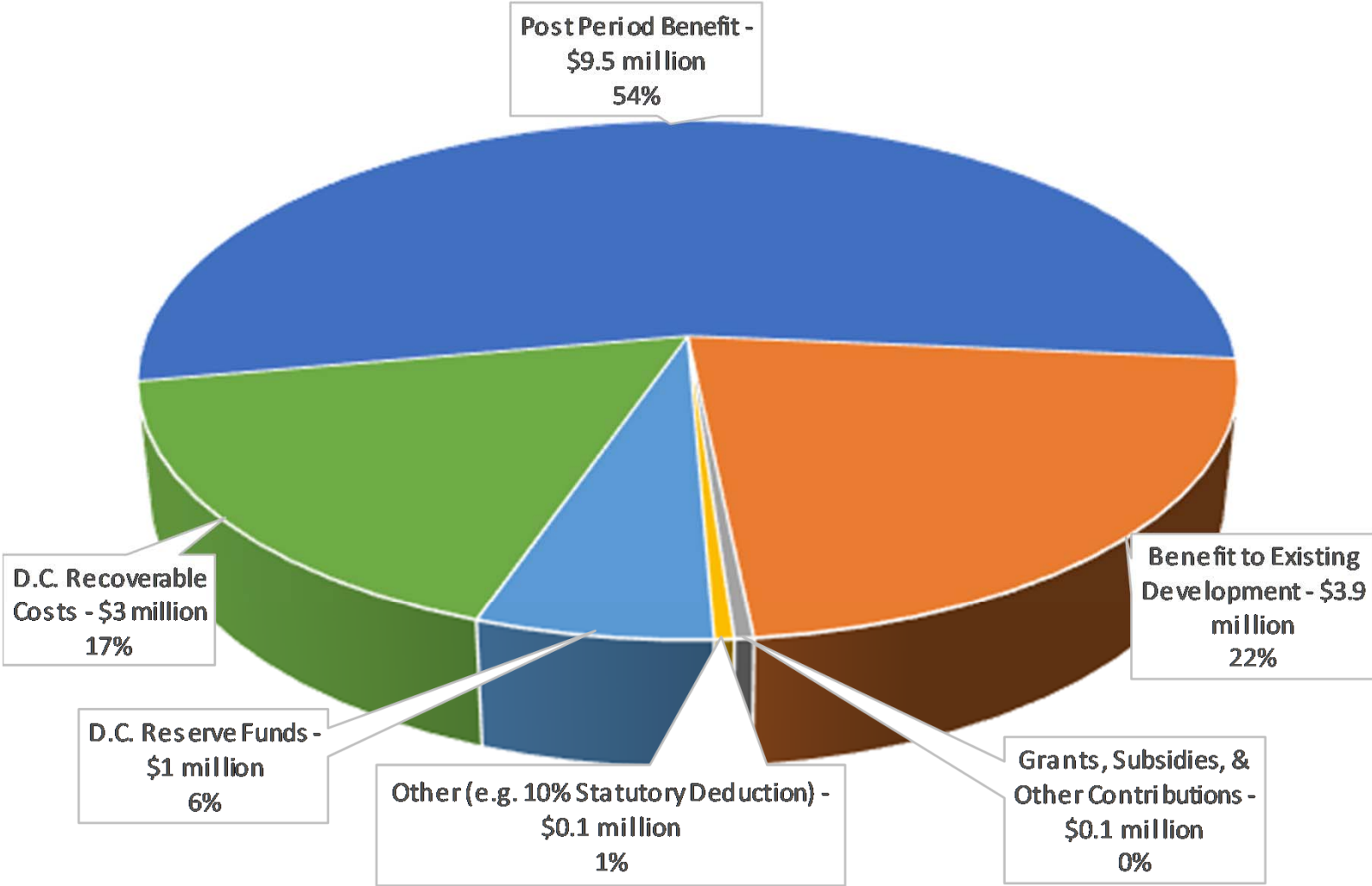


Prj.No	Increased Service Needs Attributable to Anticipated Development	Timing (year)	Gross Capital Cost Estimate (2019\$)	Net Capital Cost	Less:		Subtotal	Less:	Potential D.C. Recoverable Cost		
					Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development		Other (e.g. 10% Statutory Deduction)	Total	Residential Share	Non- Residential Share
2019-2028									71%	29%	
1	Development Charges Study	2023	20,000	20,000	-		20,000	2,000	18,000	12,780	5,220
2	Development Charges Study	2028	20,000	20,000	-		20,000	2,000	18,000	12,780	5,220
3	Secondary Plan	2019-2028	224,900	224,900	56,225	84,338	84,338	8,434	75,904	53,892	22,012
4	Parks and Recreation Master Plan	2019-2028	84,300	84,300	21,075		63,225	6,323	56,903	40,401	16,502
5	Stormwater Plan	2025	112,400	112,400	28,100		84,300		84,300	59,853	24,447
6	Asset Mangement Plan	2019-2023	50,000	50,000	43,615		6,385	639	5,747	4,080	1,667
7	Transit Study	2019-2028	30,000	30,000	7,500		22,500		22,500	15,975	6,525
	Reserve Fund Adjustment						(106,821)		(106,821)	(75,843)	(30,978)
	Total		541,600	541,600	156,515	84,338	193,927	19,395	174,532	123,918	50,614



Anticipated Capital Needs

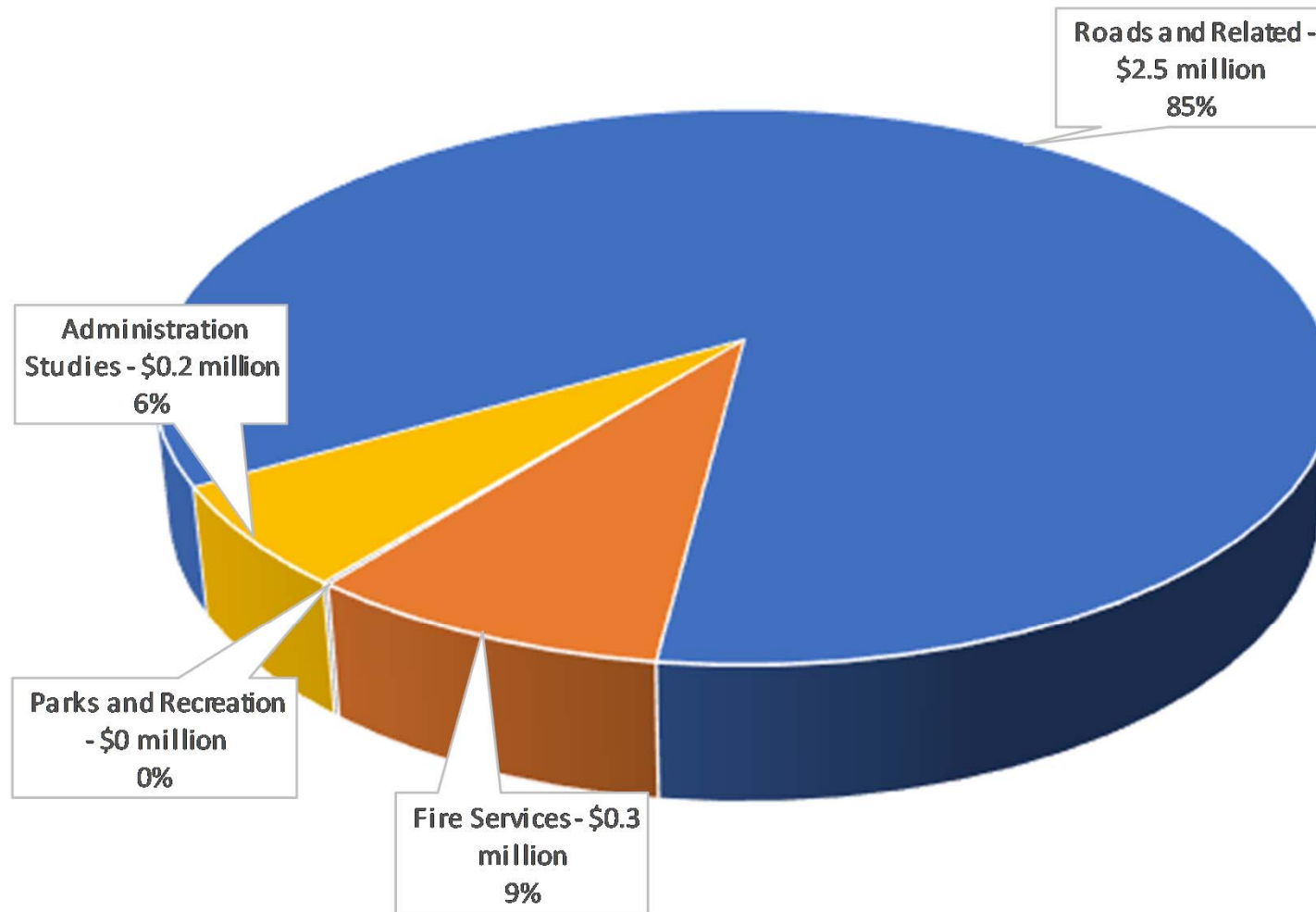
Gross Capital Costs - \$17.5 million





Development Charge Recoverable Capital Costs

Total D.C. Recoverable Costs – \$3.0 million



Calculated Schedule of Development Charges



Service	RESIDENTIAL				NON-RESIDENTIAL
	Single and Semi-Detached Dwelling	Apartments - 2 Bedrooms +	Apartments - Bachelor and 1 Bedroom	Other Multiples	(per m ² of Gross Floor Area)
Municipal Wide Services:					
Roads and Related	2,712	1,446	978	1,704	9.44
Fire Services	271	145	98	170	0.94
Parks and Recreation	-	-	-	-	-
Administration Studies	195	104	70	122	0.68
Total Municipal Wide Services	3,178	1,695	1,146	1,996	11.06



Development Charge Comparison

Current vs. Calculated Charges per Single Detached Residential Dwelling Unit and per Sq. Mt. of Non-Residential Gross Floor Area

Residential (Single Detached) Comparison

Service	Current	Calculated	% Increase
Municipal Wide Services:			
Roads and Related	2,535	2,712	7%
Fire Services	188	271	44%
Parks and Recreation	745	-	-100%
Administration Studies	310	195	-37%
Total Municipal Wide Services	3,778	3,178	-16%

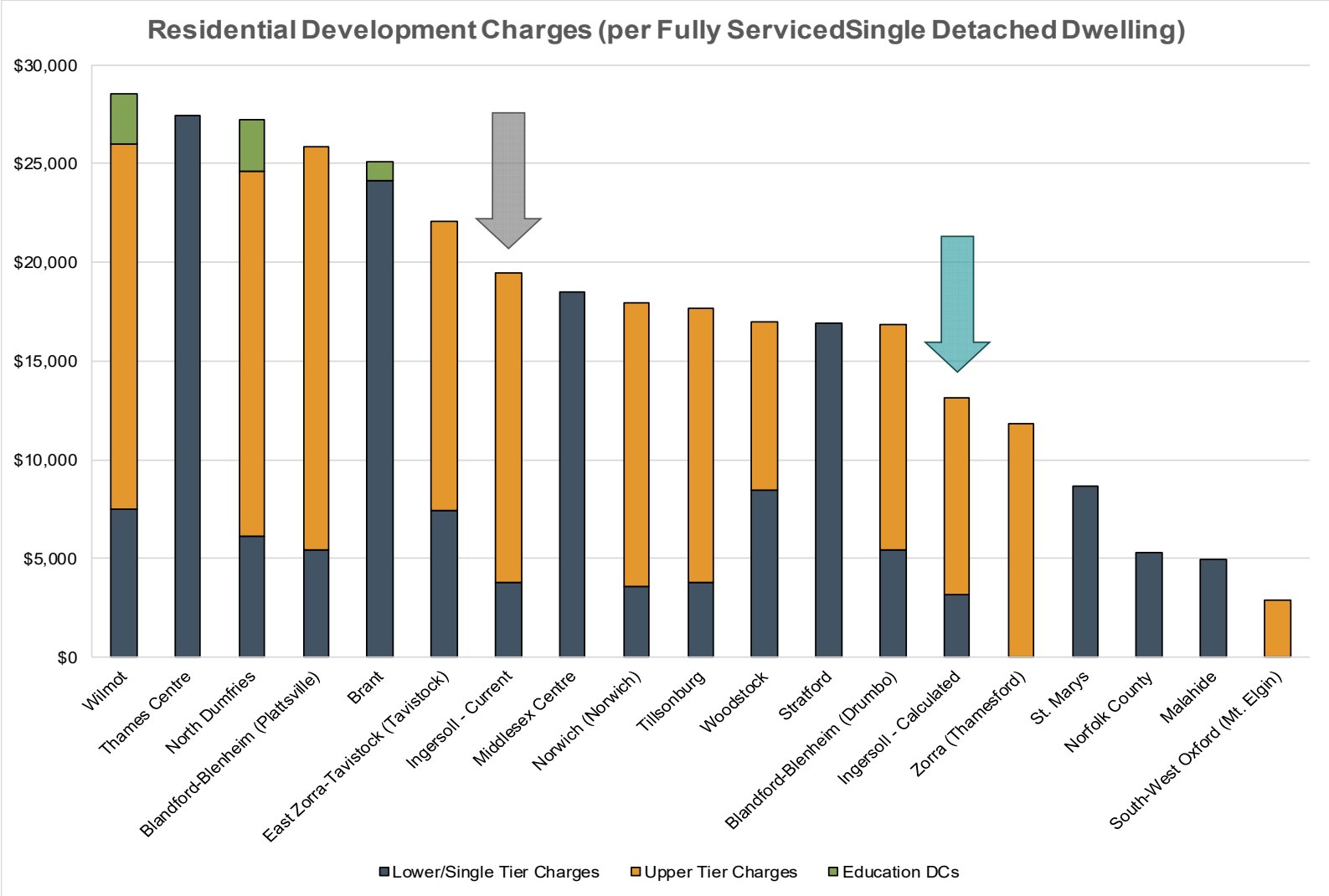
Non-Residential (per m²) Comparison

Service	Current	Calculated	% Increase
Municipal Wide Services:			
Roads and Related	-	9.44	N/A
Fire Services	-	0.94	N/A
Parks and Recreation	-	-	N/A
Administration Studies	-	0.68	N/A
Total Municipal Wide Services	-	11.06	N/A



D.C. Comparison

Per Residential Single-Detached Dwelling Unit

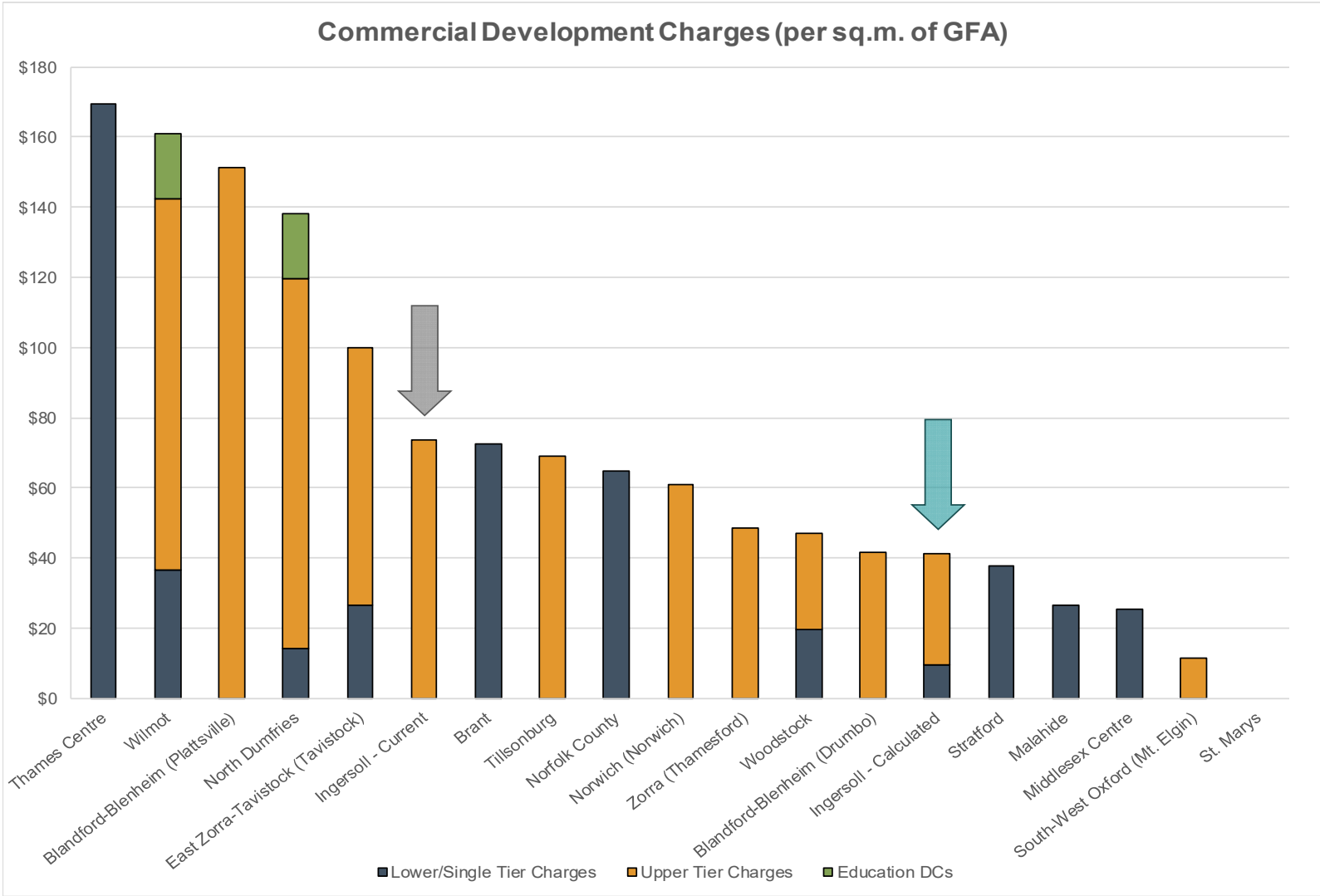


Calculated Rates for Ingersoll include draft calculated rates for the County of Oxford



D.C. Comparison

Per sq.m. Commercial Gross Floor Area

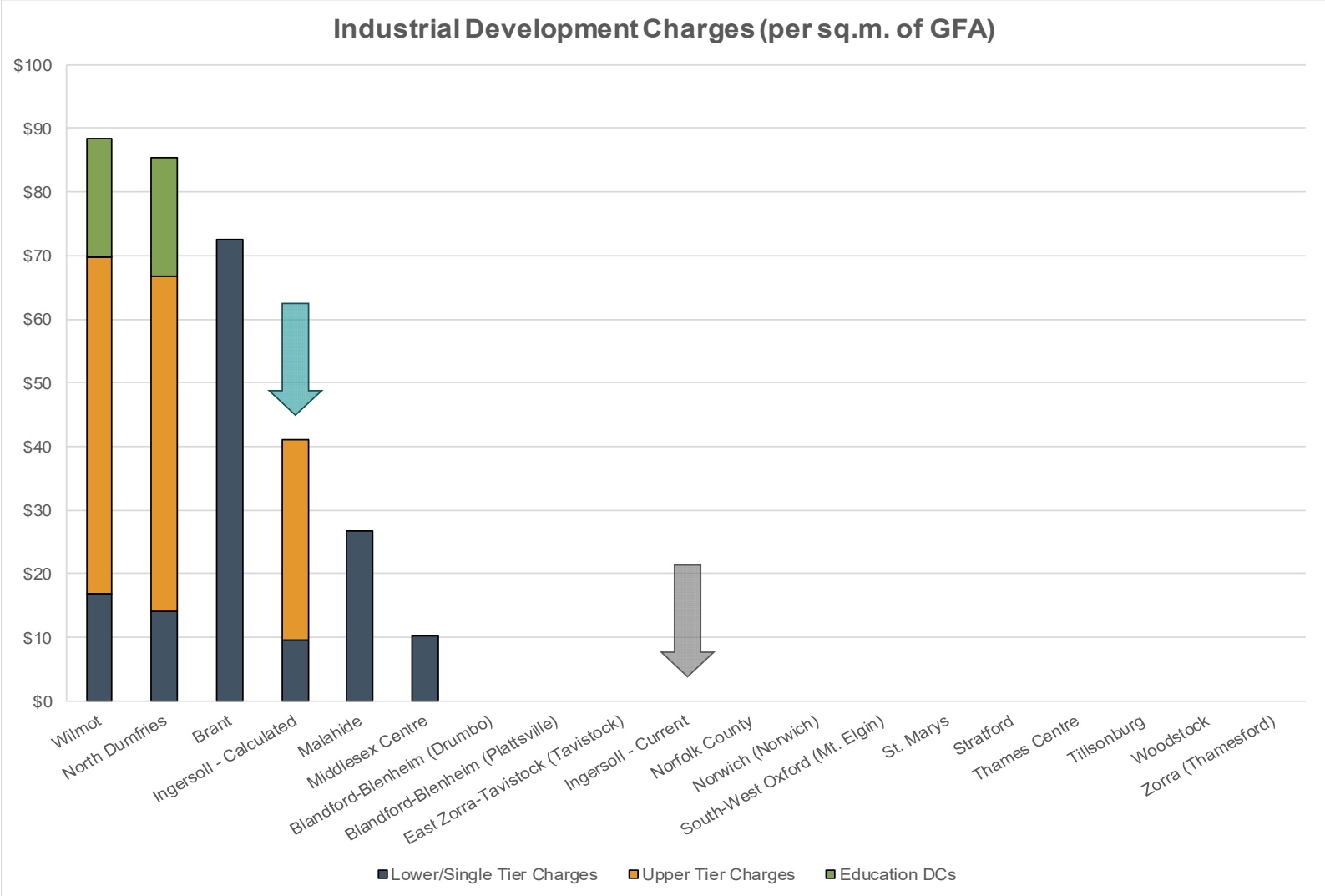


Calculated Rates for Ingersoll include draft calculated rates for the County of Oxford

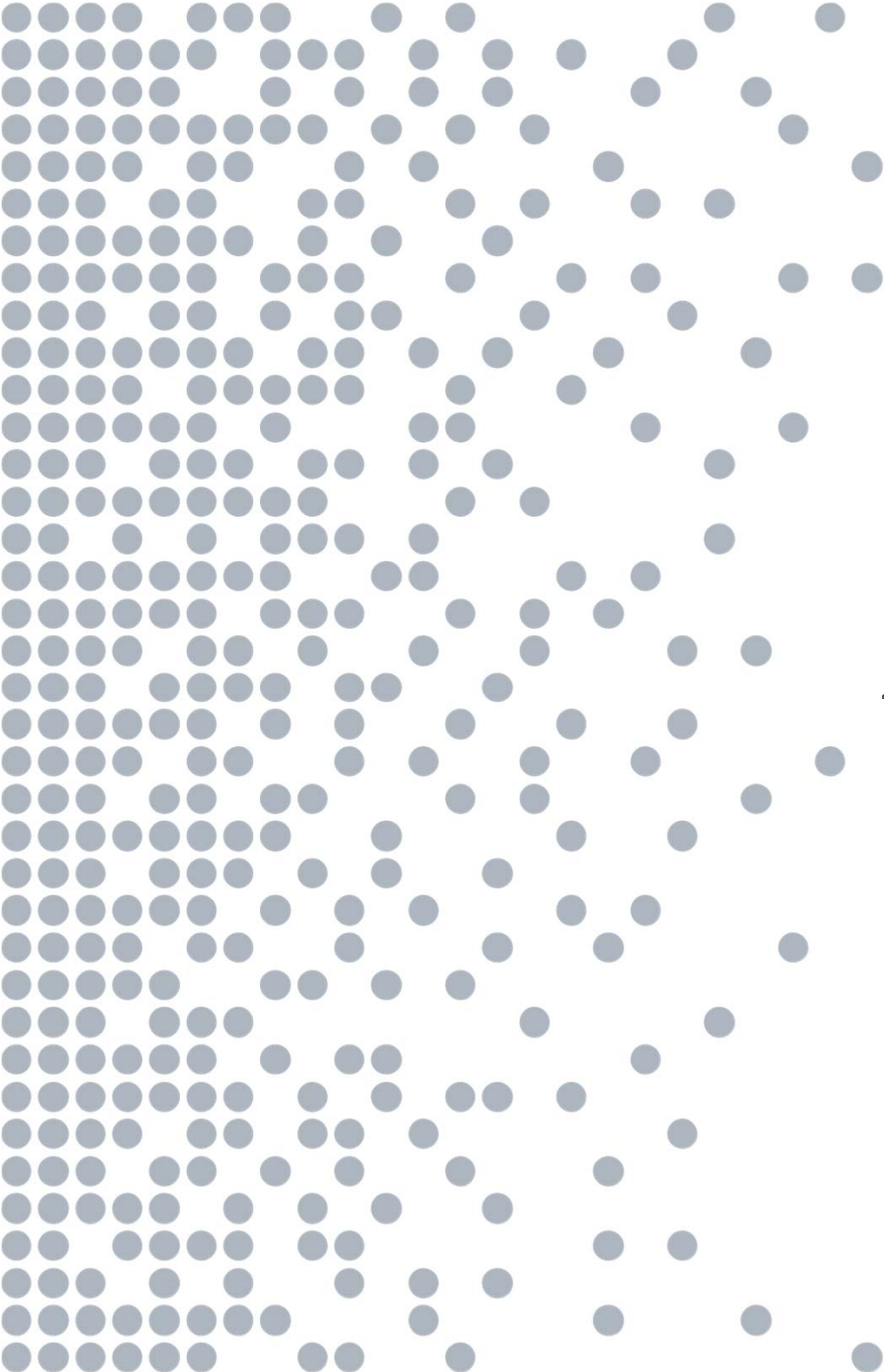


D.C. Comparison

Per sq.m. Industrial Gross Floor Area



Calculated Rates for Ingersoll include draft calculated rates for the County of Oxford



Development Charge By-Law Policies



D.C. By-Law Policies

Timing of Collection

- D.C.s can be calculated and payable at the time of building permit issuance or at subdivision registration for hard services
 - Municipality may enter into agreement for the D.C. to be paid before or after it would otherwise be payable
- A municipality is not required to issue a building permit for development to which a D.C. applies unless the charge has been paid
- If a D.C. or any part of it remains unpaid after it is payable, the amount unpaid shall be added to the tax roll and shall be collected in the same manner as taxes
- **D.C.s are payable on the date the first building permit is issued**



D.C. By-Law Policies

D.C. Exemptions

- The Act provides for some mandatory exemptions but also allows municipalities the ability to provide it's own exemptions
- Exemptions set out certain classes of development that will not be required to pay D.C.s. These exemptions may be determined by:
 - Use (e.g. places of worship, farm buildings)
 - Geographic area
 - Development type
 - Service exemption
- The Act is specific in identifying that the revenue forgone may not be made up by increasing the D.C.s for other classes of development
- In effect, it is a loss of revenue to the Municipality which will have to be funded via taxes, rates, reserves or other financial resources



D.C. By-Law Policies

Statutory D.C. Exemptions

- The D.C.A. provides statutory exemptions for:
 - Industrial building expansions (may expand by 50% with no D.C.)
 - Residential intensification:
 - May add up to two apartments for a single detached home as long as size of home doesn't double
 - Add one additional unit in medium & high density buildings
 - Upper/Lower Tier Governments and School Boards



D.C. By-Law Policies

Current Non-Statutory D.C. Exemptions

	Exemption	Ingersoll	County of Oxford	Blandford-Blenheim	East Zorra-Tavistock	Norwich	Tillsonburg	Woodstock
1	Non-residential uses	✓		✓		✓	✓	
2	Industrial buildings	✓ (incl. in #1)	✓	✓ (incl. in #1)	✓	✓ (incl. in #1)	✓ (incl. in #1)	✓
3	Institutional development	✓ (incl. in #1)	✓ (incl. in #1)	✓ (incl. in #1)	✓ (incl. in #1)	✓ (incl. in #1)	✓ (incl. in #1)	✓
4	Non-residential farm building	✓	✓	✓	✓	✓	✓	✓ (incl. in #2)
5	Places of worship	✓	✓	✓	✓	✓	✓	✓
6	Public Hospitals	✓	✓	✓	✓	✓	✓	✓
7	Development in Central Business District and Entrepreneurial Area	✓	✓				✓	✓
8	Temporary buildings and structures	✓	✓	✓	✓	✓	✓	
9	Long term care home		✓		✓			
10	Affordable housing	✓	✓	✓	✓	✓	✓	✓
11	Temporary dwelling units	✓	✓	✓	✓	✓	✓	



D.C. By-Law Policies

Redevelopment Credits

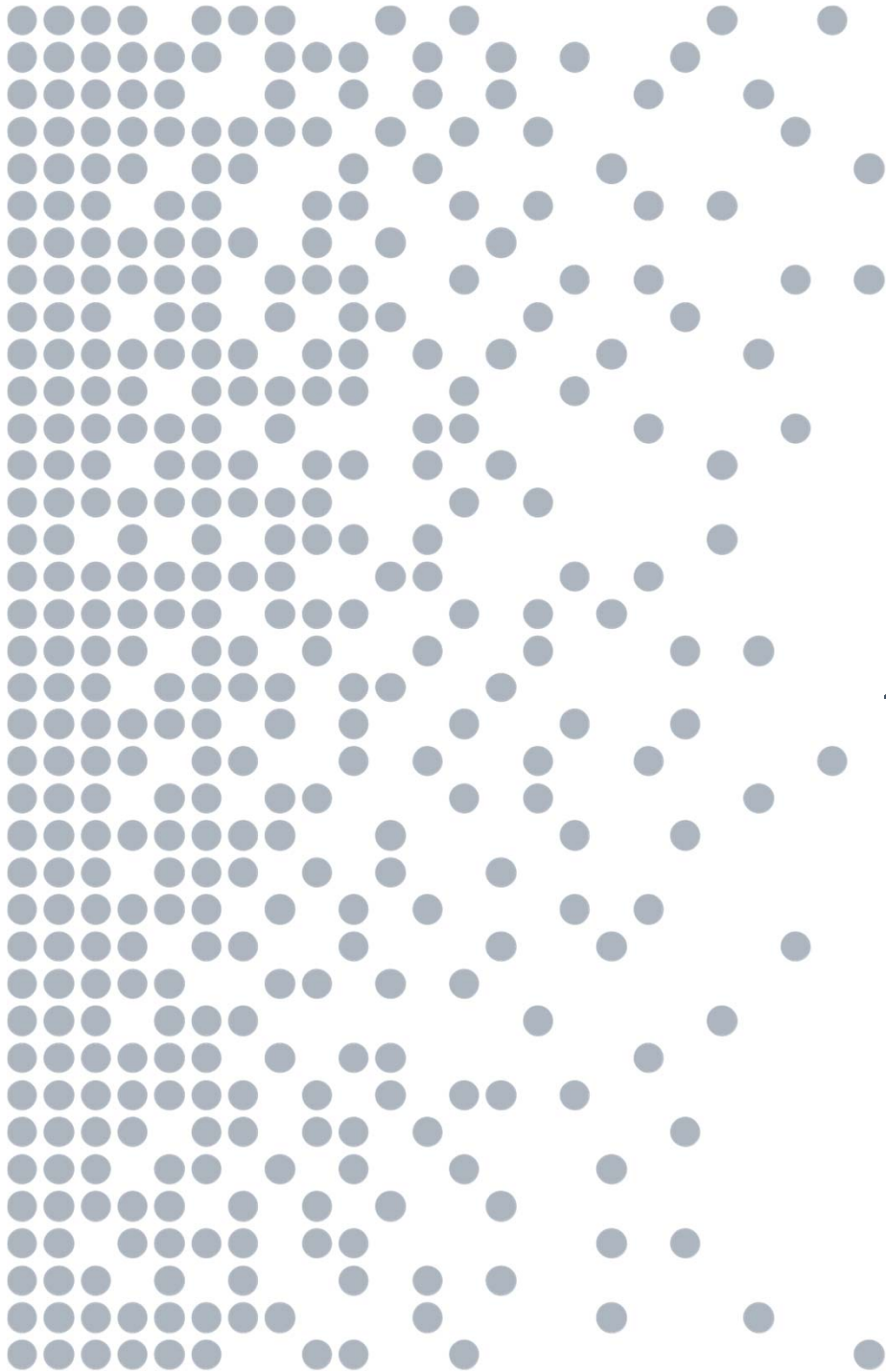
- Redevelopment credits on conversions or demolitions of existing buildings or structures are generally granted to recognize what is being replaced on site (not specific in the Act but provided by case law)
- Redevelopment credits where demolition/conversion occurs within 5 years of building permit issuance
- Credits are not granted for demolitions/conversions that would be exempt under current by-laws
 - Buildings constructed prior to 1999 that would be exempt under current by-laws would still be eligible for redevelopment



D.C. By-Law Policies

D.C. Indexing

- D.C.A. allows for adjustment of charges to reflect underlying cost increases and reduces municipal cash flow impact between statutory by-law reviews
- Indexing can be:
 - Mandatory – implemented annually commencing from the date the by-law comes into force, in accordance with the Statistics Canada Quarterly, Construction Price Statistics
 - Discretionary – index presented to Council annually for direction
- Current by-law provision for mandatory annual indexing on April 1st



Next Steps



Next Steps

- Receive Council input on the study findings
- Joint County and Area Municipal Council Information Session (Feb. 27, 2019)
- Development Industry Stakeholder Consultation (Mar. 21 and 25, 2019)
- Prepare formal D.C. Background Study and draft By-Law
 - Release of D.C. Background Study (May 9, 2019, 60 days prior to by-law passage)
 - Provide notice of Public Meeting in Newspaper
- Undertake Public Meeting of Council (June 10, 2019)
- Council to consider by-law for adoption (July 8, 2019)

UPDATE OF WALKER ENVIRONMENTAL GROUP PROPOSED SOUTHWEST LANDFILL

PRESENTATION TO: INGERSOLL TOWN COUNCIL

February 11, 2019

Presented By:

Peter Klaassen, P.Eng, MBA
Vice President Solid Waste
Tetra Tech Canada Inc.

Barbara Hard, PhD, P.Bio
Principal Environmental Consultant
Arcadis Canada Inc.

TECHNICAL REVIEW FIRMS

Tetra Tech Canada Inc.

52 Years in Business

**3500 Employees in Canada
(18,000 worldwide)**

All Engineering Disciplines

**60 employees dedicated to
waste management in Canada**

Solid Waste Planning

- Planning and Permitting
- Sustainability Planning

Infrastructure Design

Site Investigation / Management

- Historic Sites
- Proposed Sites
- LFG
- Operations Support

Construction Management

Operations (LFG, Leachate)

TECHNICAL REVIEW FIRMS (Cont'd)

Arcadis Canada Inc.

Over 100 Years in Business

280 Employees in Canada
(27,000 worldwide)

All Engineering Disciplines

Solid Waste Planning

- Planning and Permitting
- ESIA
- Stakeholder Consultation
- Waste to Energy Feasibility
- Financial Analysis
- Public Private Partnership (PPP)
- Institutional Strengthening



KEY REVIEW TEAM MEMBERS

Tetra Tech Canada Ltd.

Peter Klaassen, P.Eng., MBA
John Muller, MBA, P.Eng.
Dominique Grenier, P.Eng.
Brian Adeney, P.Eng.
Michel Lefebvre, M.Sc., P.Eng.
Paul Steel, M.Eng., P.Eng.
Doug McLaren, P.Eng.

Project Management, Financial Impact
Overall Landfill D&O, Financial Assurance
Landfill Leachate Treatment
Surface Water Management
Landfill Gas
Traffic
Air Quality and Odour

Arcadis Canada Inc.

Frederick D. Bernard, MA
Jennifer Kirk, Ph.D.
Barbara Hard, Ph.D.
Thomas Franz, M.Sc., P.Geo.

EA Planning
Risk Assessment (Human Health)
Risk Assessment (Ecological)
Hydrogeology

University of Waterloo

Walter Illman, Ph.D.

Hydrogeology

AirZone One Ltd.

Franco DiGionvanni Ph.D.

Air Quality and Health Assessment

REGULATORY CONTEXT

- The Ontario *Environmental Assessment Act*, 1990, as amended, is intended to provide for the protection, conservation and wise management of the province's environment.
- “Environment” is applied in a broad sense and includes the natural, social, cultural, built and economic environments.

REGULATORY CONTEXT (Cont'd)

- The *Act* sets out an environmental planning process, commonly referred to as an environmental assessment (EA) to ensure that that potential environmental effects of a project are considered **before the project is allowed to begin**.
- Environmental Assessments are required for large projects in the **waste management**, mining, electricity, transportation, infrastructure, and forestry sectors, among others.

REGULATORY CONTEXT (Cont'd)

- The *EA Act* promotes responsible environmental decision-making and **ensures that interested persons/stakeholders have an opportunity to comment** on proposed projects that may affect them.
- The potential environmental effects of Walker's proposed Southwest Landfill are to be assessed in accordance with the *EA Act*.

REGULATORY CONTEXT (Cont'd)

Other Key Legislation

- The landfill will be designed, operated, closed, and maintained in accordance with the requirements of *Ontario Regulation 232/98* (Landfilling Sites) under the *Environmental Protection Act*.

REGULATORY CONTEXT (Cont'd)

Other Key Legislation

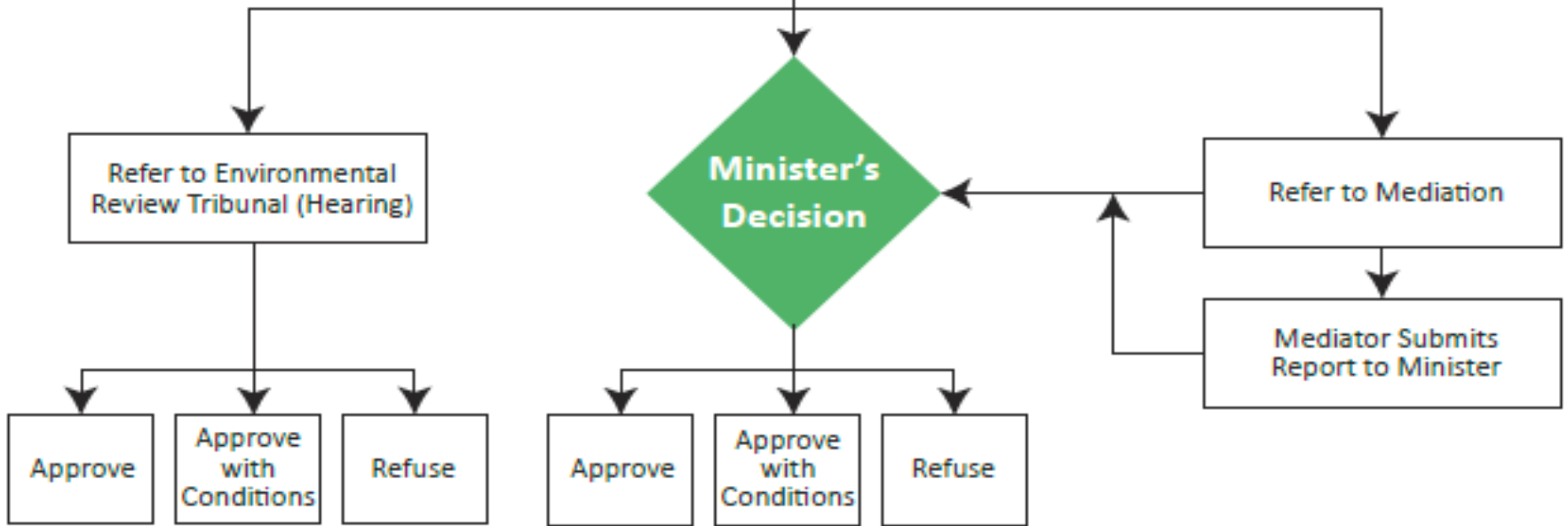
- New government policy on Environment set out in “A Made-in-Ontario Environment Plan”
 - *Reduce Organics to Landfill*
 - *Increase Diversion*
 - *Increase Community say in the establishment of new landfills*

Environmental Assessment

Consultation/ Preparation	<ul style="list-style-type: none"> Prepare and submit Environmental Assessment Report, in consultation with interested parties Typically requires at least a year of scientific studies (all seasons)
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Government & Public Review	<ul style="list-style-type: none"> Review by government experts and other interested parties Notice of completion of Ministry's review Government posts its expert review for public inspection
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Minister's Options



Source: 1. Code of Practice Preparing and Reviewing Environmental Assessments in Ontario
2. Walker Environmental Group

PROPOSED SOUTHWEST LANDFILL LOCATION



THE SOUTHWEST LANDFILL PROJECT

- Intended to provide future landfill capacity at the Carmeuse Lime (Canada) Ltd. (Carmeuse) site.
- Will handle solid, non-hazardous waste generated in the Province of Ontario.
- The site would accept up to 850,000 tonnes of waste per year (plus daily cover), a total of approximately 17 million tonnes over a 20 year operating period.

Activities undertaken by Ingersoll Technical Review Team During Environmental Assessment Preparation

- Field observations of Walker's fieldwork program.
- Attended and participate in public consultation meetings with JMCC, CLC, etc.
- Participated in external Technical Review Meetings on Walker's environmental assessment.
- Held internal Technical Review Team meetings to discuss technical issue of concern.
- Participated in ongoing liaison and strategic planning with the Town.
- Communicated with Walker

Activities of Ingersoll Technical Review Team During Environmental Assessment Preparation- Ecological Surveys

- Reviewed and commented on Walker's proposed sampling programs and methodologies for Ecological Surveys:
 - Arcadis reviewed and provided comments on natural environment surveys, including methodologies and proposed sampling locations
- Field observations of Walker's fieldwork program:
 - Arcadis observed electrofishing and data collection (recording of fish species, measurements)

Activities of Ingersoll Technical Review Team During Environmental Assessment Preparation

- Wrote to Ministry of Environment Conservation and Parks (MECP) Southwestern Region regarding Carmeuse application for an amended Permit to Take Water and requested additional documentation.
- Reviewed comments and documentation provided by MECP.
- Submitted follow-up letter to MECP with recommendation to include the proposed landfill in the evaluation of the amended Permit to Take Water.

Activities of Ingersoll Technical Review Team During Environmental Assessment Preparation

- Attended air sampling event undertaken by WEG air consultant
- Noted that there are 4 air monitoring stations located in 4 geographic locations around the proposed landfill site.
- Baseline analysis will require amalgamation of MECP and consultant data
- Some surprising results (Chloroform and Sulphur)
- Consultant sampling stations will be dismantled in Spring 2019

Activities of Ingersoll Technical Review Team During Environmental Assessment Preparation

- Attended meeting with WEG to assess the current status of project
 - New Schedule provided
 - Ground water results to be issued in February CLC meeting
 - Most field studies complete
 - Climate Change impact to be provided in EA documentation

KEY POINTS ARISING FROM PEER REVIEW OF WALKER'S TECHNICAL WORK PLANS

Environmental Assessment and Government Policy

- Previous Government had touted “Waste Free Ontario” to reduce amount of waste going to landfills.
- Emphasis was on increasing recycling and potentially banning organics from landfills.

KEY POINTS ARISING FROM PEER REVIEW OF WALKER'S TECHNICAL WORK PLANS (Cont'd)

Ground and Surface Water

- Sub-surface composition is complex and may not be easily defined.
- Landfill design (yet to be detailed) may not account for the sub-surface complexity and ultimately may allow leachate to migrate to surrounding wells.

Air and noise

- Not all potential air contaminants appear in the work plan.
- WEG does not account for accumulated odour that can be additive from non landfill sources.

KEY POINTS ARISING FROM PEER REVIEW OF WALKER'S TECHNICAL WORK PLANS (Cont'd)

Traffic Planning

- More details needed to assess impact of traffic on Town of Ingersoll.

Financial Impact

- WEG needs to assess impact of landfill on the whole town of Ingersoll, not immediate surrounding residences.

KEY POINTS ARISING FROM PEER REVIEW OF WALKER'S TECHNICAL WORK PLANS (Cont'd)

Cumulative Effects (Risk) Assessment

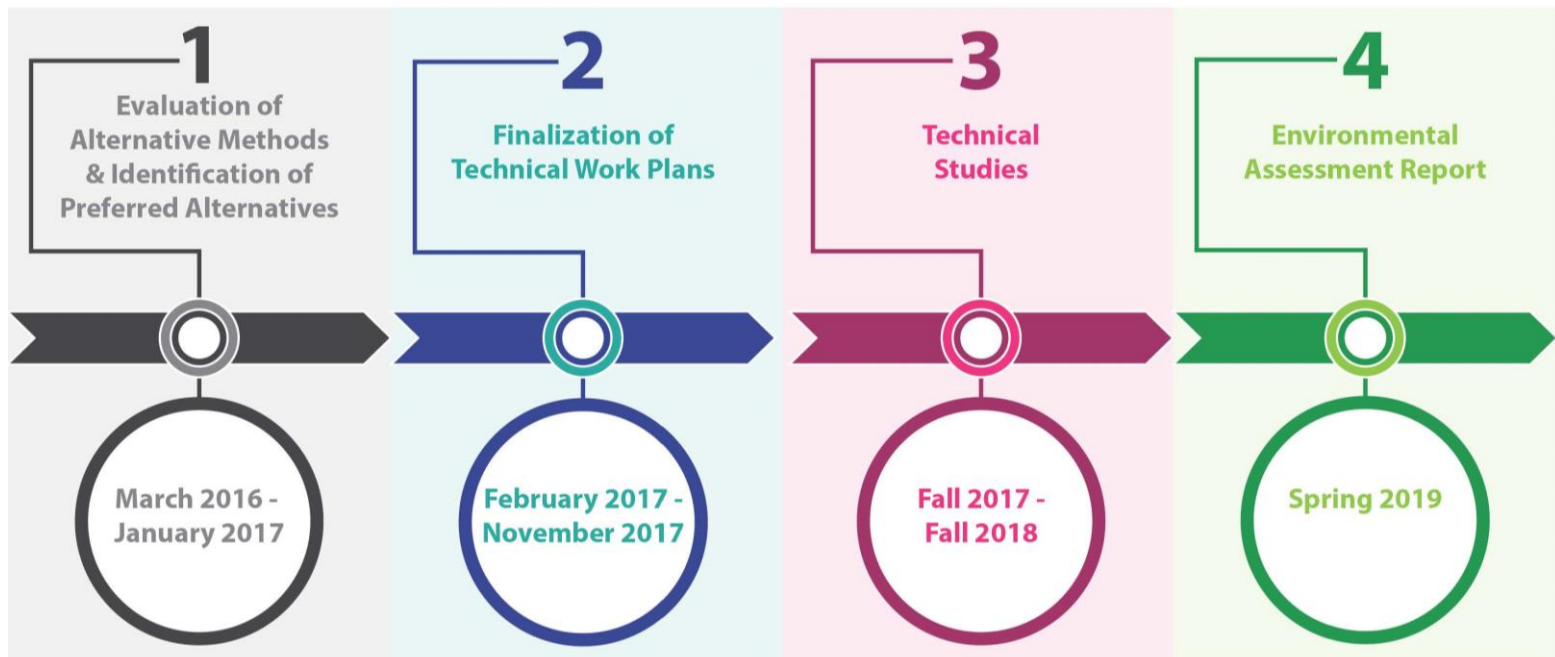
- WEG needs to include the cumulative impact of all surrounding sources (including Carmeuse).

Health and Ecology Assessment

- More details of sampling protocol and preliminary analysis needed to assess risk.

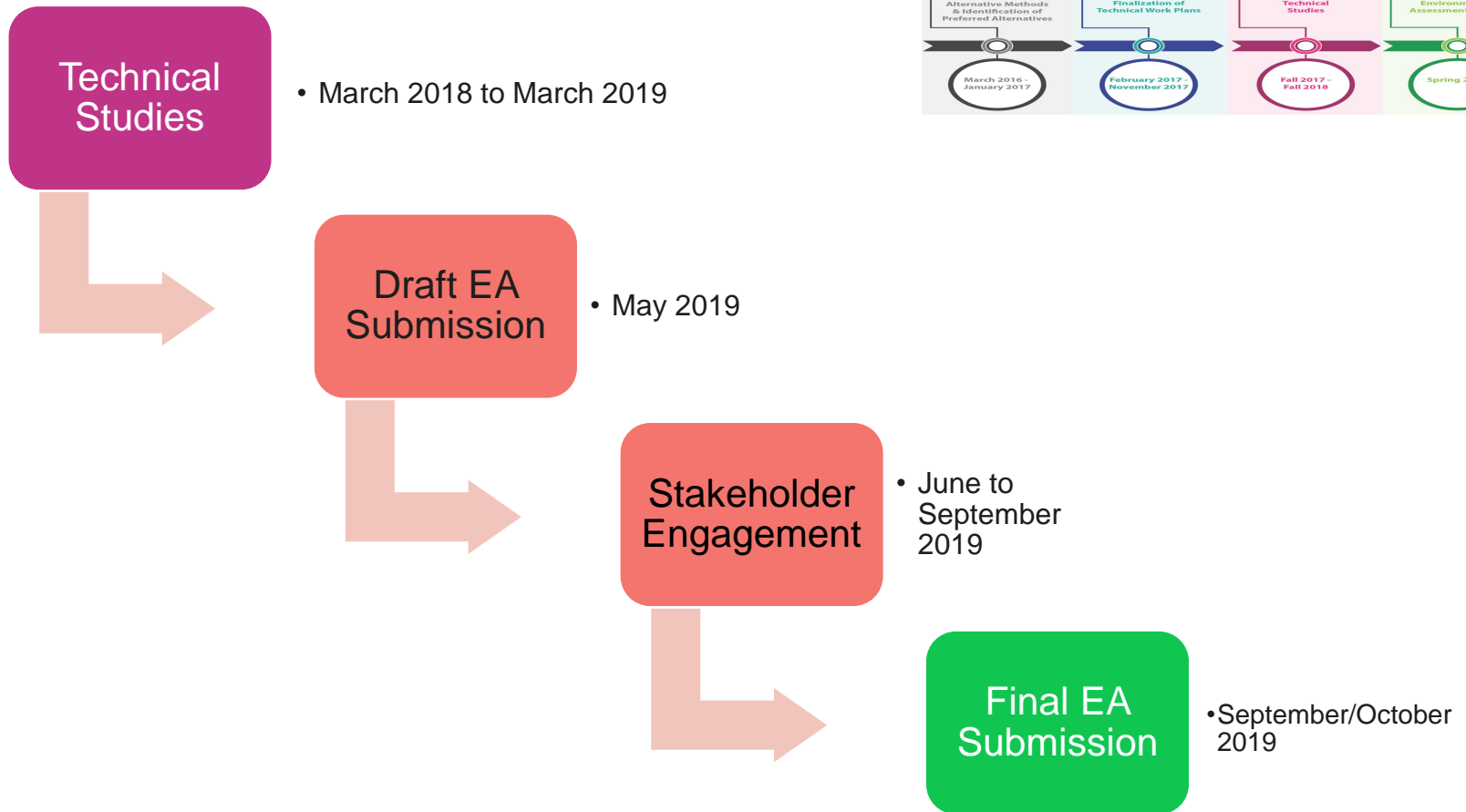
PHASE OF THE ENVIRONMENTAL ASSESSMENT

The following four key environmental assessment phases are identified by Walker:



Source: Walker Environmental Group

PHASE OF THE ENVIRONMENTAL ASSESSMENT – Revised Schedule



KEY POINTS TO BE ADDRESSED FROM DRAFT EA

- Surface and Ground Water
- Air and Noise
- Health and Safety
- Risk Assessment
- Ecology
- Landfill Design and Operations
- Leachate System Design and Operations
- Landfill Gas System Design and Operations
- Financial Impact of Landfills

Thank You



Department: Clerk's

Report Number: C-008-19

Council Meeting Date: February 11, 2019

Title: Council-Staff Relations Policy

Objective

To provide Council with a Council-staff Relations Policy for consideration, as required by the *Municipal Act, 2001*.

Background

Bill 68 – Modernizing Ontario's Municipal Legislation Act, 2017 received Royal Assent on May 30, 2017, amending the Municipal Act, 2001, the Municipal Conflict of Interest Act and other various Acts in relation to municipalities.

One of the provisions of Bill 68 is the requirement that a municipality adopt and maintain a policy with respect to "the relationship between members of council and the officers and employees of the municipality" S. 270 (1) 2.1. This policy requirement comes into force under the Municipal Act on March 1, 2019.

Analysis

Expected and acceptable conduct of Council and Council Committee members is established under Town of Ingersoll By-law 11-4646, Being a By-Law to establish a Code of Conduct for Members of Council, Local Boards, and Advisory Committees. Employee conduct is governed in part by the Town of Ingersoll's Anti-Violence and Harassment in the Workplace Policy and Program which establishes behavioural expectations and prohibitions. All Town employees, Council and Council Committee and Board members are responsible for abiding by the expectations established under the Town's Procedure by-Law, Human Rights Codes and the *Occupational Health and Safety Act*, specifically with respect to workplace violence and harassment.

The purpose of the attached policy is to establish a framework by which Council and staff interactions and relations shall be governed as required by the legislation. Although the above-mentioned policies and legislation do not explicitly address Council-staff relations as prescribed by Bill 68, they are considered to be the foundation upon which the Town of Ingersoll's Council-Staff Relations policy is developed.

Financial Implications

None

Interdepartmental Implications

If adopted, this report and policy shall be circulated to all staff to communicate expectations.

Recommendation

THAT staff report C-008-19 be received by the Council for the Town of Ingersoll as information.

AND THAT Council hereby adopt the attached Council-Staff Relations Policy.

Attachments

Council-Staff Relations Policy

Prepared by: Danielle Richard, Deputy Clerk
Reviewed by: Michael Graves, Director of Corporate Services
Approved by: William Tigert, CAO

Town of Ingersoll

Policies and Procedures

Policy: Council-Staff Relations
Approval Date: TBD, **Resolution:** TBD
Effective Date: Upon Council Approval

Purpose:

This policy establishes expectations concerning appropriate Council and staff interactions and is intended to provide a general framework to achieve productive working relationships.

This policy augments existing provincial laws, municipal policies, and by-laws that govern workplace conduct, and is not intended to restrict Council-staff relations but to ensure that interactions occur in an organized and respectful manner.

Legal Authority

Section 270 (1) 2.1 of the *Municipal Act*, 2001, S.O.2001,c. 25, as amended, provides that a municipality shall adopt and maintain a policy with respect to the relationship between members of council and the officers and employees of the municipality.

Policy Statement

Mutually respectful Council-staff relations and a clear understanding of roles and responsibilities are key features of effective municipal government and supports the Town's commitment to providing a respectful, tolerant and harassment-free workplace.

Roles and Responsibilities

The Council for the Town of Ingersoll and its administration have a common purpose and shared objectives, but perform different roles in pursuit of those objectives. Roles of each party are established below and in alignment with Section 224 of the *Municipal Act*.

Role of Members of Council

Members of Council shall:

- Work to advance the well-being and interests of the municipality and its constituents;
- Ensure policy and program development in alignment with those interests;
- Establish which services the municipality shall provide;

- Through the CAO, ensure that administrative policies, practices, procedures and controllership policies, practices, and procedures are in place to implement Council's decisions and direction;
- Maintain the financial integrity of the municipality;
- Conduct themselves and the affairs of the municipality in an open, equitable and transparent manner through proper processes.

Role of Staff:

- Implement Council's decisions and establish administrative practices and procedures to carry out those decisions; and
- Undertake research and provide advice to Council through timely reports and follow-up on inquiries concerning policies and programs of the municipality

It is understood that specific officers of the municipality such as the Chief Administrative Officer, Clerk, Treasurer, Fire Chief, and Chief Building Official are subject to specific legislative provisions under which the duties they perform and decisions they make are done so at an arm's length from Council.

Guidelines for Respectful Working Relationships

Guided by the Town's Procedure By-law, Code of Conduct and Anti-Workplace Violence, Harassment and Discrimination Policy, the *Human Rights Code* and *Occupational Health and Safety Act* it is expected that:

Members of Council shall:

- Perform their duties in accordance with the various statutes, by-laws, and policies concerning acceptable workplace conduct;
- Refrain from intervening in the day-to-day managerial and administrative aspects of the corporation;
- When advisable, request staff input and expertise prior to affecting a decision or providing direction on significant policy matters;
- Apprise relevant Department Heads through the CAO, of inquiries, concerns, and issues under their purview; soliciting input and expertise prior to committing the municipality to a resolution;
- Remain respectful of the fact that staff work for the Town as a body corporate and that they are charged with making recommendations that reflect their professional expertise and corporate perspective, without undue influence from any individual member or group of members of Council; and
- Acknowledge that any direction to staff needs to come from Council at a duly called meeting by a resolution passed in the majority and guided through the CAO.

Staff members shall:

- Perform their duties in accordance with the various statutes, by-laws, and policies concerning acceptable workplace conduct;
- Provide Council with a high quality of advice based on political neutrality and objectivity irrespective of party politics, the loyalties of persons in power, or personal opinions;
- Treat all members of Council equally and with respect;
- Undertake thorough research and present information and recommendations to Council that will aid in their decision-making process; and
- Establish the appropriate administrative policies, systems, structures, and internal controls to implement the goals and objectives of Council, and to manage implementation within the resources at their disposal.

Staff-Council Reporting Relationship

Members of Council are encouraged to liaise with appropriate staff to obtain advice and information on matters concerning the municipality after advising the CAO. However with the understanding that Council has one employee, the CAO, who is responsible for acting as the primary conduit through which formal Council direction to staff is to flow.

This means that under the direction of the CAO, staff has the responsibility and the authority to provide consultation, advice, and direction to Council and to implement Council approved policy.

Policy Monitoring and Contraventions

Concerns regarding possible contraventions to this policy will be handled as follows:

- Council concerns are to be directed to the CAO, or the Town's appointed Integrity Commissioner.
- Employee concerns are to be brought to the attention of the Chief Administrative Officer or the Town's appointed Integrity Commissioner.



Department: Clerk's

Report Number: C-009-19

Council Meeting Date: February 11, 2019

Title: Councillor Pregnancy and Parental Leaves

Objective

To provide Council with a Councillor Pregnancy and Parental Leave Policy for consideration, as required by the *Municipal Act, 2001*.

Background

Bill 68 – Modernizing Ontario's Municipal Legislation Act, 2017 received Royal Assent on May 30, 2017, amending the *Municipal Act, 2001*, the *Municipal Conflict of Interest Act* and other various Acts in relation to municipalities.

One of the provisions of Bill 68 is the requirement that a municipality adopt and maintain a policy with respect to "pregnancy leaves and parental leaves of members of Council" S. 270 (1) 8. This policy requirement comes into force under the *Municipal Act* on March 1, 2019.

Analysis

Section 259 (1.1) of the *Municipal Act*, provides that the office of a member of Council of a municipality shall not be declared vacant for an absence of twenty (20) weeks or less, if the absence is a result of the member's pregnancy, the birth of the member's child or the adoption of a child by the member.

The attached policy is intended to establish guidelines by which the absence of a Council member for Parental/Pregnancy leave purposes shall be managed.

Financial Implications

Financial implications are anticipated to be negligible and will be based on the Council member's decision to maintain his/her honorarium at 55% or forego the amount entirely for the duration of the absence of up to twenty consecutive weeks.

Interdepartmental Implications

None

Recommendation

THAT staff report C-009-19 be received by the Council for the Town of Ingersoll as information.

AND THAT Council hereby adopt the attached Councillor Pregnancy and Parental Leaves Policy.

Attachments

Councillor Pregnancy and Parental Leaves Policy.

Prepared by: Danielle Richard, Deputy Clerk
Reviewed by: Michael Graves, Director of Corporate Services
Approved by: William Tigert, CAO

Town of Ingersoll

Policies and Procedures

Policy: Councillor Pregnancy and Parental Leaves
Approval Date: TBD, **Resolution:** TBD
Effective Date: Upon Council Approval

Purpose:

This policy is intended to provide guidance to members of Council of the Town of Ingersoll who wish to take leave from their role as a result of the member's pregnancy, the birth of the member's child, or the adoption of a child by the member.

Legal Authority

Section 270 (1) 8 of the *Municipal Act*, 2001, S.O.2001,c. 25, as amended, provides that a municipality shall adopt and maintain a policy with respect to pregnancy leaves and parental leaves of members of Council.

Policy Statement

The Town of Ingersoll recognizes a member of Council's right to take a leave of absence from the role of Councillor as a result of the member's pregnancy, the birth of the member's child, or the adoption of a child by the member in accordance with requirements established under the *Municipal Act*, 2001.

Vacancies

Section 259 (1.1) provides a member of Council of a municipality may be absent from Council for twenty (20) consecutive weeks or less if the absence is a result of the member's pregnancy, the birth of the member's child, or the adoption of a child by the member. In such cases, the member of Council shall not be considered to have vacated his or her seat on Council.

Procedure

Pregnancy/Parental Leave for members of Council shall be guided by the following:

- A leave of absence for the purpose of pregnancy/parental leave does not require Council approval.
- A member of Council wishing to take pregnancy or parental leave is requested to provide his or her leave request in writing at least eight (8) weeks in advance of

the leave. If advance notice is not possible, the leave shall be granted regardless.

- Members shall be provided leave of up to twenty (20) consecutive weeks, during which the member's seat on Council cannot be declared vacant.
- A member of Council on Pregnancy and/or Parental Leave is entitled to receive up to 55% of their honorarium pay, or may forego the compensation entirely for the duration of the leave. Compensation decisions are at the sole discretion of the member, who is responsible for determining the financial implications of maintaining or foregoing the honorarium in relation to employment insurance maternity and parental leave benefits to which the member may be entitled.
- Members reserve the right to participate as a Member of Council at any time during the leave. In accordance with the Town's Procedure By-Law, members must attend a Council meeting in person to cast a vote and have it counted.
- Members are entitled to continue to receive all Council-related correspondence for the duration of the absence including agendas packages, emails, meeting invitations, etc.)
- Should the Councillor attend a meeting during the leave that fits the conventions and seminars policy and has been previously approved, they will be eligible for expenses under that policy.

Participation on Committees and Boards

Where necessary, Council may appoint an alternate member to attend boards and/or committee meetings while the Town-appointed member is on Pregnancy/Parental Leave. This appointment will be at the discretion of Council. The alternate member shall serve during the leave, and upon their return, the Councillor will have their board and/or committee appointments reinstated.

Quorum

Quorum shall not be impacted by a Council member's Parental and/or Pregnancy Leave.



Department: Clerk's

Report Number: C-010-19

Council Meeting Date: February 11, 2019

Title: BIA Board of Management

Objective

To appoint a Business Improvement Area (BIA) Board of Management.

Background

Section 204 of the Municipal Act states:

204 (1) A local municipality may designate an area as an improvement area and may establish a board of management,

(a) to oversee the improvement, beautification and maintenance of municipally-owned land, buildings and structures in the area beyond that provided at the expense of the municipality generally; and

(b) to promote the area as a business or shopping area. 2001, c. 25, s. 204 (1).

(3) A board of management shall be composed of,

(a) one or more directors appointed directly by the municipality; and

(b) the remaining directors selected by a vote of the membership of the improvement area and appointed by the municipality. 2001, c. 25, s. 204 (3).

Ingersoll By-law 80-3006 established the actual area of the BIA and By-law 80-3014 established the Board of Management which was subsequently amended by By-law 07-4346.

These by-laws established the board to be 12 members with one Councillor being appointed to the board.

Staff have sought interested board members from all BIA members.

The individuals that have asked to be appointed are listed below.

Analysis

The following members have applied:

<u>Applicant</u>	<u>Qualifying Address</u>	<u>Already a Member of Board</u>
Mark Erhardt	28 King Street East	No
Christopher Radford	134 Bond Street	No
Lisa Dube	Dwell Urban Boutique	No
Mike Bowman		Yes
Dom Riccuito		Yes
Sue Reinjtes		Yes
Cheryl Cole		Yes
Kathleen Young		Yes
Andrea Mulder		Yes
Lisa Janssen		Yes
Chantel Gabriel		Yes
Amanda Evely		Yes
Bob Mott		Yes
Steve Walker	67 King Street West	No

Due to the fact that we have received more applications than we have positions (14 applications for 11 spots). It is staff's suggestion that Council appoint their Council representative and advise the BIA to conduct an election for the remaining spots.

Staff have resources and can assist the BIA with conducting the election.

In regards to the Council representative appointment, staff point to the letter received from the current chair of the BIA requesting that Councillor Gord Lesser be appointed to the Board as the Council representative.

Council, of course, may take that advice and choose to appoint whomever they want.

Interdepartmental Implications

None

Financial Implications

None

Recommendation

THAT staff report C-010-19 be received by the Council for the Town of Ingersoll as information.

AND THAT Council appoints _____ as the Council representative to the BIA Board;

AND FURTHER THAT Council advises the BIA to conduct an election for the remainder of its appointments.

Attachments

Letter from Chair of BIA Re: Councillor Appointment

Prepared by: Michael Graves, Director of Corporate Services/Clerk-Deputy CAO

Approved by: William Tigert, Chief Administrative Officer



January 10, 2019

Mayor Ted Comiskey
130 Oxford Street, 2nd Floor
Ingersoll, ON
N5C 2V5

Re: Ingersoll Downtown BIA Board of Management Request

Mr. Mayor,

The Ingersoll Downtown BIA Board of Management requests Councillor Lesser be appointed as Council Representative of the BIA Board of Management for the 2019-2022 term.

Sincerely,

Kathleen Young
BIA President



Department: Clerk's

Report Number: C-011-19

Council Meeting Date: February 11, 2019

Title: Application for a variance to By-law 01-3989 (Maximum number of dogs)

Objective

To present Council with the necessary information to decide on a request for an exemption to By-law 01-3989 concerning the maximum number of dogs permitted to reside in any one dwelling unit or on any premises.

Background

Council has received a request from Chelsey Fennell, Matt Straw and Pam Murray (attached) requesting permission to allow an additional two dogs to reside on the property located at 116 Church Street. The applicants have only moved in temporarily as indicated in the request to save up to buy a new home.

Analysis

By-law 01-3989 at clause 3.1 states: "no person shall keep more than two dogs in any one dwelling unit or on any premises."

From time to time Council has approved exemption requests to clause 3.1 so long as the applicant agrees to enter into an agreement with the Town with the following conditions:

- That as each dog in excess of the two dog limit passes away no new dog shall be acquired and kept at the location;
- That in time there will be no more than two (2) dogs kept at this premise or any other premise in the Town of Ingersoll without permission of Council;
- That all other conditions of By-law No. 01-3989 be adhered to at all times.

If the applicant is willing to enter into an agreement, staff would recommend approval of the exemption request.

Interdepartmental Implications

None

Financial Implications

None

Recommendation

THAT staff report C-011-19 be received by the Council for the Town of Ingersoll as information.

AND THAT Council approves the exemption to By-law No. 01-3989 to allow four dogs temporarily on the premise of 116 Church Street, subject to the applicants, Chelsey Fennell, Matt Straw, and Pam Murray, entering into an agreement including the conditions detailed in this report.

Attachments

Request for Exemption by Chelsey Fennell, Matt Straw, and Pam Murray

Prepared by: Michael Graves, Director of Corporate Services, Clerk-Deputy CAO
Approved by: William Tigert, Chief Administrative Officer

Feb 5, 2019

To whom it may concern,

~~_____~~
Matt Straw
My name is Chelsey Fennell, my boyfriend and I moved in with my mother Pam Murray temporarily moved in to save up to buy our first home. I have 2 dogs and my mother has 2 dogs. Her oldest dog is 14 and won't be around much longer and she won't be replacing him. We are going to be keeping a close eye on the barking and will be outside with them at all times. They are up to date on all shots and are all fixed. I don't want to lose my dogs, they are like my children as I can not have my own children so losing them would break my heart. Once we have enough saved (under a year left) two dogs will be removed from this household. All dog licenses have been purchased. All dogs are friendly and well taken care of. They are all due for their rabie shots this year in September. All we ask is to keep the dogs we have and we give our word for everything mentioned above.

Thank - you .

Sincerely, Chelsey Fennell, Matt Straw, Pam Murray
Chelsey Fennell ~~Matt Straw~~ Pam Murray



Department: Community Services

Report Number: CS-003-19

Council Meeting Date: February 11, 2019

Title: Arena Ice Plant- Fernie BC Incident

Objective

To provide Council with information regarding the Fernie BC refrigeration plant incident and its potential ramifications.

Background

On October 17/2017 a tragic accident occurred at hockey/curling facility in Fernie BC where an ammonia leak in the refrigeration plant claimed the lives of three people (two City employees and a refrigeration mechanic). Following the accident, Technical Safety BC conducted an investigation and subsequent report which attached along with a video outlining the incident.

Analysis

We have been working with our contractor CIMCO refrigeration to ensure that we are ahead of the curve with any regulatory changes that will come as a result of the Fernie, BC incident. To date:

- We have completed a Life Cycle Plan and assessment of our refrigeration plant to ensure we meet standards. This was a key recommendation in the TSSA report. This helped us identify the life expectancy of our equipment. The Life Cycle Plan identifies that our condenser, a dehumidifier, and our electrical panel needs to be replaced as they have reached or are nearing the end of their lifecycles.
- Our chiller is approx. seven years away from its life expectancy. During our last TSSA inspection, it was recommended to have our chiller fully inspected within the next two years. The cost on that will be between \$5,000 - \$7,000

- We have developed a full maintenance plan with CIMCO Refrigeration for annual maintenance to ensure our equipment reaches its full life cycle and we don't have premature failure
- We have added a line in the budget to directly reflect refrigeration plant maintenance
- We will continue to work with the Fire Department to have new firefighters trained with our refrigeration contractor
- We have moved the ammonia sensor outside the plant room; added an alarm and auto dialer attached to ammonia alarm that will contact the manager and fire department in case of a leak and began maintenance in the refrigeration plant by overhauling a compressor

Financial Implications

Approx. \$194,500 to meet life cycle standards and chiller inspection

Recommendation

THAT Staff report CS-003-19 be received by the Council for the Town of Ingersoll as information.

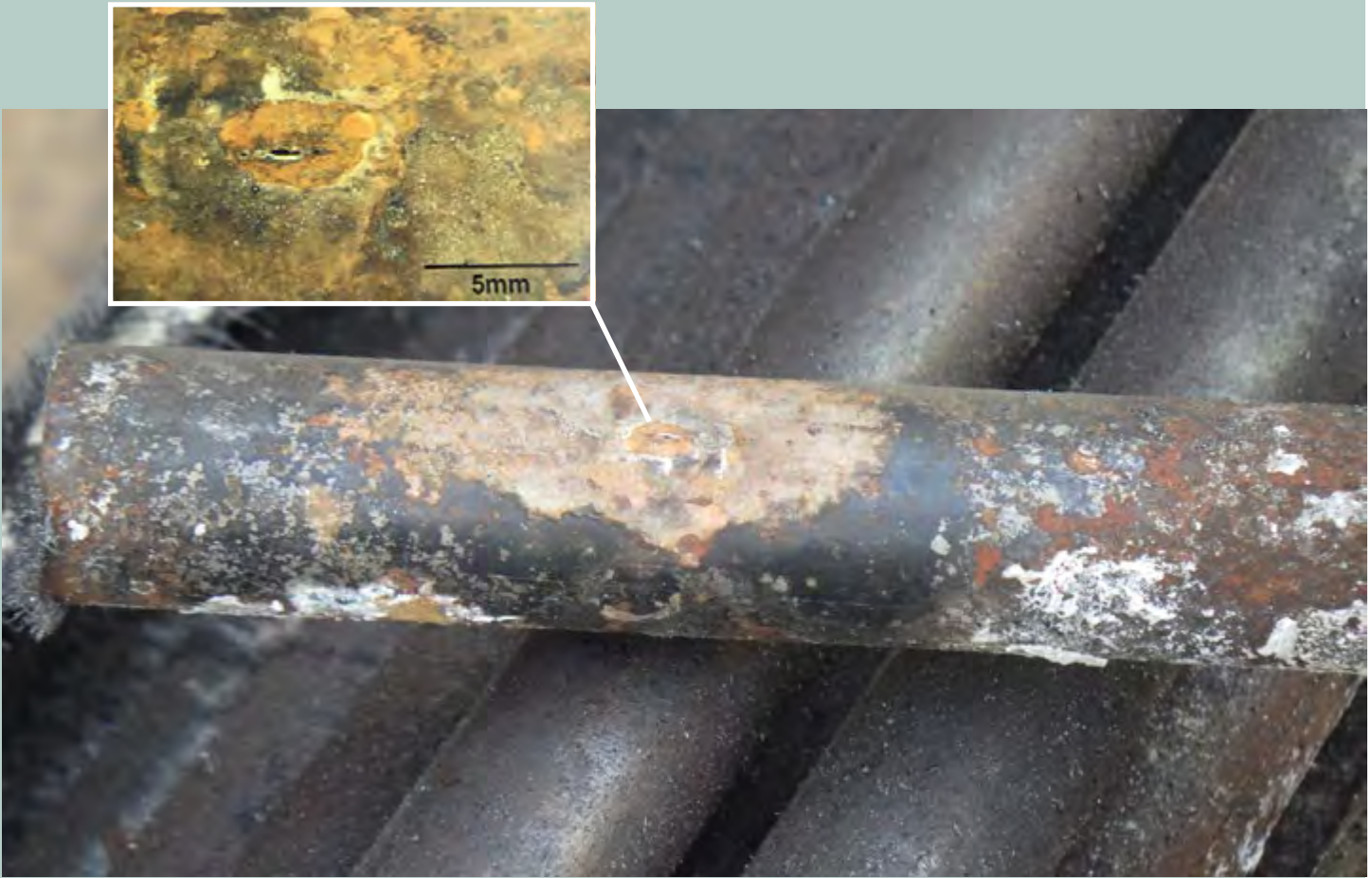
Attachments

Youtube Video - <https://www.youtube.com/watch?v=BBxzXKRSjsc>
Technical Safety BC Investigation Report

Prepared by: Joe Sym, Manager, Manager of Facility Operations
Approved by: Kyle Stefanovic, Director of Community Services
William Tigert, CAO



**TECHNICAL
SAFETY BC**



INVESTIGATION REPORT

AMMONIA RELEASE — FERNIE MEMORIAL ARENA

DATE OF INCIDENT: OCTOBER 17, 2017

TECHNICAL SAFETY BC INCIDENT INVESTIGATION

JURISDICTION AND ROLE

Technical Safety BC administers the *Safety Standards Act* (“Act”) on behalf of the Province of British Columbia¹. The *Act* and associated *Regulations* apply to the following products, operations and work associated with these products:

- (i) amusement devices;
- (ii) passenger ropeways;
- (iii) boilers and boiler systems;
- (iv) electrical equipment;
- (v) elevating devices and passenger conveyors;
- (vi) gas systems and equipment;
- (vii) pressure vessels;
- (viii) pressure piping;
- (ix) refrigeration systems and equipment; and
- (x) any other regulated product specified in the regulations.

The *Act* and Power Engineers, Boiler, Pressure Vessel and Refrigeration Safety Regulation (“*Regulation*”) applies in respect of pressure vessels, pressure piping systems, fittings, refrigeration equipment and refrigeration plants in BC within the identified scope of the *Act* and *Regulation*. The refrigeration system, associated work and management of this refrigeration equipment at the Fernie Memorial Arena are subject to the *Act* and *Regulation*.

Incidents involving products or work subject to the *Act* are required to be reported in accordance with Section 36 of the *Act*. Technical Safety BC investigates these incidents in accordance with Section 37 of the *Act* and may appoint persons to assist with an investigation.

The role of Technical Safety BC with respect to the investigation of incidents is to understand relationships between incidents, equipment and work that are subject to the *Act*. It is our aim to learn from these investigations what happened to inform efforts to prevent the recurrence of similar incidents. Often, these investigations are conducted in cooperation with other agencies including fire departments, WorkSafeBC, law enforcement officials, and the Coroners Service.

This investigation report is issued by a Provincial Safety Manager and published in accordance with the *Act*. This report does not address issues of enforcement action taken under the *Act*. Any regulatory enforcement or compliance activities arising from this incident will be documented separately.

¹ Some municipalities administer portions of the Safety Standards Act. See www.technicalafetybc.ca for details.

CONTENTS

- 4 Incident Overview & Site Description
- 5 Report Summary
- 7 Scope of Investigation
- 8 Investigation Findings I:
Failure of refrigeration
system equipment
- 17 Investigation Findings II:
Operational decisions that
contributed to the incident
- 28 Investigation Findings III:
Impact of inadequate ventilation
and discharge systems
- 34 Conclusions
- 35 Recommendations

LIST OF APPENDICES

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- A Engineering Analysis – Cold Dynamics Ltd.
- B Valve Positions – Brine and Ammonia Systems
- C Site Description and Scene Documentation
- D Ammonia Odour Map – Witness Reports
- E Laboratory Analysis Report – System Component Failure Evaluation
- F Curling System Brine Analysis Reports
- G Alarm Monitoring Company Activity Report – Fernie Memorial Arena
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- K Brine System Pipe Coupling – Manufacturer’s Catalogue Page

Operational decisions that contributed to the incident

- L Recommendations to Replace Curling Chiller in 2010 and 2011
- M Financial Analysis – Fernie Memorial Arena Capital Spending
- N Curling Chiller Replacement Planning Analysis
- O Employee Turnover Analysis – City of Fernie
- P Capital Spending Request – Curling Brine Chiller – August 17, 2017
– City of Fernie
- Q Fernie Memorial Arena Employee Certification and Staffing Summary
- R Organization Chart – City of Fernie (December 31, 2016)
- S Director of Leisure Services Job Description – City of Fernie
- T Leaking Chiller Communications Summary
- U Training and Qualification Review of Persons Involved with
Refrigeration Systems
- V Arena Surveys: Maintenance Programs and Leaking Chillers
- W Cimco Web Article – Brine Maintenance for Rinks

Ventilation and Emergency Discharge Systems

- X CSA B52-13 Code Rules Relating to Doors and Ventilation
- Y CSA B52-13 Code Rules Relating to Emergency Discharge

INCIDENT OVERVIEW

On October 16, 2017, the curling brine chiller at the Fernie Memorial Arena was put back into operation after a seasonal shutdown. During the shutdown and seasonal maintenance, ammonia had been detected in the curling brine system, indicating that the curling brine chiller was leaking.

At 3:53 a.m. on October 17, 2017, an ammonia alarm in the arena's mechanical room was triggered and the system was shut down. Between 9:15 a.m. and 9:38 a.m., rising pressure contained within the curling brine system led to the separation of a pipe coupling in the mechanical room. Upon separation of the coupling, an estimated 9 lb. of ammonia was rapidly released into the room followed by additional ammonia from the system. The atmosphere in the mechanical room may have reached or exceeded concentrations of 20,000 parts per million (ppm) of ammonia.

Ammonia odour was reported from nearby areas of the community between 9:40 a.m. and 1:20 p.m.. At 12:50 p.m., an electrician discovered a worker in the mechanical room, called 911, removed the person, and performed CPR until the arrival of the fire department.

A total of three people were found deceased in the mechanical room: the director of leisure services, the refrigeration operator, and a refrigeration mechanic.

Responders opened the emergency discharge valve and pressed the emergency stop for the ammonia system located on the exterior wall of the arena at 1:50 p.m.. Opening the discharge valve resulted in an estimated initial release of 55 lb. of ammonia into the atmosphere with approximately 632 lb. of ammonia from the system being slowly released during the subsequent days.

Due to the three fatalities, the ammonia release and the unknown amount of ammonia remaining in the arena on the day of the incident, the City of Fernie issued a local state of emergency and evacuated approximately 55 homes and 95 residents from the surrounding area. The evacuation order remained until October 22, 2017 and the local state of emergency remained in effect until October 24, 2017.

SITE DESCRIPTION

The Fernie Memorial Arena incorporated one refrigeration system that provided cooling for two coolant systems; one cooling the arena floor, and the other cooling the curling rink floor. The refrigerant used was ammonia and the coolant in both systems was a calcium chloride brine solution. Heat was exchanged between the brine systems and liquid ammonia within two-pass shell-and-tube heat exchangers, referred to as chillers. Details and diagrams of the facility and components related to the incident can be found in Appendix C.

The refrigeration system at the Fernie Memorial Arena had all of the operating permits required by Technical Safety BC at the time of the incident. There were no outstanding non-compliances from past inspections by Technical Safety BC that occurred in 2007, 2010, 2011, 2012 and 2014. Employees of the City of Fernie reported to have been working on or with the refrigeration system and their maintenance contractor were assessed to have met the training, qualification, and staffing requirements under the Act.

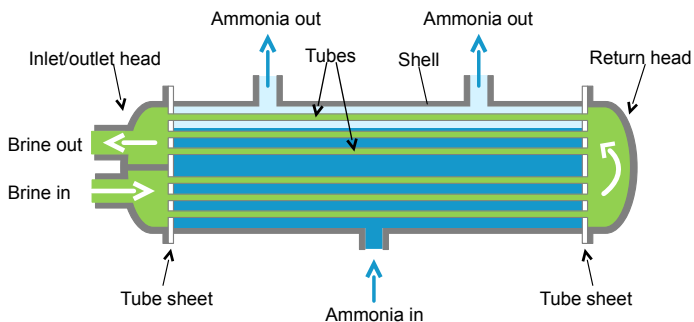


Figure 1: Generic diagram of a two-pass flooded chiller similar to that used at the Fernie Memorial Arena.

SUMMARY

On October 17, 2017 a rapid release of ammonia occurred within the mechanical room at the Fernie Memorial Arena and resulted in estimated concentrations of ammonia exceeding 20,000 ppm. Three people were in the room at the time of the release and were found deceased. The incident resulted in a local state of emergency for the community and an evacuation of the area around the arena.

Following the incident, Technical Safety BC conducted an investigation to determine factors that contributed to the ammonia release. The objective of the investigation was to identify causes and contributing factors to inform an understanding and management of safety risks associated with refrigeration systems.

The investigation identified three areas where evidence indicates causal and contributing factors leading to the incident and the subsequent impact to the arena and surrounding community:

- I. Failure of refrigeration system equipment
- II. Operational decisions that contributed to the incident
- III. Impact of inadequate ventilation and discharge systems following the incident

I. FAILURE OF REFRIGERATION SYSTEM EQUIPMENT

The investigation found that the ammonia release was initiated by a small hole within the curling system brine chiller caused by corrosion pitting at a carbon-steel tube welded seam. The corrosion process typically progresses with the operational use and age of equipment and can accelerate in areas containing defects that promote pitting. An estimated typical operational life-cycle of 20-25 years was identified for this type of chiller which was manufactured 31 years prior to the incident. The investigation did not find documentation indicating the exact start date of active service for the chiller.

Ammonia was detected within the brine system during maintenance and brine testing conducted as part of routine shut down procedures at the conclusion of the 2016/2017 operating season. After a summer shut down period, the curling refrigeration system was re-started on October 16, 2017. Ammonia released through the brine system led to an ammonia alarm at 3:53 a.m. on October 17, 2017.

In response to the ammonia leak, the brine system and curling chiller were isolated and the refrigeration and brine system were shut down. This impeded brine expansion and ventilation, as ammonia continued to leak into the brine over a five hour period. As the leak continued, the concentration of ammonia would have become higher close to the chiller and the hole in the tube. The likely effect within the brine system near the chiller was: an ammonia saturated volume of brine; a temperature increase from chemical reaction and heat absorption from the room; elevated pressure within the brine system and chiller; and a displaced volume of brine from ammonia being added to the saturated solution.

A brine system pipe segment was joined at two locations near the chiller by pipe couplings that were not supported to resist pipe movement from pressure or mechanically applied forces. The rising pressure within the brine system eventually exceeded the strength of the joint and one of the couplings separated. This separation suddenly depressurized the brine system and caused the ammonia in the system to rapidly expand, propelling the pipe contents into the room. As ammonia was released, it quickly expanded within the room, reaching estimated concentrations over 20,000 ppm.

II. OPERATIONAL DECISIONS THAT CONTRIBUTED TO THE INCIDENT

In October 2010, seven years prior to the incident, the City of Fernie received a recommendation from their maintenance contractor to replace the curling system brine chiller due to its age. Analysis of evidence gathered during the investigation identified a series of key decisions during this seven year period that contributed to the incident.

Potential influences of these decisions were identified, including:

- A. facility management and organizational priorities;
- B. failure to include safety risk criteria from aging infrastructure risk assessment;
- C. operational management structure;
- D. employee capacity and turnover;
- E. incomplete maintenance planning; and
- F. an industry practice of run-to-failure or run-past-failure for brine chillers.

The City of Fernie initially scheduled funding to replace the curling brine chiller for 2013. This funding was deferred to 2014 and then deleted from further financial planning. At the end of the 2016/2017 operating season, an ammonia leak was detected in the curling system, indicating a potential failure of the chiller. A decision was made to monitor the leaking chiller in the summer of 2017, followed by a decision to put the leaking chiller back into operation on October 16, 2017. Available evidence did not indicate that there was an awareness of any safety risk associated with the continued operation of the chiller by any parties involved.

The decision to operate the leaking chiller is pivotal in the development of the incident. Once the leaking chiller was put back into operation, additional actions and decisions were a response to cascading failures and were beyond the scope of training and situational awareness of those involved.

III. IMPACT OF INADEQUATE VENTILATION AND DISCHARGE SYSTEMS

In addition to analysis of the cause, the investigation also evaluated the role of the ammonia detection, ventilation and discharge systems following the ammonia release. This analysis determined the ventilation system could not have prevented the large concentration of ammonia within the room, and that it may have contributed to the spread of ammonia to other areas of the arena. It was also determined that the deployment and configuration of the emergency discharge system introduced risk while not reducing the amount of ammonia released into the mechanical room.

The investigation found that the configuration and capacity of the ventilation system could not have prevented extremely high levels of ammonia from accumulating within the mechanical room due to the rate of ammonia release. Additionally, the fan belt for the leak/rupture fan was worn and the location of this fan was such that ventilation performance was inefficient; extending the period of time required to reduce the ammonia concentration within the room following the leak.

Location of the fans in a recessed area of the roof also prevented exhausted air from reaching the outside airstream and may have directed exhausted ammonia toward air inlets in the arena building.

This may have contributed to the ammonia concentration of 400 ppm measured in the arena lobby hours after the incident. It is also possible that ammonia detected in the lobby may have escaped the machine room through a gap beneath the door to the vestibule and an unsealed door between the vestibule and the public area of the arena.

Following the incident, first responders opened the emergency discharge valve which released ammonia into the atmosphere, contributing to the declaration of a local state of emergency and the evacuation of 95 residents from 55 homes near the arena. Examination of the system configuration and condition determined that the release of ammonia via the emergency discharge valve did not reduce the risk of ammonia exposure within the mechanical room. Further examination of pipe routing and system requirements concluded that the arena's emergency discharge system introduced additional exposure risk.

○ Recommendations

Based on the findings of the investigation, Technical Safety BC made 18 recommendations to improve management of safety risks related to refrigeration systems. These recommendations aimed at arena owners, maintenance contractors, training providers, local governments, and the Canadian Standards Association appear at the conclusion of the report and are published on Technical Safety BC's website at technicalafetybc.ca.

SCOPE OF INVESTIGATION

The discussion and conclusions in this report are based upon the evidence presented and available at the time of Technical Safety BC's investigation, conducted between October 2017 and June 2018. The investigation sought to understand both causal and contributing factors that led to the ammonia release. Factors subject to the *Act* and *Regulation* that contributed to the impact to the area and community following the release were also investigated. This scope is graphically represented in the diagram below (Figure 2) which depicts both pre-incident and post-incident variables.

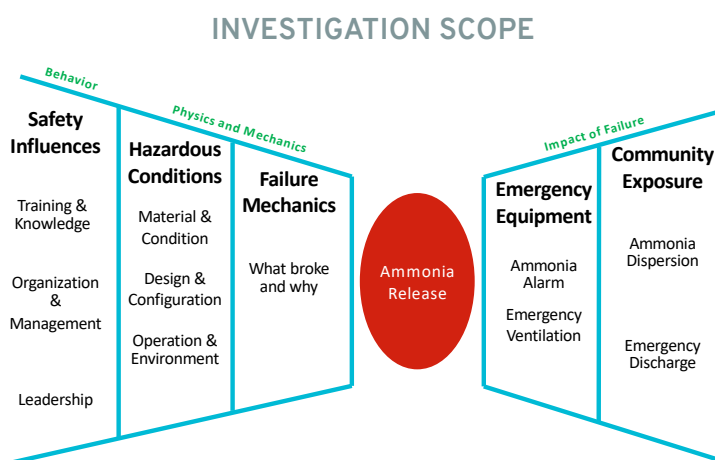


Figure 2: Technical Safety BC's investigation scope depicting the relationship of factors to the incident (ammonia release). Pre-incident contributing factors are represented to the left of the incident, and post-incident factors to the right.

The purpose of Technical Safety BC's investigation was to understand the causes and contributing factors that led to the incident and its impact. Technical Safety BC's investigation aims to inform prevention to reduce the risk of an incident of this nature recurring in the future. Sections I and II of this report provide analysis of the technical and operational conditions that led to the incident. Section III addresses additional findings of the investigation related to the function of incident mitigation systems, specifically the ventilation system and the emergency discharge system.

The scope of activity undertaken during the investigation included:

- documentation of the scene;
- examination of log books, manuals and procedures;
- integrity inspections, tests and analyses of refrigeration system equipment;
- operational tests of the ammonia detection and ventilation systems;
- laboratory analyses of the curling brine chiller, brine system pipe couplings and valves;
- analysis and simulation of ammonia release and dispersion;
- interviews of current and past City of Fernie employees and maintenance contractors;
- examination of email correspondence relating to the Fernie Memorial Arena;
- examination of budget and financial management between 2010 and the incident date;
- examination of strategic planning materials related to the arena and asset management;
- examination of arena work, inspections and service orders between 2010 and the incident date;
- evaluation of the organizational structure, turnover and management incentives at the City of Fernie;
- examination of industry asset management planning materials;
- evaluation of qualifications and training materials for refrigeration industry workers; and
- benchmarking of maintenance practices and industry behaviours at other arenas and service providers.

INVESTIGATION FINDINGS I

FAILURE OF REFRIGERATION SYSTEM EQUIPMENT

○ SUMMARY

Ammonia was detected to have leaked into the curling brine system during the 2016/2017 operating season at the Fernie Memorial Arena. Examination of the curling brine chiller after the incident identified the source of the leak as a carbon-steel tube failure within the curling system brine chiller. The failed tube showed evidence of corrosion pitting along the inner tube walls with accelerated pitting on an electric resistance weld line due to weld line fusion defects. A corrosion penetration occurred at a weld location resulting in a hole measuring approximately 2.2 mm x 0.2 mm with potential adjacent smaller holes along the same weld line.

The potential for corrosion in this type of system results from the chemical reactions between the calcium chloride brine solution and the carbon steel welded tubes. Brine systems of this type are also subject to periodic air ingress that can promote corrosion. Removal of this trapped air from the system is part of regular operation and maintenance. Evidence indicates that a corrosion inhibitor (brinehib) was being added periodically to the brine solution to slow the corrosion process within the system.

Corrosion penetration is one type of wear-out failure risk that can increase with the length of service or age of equipment and become accelerated at some defect areas. Vessels in similar service conditions are generally considered to have a useful life of 20-25 years, although there are many factors that influence how long a vessel might remain serviceable. The curling chiller was manufactured 31 years prior to its failure in 2017. The investigation did not discover documentation indicating the exact date the chiller was put into active service at the facility.

Detection of a curling chiller ammonia leak during the 2016/17 operating season first occurred during seasonal shutdown in April/May of 2017. The curling system remained shut down through the summer months and was re-started on October 16, 2017. Hours after starting the curling system, ammonia that leaked into the brine began to accumulate into the mechanical room through the brine expansion tank. At 3:53 a.m. on October 17, 2017, an ammonia alarm was triggered within the mechanical room when a concentration

of 100 ppm was detected. Brine had also leaked into the ammonia system and was detected in the compressor oil.

In response to the ammonia leak, the brine expansion tank and curling chiller were isolated. This isolation impeded brine expansion while isolating liquid ammonia within the leaking chiller. The brine system was shut down and valves were closed at the pump, inhibiting absorption of the leaking ammonia throughout the entire brine system volume. In response to the brine leaking into the ammonia system, a service call was arranged for a mechanic to perform an oil change that morning.

As ammonia continued to leak into the brine, the brine nearest the leak likely reached ammonia saturation concentrations. The likely effects within the brine system near and within the chiller were:

- an ammonia saturated volume of brine;
- a temperature increase;
- a pressure rise within the brine system and chiller; and
- a displaced volume of brine from ammonia being added to the saturated solution.

A brine system pipe segment near the curling chiller was joined at two locations by pipe couplings. These joints were not supported to resist movement from pipe loading due to pressure or mechanical forces. The rising pressure within the brine system eventually exceeded the strength of the joint and one of the coupling joints separated.

Once the coupling separated, the brine system piping suddenly depressurized and the ammonia within the solution and piping rapidly expanded. The contents of the pipe were propelled out by the rapidly expanding ammonia. The released ammonia quickly expanded within the room, reaching estimated concentrations above 20,000 ppm within the mechanical room.

The Fernie Memorial Arena mechanical room scene is documented in photos in Appendix C for reference. An itemized system schematic is provided in Figure 3.

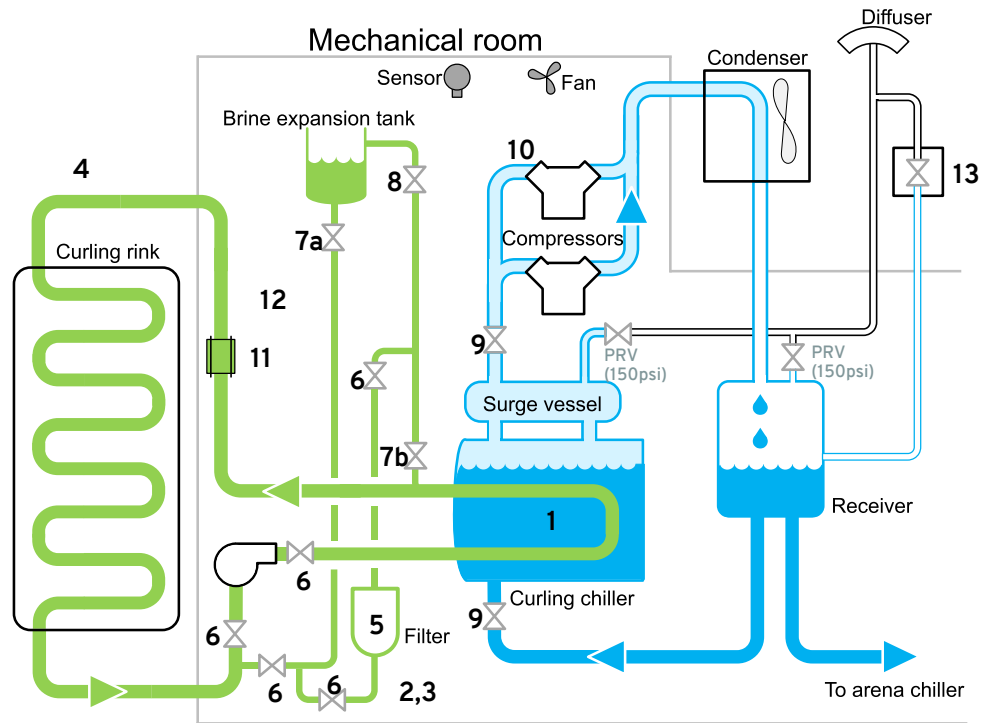


Figure 3: Schematic of the Fernie Memorial Arena curling refrigeration system. Numbers identified correspond to the items and descriptions in the Table 1 below.

Reference Table for Numbered Items in Figure 3 – Fernie Memorial Arena Schematic

#	ITEM DESCRIPTION & FINDING	#	ITEM DESCRIPTION & FINDING
1	Curling Brine Chiller – One 2.2 mm x 0.2 mm hole found in an upper tube along a weld seam.	7a	Valve found in OPEN position
2	Brine analysis results – prior to incident: (sample locations indicated as item 2) 0 ppm ammonia – Jan 2016 3,320 ppm ammonia – May 2017 1,830 ppm ammonia – Aug 2017	7b	Valve found failed in OPEN position
		8	Valve concluded to be effectively CLOSED . A very small opening may have facilitated some leakage, while pressure relief was impeded.
3	Brine analysis results – post-incident: (sample locations indicated as item 3) 113,400 ppm ammonia measured on Oct 20 2017	9	Ammonia system valves found CLOSED , isolating an estimated 90 lb. ammonia in chiller
		10	Compressors contaminated – salt deposits found indicate brine leaking from chiller
4	Brine analysis results – post-incident: (sample locations indicated as item 4) 5,395 ppm ammonia measured on Oct 23 2017	11	Separated brine system coupling. Pipe segment not supported for pressure loading
5	Brine filter changed April 13, 2017 – log book notes strong smell of ammonia. Filter valve found plugged and filter element clean	12	Brine spray in mechanical room
6	Brine system valves found CLOSED	13	Emergency discharge valve (firebox) - OPEN

Table 1: Items and descriptions as referenced from Figure 3 – Curling Refrigeration System Schematic. Item numbers (#) correspond to the components and system locations in the schematic, Figure 3.

○ FINDINGS RELATED TO THE CURLING BRINE CHILLER

Multiple potential sources of an ammonia leak were examined and tested. The curling brine chiller was determined to be the only source of ammonia that could have leaked into the room. This conclusion was determined based on several factors:

- Leak tests and visual inspections of all ammonia system piping and equipment did not reveal any leaks other than within the curling system chiller.
- Brine analysis reports indicated the curling system chiller was leaking prior to the incident.
- Following ventilation of the room, the only source of ammonia detected to be entering the room was measured at the separated curling brine system coupling.
- Higher ammonia readings were detected at the separated brine system pipe connected to the chiller.
- The arena system brine analysis did not indicate an ammonia leak from the arena chiller.

When the chiller heads were removed in the mechanical room in January 2018, they revealed the following:

- Tubes and tube sheets appeared corroded and contaminated.
- Lower tube contamination was dark and oily in appearance.
- Contamination was soluble in water.
- Ultrasonic measurement detected one leaking tube (row 2, tube 3).
- The identified leaking tube was noticeably less contaminated than other tubes.



Photo 1: Curling chiller opened showing contamination. The leaking upper tube is identified by the white arrow – second row, third tube from the right side of the photo.

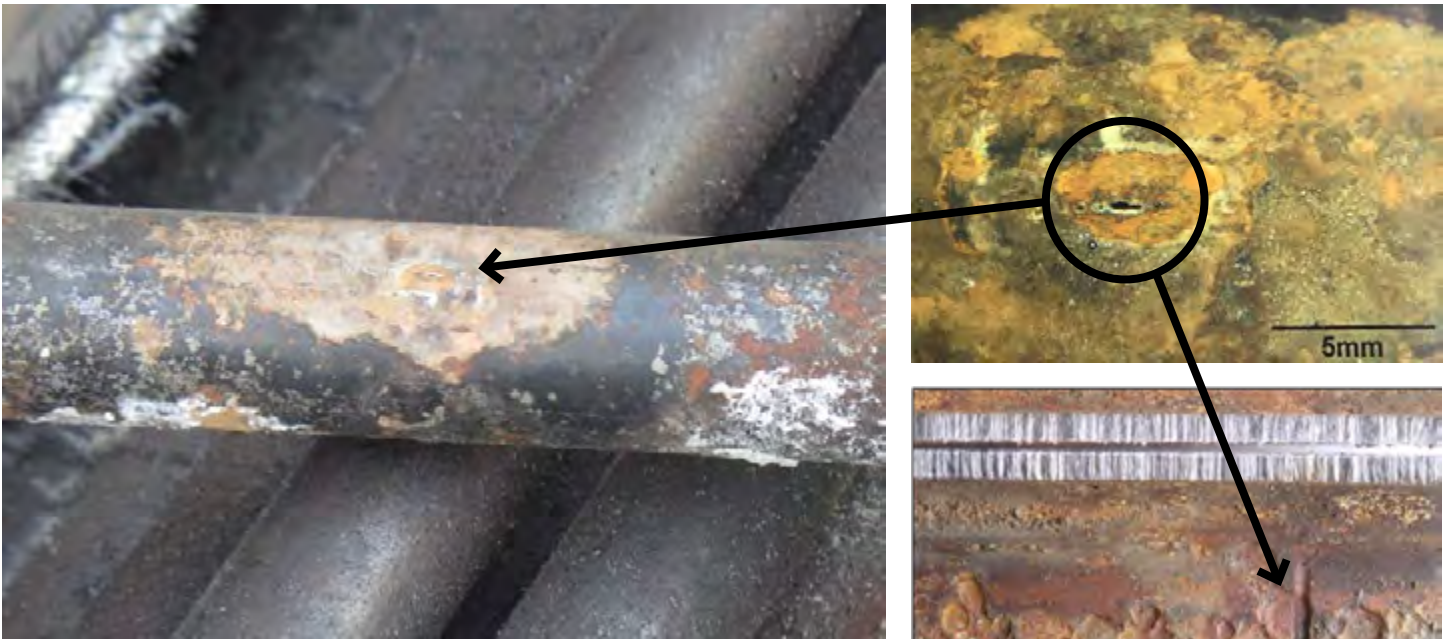


Photo 2 (above): outside of failed tube showing hole and corrosion due to brine spray.

Photo 3 (right-upper): close-up of hole from outside surface of tube.

Photo 4 (right-lower): close-up of hole from inside surface of tube showing pitting corrosion and line of smaller pits along weld line (Appendix E).

Destructive testing and laboratory analysis of the chiller was completed and included in Appendix E. A leak check of each tube confirmed only the one identified tube was leaking. The failed tube showed evidence of corrosion pitting along the inner tube walls with selective pitting on an electric resistance weld (ERW) line. The tube ERW weld lines were found to contain fusion defects resulting from the welding process that increased the potential for corrosion in unfused areas (Appendix E). A corrosion penetration occurred on the ERW weld seam resulting with a hole measuring approximately 2.2 mm x 0.2 mm. Adjacent smaller pits along the same ERW weld line were identified that may have penetrated the tube wall.

○ FINDINGS RELATED TO THE DETECTION OF AMMONIA IN THE CURLING SYSTEM BRINE

High ammonia levels were detected within the curling system brine solution. It is likely that at the time of the incident, the ammonia concentration within the brine closer to the leak within the chiller was much higher. Following the incident, a sample within the mechanical room close to the chiller detected 113,400 ppm ammonia, while a sample further from the chiller, outside of the mechanical room measured 5,395 ppm ammonia.

As part of the annual shut-down of the facility’s refrigeration system, the maintenance contractor took samples and coordinated brine analysis to monitor for a number of items, including the presence of ammonia. Ammonia concentrations measured during this time were as follows:

- January 2016 – No ammonia was detected in the sample.
- April 13, 2017 – during interviews, city employees stated that there was an ammonia smell from the brine. The maintenance log also recorded “a strong smell of ammonia in the curling rink filter” following a filter cleaning task.
- May 2017 – 3,320 ppm ammonia detected in a sample and a recommendation was made by the maintenance contractor to monitor and take another sample.
- August 2017 – 1,830 ppm ammonia detected in a sample. The reduced concentration is likely due to off-gassing throughout the summer months while the brine sat idle in the system. During shutdown periods the liquid ammonia is pumped out of the chiller shell side with minimum vapour remaining.

Results from the May 2017 brine sample analysis with a recommendation by the maintenance contractor to monitor was found within the mechanical room (Appendix C). The brine analyses conducted indicate the curling chiller had begun to leak ammonia into the curling system brine during the 2016/2017 operating season.

○ FINDINGS RELATED TO THE VALVE POSITIONS

The valve positions of the ammonia and brine systems were recorded prior to any manipulation for hazardous materials removal. These valve positions, documented in Appendix B and Figure 4, record those positions immediately following the incident. An analysis of the timing for isolation and system shutdown (Investigation Findings II) concludes that these valve positions, with the exception of the closed valves at compressor #1, likely represent how the system was configured after the shutdown at 4:30 a.m. on October 17, 2017.

This configuration isolated an estimated 90 lb. of ammonia within the chiller (Appendix A) and inhibited brine system venting and pressure relief through the expansion tank.



Photo 5: Brine expansion tanks – closed valve positions as found after incident shown in photo insets. Main photo taken after hazardous material removal.

An inlet valve to the curling system brine expansion tank was found slightly cocked, as shown in the upper inset of Photo 5. The valve handle had been re-installed in a flipped condition allowing for a different orientation and range of motion. Lab analysis (Appendix E) estimated the handle angle at 10 degrees from perpendicular. Radiography and leak testing to determine if the valve was fully closed or permitting free flow (unplugged) was inconclusive. An exemplar valve was configured per the as-found valve and suggests this valve may not have been completely closed. In such an ‘almost closed’ and unplugged configuration, this valve may have facilitated some leakage while impeding pressure relief from brine expansion or displacement. This valve is concluded to be effectively closed but

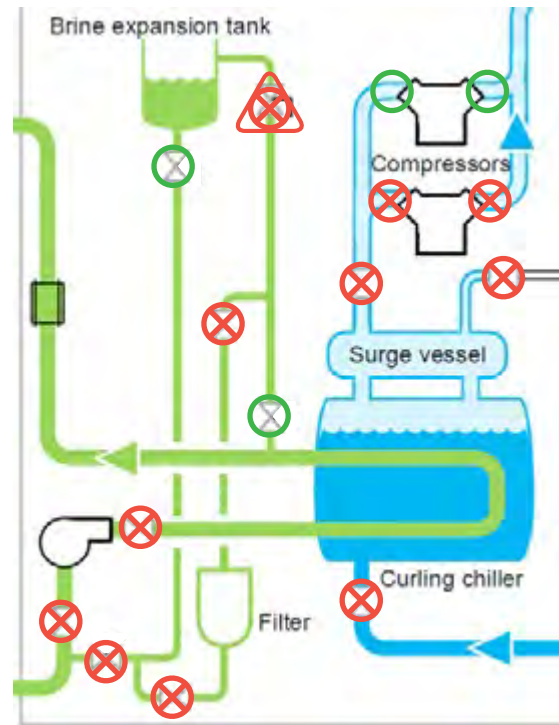


Figure 4: Valve positions found resulted with liquid ammonia contained in the leaking chiller and no pressure relief in the brine system.



may have contributed to a small leakage of ammonia or brine as the brine system pressurized.

The log of ammonia alarms recorded by the alarm monitoring company for the Fernie Memorial Arena (Appendix G) indicates a number of ammonia alarms in the morning leading up to the incident. It is reportedly common for ammonia alarms to be triggered while work on a refrigeration system is being conducted and refrigeration mechanics reported it is common for those alarms to be disregarded. These alarms could have been triggered from ammonia escaping at the brine expansion tank, brine system coupling locations or as compressor #1 was being prepared for ammonia purging in anticipation of the upcoming oil change.

○ FINDINGS RELATED TO BRINE CONTAMINATION WITHIN THE COMPRESSORS

In addition to the ammonia leaking into the brine system, brine was also leaking into the ammonia system through the leaking chiller tube.

The compressor oil was identified in the maintenance log on October 16, 2017 as being milky. Following the 3:53 a.m. alarm and subsequent system shutdown on October 17, 2017, the maintenance contractor was requested to dispatch a mechanic to get the refrigeration system running for the arena system and to perform

oil changes on the compressors due to the visual appearance and level of the oil.

Oil with a cloudy or milky appearance is identified as an indication of a water/brine contamination. The compressor and cylinder heads were removed post incident and inspected which revealed the presence of salt deposits most likely from brine contamination of the ammonia.



Photo 6: Compressor #2 (#1 similar) showing salt crystal build-up on lower compressor cylinder heads, upper heads were clean.



Photo 7: Build-up of salt crystals from brine around lower compressor cylinder heads of compressors #1 and #2.

○ FINDINGS RELATED TO THE SEPARATED BRINE SYSTEM COUPLING

Rising pressure from the ammonia leak into the isolated brine system exceeded the strength of a coupling joint in the brine system piping located near the curling chiller. The separated joint relieved the pressure, which resulted in rapid release and expansion of the ammonia within the brine system and solution.

As shown in Figure 5, a segment of the brine system piping was connected by two in-line water system couplings. One coupling was oriented vertically while the other horizontally. The pipe segment weight was supported on a wooden block at one location. There was no support for either longitudinal or torsional loading.

The horizontal coupling was found separated as shown in Figure 5 and Photo 8.

As part of the investigation, a test was conducted to evaluate the pressure required to separate a similar pipe coupling. A new exemplar coupling was installed per the manufacturer's specifications onto 4-inch diameter piping similar to that used at the Fernie Memorial Arena. The pipe-coupling joint was pressurized and at 30 pounds per square inch (psi) the coupling began to slip toward separation.

The curling chiller is protected on the shell side (ammonia) by an over-pressure relief device set to relieve at 150 psi. This valve was tested and demonstrated to relieve at the designed pressure. An inspection revealed no evidence of brine deposits within the valve. It is concluded that the overpressure relief device likely did not activate.

It is therefore estimated that the pressure within the brine system reached between 30 psi and 150 psi. The friction from the weight of the pipe and the torsional friction of the vertical coupling would have added to the force needed to separate the coupling beyond that associated with the 30 psi coupling separation pressure.

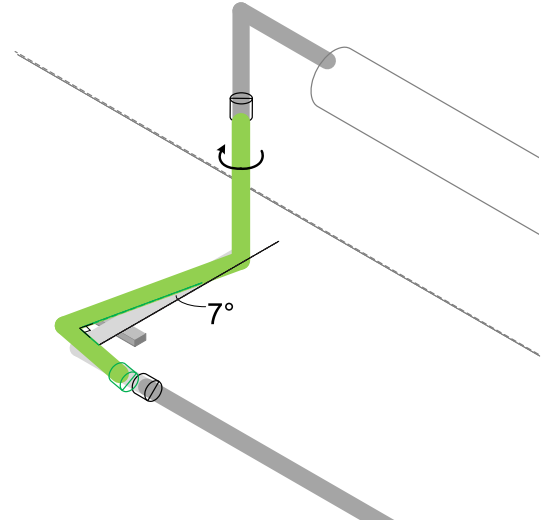


Figure 5: Piping segment installed with in-line water system couplings.



Photo 8: Separated brine system coupling.



Photo 9: View looking down on pipe segment between vertical coupling and horizontal coupling. Angle of rotation estimated at approximately 7 degrees.

○ FINDINGS RELATED TO AMMONIA-BRINE SPRAY INTO MECHANICAL ROOM

Once the brine system coupling separated and relieved the internal pressure, the ammonia in solution and any ammonia in the brine pipe quickly expanded, projecting the contents of the brine pipe outward from the pipe opening. The ammonia quickly vaporized and expanded to fill the mechanical room reaching estimated concentrations exceeding 20,000 ppm.

Evidence of brine chiller and pipe contents projecting from the separated brine system coupling was observed immediately following the incident as shown in Photo 10 and Photo 11 below.



Photo 10: Separated coupling and projected brine system contents. Photo taken on October 18, 2017.



Photo 11: Projected contents of the brine piping from the separated coupling.

Exposed copper pipe and locks within the mechanical room were observed to be corroded (blue) indicating exposure to ammonia.

Residue patterns were observed on the mechanical room walls and around the maintenance log books that are consistent with having originated from the separated coupling as shown in Figure 5.

Samples from the residue on the walls were taken and analyzed. The results are contained in Appendix I and identified the likely presence of calcium chloride, consistent with brine having originated from the chiller/brine system piping.

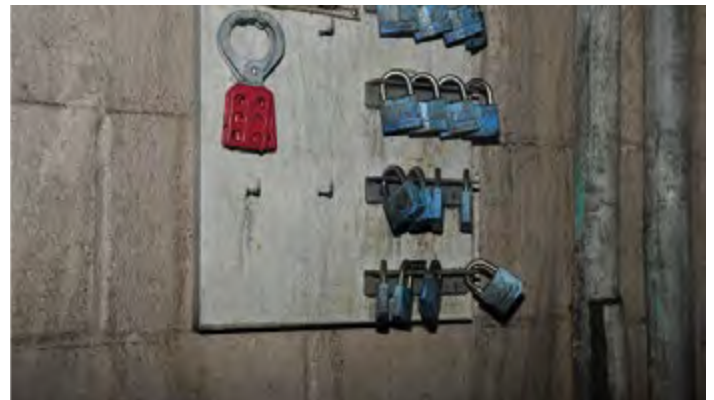


Photo 12: Lock-out board showing corroded (blue) copper consistent with ammonia exposure.



Figure 6: Photos of residue locations on the mechanical room wall. Pattern location is consistent with originating from the separated brine coupling. Samples of the residue tested identified a likely presence of calcium chloride consistent with brine.

INVESTIGATION FINDINGS II

OPERATIONAL DECISIONS THAT CONTRIBUTED TO THE INCIDENT

SUMMARY

Technical Safety BC’s investigation sought to gain insight into the operational context in which the incident occurred. Correspondence and administration records were examined from the City of Fernie and maintenance contractors and interviews were conducted with key personnel relating to the management of the equipment that failed. The evidence gathered indicates that there were five discernable key decisions made between 2010 and October 17, 2017 that contributed to the incident. While the impact of these decisions may be evident in hindsight, Technical Safety BC did not discover evidence that foresight of the eventual outcome was apparent at the time they were made.

The timeline below shows the chronological occurrence of this decision chain, starting with documented recommendations in 2010 to replace the aging curling chiller.

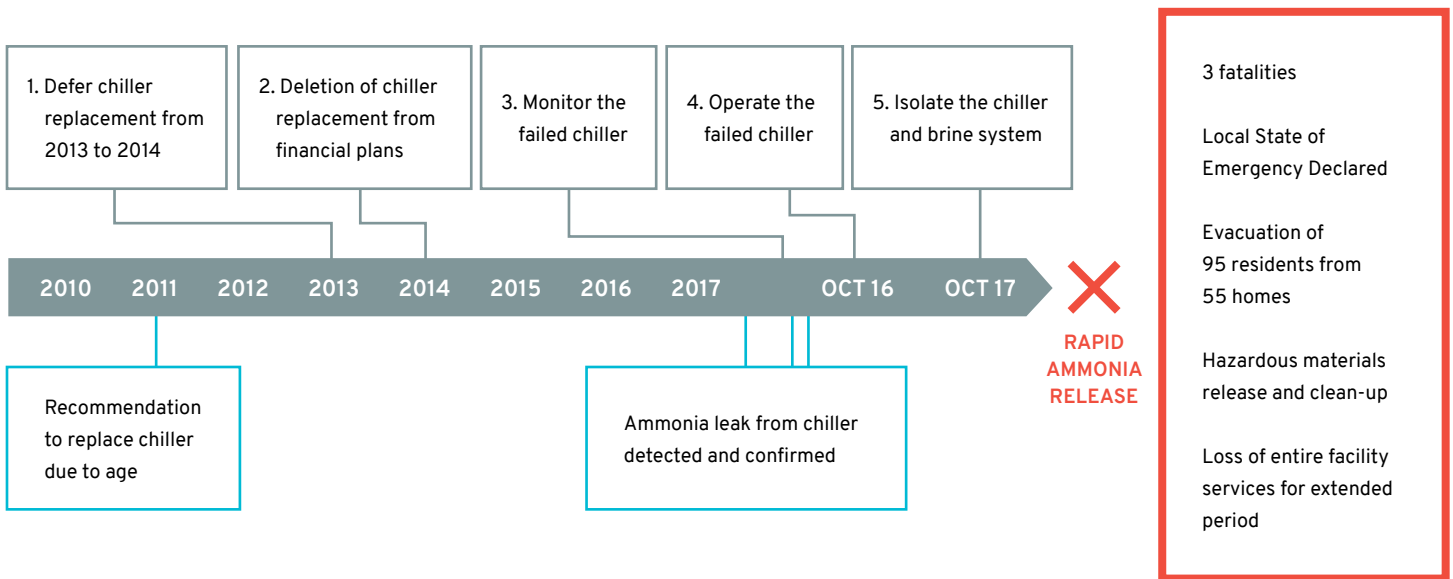


Figure 7: Timeline of key decisions that contributed to the eventual rapid release of ammonia into the mechanical room on October 17, 2017.

The decision to isolate the curling chiller and brine system is directly connected to the system configuration and equipment failure, as described in the previous section of this report. This decision was made in response to a situation that resulted from preceding decision outcomes affecting the refrigeration system and curling chiller. These decisions contributed to the situation that developed on October 17, 2017, where a leaking chiller and system configuration resulted in a rapid ammonia release.

Evidence identified a number of potential influences for these decisions. These influences include organizational and departmental priorities, employee turnover, organizational design, ineffective communications, and a lack of hazard awareness associated with leaking chillers and aging equipment.

○ FINDINGS RELATED TO THE DEFERRAL OF THE CHILLER REPLACEMENT

In October of 2010 and January of 2011, the City of Fernie’s maintenance contractor made a series of recommendations (Appendix L) to address non-compliances with technical safety codes, the aging condenser and the aging curling club chiller, as well as energy efficiency improvements. The curling club chiller, manufactured in 1986, was proposed by the maintenance contractor at that time as having reached or surpassed its life expectancy of 20 to 25 years.

The City of Fernie scheduled spending to address the code non-compliances (plant overhaul) in 2011, the condenser replacement in 2012 and the curling club chiller replacement in 2013.

In 2013, the replacement of the chiller was deferred to 2014 as shown in the 2013-2017 Five-Year Financial Plan deliberation (Appendix N).

Evidence identifies that the chiller replacement deferral from 2013 to 2014 was likely influenced by other priorities for the refrigeration system.

Documented deliberations on arena capital spending in 2013 show that compressor work/replacement was scheduled earlier than initially planned (2016) and a previously unplanned replacement of the brine tanks became scheduled into 2013. At this time, the planned 2013 chiller replacement appears in public consultation documents as deferred to 2014. Given that the total allocated funds for each of these activities was similar, it is likely that this rescheduling of expenses replaced one activity with the others in 2013.

Recommendations		Planned Expenses / Activities		
2010 / 2011		2011	2012	2013
1	address Code non-compliances	plant overhaul (code non-compliances)	replace condenser	replace curling chiller
2	replace condenser (aging/failing)			
3	replace curling chiller (aging)			

Table 2: 2010/2011 Recommendations made by the maintenance contractor were translated into planned expenses for 2011-2013.

○ FINDINGS RELATED TO THE DELETION OF THE CHILLER REPLACEMENT FROM CAPITAL SPENDING PLANS

In 2014, the reference to the curling chiller replacement disappeared from five-year financial/capital spending plans and subsequent years’ capital spending plans. The chiller replacement was no longer a budgeted activity, however it remained as an item in various management documents following 2014, including the City’s 2014-2018 Corporate Strategic Plan, 2016 Business Plan, and management capital planning worksheet for 2017. In addition, five quotes were requested by the City for chiller replacement between January 2015 and August 2017.

Evidence identifies that the deletion of the curling chiller replacement from approved financial plans may have been influenced by the a number of variables, including: 1) employee turn-over; 2) the organization’s design of the leisure services department; 3) the introduction of a Facilities Master Plan; and 4) the refrigeration system maintenance plan.

Employee Turnover

The original recommendation to replace the chiller was made in 2010 to the director of leisure services at that time. By 2014, when organizational commitment for the scheduled replacement was required, those in the director and the chief administrative officer positions when the recommendation was made in 2010 had both left the organization (see Appendix O). Both the director and the chief administrative officer in those roles in 2013 and 2014 stated that they were not explicitly aware of the recommendation made in 2010 by the maintenance contractor to the director.

Employee interviews identified that the chief administrator's involvement is key to securing council approval for the director's capital spending proposals within the five-year financial plans. Current and past directors stated that securing resource commitment required a strong business rationale for the expenditure to be presented to Council and that resources were secured within the active year of the plan.

Employee turnover created a situation where the director that originally scheduled the future chiller replacement and the chief administrative officer who supported its inclusion into the five-year financial plan were no longer employed in the year that organizational commitment to the activity was needing to be secured.

Organizational design of the Leisure Services Department

According to the organizational chart for the City of Fernie and the job description for the director of leisure services (appendices R and S, respectively), the director was responsible for a wide array of duties which included: leisure services delivery and planning; facility equipment and infrastructure management and planning; and human resources management and planning for the Leisure Services Department.

A draft report prepared for the City of Fernie titled Asset Management Investment Plan 2018 Final Report identifies that 80% of the building infrastructure is represented by leisure services, which includes 17 buildings with a replacement value in excess of \$60,000,000. The report identifies that 39% of the building assets are in poor condition, based on their age.

Current and previous colleagues of the deceased director and past incumbents of the role expressed the role was stressful, with many aging infrastructure challenges and a substantial number of projects.

Interviews confirmed the structure of the organizational chart, which shows all employees in the department (24 minimum) reporting directly to the director and includes no manager or supervisor supporting the facility management work of the director.

Within the context of the director's workload and scope of responsibility for aging infrastructure, the chiller replacement recommendation was described as being unremarkable, given the many similar types of change recommendations for the position to assess and manage. The broad scope of responsibility within the role, combined with the competing demands of multiple aging infrastructure priorities, may have contributed to the chiller replacement being deleted from approved financial plans in 2014 and future committed expenditures.

Introduction of the Facilities Master Plan

In 2013, the City of Fernie contracted the production of a Facilities Master Plan that was completed in 2014. The document included assessments of the City's facilities, capital cost and life-cycle cost analysis, preventative maintenance plans and recommendations for future spending and priorities for the facilities and equipment.

The Facilities Master Plan was identified as being produced in response to a need to assess and anticipate the needs associated with managing aging infrastructure. The plan acknowledges immediate safety-related observations however it does not address changing safety risk as infrastructure ages. Future risks are expressed as a risk of operational service loss or financial expense. This focus of risk awareness toward service or financial disruption was found consistent with industry guidance documents available throughout the decision period.

Assessment of equipment condition within the Facilities Master Plan was limited to basic visual inspections. The assessment page included for the curling brine system chiller rated its condition as "Good" and "Meets all present requirements. No deficiencies", even though the vessel was not visible under the insulation and had been recommended for replacement due to age three years prior to this assessment.

At the time of the incident, the City of Fernie was drafting a final report titled Asset Management Investment Plan 2018 which was provided to the investigation for review. This report identifies that a *failure to plan would put the community at risk of service disruptions, emergency repairs and the need for sudden and significant tax and user*

fee increases. Safety risk is not identified as a considered factor or component of the analysis.

By failing to include safety risk management as an objective in the management of aging infrastructure, important safety and environmental impacts may not have been considered or fully assessed by qualified professionals.

A financial planning and spending analysis (Appendix M) shows that prior to the introduction of the Facilities Master Plan, capital planning and spending for the arena focused on replacement of aging refrigeration system components and larger maintenance costs as recommended by the refrigeration maintenance contractors. In 2014 and years following the Facilities Master Plan, planning and spending on the arena changed to general building upgrades as recommended by the Facilities Master Plan, as well as energy efficiency improvements.

It is possible that the recommendations of the Facilities Master Plan influenced a change in capital spending priorities on the arena, with an increased focus on building and energy improvements.

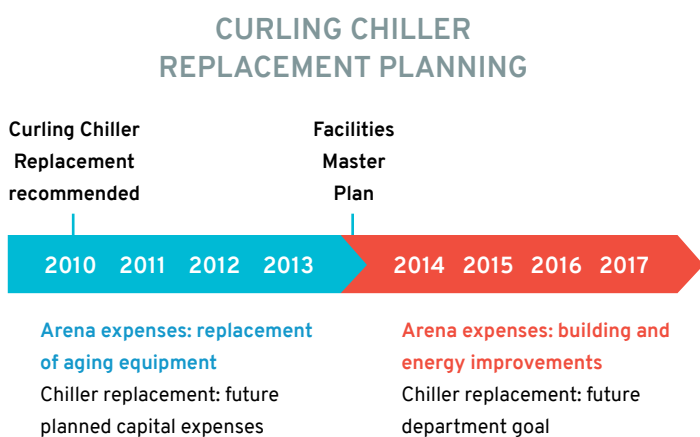


Figure 8: Fernie Memorial Arena expense type and curling chiller planning following the recommendation in 2010.

Refrigeration system maintenance plan

The maintenance plan for the refrigeration system and mechanical room at the Fernie Memorial Arena consisted of a listing of daily, weekly, monthly and annual tasks and associated procedures; a maintenance log book; and a limited service contract with

a maintenance contractor for seasonal start-up, mid-season assessment and shutdown of the refrigeration system, including brine testing for both the arena and curling brine systems.

This type of plan is often referred to as a preventative maintenance plan due to the presence of interval scheduled tasks which are preventative in intention. Technical Safety BC evaluated the City of Fernie’s maintenance plan and maintenance contract against a sample of other BC arenas and maintenance practices (see Appendix V). This review found the City of Fernie’s plan and contract to be typical of other arenas assessed and consistent with existing training materials for refrigeration operators, refrigeration mechanics and 4th class power engineers.

A robust maintenance program typically involves a variety of strategies as indicated in Table 3 and includes knowledge of wear-out or equipment end-of-life.

Preventative maintenance strategies include an understanding of concepts such as: mean-time-between-failures for repairable items, and mean-time-to-failure for non-repairable items. These estimates determine the inspection, task and replacement intervals in a preventative maintenance program and effectively manage the end-of-life of components and systems by preventing operation into the wear-out phase of their life-cycle.

Strategy	Description
Corrective	Inspections, repairs, replacements carried out following detection of anomalies.
Preventative	Inspections, repairs and replacements are scheduled at pre-determined intervals.
Predictive	Regularly assess condition and repair or replace prior to estimated failure.
Reliability-centered	Analyze failure modes and customize inspections, repairs and replacements based upon desired reliability.

Table 3: General Maintenance Strategies

Corrective maintenance was the most commonly described strategy by contractors and operators, whereby components are operated until they show signs of failure or they fail. Misinterpreting attempts to pre-empt failure or minimize the impact of failure

as being 'preventative' or 'predictive' can occur, and corrective maintenance is only appropriate where the consequences of failure are understood and accepted.

As part of this investigation, Technical Safety BC conducted a survey of maintenance regimes at other arenas comparable to the Fernie Memorial Arena (Appendix V) and evaluated brine testing results submitted to the investigation and in response to a safety order issued following the incident. A number of chillers were suspected to have ammonia leaks and considered failed. The results of the failed chillers relative to their age are shown plotted as a bathtub curve in Figure 9.

This data indicates that the risk of an arena brine system chiller failure due to wear-out begins to increase after 18 years of service. This timeframe supports the replacement recommendation made by the refrigeration contractor based on an average lifespan of 20-25 years as a reasonable estimate of the mean-time-to-failure for a chiller in this type of service.

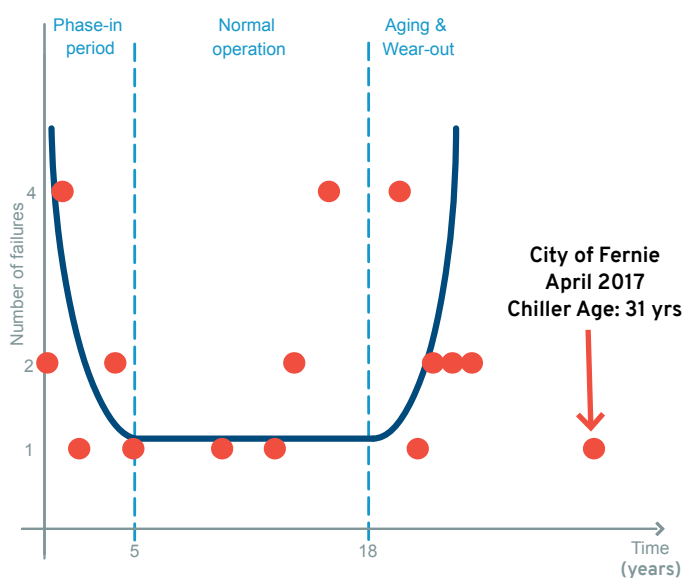


Figure 9: "Bathtub" curve showing arena brine system chiller failures detected via ammonia in the brine.

A review of training material for refrigeration operators, refrigeration mechanics and fourth class power engineers (Appendix U) identified that none of these programs provide a comprehensive overview of maintenance strategies or maintenance program elements beyond recommended periodic tasks.

Current and past arena employees and director(s) of leisure services expressed a dependence upon the refrigeration mechanic

or contractor's sales representative to identify any maintenance planning items. Interviews with these employees and other industry participants identified that maintenance contractors were asked for advice that is outside of their scope of training and qualification as identified in Appendix U.

The City of Fernie's maintenance plan did not contain equipment end-of-life strategies necessary for an effective preventative maintenance program that would have supported timely replacement of the curling chiller. Maintenance plans that include equipment end-of-life strategies provide a balance towards the expected organizational challenges that compete with resources for equipment replacement.

The failure to include component end-of-life strategies in the maintenance plan may have contributed to the deletion of the chiller replacement from approved financial plans in 2014.



Figure 10: Balancing the needs of equipment life-cycle management and a complex organizational environment.

○ FINDINGS RELATED TO THE DECISION TO MONITOR THE LEAKING CHILLER

Evidence obtained by Technical Safety BC indicates that a decision was made to monitor the leaking curling brine chiller in the summer of 2017. Technical Safety BC’s investigation identifies evidence that this decision was likely influenced by a failure to recognize a leaking chiller as hazardous.

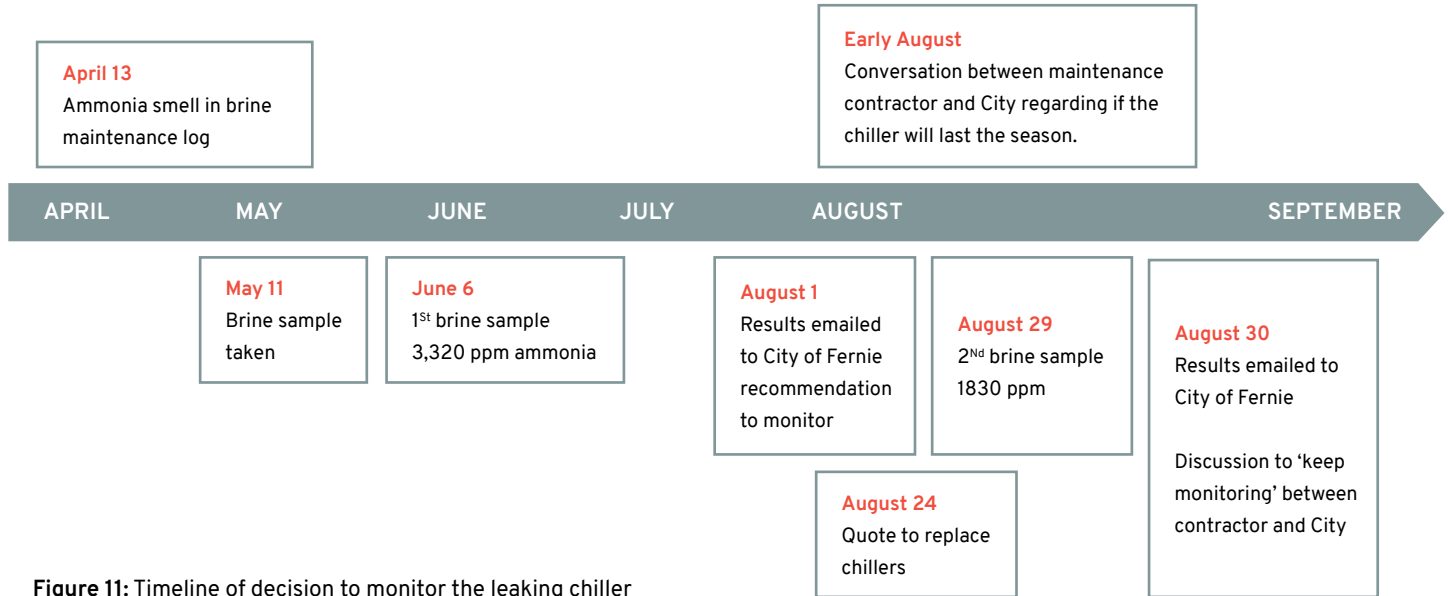


Figure 11: Timeline of decision to monitor the leaking chiller

City of Fernie’s awareness of leaking chiller hazards

The decision to monitor and its influence is evidenced through examination of the communications and actions of those persons aware of the leaking chiller between April and September of 2017:

- On April 13, 2017, arena employees stated in interviews having cleaned the brine filters and noted “a strong ammonia smell in the curling rink filter” in the maintenance log.
- On May 11, 2017, as part of the routine seasonal shut down-procedures, the maintenance contractor took a sample of the brine for analysis. It was reported that the refrigeration mechanic that drew the brine sample did not smell an ammonia odour when drawing the sample.
- Laboratory analysis of the brine sample from May 11, 2017 detected an ammonia concentration of 3,320 ppm as indicated in the brine analysis report dated June 6, 2017 (Appendix F).
- On August 1, 2017, the brine analysis report was mailed to the City of Fernie with the instruction from the maintenance contractor, “curling brine shows ammonia – need to monitor – take another sample & advise”. A paper (Appendix C, Photo C6-6) found in the mechanical room, near a copy of

the brine analysis report within the mechanical room that states: “Cimco Recommendation - Retest as ammonia may be a false positive as there was no odor at time of sample and this concentration odor would be present”.

- An employee of the maintenance contractor stated during an interview that there were many conversations that the chiller had failed, in reference to the results of brine analysis.
- In early August, the maintenance contractor reported a conversation with the City of Fernie in which the City asked how long the chiller would last. The contractor’s response was that they did not know (Appendix T).
- On August 24, 2017, the maintenance contractor submitted a quote to replace the curling chiller.
- On August 29, 2017, a second brine sample and analysis (Appendix F) was completed to confirm the presence of ammonia and the results were communicated to the City of Fernie on August 30, 2017 showing a concentration of 1,830 ppm ammonia.
- The maintenance contractor stated in an interview that the dialogue with the City of Fernie following the second brine analysis of August 30, 2017 was to “keep monitoring”.

No evidence of further communications was found or reported between the City of Fernie and the maintenance contractor between September and October 16, 2017 relating to the arena and curling refrigeration systems.

Examination of email communications and interviews of key participants indicates no identification or discussion of potential safety hazards or safety risk associated with operating a leaking chiller and no evidence of planning to replace the curling chiller prior to operation.

Industry awareness of leaking chiller hazards

Technical Safety BC examined industry awareness of hazards associated with leaking chillers to gain an understanding of whether the communications and actions taken at the City of Fernie were consistent with industry practice. Those findings are summarized as follows:

- A web article titled '[Brine Maintenance for Rinks](#)' on the maintenance contractor's website provides interpretation guidance of brine analysis (Appendix W) and identifies the presence of ammonia in the brine as 'a cause for concern', however does not provide discussion of the nature of the concern.
- When asked about the significance of brine analysis, refrigeration operators and mechanics described the activity as managing the brine chemistry rather than understanding from the brine analysis what might be occurring within the system. There was a consistent response that mechanics only pass the results and recommendations of the brine testing laboratory on to the owner.
- An employee of the maintenance contractor stated in an interview that generally they would not recommend operating a leaking chiller but were aware that it happens.
- Technical Safety BC identified instances after the incident where refrigeration contractors recommended or supported operating leaking chillers. These instances included continued leak monitoring through repeat brine testing while operating and continued operation of a leaking chiller until a replacement chiller could be installed or a repair completed.
- The maintenance contractor stated no knowledge of a catastrophic failure of a chiller having ever occurred in the past. These comments were found to be consistent with statements made by other maintenance contractors about the consequences of operating a leaking chiller.

- Examination of training materials for refrigeration operators, refrigeration mechanics and 4th class power engineers indicates there is no training associated with potential hazards of refrigerant leaks into a secondary coolant.

Evidence examined by Technical Safety BC indicates that the lack of awareness of hazards associated with the leaking chiller at the City of Fernie was consistent with industry awareness. The failure to recognize a leaking chiller as hazardous contributed to the decision to monitor.

○ FINDINGS RELATED TO THE DECISION TO OPERATE THE FAILED CHILLER

Technical Safety BC's investigation concludes that the City of Fernie knew the chiller had failed, yet chose to operate it until a replacement could be arranged. Evidence obtained by Technical Safety BC identifies that this decision was likely influenced by the failure to recognize the leaking chiller as hazardous, an intention to monitor the chiller in operation, and ineffective communication about the condition of the chiller.



Figure 12: Timeline of decision to operate the failed chiller

As discussed in the previous section, there was no evidence to suggest awareness that the leaking chiller presented a hazard and there was industry practice of operating leaking chillers while repairs or replacements are arranged.

Monitor leaking chiller while replacement arrangements made

The last conversation with the maintenance contractor regarding the condition of the leaking chiller prior to operation was reported to include discussion of 'keep monitoring'. The maintenance contractor communicated an understanding that the chiller was not in operation at the time of that discussion and no further dialogue is reported to have occurred or was evident. It is reasonable that the City of Fernie interpreted the monitoring recommendation as referring to monitoring after start-up of the curling chiller.

A capital request dated August 17, 2017 was drafted requesting \$250,000 for replacement of both the curling and arena chillers (Appendix P). This capital request was referenced in the draft minutes of an October 4, 2017 Leisure Services Advisory Board meeting, stating "getting a chiller was mandatory for 2018...the current system is broken". It is noted that interviews pertaining to these draft minutes found that the director was not in attendance and the presentation was made on his behalf. The individual quoted

in the minutes and others in attendance stated they did not recall the statements or having a discussion that the curling chiller was broken.

On October 16, 2017 the City of Fernie refrigeration operator started the curling system, including the brine system chiller, knowing it was leaking, while arrangements were begun to replace the curling chiller in 2018.

Ineffective communication about the condition of the chiller

It is evident from communications regarding the condition of the chiller that knowledge of the leaking condition of the curling chiller was limited to a few individuals (Appendix T). Email and interview evidence with City and maintenance contractor employees indicate that the only persons involved or aware of the decision to monitor and operate the chiller were the director, refrigeration operator, and the maintenance contractor's mechanics and sales account manager.

The maintenance contractor and their employees stated that there is no policy or procedures to manage a response to brine analysis reports where the results are outside of recommended ranges (Appendix T).

Evaluation of the qualification training and provided resumes of the persons in communication about the condition of the chiller concludes that none have exposure to training or qualifications that involve condition/risk assessment beyond troubleshooting, repair and replace activities.

A request was made by the curling club to be able to make ice during the week of October 16, 2017. The curling club representative stated

they were not notified of any risk to the curling season. City of Fernie employees responsible for scheduling events stated they were not notified of any risk to the curling season due to the failed chiller. Members of City of Fernie management stated they were not made aware of the condition of the chiller or a decision to operate.

Technical Safety BC concludes from this evidence that ineffective communication about the condition of the chiller kept knowledge of this condition limited to those without training or qualification to assess the chiller or question a decision to operate in this condition. This ineffective communication may have contributed to the decision to operate the leaking chiller.

○ FINDINGS RELATED TO THE DECISION TO ISOLATE THE CHILLER AND BRINE SYSTEM

Evidence obtained by Technical Safety BC indicates that the refrigeration operator placed the system into a shutdown configuration at approximately 4:30 a.m. that contributed to the rapid release later that morning. This configuration consisted of:

1. closed valves to the brine expansion tank;
2. isolating the liquid ammonia within the chiller by closing the chiller suction valve and shutting down the compressors; and
3. shutdown of the brine system circulation pump and closing the circulation valves.

It is possible that these decisions were influenced by the emergency situation of the leak, an operational priority to preserve the arena ice, and no emergency procedures or training relevant to the specific situation.

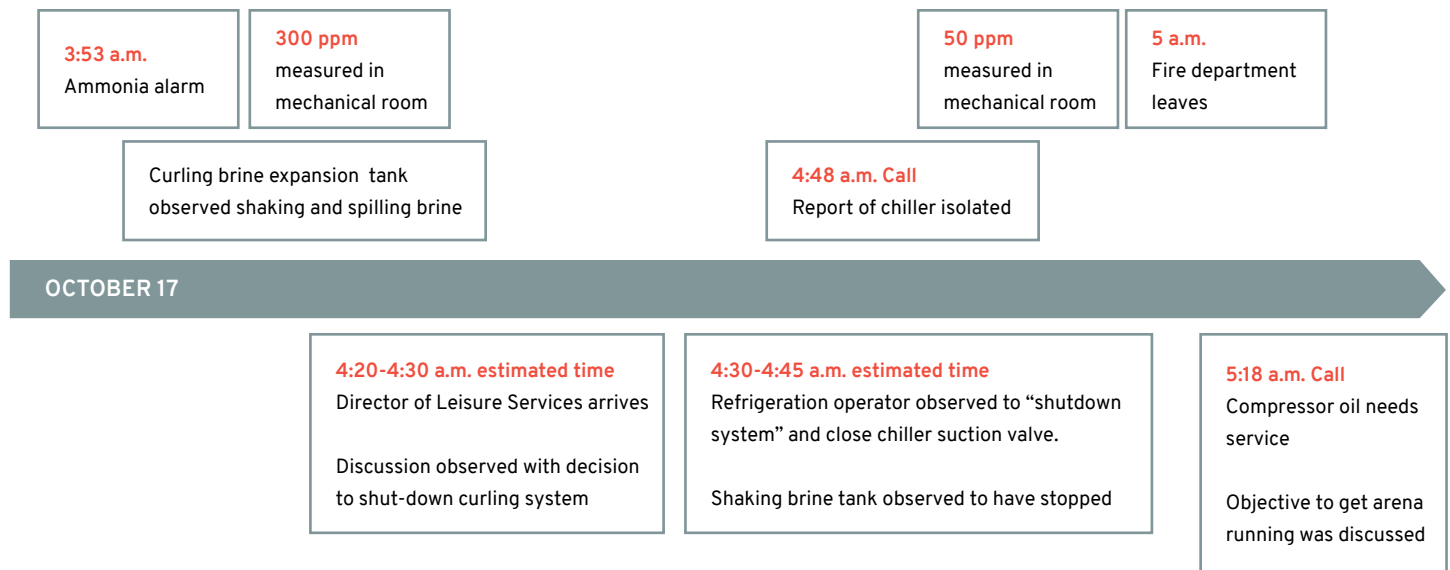


Figure 13: Chiller isolation timeline

Influence of the urgent response on shutdown and configuration

The decision-making context occurred primarily within a one-hour period between 4:00 a.m. and 5:00 a.m. on October 17, 2017 in response to an ammonia alarm at the arena. Understanding the chronology of events within that hour and the few hours that followed illustrates the potential impact that the situation had on that shutdown and isolation decision.

3:53 a.m.

- Ammonia alarm is triggered. Alarm monitoring company dispatches fire department.
- The director and refrigeration operator are notified and respond to the scene

4:00 a.m. estimated

- Firefighters enter arena and assess ammonia levels in mechanical room at 300 ppm.

4:00-4:20 a.m. estimated

- Firefighters accompany refrigeration operator into the mechanical room and report: room was loud upon entry, the refrigeration operator performed methodical visual assessment of mechanical room and manipulated a couple of valves with no effect.
- Firefighters and refrigeration operator exit the arena.

4:20-4:30 a.m. estimated

- Director is met by firefighters upon exit of the arena and conversation occurs between refrigeration operator and director.

4:30-4:45 a.m. estimated

- Firefighters accompany refrigeration operator back into mechanical room and the refrigeration operator turns off equipment and closes multiple valves including the chiller suction valve.
- Firefighters report refrigeration equipment operating noise ceases and curling brine expansion tank stops shaking.
- Ammonia concentration levels in the room decrease. System is described as shutdown.

4:33 a.m.

- Director calls Cimco call-center and reports an ammonia leak and potential *split chiller*. (Appendix T).

4:48 a.m.

- Telephone call between director and maintenance contractor indicating chiller is isolated and system shut down.
- Maintenance contractor requested to send a mechanic to get the arena side back running that day.

5:18 a.m.

- Additional telephone call between director of leisure services and maintenance contractor discussing getting the arena side running, and compressor oil needing servicing.

8:00 a.m.

- Director notifies City of Fernie employee that the curling season is to be cancelled and that they are working to have the arena side open the following day.

From the above it is likely that a decision was made by the director and refrigeration operator at approximately 4:20-4:30 a.m. to shut down the system which was subsequently carried out by the refrigeration operator.

An assessment of the electrical power consumption for the hydro meter associated with the mechanical room equipment (Appendix H) shows that during the 4:00-5:00 a.m. hour considerable less power was consumed, consistent with a refrigeration system shut down midway through the hour. Power consumption analysis also indicates that the refrigeration equipment was not run for any appreciable amount of time after the 4:00-5:00 a.m. time period. This indicates there was likely no attempt to pump the ammonia from the curling chiller per the normal shut-down procedure.

The position of valves immediately following the incident were recorded and confirmed by Technical Safety BC (as shown in Appendix B). Compressor #1 suction and discharge valves were likely closed following the response in preparation for the oil change. Since the system was not likely operated following its shut down, all other valve positions likely represent the system configuration following the shutdown of the refrigeration and brine systems at approximately 4:30-4:45 a.m.

From firefighter reports and valve positions found, it is likely that between 4:00-5:00 a.m. during the emergency response to the ammonia leak, decisions were made to shut down and configure the system. In shutting the system down and responding to the ammonia leak the refrigeration operator isolated the brine expansion tank, isolated the curling chiller without pumping out liquid ammonia and closed the valves for the curling brine circulation.

Influence of arena ice preservation

The ammonia system provided cooling for two brine systems, one for the arena ice floor and one for the curling ice floor. Contamination of or damage to the ammonia system would have an effect on both ice surfaces. The valve positions (Appendix B) for both the curling system and the arena system suggests no intention for an extended shut down of the arena side of the system.

From communication evidence obtained prior to and on October 17, 2017 the refrigeration operator identified suspicion of the curling chiller leaking and having possibly suffered a significant internal failure.

The compressor oil was noted as being *cloudy* and *milky*. This notation, considered in relation to the request for oil servicing, suggests the operator likely suspected curling brine contamination within the ammonia system. It is likely the curling chiller was isolated without pumping out the remaining ammonia in an effort to prevent further brine contamination within the shared ammonia system.

During interviews with City of Fernie employees and residents, it was made readily apparent that the arena is an important and valued facility in the community. Communication and interview evidence indicates that a priority that morning was to return the refrigeration system to operation and preserve the arena ice.

Preservation of the refrigeration system for the arena ice may have contributed to the decision to isolate the curling chiller with liquid ammonia and to arrange for immediate servicing of the compressors by the maintenance contractor.

No emergency procedures or training relevant to the situation

The investigation also considered the broader industry context of emergency management practices for the equipment. Evaluation of training materials for refrigeration operators and refrigeration mechanics found no references to emergency procedures or practices for leaking chillers or shut down configurations. Examination of the City of Fernie's ammonia leak emergency procedures indicates no consideration for system configuration or actions following the initial response to a leak.

Guidelines of this nature have reportedly been omitted due to a wide variety of potential emergency circumstances and the possible consequences of providing the wrong direction. The result is that no guidance or training is provided to assist with situational awareness during such emergencies.

Insufficient equipment emergency procedures and training may have contributed to the decision to isolate the chiller and brine system on the morning of the incident.

INVESTIGATION FINDINGS III

IMPACT OF INADEQUATE VENTILATION AND DISCHARGE SYSTEMS

○ SUMMARY

Ammonia odours were reported in the community close to the time of the incident (Appendix D) and firefighters reported measuring 400 ppm of ammonia within the arena lobby during their response. As part of the investigative scope and mandate, Technical Safety BC examined technical systems in place at the Fernie Memorial Arena that are intended to minimize the impact after a release has occurred. In particular, Technical Safety BC's investigation examined the condition of the alarm and ventilation systems to determine if they contributed to the ammonia concentrations experienced within the mechanical room or the community. In addition, the investigation analyzed the configuration and impact of the emergency discharge system deployed in response to the incident.

The Fernie Memorial Arena incorporated an automatic ammonia leak detection, alarm and ventilation system compliant to the leak/rupture ventilation requirements of CSA B52-13. Based on alarm records from the morning of the incident and fire department measurements of ammonia concentrations after the incident, it is very likely the ammonia detection system was functional at the time of the failure.

The investigation found that the configuration and capacity of the ventilation system could not have prevented extremely high levels of ammonia from accumulating within the mechanical room due to the rate of ammonia release. Additionally, the fan belt for the leak/

rupture fan was worn and the location of this fan was such that ventilation performance was inefficient; extending the period of time required to reduce the ammonia concentration within the room following the leak.

Location of the fans in a recessed area of the roof also prevented exhausted air from reaching the outside airstream and may have directed exhausted ammonia toward air inlets on building. This may have contributed to the ammonia concentration of 400 ppm measured in the arena lobby hours after the incident. It is also possible that ammonia detected in the lobby may have escaped the machine room through a gap beneath the door to the vestibule and an unsealed door between the vestibule and the public area of the arena.

Following the incident, first responders opened the emergency discharge valve which released ammonia into the atmosphere, contributing to the declaration of a local state of emergency and the evacuation of 95 residents from 55 homes near the arena. Examination of the system configuration and condition determined that the release of ammonia via the emergency discharge valve did not reduce the risk of ammonia exposure within the mechanical room. Further examination of pipe routing and system requirements concluded that the arena's emergency discharge system introduced additional exposure risk.

○ FINDINGS RELATED TO THE DETECTION AND ALARM SYSTEM

The City of Fernie’s ammonia detection system settings are documented in their plant operating procedures as shown in Figure 14.

These settings and the installed system were found to comply with the requirements of the CSA B52-13 Mechanical Refrigeration Code. An inspection and test of the system was conducted simulating ammonia sensor signals and found that the system alarm and response was consistent with the City’s required settings.

The ammonia system produced an alarm and response at 3:53 a.m. on October 17, 2017 that was consistent with the measured concentration of ammonia during the fire department response. At 7:33am, the refrigeration operator advised the alarm monitoring company to not dispatch first responders for ammonia alarms until 4:00pm as they were working on the system (Appendix G). This type of instruction is reported by refrigeration mechanics to be common practice when alarms are anticipated and considered nuisances.

Throughout the morning and leading up to the equipment failure the system produced numerous alarm and restore messages that were not dispatched in accordance with the instructions provided. The ammonia detection and alarm system was likely functional at the time of the rapid release of ammonia estimated to have occurred between 9:15 a.m. and 9:38 a.m.

Ammonia Detector Alarm Settings – Plant Vestibule		
Operators are required to read the Ammonia alarm to determine the concentrated ammonia level in the plant room before entry.		
Ammonia concentration (parts per million)	Alarm	Location
0 -34 ppm	No alarm	Ammonia Detector Plant vestibule
35 ppm	Visual alarm – flashing amber light	Plant room, Arena lobby, Arena ice surface (south wall), & curling ice surface
100 ppm	Fire Alarm	Throughout facility
	Visual alarm – strobe light and Audio alarm	Plant room
NOTE: Wear the proper respiratory protection before entry to the Plant Room. Follow the "Entering the Refrigeration Compressor Room" procedure.		

Figure 14: Fernie Memorial Arena ammonia detection system settings

○ FINDINGS RELATED TO THE VENTILATION SYSTEM

The ventilation system requirements of CSA B52-13 (6.2.5.5) (Appendix X) provide for a minimum volume flow per area of machinery room and a minimum volume flow per amount of refrigerant in the system for leakage or rupture scenarios. It is typical that these two requirements are met by incorporating two fans, with the larger leak/rupture fan being activated by the ammonia detection system.

Paragraph 6.2.5.3 of CSA B52-13 provides a general requirement for location of ventilation within the mechanical room to be at an “elevation where refrigerant from a leak is most likely to concentrate”. This same paragraph provides a general requirement for discharging of ventilation air – “the air shall be discharged to the outdoors in a manner that does not cause inconvenience or danger”.

The ventilation rate was measured and compared to the equipment’s capacity and the requirement for the mechanical room at the Fernie Memorial Arena. The results are contained in Table 4 below:

VENTILATION SCENARIO	B52 CODE REQUIREMENT	INSTALLED FAN CAPACITY	ACTUAL MEASURED
Minimum flow rate	375 cfm	800 cfm	1062 cfm
Leak/Rupture Scenario flow rate	3500 cfm	4000 cfm	2619 cfm
Time for 1 room air exchange (volume 7500 cubic feet)	2.14 minutes	1.88 minutes	2.88 minutes

Table 4: Comparison of the ventilation flow requirements, installed capacity and the actual performance.

The fan belt on the large fan was discovered to be cracked and in poor condition as shown in Photo 13. When operating, the fan belt was observed to be slipping, resulting in a reduced average fan speed. The reduced ventilation system capacity was measured as being 75% of that required during a leak/rupture scenario.

To observe the performance of the ventilation system, a smoke test was conducted. The portion of the room between the air inlet and the ventilation fans remained clear while smoke accumulated on the southwest side of the room as shown in Figure 15. Smoke continued to accumulate toward the side of the room where the vestibule door was located until the smoke candle was exhausted.

The smoke was observed to exit the room ventilation fans and become trapped in a low-point in the roof structure between the elevated arena and curling rink roofs. As smoke accumulated in this low-point, it moved toward the roof edge of the building rather than up and into the outside airstream. Smoke was observed to be ventilated mostly from the small fan. Smoke was observed to move toward an air louver on the arena structure.

Inspection of the vestibule doors identified a gap under the door between the mechanical room and vestibule. The door between the vestibule and the arena public space did not incorporate a seal at the bottom. The gaps and sealing under the vestibule doors provided a possible leakage path for ammonia from the mechanical room into the arena lobby inconsistent with the code definition for tight fitting doors. Photos of the vestibule doors are included in Appendix C.

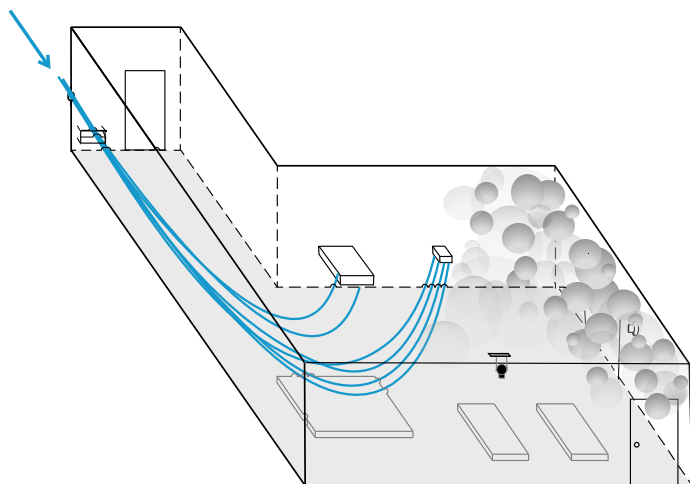


Photo 13 (above): Leak/Rupture Fan Motor, Pulley and Damaged Belt.

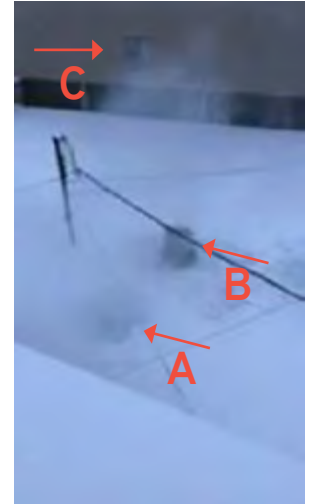


Photo 15 (above): Smoke test showing small fan (A) and large fan (B). Vented smoke shown moving toward air inlet on arena wall (C).



Photo 14 (above): Smoke test showing roof above mechanical room. Smoke became trapped (1) in depression between curling and arena roofs and was observed moving toward the roof edge rather than up into outside airstream (2). The air inlet for the furnace room for the building is identified (3).

Figure 15 (left): Ventilation airflow through the mechanical room and smoke accumulation along SW wall. The effect of the additional large fan was to move more clean air.

An additional simulation was developed to estimate the ammonia concentration within the mechanical room (Appendix A). The simulation incorporates the estimated ammonia release rate into the mechanical room and the ventilation capacities of the mechanical room. In all simulated cases, the room concentration rapidly reached concentrations exceeding 20,000 ppm ammonia and required several minutes to reduce the levels to below 5000 ppm.

It is possible that the concentration of ammonia reached levels above 20,000 ppm of ammonia and that concentrations above 5,000 ppm remained for several minutes. It is likely that the northeast side of the mechanical room near the vestibule door and maintenance log books remained at elevated concentrations for a much longer period, as a result of ineffective ventilation air flow as demonstrated during the smoke test.

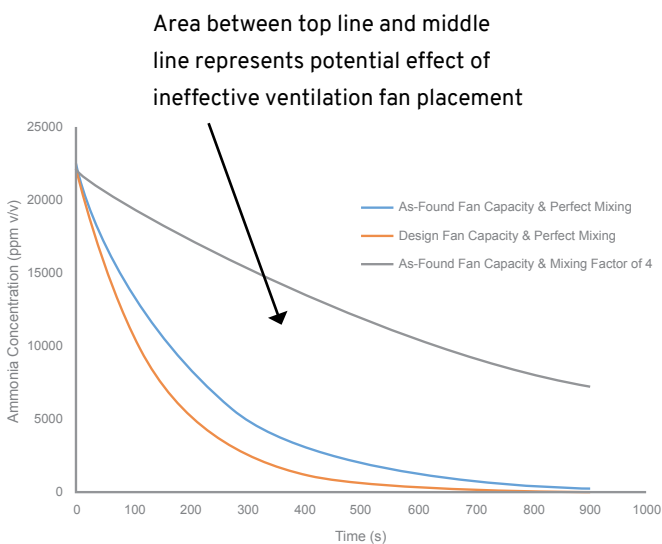


Figure 16 (above): From Appendix A. Simulation result estimating concentration of ammonia within the mechanical room during incident. The top line estimates imperfect mixing of ammonia and room air similar to that observed in the mechanical room, middle line estimates using the required ventilation capacity with perfect mixing and lower line indicates the measured ventilation capacity with perfect mixing.

Leak/Rupture Ventilation Requirements – CSA B52-13 Mechanical Refrigeration Code

The ammonia detection and mechanical ventilation system at the Fernie Memorial Arena was installed to meet CSA B52-13 requirements “to exhaust a potential accumulation of refrigerant due to leaks or a rupture of the system.” Examination of the applicable B52-13 Mechanical Refrigeration Code rules for the alarm, ventilation system and mechanical room suggests the design is intended to:

1. Notify operators of a leak within the mechanical room and the concentration prior to entering;
2. Limit leaking refrigerant from migrating into the occupied building space; and
3. Exhaust accumulated refrigerant safely outdoors where it cannot re-enter the building or harm people.

CSA B52-13 requires mechanical room and vestibule doors to be *tight fitting* which is defined as sealed to prevent the free flow of refrigerant from one space to another.

The CSA B52-13 Mechanical Refrigeration Code identifies a formula and calculation to determine the required ventilation for leak/rupture accumulated refrigerant. This formula determines an air flow rate based upon the amount of refrigerant in a system rather than considering a rate of release/expansion resulting from a leak or rupture.

A 2005 [technical paper](#)² published by the [International Institute of Ammonia Refrigeration](#) (IIAR) concluded that the basis for the formula is not clear but appears to be a best fit curve of ventilation tables derived from a 1927 New York City Code. There is no clear relationship between the leak/rupture ventilation formula and a functional objective for leakage or rupture scenarios.

While the fan belt condition did not produce a leak/rupture flow rate required by the code, its location and incorporation into the room ventilation rendered the fan ineffective at improving the ventilation of the space. Consideration of airflow and a ventilation objective for leakage scenarios is not clearly defined in the code.

² Machinery Room Ventilation for Industrial Refrigeration Systems: A Rational Engineering Analysis. Rex Brown, P.E.

○ FINDINGS RELATED TO THE EMERGENCY DISCHARGE SYSTEM

The Fernie Memorial Arena, like many arenas in BC, incorporated an emergency discharge system as described in Annex B of the Mechanical Refrigeration Code CSA B52-13 (see Appendix Y) for the stated intention of providing a means for “safely and rapidly discharging refrigerants into the atmosphere during a fire or other emergency”.

In accordance with Annex B, a discharge line is run directly from the ammonia system to a manually operated valve located outside of the mechanical room in a red, glass fronted box, at least 7 feet above ground. The valve is to be operated by a fire fighter or refrigeration operator and an emergency stop button is to be located next to the valve that removes power to refrigeration equipment in the mechanical room.

Refrigeration Operator training materials associated with this emergency discharge system identify scenarios where discharge valve use might be warranted, such as: fire within the mechanical room; risk of rupture to ammonia piping or components; human entrapment within the mechanical room in the event of a leak or risk of leak. Guidance statements are provided in some industry training manuals to check wind direction to ensure that the release

of ammonia does not present a greater hazard than what is trying to be avoided.

The opening of the emergency discharge valve immediately releases the pressurized ammonia vapour or gas. Evaporation cools the remaining liquid, resulting in a slow and steady release of this remaining liquid refrigerant. The remaining refrigerant will discharge at the rate that heat enters the system inside the room.

The investigation determined that the leak of refrigerant into the room originated solely from the curling brine chiller. This curling brine chiller was found to be isolated from the ammonia system. Inspections and leak testing of the ammonia system determined its pressure retaining integrity had remained intact.

During the initial response to the incident, fire department first responders were instructed by a previous arena refrigeration operator to open the emergency discharge valve and activate the emergency stop button. The valve was opened at approximately 1:50 p.m. on October 17 and was evaluated to have initially released approximately 55 lb. of ammonia into the atmosphere.



Photos 16 (left) and 17 (right): Opened Emergency Discharge Valve and Actuated Emergency Stop Button.

Observations of frost lines on equipment suggest that liquid ammonia remained in the system and continued to evaporate through the opened discharge line for over 24 hours following the opening of the discharge valve. It is estimated that approximately 632 lb. of ammonia evaporated into the atmosphere via the discharge system following the initial release of pressurized vapour from the system (Appendix A).

Frost line observations of the curling brine chiller equipment suggest that liquid ammonia may have remained in the chiller and continued to evaporate into the mechanical room for days following the incident. Due to its isolation, the liquid ammonia in the chiller could not evaporate via the discharge system.

The properties of refrigerants like ammonia render this type of relief device ineffective at providing a means for rapidly discharging the refrigerant in the event of an emergency. Refrigerant remaining within the system following the opening of a discharge valve can introduce risk and complicate subsequent assessments during the emergency response.

At the point that pressurized ammonia vapour was released from the system via the discharge valve, the configuration and state of the system within the mechanical room remained unknown. Managing this unknown condition was a significant component of the risk assessment efforts in the days following the incident.

Training materials suggest that before opening the discharge valve, responders assess the risks vs benefits in light of variables such as wind direction and speed, surrounding population and buildings, and amount of refrigerant to be discharged. In order to make such a complex assessment of whether the risk of release is greater than the risk of allowing ammonia to remain contained in the mechanical room first responders would require knowledge of the configuration and condition of the system within the room. It is unlikely that many responding to an emergency could complete such a risk-benefit assessment during emergency response conditions and timing required for a decision.

○ FINDINGS RELATED TO THE DISCHARGE SYSTEM PIPING ROUTING

The ammonia discharge system piping was traced during the investigation, revealing a small diameter ammonia emergency discharge pipe routed through the figure skating storage room (see Figure 17 below). This pipe was located near the ceiling and was routed approximately 14 feet in length through the room. The pipe was supported at only one location, mid-span, by a thin wire wrapped around the pipe and fastened to the ceiling structure above. The ammonia pipe was found with a costume hanging on it and was suspected to have been used as a hanging rod. This pipe had a direct connection to the liquid ammonia system and was charged with ammonia gas at all times.

This pipe could have been mistaken for red fire suppression water piping. If this pipe had broken or been cut at any point, the contents of the liquid ammonia receiver and system would have leaked into the storage room. The emergency discharge system piping presented a risk of ammonia exposure due to pipe routing within the figure skating storage room.

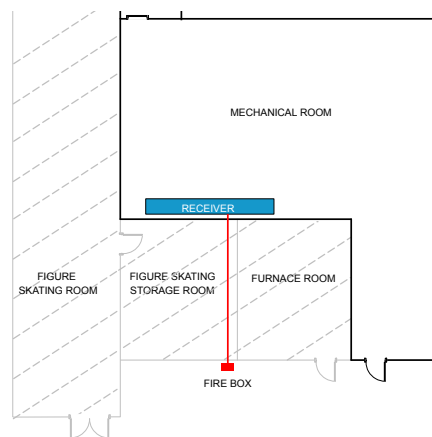


Figure 17 (left): emergency discharge piping routed through figure skating club storage closet.



Photo 18 (above): Emergency discharge piping routed through concrete wall of closet used to hang storage item.

CONCLUSIONS

Technical Safety BC concludes that the equipment failure was caused by a small hole in the curling chiller carbon steel tube resulting from corrosion at a weld seam. Contributing to this failure and the release of ammonia was the:

- chiller age and corrosive potential of the chemicals and materials used;
- presence of tube weld seam fusion defects;
- isolation of the curling brine expansion tank;
- isolation of liquid ammonia within the leaking chiller; and
- unsupported coupling joints on the brine system pipe.

Technical Safety BC concludes that the incident was caused by a decision to operate the leaking curling chiller. Contributing to this decision was a failure to replace the aging chiller after it surpassed its recommended operational life-span. The decision and failure to replace the chiller may have been influenced by:

- insufficient hazard awareness relating to leaking chillers and aging equipment;
- omission of component end-of-life strategies from the maintenance plan;
- employee turnover;
- competing organizational and departmental priorities; and
- organizational design of the leisure services department.

After examination of the detection, alarm, ventilation and discharge systems, Technical Safety BC concludes the following:

- the ventilation system could not have prevented a high concentration of ammonia in the mechanical room;
- fan location and condition contributed to ineffective ventilation after the release;
- fan exhaust location and airflow may have directed ammonia toward building openings;
- mechanical room doors presented a path for ammonia to enter arena public areas; and
- the emergency discharge did not reduce the risk or amount of ammonia leakage into the mechanical room while introducing exposure risk.

RECOMMENDATIONS

Based on the findings of this investigation, Technical Safety BC has identified 18 recommendations aimed at preventing a similar occurrence. These recommendations seek improvements to:

- owner maintenance programs and organizational design;
- identification of leak hazards and professional disclosure of such hazards;
- training of owners representatives, operators and mechanics;
- secondary coolant system configuration and construction in anticipation of refrigerant leaks; and
- public transparency and a culture of openness around technical systems.

Additional recommendations are made to improve ventilation system requirements and emergency discharge considerations to reduce the potentially harmful effects following a refrigerant release.



RECOMMENDATIONS ARISING FROM FINDINGS RELATED TO TECHNICAL EQUIPMENT

Recommendation 1 to Canadian Standards Association (CSA):

Include design, configuration and condition requirements into CSA B52-13 to ensure the secondary coolant portion of a system can safely withstand the effects of a refrigerant leak.

- Consider the increased pressure and rate of pressure increase from foreseeable refrigerant leaks.
- Address the risk of over-pressurization by operator selected configurations.
- Provide for a safe configuration of the chiller/heat exchanger when a leak is discovered.
- Consider a means to monitor the secondary coolant for developing hazardous conditions in the event of a refrigerant leak.
- Consider compatibility of refrigerant contamination of the secondary coolant system.
- Consider direct ventilation of the brine expansion tanks and secondary coolant system outside of the mechanical room.



Recommendations to improve maintenance programs

The maintenance plan included periodic maintenance tasks but did not consider component wear-out or end-of-life. The maintenance plan was found to be similar to plans at some other arenas.

Recommendation 2 to Arena Owners:

Implement a refrigeration system maintenance program that addresses:

- **Wear-out / End-of-Life** - utilizes an established maintenance end-of-life strategy;
- **Resources** - organizational resource commitment for significant maintenance activity;
- **Approval & Accountability** - program is approved and monitored by the owner, separate from the responsible manager.

Note 1: Product quality defects or lower quality manufacturing methods that could manifest as wear-out failures, such as low-frequency electric resistance welded tubes, should be taken into consideration for component end-of-life planning.

Note 2: Maintenance programs should be developed with professionals that have training and qualifications associated with maintenance life-cycle strategies and condition assessment.

Review of training materials associated with minimum technical qualifications associated with arenas indicated no content relating to brine analysis or interpretation. Refrigeration mechanics identified involvement being limited to drawing samples and passing test results to owners and refrigeration operators.

Recommendation 3 to Training Providers:

Add brine testing, analysis and interpretation to the training and qualifications of refrigeration operators, refrigeration mechanics and 4th class power engineers.

Interview statements were made by some persons involved with refrigeration system management activities that they were not aware of basic system operation and maintenance and were fully dependent upon their mechanic or maintenance contractor for direction. Review of qualification requirements indicates that there are no training or qualification requirements for owners of refrigeration systems.

Recommendation 4 to Arena Owners:

Provide refrigeration system, maintenance program and worker qualification/skill awareness training to all employees and representatives responsible or involved with approving arena maintenance related activities or expenses.

Review of training materials for minimum technical qualifications associated with arena refrigeration systems indicates that maintenance training content did not include component wear-out, end-of-life or condition assessment considerations.

Recommendation 5 to Training Providers (Refrigeration Operators, Refrigeration Mechanics and 4th Class Power Engineers):

Improve training related to maintenance strategies and maintenance program awareness dealing with component wear-out and condition assessment so that graduates can effectively participate with a comprehensive program.

Recommendations to improve hazard awareness of leaking chillers

Evidence did not indicate an awareness of hazard associated with the leaking chiller. Following the incident Technical Safety BC discovered instances at some other arenas where leaking chillers were intended to be operated until replacements could be arranged.

Recommendation 6 to Arena Owners and Maintenance Contractors:

Implement clear procedures that provide guidance and instructions to employees regarding the hazards associated with leaking chillers and required actions.

- *Ammonia detection in brine is evidence of a possible leaking chiller.*
- *Leaking chillers are hazardous.*
- *Chillers suspected of leaking are not to be operated until the condition is assessed as safe.*

Review of training materials indicated that emergency procedures or considerations for such situations were not included.

Recommendation 7 to Training Providers (Refrigeration Operators and Mechanics):

Develop and implement generically applicable emergency situational guidance that can be taught and posted within mechanical rooms.

Examples of simple 'SAFE PRACTICE' instructions for consideration:

- *DO NOT operate equipment that is suspected to be failed/leaking.*
- *DO NOT isolate liquid refrigerant within suspected failed/leaking equipment.*
- *DO NOT isolate secondary coolant systems without pressure relief.*

The condition of a leaking chiller did not receive a clear disclosure that it may be a cause for concern.

Recommendation 8 to Refrigeration Maintenance Contractors:

Implement procedures for employees interacting with owners and operators to clearly disclose and refer items that are a cause for concern to refrigeration professionals with the necessary training to provide advice.

Maintenance contractors are reminded of their obligation to [report hazards](#) that are not known to be addressed by the owner.

Review of communications found that the owner's representative requested advice from persons that was beyond their scope of training and qualification. Evidence also indicated that knowledge of the leaking chiller remained limited to a small number of persons that did not have training or qualifications associated with condition or risk assessment.

Recommendation 9 to Arena Owners:

Implement training and procedures for refrigeration system managers to identify the limitations of different technical qualifications associated with refrigeration systems and engage independent advisors for items considered a cause for concern.

Review of asset management planning and guidance documents found that safety risk assessment was not considered a risk factor, equivalent to financial and service delivery risks.

Recommendation 10 to Local Governments that Own Refrigeration Systems:

Incorporate safety risk assessments into asset management planning activities for all arena and curling refrigeration systems and mechanical rooms.

Safety risk assessments should be completed by an independent professional trained in refrigeration condition assessment methods.

Recommendations to improve refrigeration system management organizational design

Evidence and interview statements indicated that the director responsible for the refrigeration system had a very broad scope of responsibility, with no management support. The director of leisure services was responsible for some competing priorities such as service delivery, maintenance of the refrigeration equipment and the associated facilities.

Recommendation 11 to Local Governments:

Conduct an assessment of the organizational design and assigned resourcing for positions that are accountable for technical system management.



RECOMMENDATIONS ARISING FROM FINDINGS RELATED TO VENTILATION AND DISCHARGE SYSTEMS

An airflow test revealed airflow patterns specific to the installation that resulted with ineffective ventilation and a potential for exhaust to flow towards building openings.

Recommendation 12 to Arena Owners:

Conduct an assessment and test of ventilation systems to evaluate effective internal ventilation of the mechanical room and external discharge in a manner that minimizes risk of exposure.

The additional fan capacity was installed to meet the requirements of CSA B52-13 which defines a total capacity based upon the amount of refrigerant.

Recommendation 13 to Canadian Standards Association:

Implement leak rupture ventilation requirements into CSA B52-13 that consider leakage scenarios, system performance and airflow within and outside of the mechanical room.

- *Fan locations consider airflow within the mechanical room from inlets to exhaust fans, to minimize refrigerant accumulations and time required to exhaust.*
- *Fan locations exhaust refrigerant directly into outside airstream and consider effects of surrounding structures and outside airflow.*

An airflow test revealed airflow patterns specific to the installation that resulted with ineffective ventilation and a potential for exhaust to flow towards building openings.

Recommendation 14 to Canadian Standards Association:

Implement a requirement into CSA B52-13 to assess and verify by test that the ventilation systems effectively exhaust the mechanical room and externally discharge exhausted air in a manner that minimizes the risk of exposure.

The emergency discharge system introduced risk at the Fernie Memorial Arena while its activation did not reduce the risk of ammonia leakage into the mechanical room following the event.

Recommendation 15 - to Canadian Standards Association:

Re-evaluate the intended purpose of the emergency discharge provisions of CSA B52-13 Annex B and consider eliminating it from the code or discouraging its use.

A detailed examination of the routing of emergency discharge piping discovered a charged pipe routed within a public space, which presented a risk to public safety.

Recommendation 16 - to Arena Owners:

Inspect all emergency discharge piping and confirm that routing does not enter any spaces that present a risk to public safety.

Examination of refrigeration operator training materials found explanations associated with operation of the emergency discharge system either missing or promoting risk assessment to occur during the emergency response with only broad guidance relating to the objective of the system use.

Recommendation 17 - to Training Providers:

Review and amend guidance relating to the operation of an emergency discharge system such that specific scenarios where the benefits outweigh the risks are clearly identified and the necessary information to perform an emergency risk assessment is identified.



RECOMMENDATION TO ENHANCE PUBLIC TRANSPARENCY AND SUPPORT A CULTURE OF OPENNESS AROUND TECHNICAL SYSTEMS

A recurring theme in this report is that critical information respecting the technical equipment involved was not made available to all relevant persons interacting with, responsible for, or potentially impacted by the equipment. Most significantly, the investigation discovered that awareness of certain aspects relating to the management of the aging chiller following the 2010 contractor recommendation and the leaking condition of the curling chiller in 2017 remained limited to only those directly involved.

Recommendation #2 strives to have owners implement maintenance programs that plan for wear-out and major expenses, demonstrate organizational commitment to schedule major expenses associated with that program, and monitor their performance in managing the maintenance program. Further, the following recommendation addresses how local governments, arena owners, and Technical Safety BC can provide support.

Recommendation 18 – to Local Governments, Arena Owners, and Technical Safety BC:

Make publically available the following information associated with management and oversight of regulated refrigeration systems at public assembly facilities (such as arenas):

- refrigeration system maintenance programs for regulated equipment;
- related capital budgeting plans for supporting maintenance programs;
- assessment and audit criteria;
- results of assessments and audits;
- independent recommendations relating to the condition of equipment, including recommendations from maintenance contractors for repair or replacement; and,
- any other information relevant to the assessment, audits and overall safety of the technical equipment and its management programs.

ASHRAE Equipment Life Expectancy chart

ASHRAE is the industry organization that sets the standards and guidelines for most all HVAC-R equipment.
For additional info about ASHRAE the website is www.ashrae.org .

Equipment Item	Median Years	Equipment Item	Median Years	Equipment Item	Median Years
Air conditioners		Air terminals		Air-cooled condensers	20
Window unit	10	Diffusers, grilles, and registers	27	Evaporative condensers	20
Residential single or Split Package	15	Induction and fan coil units	20	Insulation	
Commercial through-the wall	15	VAV and double-duct boxes	20	Molded Blanket	20
Water-cooled package	15	Air washers	17	Blanket	24
Heat Pumps		Ductwork	30	Pumps	
Residential air-to-air	15	Dampers	20	Base-mounted	20
Commercial air-to-air	15	Fans		Pipe-mounted	10
Commercial water-to-air	19	Centrifugal	25	Sump and well	10
Roof-top air conditioners		Axial	20	Condensate	15
Single-zone	15	Propeller	15	Reciprocating engines	20
Multi-zone	15	Ventilating roof-mounted	20	Steam turbines	30
Boilers, hot water (steam)		Coils		Electric motors	18
Steel water-tube	24 (30)	DX, water, or steam	20	Motor starters	17
Steel fire-tube	25 (25)	Electric	15	Electric transformers	30
Cast iron	35 (30)	Heat Exchangers		Controls	
Electric	15	Shell-and-tube	24	Pneumatic	20
Burners	21	Reciprocating compressors	20	Electric	16
Furnaces		Packaged chillers		Electronic	15
Gas- or oil-fired	18	Reciprocating	20	Valve actuators	
Unit heaters		Centrifugal	23	Hydraulic	15
Gas or electric	13	Absorption	23	Pneumatic	20
Hot water or steam	20	Cooling towers		Self-contained	10
Radiant Heaters		Galvanized metal	20		
Electric	10	Wood	20		
Hot water or steam	25	Ceramic	34		

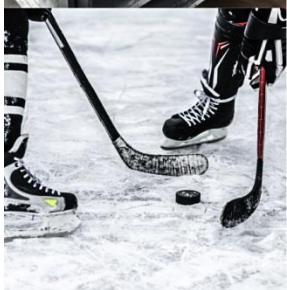


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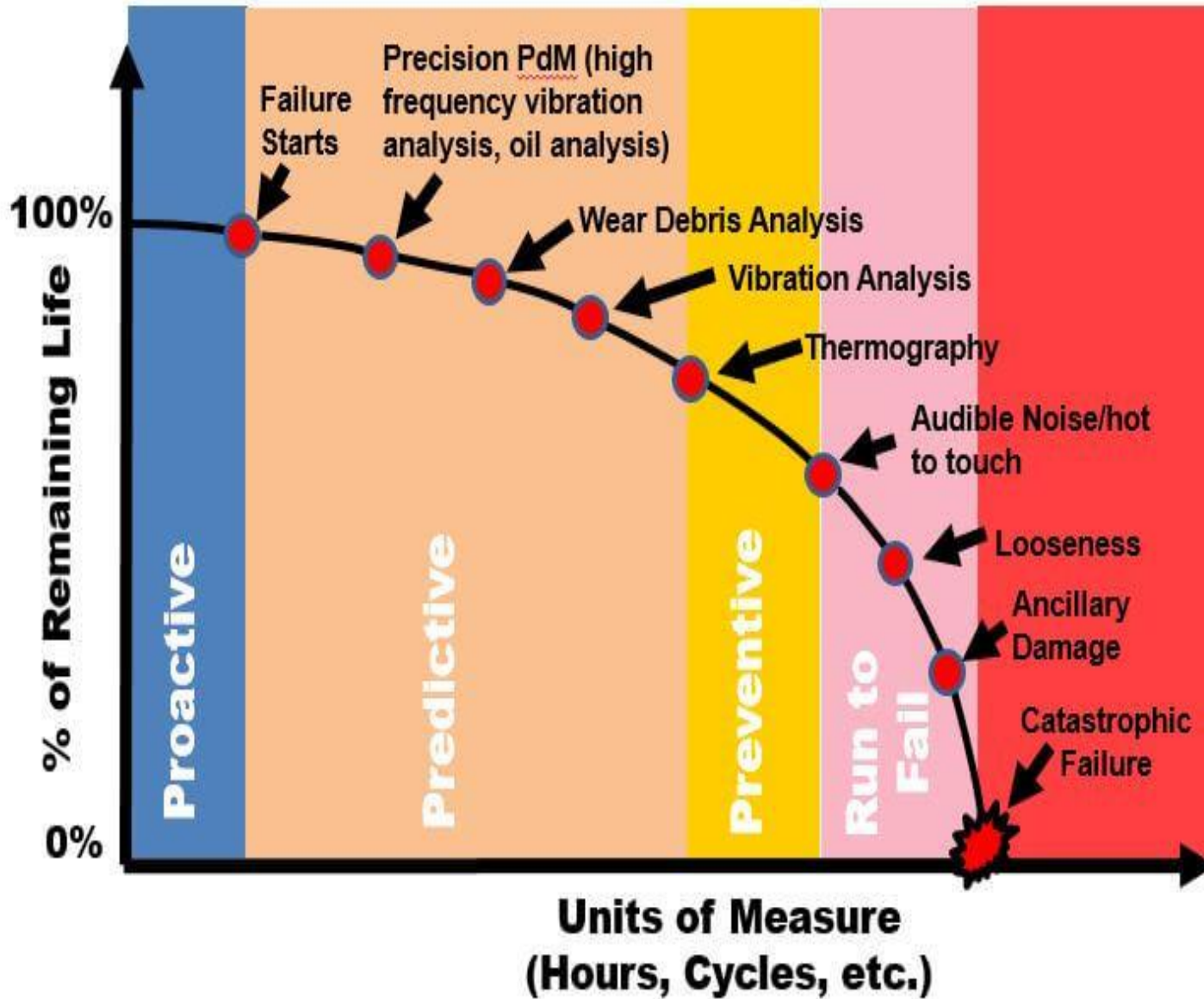
CIMCO

LIFE CYCLE ASSET PLANNING

LIFE CYCLE PLAN



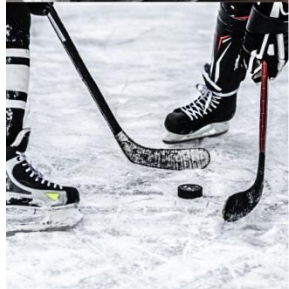
Progression of a Failure P-F Curve



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EQUIPMENT LIFE EXPECTANCY



ASHRAE Equipment Lifecycle Recommendations

Table 3 Estimates of Service Lives of Various System Components^a

Equipment Item	Median Years	Equipment Item	Median Years	Equipment Item	Median Years
Air conditioners		Air terminals		Air-cooled condensers	20
Window unit	10	Diffusers, grilles, and registers	27	Evaporative condensers	20
Residential single or split package	15	Induction and fan-coil units	20	Insulation	
Commercial through-the-wall	15	VAV and double-duct boxes	20	Molded	20
Water-cooled package	15	Air washers	17	Blanket	24
Heat pumps		Ductwork	30	Pumps	
Residential air-to-air	15 ^b	Dampers	20	Base-mounted	20
Commercial air-to-air	15	Fans		Pipe-mounted	10
Commercial water-to-air	19	Centrifugal	25	Sump and well	10
Roof-top air conditioners		Axial	20	Condensate	15
Single-zone	15	Propeller	15	Reciprocating engines	20
Multizone	15	Ventilating roof-mounted	20	Steam turbines	30
Boilers, hot water (steam)		Coils		Electric motors	18
Steel water-tube	24 (30)	DX, water, or steam	20	Motor starters	17
Steel fire-tube	25 (25)	Electric	15	Electric transformers	30
Cast iron	35 (30)	Heat exchangers		Controls	
Electric	15	Shell-and-tube	24	Pneumatic	20
Burners	21	Reciprocating compressors	20	Electric	16
Furnaces		Package chillers		Electronic	15
Gas- or oil-fired	18	Reciprocating	20	Valve actuators	
Unit heaters		Centrifugal	23	Hydraulic	15
Gas or electric	13	Absorption	23	Pneumatic	20
Hot water or steam	20	Cooling towers		Self-contained	10
Radiant heaters		Galvanized metal	20		
Electric	10	Wood	20		
Hot water or steam	25	Ceramic	34		

Notes: 1. ASHRAE makes no claims as to the statistical validity of any of the data presented in this table.

2. Table lists base values that should be adjusted for local conditions (see the section on Service Life).

Source: Data obtained from a survey of the United States by ASHRAE Technical Committee TC 1.8 (Akalin 1978).

^a See Lovvorn and Hiller (1985) and Easton Consultants (1986) for further information.

^b Data updated by TC 1.8 in 1986.



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Arena Specific Equipment Lifecycle Recommendations

Refrigeration Equipment	Replacement Period
Reciprocating Compressors	20 Years
Shell & Tube Chiller	24 Years
Evaporative Condenser	20 Years
Electrical Control Panel	20 Years
Control System	15 Years
Dehumidifiers	15 Years
Headers	25 Years
Concrete Floor	50 Years

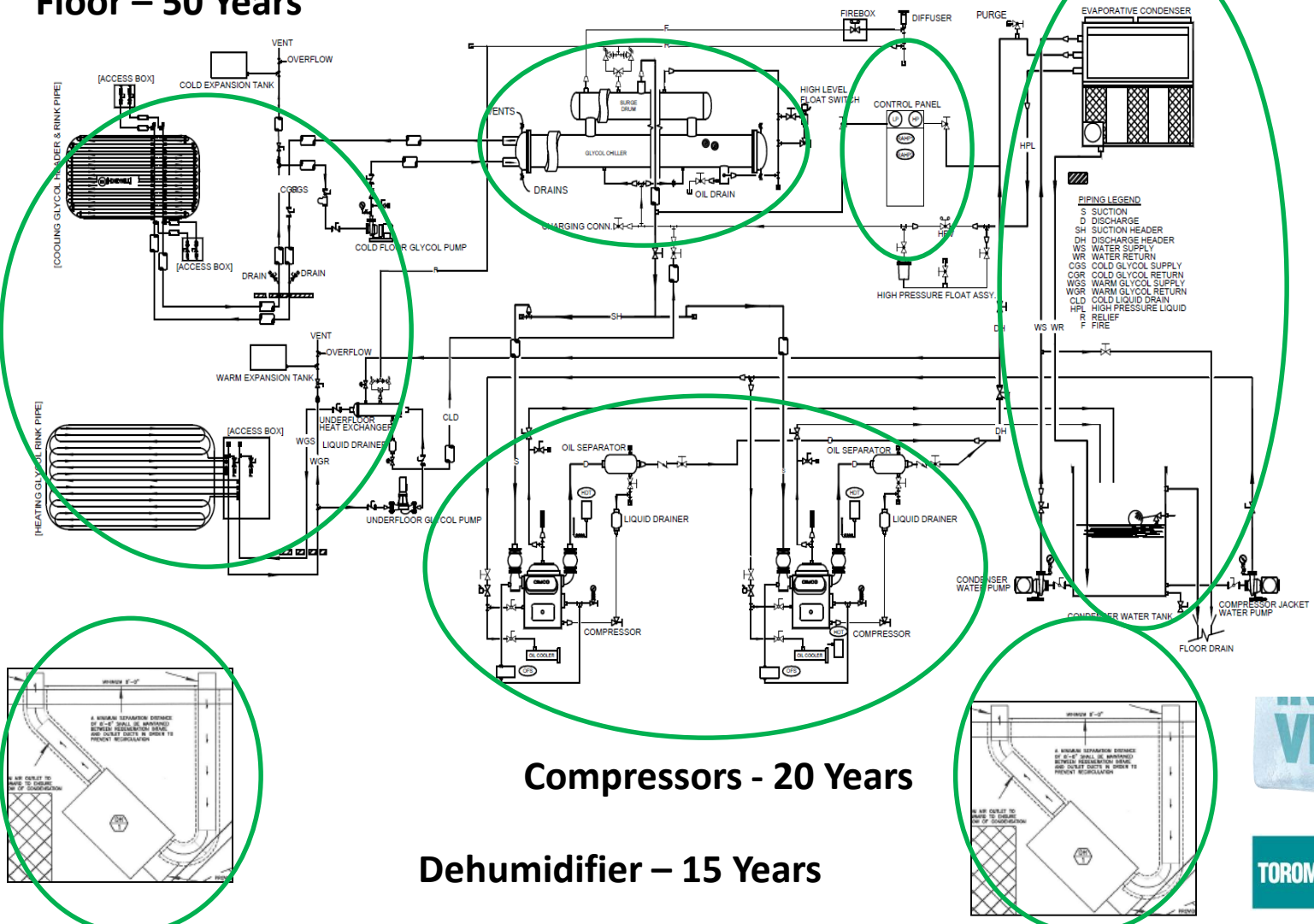


Typical Single Pad Arena Schematic

Headers – 25 Years
Floor – 50 Years

Chiller – 24 Years Panels – 20 Years

Condenser – 20 Years



Compressors - 20 Years

Dehumidifier – 15 Years



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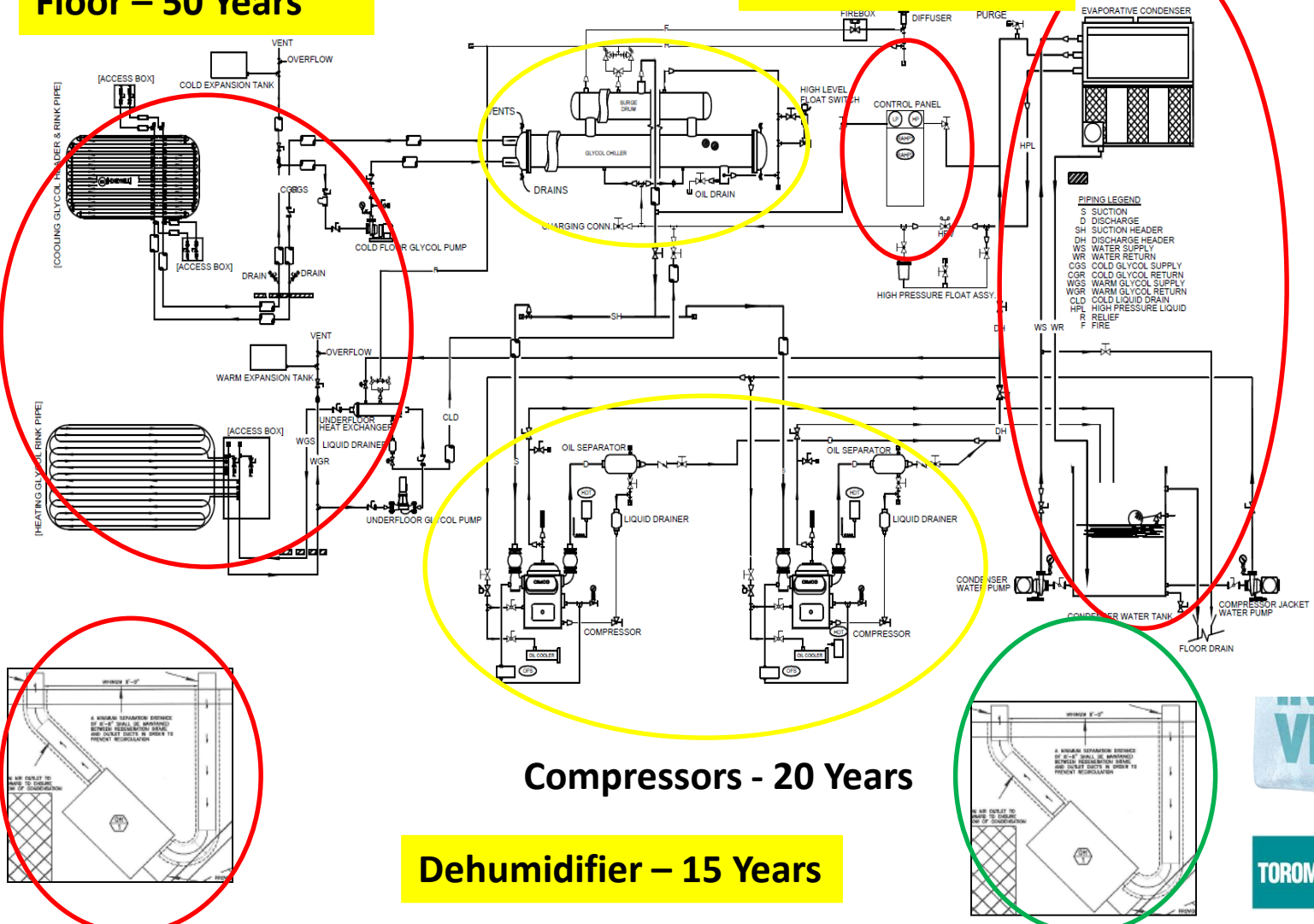


Ingersoll Single Pad Arena Schematic

Headers – 25 Years
Floor – 50 Years

Condenser – 20 Years

Chiller – 24 Years **Panels – 20 Years**



Compressors - 20 Years

Dehumidifier – 15 Years



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SAFETY & BUSINESS RISK OF EQUIPMENT FAILURE



Safety Risk... Injury Caused by failure



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Business Risk.... Lost Revenue Caused by Failure!



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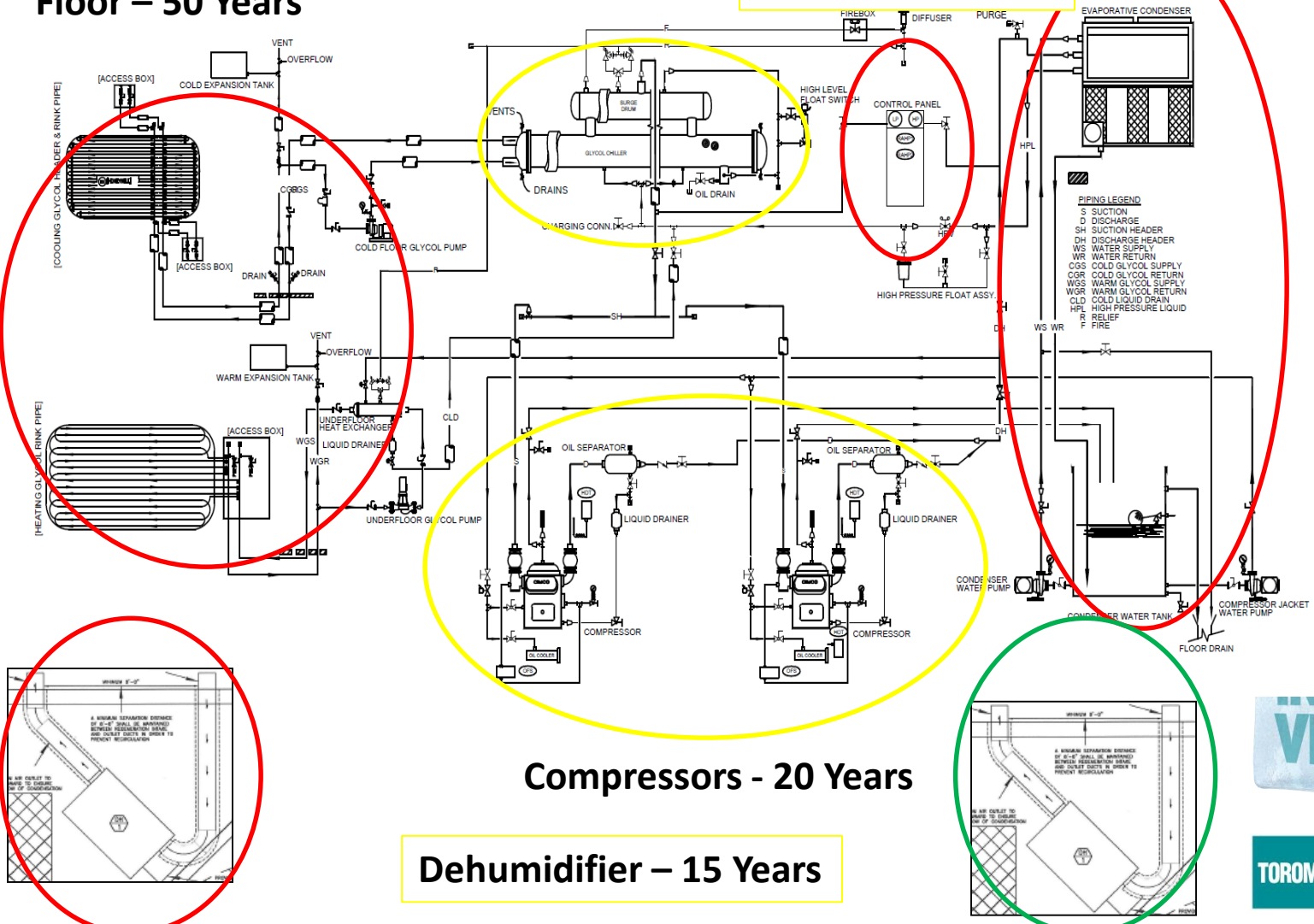


Ingersoll Single Pad Arena Schematic

Condenser – 20 Years

Headers – 25 Years
Floor – 50 Years

Chiller – 24 Years Panels – 20 Years



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Compressors - 20 Years

Dehumidifier – 15 Years

Safety Risk – Condenser Operating Past Life Expectancy

Potential for serious injury:



- If a failure occurs, high pressure refrigerant vapour can be released into the atmosphere



Business Risk – Condenser Operating Past Life Expectancy

Number of Condensers	Business Risk
No Redundancy	High: If failure occurs will result in poor ice conditions and potential lost revenue. Emergency Replacement: 10 Weeks
Partial Redundancy	Medium: If failure occurs will result in operational challenges to maintain ice.
Full Redundancy	Low: If failure occurs will result in normal operating until the repairs/replacement has occurred.



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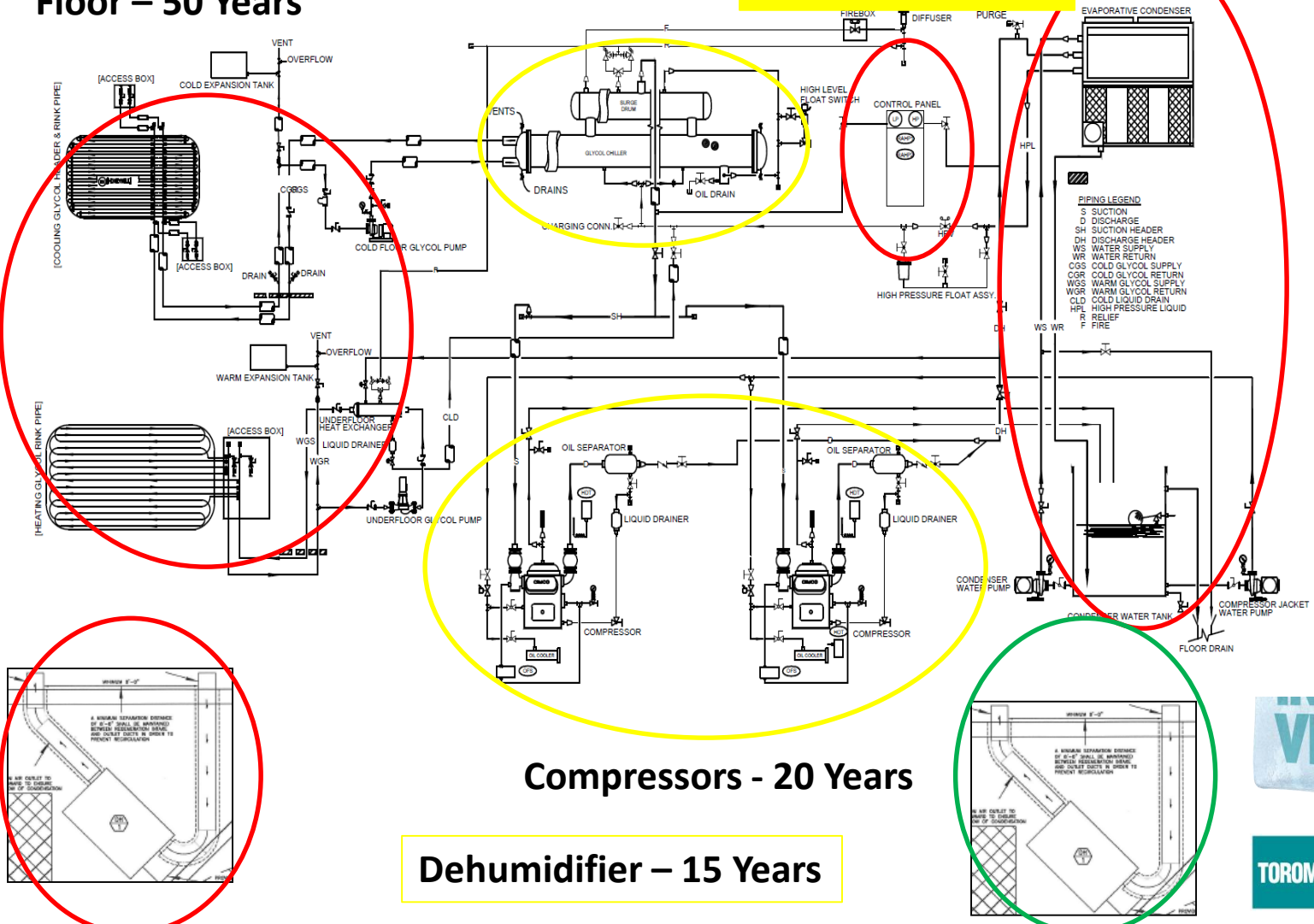


Ingersoll Single Pad Arena Schematic

Headers – 25 Years
Floor – 50 Years

Chiller – 24 Years Panels – 20 Years

Condenser – 20 Years



Compressors - 20 Years

Dehumidifier – 15 Years



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Safety Risk – Electrical/Control Operating Past Life Expectancy

Potential for serious injury or death:



Business Risk – Electrical/Control Operating Past Life Expectancy

Electrical/Control Panels

Business Risk

No Redundancy

High: If failure occurs will result in poor ice conditions and operational issues. Repair components are usually readily available so the repair can be made in a timely manner.

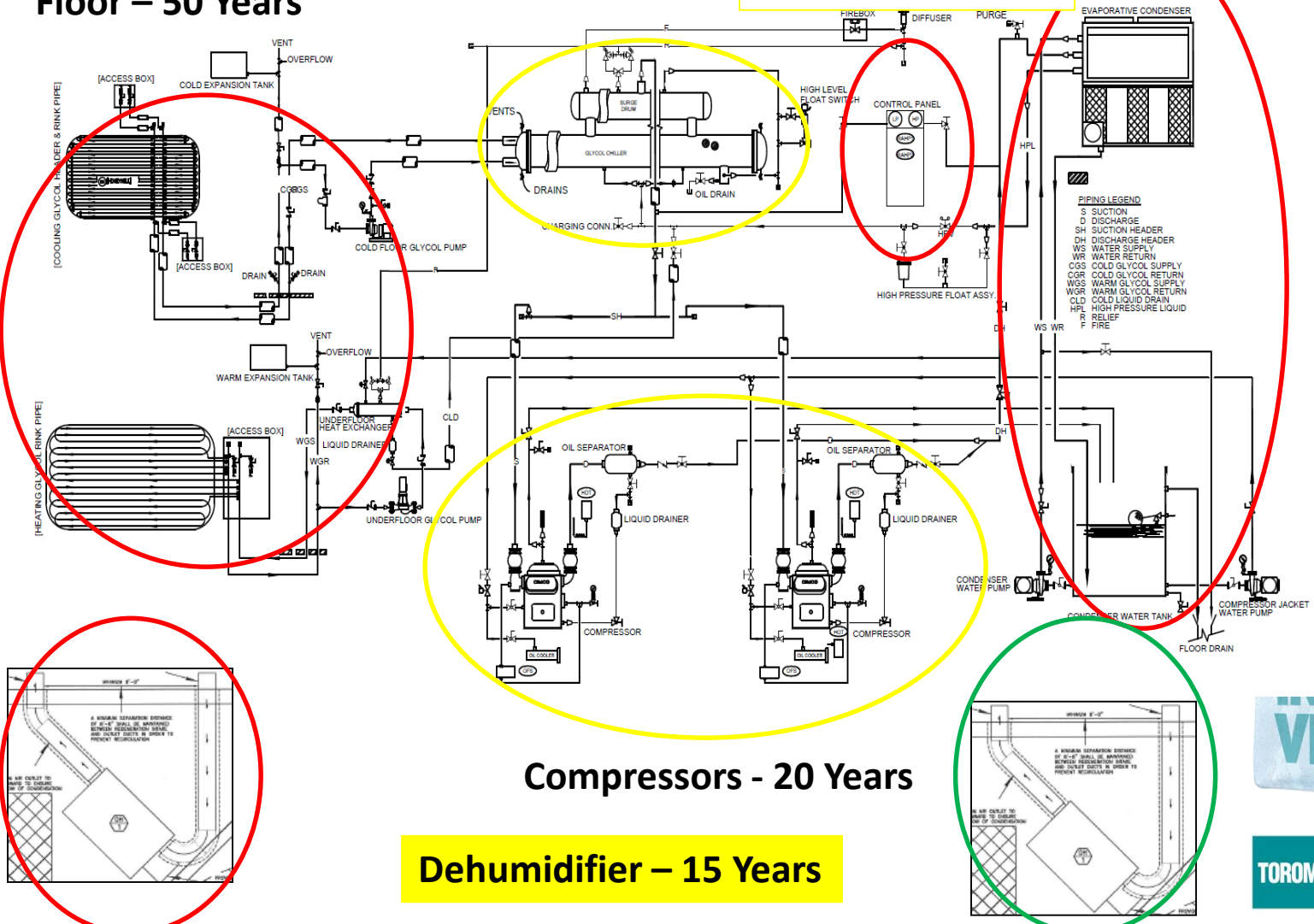


Ingersoll Single Pad Arena Schematic

Headers – 25 Years
Floor – 50 Years

Chiller – 24 Years Panels – 20 Years

Condenser – 20 Years



Compressors - 20 Years

Dehumidifier – 15 Years



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Safety Risk – Dehumidifier Operating Past Life Expectancy

Potential for serious injury:



- If a failure occurs, moisture/mold could build up, creating an unsafe hazardous environment for workers and public.



Business Risk – Dehumidifier Operating Past Life Expectancy

Number of Dehumidifiers	Business Risk
No Redundancy	<p>High: If failure occurs will result in poor air quality and ice conditions. The associated ice surface could be non-functional due to fog build up in the arena envelope. Parts are usually readily available.</p> <p>Emergency Replacement: 10 Weeks</p>
Partial Redundancy	<p>Medium: Depending on the time of season if failure occurs will result in operational challenges and repairs will need to be made in a timely manner to ensure a safe playing service to generate revenue.</p>



Arena Safety Ranking Operating Past Life Expectancy

Refrigeration Equipment	Safety Risk	Ranking
Evaporative Condenser	High	1
Electrical/Control Panel	High	2
Dehumidifiers	Medium	3



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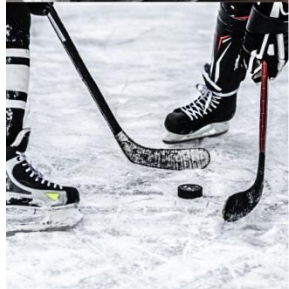
Arena Business Ranking Operating Past Life Expectancy

Refrigeration Equipment	Safety Risk	Replacement (weeks)
Evaporative Condenser	High	8
Dehumidifiers	Medium	8
Electrical/Control Panel	Medium	12



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Department: Community Services

Report Number: CS-004-19

Council Meeting Date: February 11, 2019

Title: 2018 VPCC Annual Stats Report

Objective

To provide Council with 2018 Victoria Park Community Centre stats for programs and membership.

Background

This annual report provides information for the 2018 statistics for Victoria Park Community Centre

Analysis

Program registration for adults, youth and preschool and also for swimming lessons have remained relatively unchanged from 2017. There were 2044 patrons registered in programs in 2018 as compared to 1980 in 2017. There were 2349 patrons enrolled in swimming lessons in 2018 compared to 2417 in 2017.

In regards to membership visits to the complex, we are up by over 1600 visits compared to 2017. This increase is a result of the new membership structure which has enticed more individuals to use the facility.

Financial Implications

Membership and program revenue have remained relatively unchanged with the new fee structure. Memberships in 2017 were paid in bulk amounts wherein 2018 fees were spread over the year. Some of the drop in fees have decreased with the changing the membership structure but has also resulted in an increase in memberships.

Recommendation

THAT Staff report CS-004-19 be received by the Council for the Town of Ingersoll as information.

Attachments

Financial statistics report

Prepared by: Carol Sharpe

Approved by: Kyle Stefanovic, Director of Community Services.

William Tigert, CAO

2018 Aquatic Monthly Stats Public Swimming & Rentals

Activity	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	TOTAL
Length Swim 19 hrs/wk	845	768	730	775	578	597	750	682	717	772	760	575	8549
Community Swim 7 hrs/wk	1228	1309	1733	1090	708	760	833	755	734	728	696	638	11,212
Aquafit 9 ½ hrs/wk	693	642	717	688	659	602	675	638	688	770	687	516	7975
Family Swim 1 hr/wk	169	268	247	124	79	93	56	48	112	90	136	172	1594
Swim Team 8 hrs/wk	311	326	280	467	302				294	317	382	204	2883
Birthdays/ Rentals/Schools	208	319	325	309	289	109			37	67	140	172	1975
Camps			275				1316	917					2508
Kinderkids 1 hr/wk	71	82	66	69	81	67	0						436
TOTAL	3525	3714	4373	3522	2696	2228	3630	3040	2582	2744	2801	2277	37,132
2017	1196	2056	3627	3479	3560	2846	3688	3840	2719	3102	3194	2694	36,001

2018 Aquatic Session Program Stats

Activity	Winter	Spring 1	Spring 2	Summer	Fall 1	Fall 2	TOTAL
Recreational Synchro	8	8			5		21
Bronze Star, Medallion, Cross					7	7	14
NLS AWSI WSI			17				17
*Lessons	519	490	361	192	403	332	2297
TOTAL	527	498	378	192	415	339	2349
2017	459	553	-	400	573	462	2417

Program Drop-in Monthly Stats – 2018

Activity	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	TOTAL	2017
Aerobics	300	171	222	298	272	207	111	146	187	221	258	158	2551	3559
Day Passes	88	73	37	55	16	71	31	27	16	7	4	11	436	723
Friday Fun Night	99	224	235	261	204	186	-	-	89	88	121	73	1580	1761
Pre-Teen Dances	-	-	-	-	-	-	-	-	-	-	-	-	-	
Squash	232	202	146	138	78	68	56	22	28	58	104	102	1234	1475
Wallyball	4	4	28	4	8	-	-	-	8	4	8	8	76	81
Personal Training	14	11	29	12	11	27	5	32	26	49	37	11	264	289
TOTAL	737	685	697	768	589	559	203	227	354	427	532	363	6141	
2017	909	922	840	852	769	608	332	348	466	672	690	480		7888

2018 Registration Programs – Program Participant Stats

Activity	Winter	Spring	Summer	Fall	Total
Adult Programs	71	63	Coed – 22 teams = 396 + 38 = 434	130	698
Youth Programs (includes day camp)	56 MB- 89	246 IDCI + 111 = 357	530 + 8 = 538	129	1169
Pre-school Programs	74	73		30	177
TOTAL	290	493	972	289	2044
2017	350	339	975	316	1980

2018 Day Camp Statistics Weekly

	Camp	Daily	Ext AM	Ext PM	TOTAL
Week 1	73	-	79 VP - 30 FU	49	231
Week 2	75	-	73 VP - 35 FU	56	239
Week 3	78	6	68 VP – 47 FU	45	244
Week 4	74	1	67 VP - 25 FU	39	206
Week 5	65		63 VP - 24 FU	47	199
Week 6	76	1	89 VP - 18 FU	44	228
Week 7	76	5	98 VP - 30 FU	55	264
TOTALS	517	13	746	335	1611
2017 Totals	547	46			593

Membership Sold Stats – 2018

Activity	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	2018	2017
Family Membership	12	12	19	11	10	8	8	15	13	11	9	9	137	151
Adult Membership	21	17	21	14	19	10	8	10	20	20	17	16	193	219
Student Membership	12	9	4	13	13	14	8	1	7	9	4	8	102	126
Senior Membership	20	15	12	34	17	16	23	26	28	26	18	18	253	217
Corporate Family Membership			2						1		1	2	6	7
Corporate Adult Membership			1	1								3	5	2
2018	65	53	59	73	59	48	47	52	69	66	49	56	696	
2017	74	46	62	69	74	51	61	52	64	65	61	44		722

VPCC Membership Visits – 2018

Month	2018	TOTAL 2018	TOTAL 2017
January	2432	2,432	2058
February	2240	4,672	4105
March	2335	7,007	6643
April	2443	9,450	8735
May	2362	11,821	10,819
June	2118	13,939	12,961
July	2008	15,947	15,445
August	2018	17,765	17,224
September	2080	19,304	19,079
October	2650	21,954	21,173
November	2712	24,666	23,370
December	2114	26,780	25,183

**January - December 2018
DISBURSEMENT SHEET BREAKDOWN**

	Gift Cert	GC red	Fusion	Garden F	NSF/Member	Lights	Santa's V	Misc	Short/over	HST	Total		Grand Total	
JA	\$60.00	-\$283.50		\$1,695.00	\$20.00	\$525.00		\$125.35	\$2.86	\$2,145.75	\$4,290.46		\$34,551.80	
FE		-\$181.00		\$1,002.35	\$70.00			\$132.79	-\$0.98	\$1,923.40	\$2,946.56		\$37,557.92	
MR		-\$230.00		\$990.00	\$65.00			\$69.91	\$6.78	\$3,827.32	\$4,729.01		\$56,046.72	
AP			\$6,831.08	\$955.00				\$62.99	-\$1.60	\$3,509.45	\$11,356.92		\$59,609.11	
MA			\$4,112.00	\$510.00	\$25.00			\$33.00	\$1.00	\$2,183.73	\$6,864.73		\$40,920.82	
JN		-\$175.00	\$3,183.25	\$1,095.00						\$1,659.19	\$5,762.44		\$39,624.91	
JL	\$50.00	-\$230.00	\$4,586.85		\$5.00			\$88.85	\$230.77	\$895.39	\$5,626.86		\$29,824.92	
AU	\$70.00	-\$50.00	\$2,984.00	\$1,865.00					\$2.00	\$1,888.46	\$6,759.46		\$41,005.46	
SE	\$100.00	-\$405.00	\$315.92	\$1,600.00				\$20,032.74	\$1.01	\$2,316.85	\$23,961.52		\$56,642.87	
OC	\$32.50	-\$32.50	\$485.92	\$520.00				\$21,980.02	\$1.04	\$1,569.37	\$24,556.35		\$38,840.55	
NO	\$40.00	-\$945.00	\$202.75	\$1,190.00	\$495.58	\$90.00		\$913.01	-\$1.00	\$945.66	\$2,931.00		\$26,511.90	
DE	\$1,410.75	-\$97.50	\$280.00		\$117.62	\$123.90		\$13,612.06	-\$48.50	\$1,275.16	\$16,673.49		\$27,425.33	
TO	\$1,763.25	-\$2,629.50	\$22,981.77	\$11,422.35	\$798.20	\$738.90	\$0.00	\$57,050.72	\$193.38	\$24,139.73	\$116,458.80		\$488,562.31	
17	\$1,546.30	-\$1,378.35	\$7,059.65	\$13,865.34	\$585.00	\$2,279.60	\$1,974.10	\$25,870.40	\$24.64	\$28,671.32	\$80,498.00		\$542,799.72	

JANUARY - DECEMBER 2018
DISBURSEMENT SHEET MEMBERSHIP BREAKDOWN with Direct Withdrawal

	Family A	Family F	Adult	Student	Senior	Corp F	Corp A		TOTAL	Total 2017
January	\$321.90	\$1,945.10	\$2,229.93	\$1,053.47	\$2,010.37				\$7,560.77	\$12,030.54
Jan Direct Withd	\$1,270.94	\$259.29	\$273.97		\$103.04	\$174.97			\$2,082.21	\$962.47
February	\$975.35	\$1,473.60	\$2,023.35	\$894.61	\$2,448.69				\$7,815.60	\$6,894.15
Feb Direct Withd	\$1,334.58	\$248.50	\$273.97		\$103.04	\$174.97			\$2,135.06	\$1,078.02
March	\$436.81	\$1,881.73	\$1,633.67	\$108.85	\$1,144.55	\$1,348.23	\$300.00		\$6,853.84	\$8,669.99
Mar Direct Withd	\$1,464.23	\$248.50	\$273.97		\$75.25	\$174.97			\$2,236.92	\$1,147.70
April	\$777.83	\$1,060.66	\$417.42	\$401.87	\$2,392.76				\$5,050.54	\$9,588.31
Apr Direct Withd	\$1,723.52	\$248.50	\$273.97		\$130.82	\$116.64			\$2,493.45	\$1,147.70
May	\$1,838.58	\$1,361.57	\$2,007.45	\$879.13	\$2,518.34				\$8,605.07	\$10,725.46
May Direct Withd	\$1,723.52	\$313.32	\$273.97		\$158.61	\$116.64			\$2,586.06	\$1,568.72
June	\$932.70	\$909.23	\$414.34	\$1,062.02	\$2,465.94				\$5,784.23	\$5,609.39
Jun Direct Withd	\$1,723.52	\$313.32	\$308.84		\$158.61	\$116.64			\$2,620.93	\$1,409.11
July	\$267.03	\$1,790.48	\$569.68	\$690.25	\$2,380.93				\$5,698.37	\$9,652.73
Jul Direct Withd	\$1,663.50	\$313.32	\$272.39		\$269.79	\$58.32			\$2,577.32	\$1,698.36
August	\$628.63	\$3,378.76	\$1,532.83	\$201.32	\$2,922.71				\$8,664.25	\$8,127.54
Aug Direct Withd	\$1,751.12	\$447.61	\$460.43	\$57.52	\$413.59	\$58.32			\$3,188.59	\$1,767.44
September	\$884.95	\$757.30	\$789.81	\$805.29	\$1,212.56	\$716.81			\$5,166.72	\$5,547.73
Sep Direct Withd	\$1,425.46	\$912.21	\$684.95	\$115.04	\$672.44	\$58.32			\$3,868.42	\$1,494.88
October	\$436.39	\$617.03	\$1,993.35	\$230.08	\$3,278.72				\$6,555.57	\$9,876.39
Oct Direct Withd	\$1,757.32	\$978.58	\$1,098.66	\$115.04	\$960.05	\$58.32			\$4,967.97	\$1,843.18
November	\$1,523.54	\$132.74	\$1,714.59	\$28.76	\$1,360.07				\$4,759.70	\$9,663.72
Nov Direct Withd	\$1,692.50	\$1,223.98	\$1,249.11	\$230.09	\$1,305.19	\$58.32			\$5,759.19	\$1,888.27
December	\$333.85	\$592.70	\$1,053.05	\$776.54	\$1,845.46	\$836.28	\$846.23		\$6,284.11	\$6,197.17
Dec Direct Withd	\$1,828.25	\$1,157.43	\$1,286.72	\$258.85	\$1,478.05	\$58.32	\$788.79		\$6,856.41	\$2,035.03
TOTAL 2018	\$28,716.02	\$22,565.46	\$23,110.42	\$7,908.73	\$31,809.58	\$4,126.07	\$1,935.02		\$120,171.30	
TOTAL 2017	\$21,797.47	\$26,445.24	\$27,909.35	\$8,852.31	\$30,193.01	\$4,702.59	\$724.03			\$120,624.00



Department: Community Services

Report Number: CS-005-19

Council Meeting Date: February 11th, 2019

Title: Update on Trillium Grant for VPCC Weight Room

Objective

To provide council with an update on the Ontario Trillium Foundation Capital Grant application for the VPCC fitness centre.

Background

In September 2018 we submitted an application to the Ontario Trillium Foundation to replace our older outdated equipment Victoria Park Community Centre and to relocate existing weight room space. The maximum grant you can receive from the Ontario Trillium Foundation Capital Grant is \$150,000.

Analysis

In January 2019 we received notice from the Ontario Trillium Foundation that the Town of Ingersoll was approved for the full asking amount of \$150,000.

Financial Implications

Council originally approved \$150,000 for new equipment in the 2019 Capital Budget.

With the Trillium grant approval for the full asking amount of \$150,000, the monies in the Capital Budget can be reallocated.

Recommendation

THAT staff report CS-005-19 be received by the Council for the Town of Ingersoll as information.

Attachments

None

Prepared by: Nancy Nadalin, Recreation Program Manager
Approved by: Kyle Stefanovic, Director of Community Services
William Tigert, CAO.



Department: Community Services

Report Number: CS-006-19

Council Meeting Date: February 11, 2019

Title: Report on 2018 Santa's Village

Objective

To provide town council with an update of the 2018 Santa's Village, including an analysis of the attendance numbers, results of completed surveys, and recommendations for future events.

Background

In the past, there has been no tracking of the number of adults vs. children visiting Santa's Village, nor where they live, or the ages of the children attending. This is vital information in terms of directing advertising dollars and determining the direction of future events.

Analysis

This report is intended to provide an update on the 2018 Santa's Village regarding attendance and community outreach. It also provides a breakdown and analysis of the event's attendance and where visitors live. The results of a survey are presented, providing insight into visitors' likes and dislikes about the event, along with comments and suggestions for future events.

Based on this analysis, recommendations are provided to Council that can grow the event into a premier Christmas destination for local families. Such information will allow for important changes that can be made to future Santa's Village events:

- Advertising dollars can be better directed for more efficiency.
- Additional markets can be developed to increase the reach of the event.

Financial Implications

None

Recommendation

THAT staff report CS-006-19 be received by the Council for the Town of Ingersoll as information.

Attachments

Report on 2018 Santa's Village
Attendance Analysis 2018 (Excel Spreadsheet)

Prepared by: Andrea Roulston, Coordinator of Santa's Village
Approved by: Kyle Stefanovic, Director of Community Services.
William Tigert, CAO

Report on the 2018 Santa's Village

Attendance and Survey Analysis
Visitor Comments, Feedback, and Suggestions

Written by

Andrea Roulston

Coordinator, 2018 Santa's Village
Town of Ingersoll

2018 Attendance Numbers

Week	Date	Children	Adults	Total	Percentage
Week 1	Fri Nov 23	205	295	500*	
	Sat Nov 24	68	58	126	
				626	
Week 2	Fri Nov 30	80	61	141	
	Sat Dec 1	111	128	239	
				380	
Week 3	Fri Dec 7	88	105	193	
	Sat Dec 8	163	178	341	
				534	
Week 4	Fri Dec 14	104	137	241	
	Sat Dec 15	165	198	363	
				604	
Week 5	Fri Dec 21	82	94	176	
	Sat Dec 22	117	151	268	
				444	
Total		1183	1405	2588	

*The attendance figure for the Opening Night is an estimation. We have the number of children's ballot that were filled out and placed into the ballot box. With the large number of people and difficulty with tripping breakers, the Coordinator could not keep track of every adult that came into the barn. Based on the adults that were tracked and the observation of how many adults typically accompanied each child, an estimation of 500 people for Opening Night was rendered.

Relevant Observations of 2018 Attendance Numbers:

- a) Almost one-quarter of visitors came during the first weekend.
- b) Opening Night is the only Friday where attendance was greater on Friday than on Saturday. During weeks 2-5, Saturdays were busier.
- c) Despite such an overwhelming number of Opening Night visitors, the number of children visiting on Friday vs. Saturday was almost even – 47.3% on Fridays vs. 52.7% on Saturdays.
- d) Although Santa's Village is an event designed for children, more adults attended than children (54.3% vs. 45.7% respectively). Only one night (out of the ten) did children outnumber adults.

Recommendation – There is an opportunity for the Town of Ingersoll to attract even more adults. Many of the older adults accompanied their children and grandchildren to Santa's Village. To draw older visitors, Santa's Village could open for 2-3 weekday afternoons (for example, from 3-6 pm) so that bus tours of seniors from local centres and retirement homes could attend. Local restaurants or churches could offer dinner to the tour buses, which could then come back to the parks to see the Festival of Lights display.

There are some caveats to opening these dates/times outside of the normal Santa's Village hours. First of all, there must be enough staff or volunteers to look after visitors. Secondly, the cold temperatures would be a concern for older visitors who are on site for an extended period of time. As well, seniors with mobility issues and use a cane, walker, or wheelchair might have some difficulty in navigating the barn due to the rented floor mats. Lastly, some form of entertainment would need to be arranged on these tour dates to make it worthwhile for senior centres and retirement homes to rent transportation/drivers to bring their guests.

- e) For the first time, Santa's Village ran a week later into December. The last weekend had over 17% of the total number of visitors, certainly making it worthwhile to have the event end closer to Christmas.
- f) Weather does significantly affect the attendance numbers of the event. During the first two Saturdays of Santa's Village, there was a great deal of rainfall. These two dates were the lowest Saturdays of the five weekends.
- g) Out of the ten evenings of the event, only two nights had any significant visitor numbers after 8 pm. The other eight evenings were sparsely attended after that time (perhaps 5-6 people).

Recommendation -- Serious consideration should be given to ending each evening at 8 pm to save money (wages, electricity, etc.).

- h) If one looks closely at the ages of the children who attended Santa's Village in 2018 (see Excel spreadsheet), you'll notice that the highest numbers are for ages 6, 8, and 3 (12.4%, 11.2% and 10.7% respectively). After age 8, the number of

children falls significantly. This matches the feedback the Coordinator obtained from family and friends that most children older than aged 8 become bored with the entertainment and decorations. It appears that most of the older children (above age 8) are brought by parents with their younger siblings.

Recommendation -- The Town of Ingersoll has an opportunity to develop another market for Santa's Village by appealing to an older age group of children (age 9+). Perhaps with the Fusion Youth Centre, programs and entertainment could be developed for older children, tweens, and younger teenagers. Less emphasis could be placed on "Santa Claus" and more could be placed on fun, friendship, and entertainment for the holiday season.

- i) The children's raffle ballots also gave the Santa's Village committee valuable information about where visitors reside. With the event being held in Ingersoll, one would think that the vast majority of visitors would hail from Ingersoll. However, only 51.1% of visiting children lived in Ingersoll, meaning 48.9% lived outside of the town limits.

This information is vitally important for future marketing and advertising efforts. Knowing where visitors reside helps in determining the most appropriate and effective way to spend the advertising budget. Further information can be gathered from the surveys that were completed by several adults.

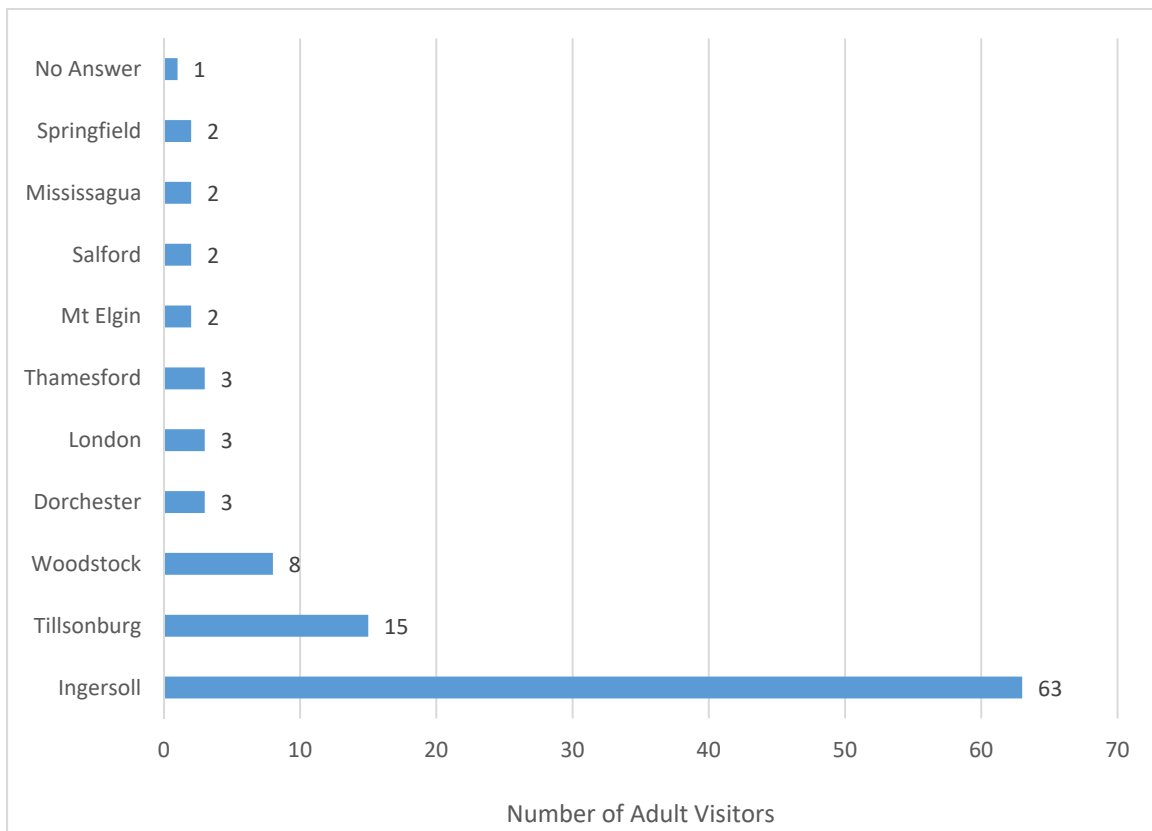
Survey Analysis

Number of Surveys Completed – 118* (8.4% of adult visitors)

*Coordinator wanted to have more surveys completed, but it was difficult to do so when the event was very busy. Adults completing the survey created a bottleneck near the doorway, making the area very crowded.

Question 1 – Where are you from?

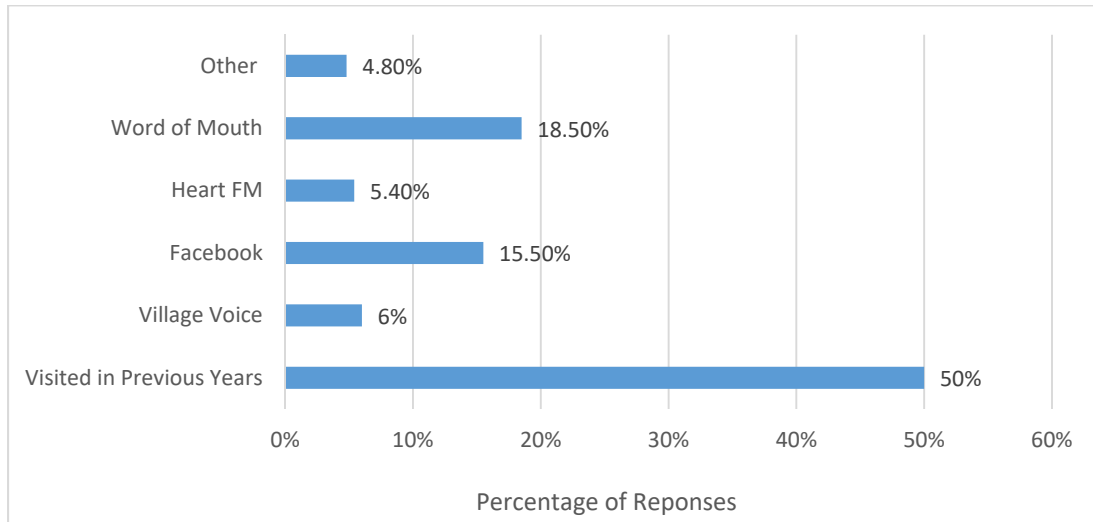
122 Answers (some surveys listed more than more response)



*Locations with 1 response include: Mossley, Eden, Beachville, Burgessville, Brampton, St Marys, Port Dover, Durham Centre, Temagami (near North Bay), Putnam, Wellburn, Langton, Cambridge, Brantford, Tavistock, England (UK), Kintore, and Drumbo.

- a) As with the children's raffle ballots, the locations listed in the chart above will help influence the decisions of where to direct advertising dollars for the most efficient and economical results.

Question 2 – How did you hear about Santa’s Village? (check all that apply)
168 Answers



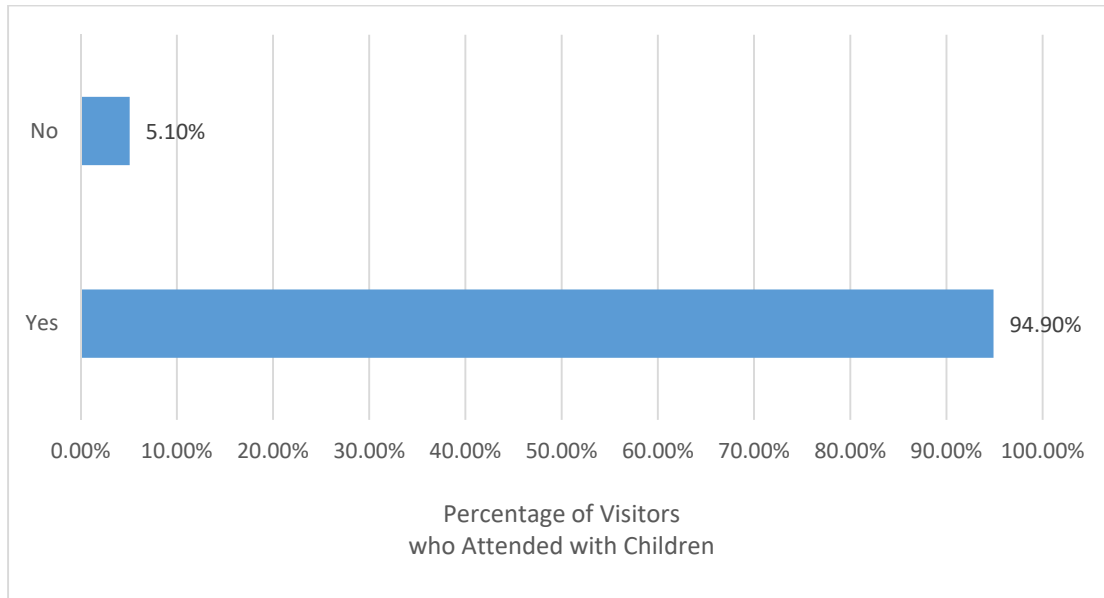
**"Other" includes: School Flyers, Google/Online Search, London Free Press, School/Teacher, and Driving by the Event (on Highway 119).

- a) The surveys show that the majority of visitors are repeat visitors year after year, or have come to the event after speaking with others. This clearly shows how important the "customer experience" is overall to Santa's Village. Everything must work together to provide a wonderful experience that will create a buzz and make people want to come back. This includes fun children's entertainment and activities, enthusiastic staff and volunteers, and a personable, likeable Santa Claus.
- b) An interesting thing to note in the chart above are the 10 responses of the "Village Voice". Due to unforeseen circumstances, a full-page ad was not placed in 2018 in the Village Voice. Therefore, these visitors are indicating that they remember seeing an ad in previous years. However, the Coordinator does not feel that this lack of advertising in the Village Voice has a significant impact on attendance levels. Instead, weather appears to have a greater impact than missing this advertising opportunity.

Recommendation – As mentioned, the Coordinator does not believe that not advertising in the Village Voice in 2018 had a significant impact on attendance. Combined with an idea of where visitors reside, the savings (almost \$2000 per year) can be better directed to reach more potential visitors more economically.

Question 3 – Did you bring children?

118 Answers

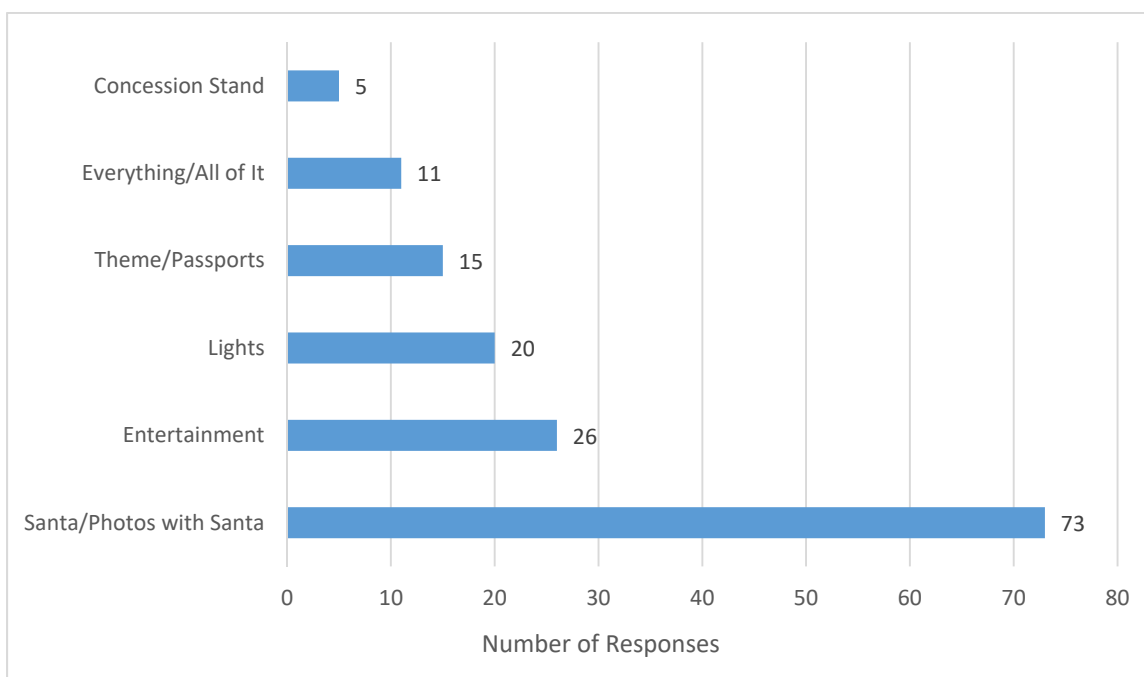


*The 112 visitors who attended with children brought a total of 224 children.

- a) This question is a paradox to the attendance numbers. While most adults visit Santa's Village with children, the overall number of adults who visited outnumbered the total number of children.

Recommendation – This question demonstrates that Santa's Village should continue to be advertised as a family event. While adults may come to Santa's Village to see the decorations or have their photo taken with Santa, children should remain the primary focus.

Question 4 – What is your favourite part of Santa’s Village?



*Specific entertainment mentioned in the survey comments include: fireworks show, magician, Miss Gail (story time), face painting, balloon twisting, and the Ingersoll Choral Society.

**Other Responses include: Sense of Community, Free Admission, Local Event, Candy Canes, and Kids’ Expressions/Feelings of Joy/Laughter/Smiles.

- a) As the chart above shows, many visitors mentioned that meeting Santa Claus was their (and their children’s) favourite part of coming to the event. Therefore, it is very important to have a Santa who is friendly and interacts well with the children. It is also important to hire a Santa well before the start of the event as there are fewer men who portray Santa (many have retired from making appearances) or who are booked to do the same events year after year.

Recommendation – Book a Santa Claus before the end of September (at the latest).

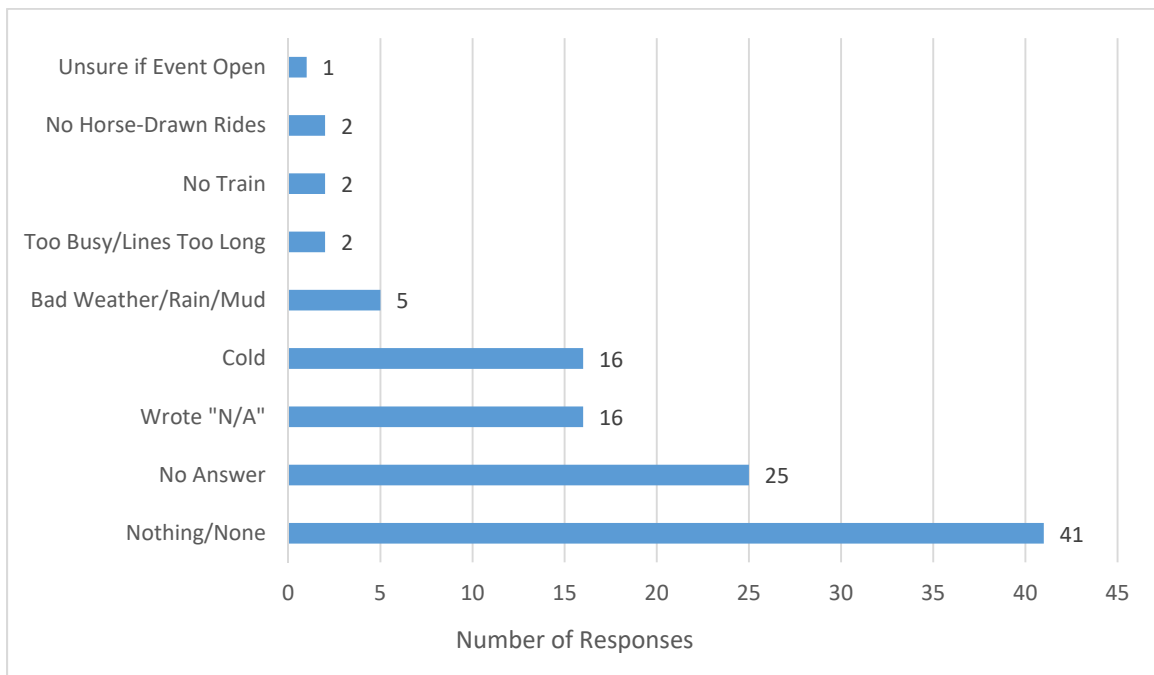
- b) Despite the cold and lack of parking, the barn at the Ingersoll Cheese and Agricultural Museum seems to be a good location for Santa’s Village. Many visitors (as shown in the chart above) mentioned that the Festival of Lights was a favourite part of the event. There seems to be no distinction in visitors’ minds between the Festival of Lights and Santa’s Village; instead, they are seen as the same event.

Advisory – If significant changes are to be made in future to either Santa’s Village or the Festival of Lights, it might be difficult to garner support for these changes without a clear distinction between the two events. The Town of Ingersoll should look strongly at the individual branding of each event so that each has its own identity.

- c) In addition to those who completed the survey, many others indicated that they enjoyed having the concession stand on site. With the cold temperatures inside the barn, both visitors and volunteers appreciated the ability to buy hot drinks (coffee, hot chocolate, and apple cider) to stay warm. The Christmas cookies were also very popular.

Recommendation – The 2018 Santa’s Village was the first year that a concession stand was held with the event. While it resulted in extra work for the Coordinator – buying supplies, packaging cookies individually, finding staff and volunteers to work the area, cleanup – the concession stand did a good business each night of the event. Many visitors remarked that they wished they had brought money with them to make a purchase at the concession stand. The net proceeds of the 2018 concession stand was over \$900, which was divided between the four service groups and churches that provided volunteers to Santa’s Village. It is recommended that there continue to be a concession stand in future years.

Question 5 – What is your least favourite part of Santa’s Village?



- a) It is interesting to note that 82 of the 118 surveys (69.5%) had no answer to this question, or the visitor has written “nothing”, “none”, or “n/a” for not applicable. This says a great deal about the guest experience for each visitor.
- b) Next to these answers, the cold temperatures in the barn were mentioned most often. While it was cold for a visitor who was in the barn for possibly 20-30 minutes, imagine how uncomfortable it was for staff and volunteers who were in the barn for 3-4 hours. It is unfair to ask people to work in these conditions for such a long period of time, and might prove difficult to recruit staff and volunteers to work at the event in the future. As mentioned earlier, the cold temperatures might also be an issue if there is a marketable effort to have more seniors visit Santa’s Village. An important note is that temperatures hovered at or above the freezing mark during the 2018 event.

Recommendation – Town Council should consider making a one-time increase to the event budget so that portable propane heaters can be purchased for the event. This would be a cheaper option than upgrading the heating system in the barn.

- c) Without some important changes, it is likely that many more visitors would have complained about the busyness of the event and slow lines. To combat these issues, the layout of the barn was adjusted so that visitors followed a path past the exhibits and ended with a visit to Santa Claus. While waiting, the children could look at the decorations, read their activity books (passports), interact with the volunteers, or interact with some of the entertainment (face painters, balloon twisters, and magician). The layout provided some order and direction, and the entertainment occupied the children while they waited in line.
- d) To ensure the lines moved more quickly, more entertainers were hired. In previous years, only one face painter or balloon twister was hired to save money by stretching a tight budget. However, this created long, slow-moving lines where many parents were unwilling to wait with their children.

Instead, two or three face painters were hired (depending on the expected attendance). While costing more, it allowed parents and children to move through the lines faster, decreasing frustration and disappointment, and increasing the customer experience.

- e) Some people mentioned they were disappointed that the train set and village was not on site. If mentioned directly to the Coordinator, staff, or volunteers, the visitor was told that the train needed repairs. Note: The train has been repaired and will be available for display during the 2019 Santa’s Village.

- f) Many more visitors asked about the horse-drawn wagon rides; they were disappointed that the rides were not being provided. However, when the safety concerns were explained, the visitors understood the situation and agreed that the rides could not take place if there any potential of injury or harm to horses or visitors.

Recommendation – Serious efforts should be made to develop a different route for the wagon rides so that there is a reduced risk of injury.

Question 6 – Comments/Feedback/Suggestions (with notes by Coordinator)

- a) Add heaters to the barn (3)
- b) Put a sign at the road
- c) Have somewhere to sit and visit

Note: This is not feasible; there is not enough space within the barn to have tables/chairs or benches set up. Barn is already congested and busy.

- d) Want a digital photo option (in addition to a printed Santa photo)

Note: The photographer was asked about this by the Coordinator. She said that she did not provide this option because it was too hard to keep track of email addresses and coordinate them with the correct photos.

- e) More activities for toddlers

Note: The passport was designed as an activity for all age groups, with pictures to colour as well as activities for older children (maze, word search, connect the dots). Clearly, the visitor did not attend during any of the children's entertainment, such as face painting, balloon twisting, story time, magician, or puppet show.

- f) Crafts for kids to make

Note: The passport was created to provide information about the countries featured in the Christmas Around the World theme. It was also an activity book for children to take home to complete. It was felt that this eliminated the need for a separate craft activity.

- g) Didn't bring any money

Note: This was a comment that was repeated again and again. Not surprising since the 2018 Santa's Village was the first time that there was a concession stand.

h) Improve parking situation

Note: Unsure of how this can be done. There must be consultations between the Coordinator, the Parks department, and the museum curator.

i) Open one weekday as well as weekends

Note: As mentioned earlier, this might put a strain on available resources, particularly on finding the staff and volunteers to work, and the expense of hiring entertainment (such as Santa Claus). It's also a question of whether there would be enough visitors to warrant opening an extra night.

j) Want the horse-drawn wagon rides back

Note: As mentioned earlier, this is a large safety concern. By observation of several visitors, more people than in the past drive through the park to view the Festival of Lights displays rather than walk. This is particularly dangerous with a narrow roadway that makes it difficult for vehicles to pass the horses and wagon. In order to bring back the horse-drawn wagon rides, changes will need to be made to the route.

k) Hire local businesses

Note: Every attempt was made to support the local community by hiring local businesses and talent for entertainment. However, visitors must understand that this is not always possible. Sometimes, they do not offer the products or services required or they do not offer them at competitive prices. With a limited budget, this is important. To maintain interest in Santa's Village and keep visitors coming back each year, it's also important to offer different children's activities and entertainment. Therefore, it becomes necessary to hire talent from outside Ingersoll.

Additional Comments:

"You are doing a great job. Keep up the good job."

"Love the new concept!"

"I think it's a great family event."

"Everything was excellent; everyone was amazing."

"First year here and very pleased." (Visitor from Woodstock, visiting with 2 children, ages 3 and 6)

"Always enjoy this activity with the grandchildren."

Attendance -- 2018 Santa's Village

Grant Total -- 2588 visitors

Week 1	Friday Nov 23	Children	205				
		Adults	295				
		Total	500				
	Sat Nov 24	Children	68				
		Adults	58				
		Total	126				
Weekend Total				626	24.20%		
Week 2	Friday Nov 30	Children	80				
		Adults	61				
		Total	141				
	Sat Dec 1	Children	111				
		Adults	128				
		Total	239				
Weekend Total				380	14.70%		
Week 3	Friday Dec 7	Children	88				
		Adults	105				
		Total	193				
	Sat Dec 8	Children	163				
		Adults	178				
		Total	341				
Weekend Total				534	20.60%		
Week 4	Friday Dec 14	Children	104				
		Adults	137				
		Total	241				
	Sat Dec 15	Children	165				
		Adults	198				
		Total	363				
Weekend Total				604	23.30%		
Week 5	Friday Dec 21	Children	82				
		Adults	94				
		Total	176				
	Sat Dec 22	Children	117				
		Adults	151				
		Total	268				
Weekend Total				444	17.20%		
Grand Total				2588			
		Children	1183	45.70%			
		Adults	1405	54.30%			

Adults	Week 1	Week 2	Week 3	Week 4	Week 5	Total	Percentage
Friday	295	61	105	137	94	692	49.30%
Saturday	58	128	178	198	151	713	50.70%
	353	189	283	335	245		100.00%
						1405	

Friday Nov 23, 2018 -- Opening Night

No of Children Attended -- 205

Age Group	Number	Percentage
< 2 years	7	3.40%
2 years	15	7.30%
3 years	21	10.22%
4 years	19	9.30%
5 years	23	11.20%
6 years	24	11.70%
7 years	16	7.80%
8 years	21	10.20%
9 years	17	8.30%
10 years	11	5.40%
11 years	10	4.90%
12 years	4	2.00%
13 years	3	1.50%
> 13 years	1	0.50%
Unknown	13	6.30%
	205	100.02%

No of Children Attended -- 205

Location	Number	Percentage
Ingersoll	89	43.40%
Woodstock	45	22.00%
London	12	5.90%
Mt Elgin	12	5.90%
Thamesford	9	4.40%
Beachville	4	2.00%
Wellesley	3	1.50%
Norwich	3	1.50%
St Marys	3	1.50%
Burgessville	3	1.50%
Tillsonburg	2	0.97%
Ilderton	2	0.97%
Delhi	2	0.97%
Komoka	1	0.40%
Paris	1	0.40%
Salford	1	0.40%
Unknown	13	6.30%
	205	100.01%

Saturday Nov 24, 2018

No of Children Attended -- 68

Age Group	Number	Percentage
< 2 years	1	1.50%
2 years	3	4.40%
3 years	13	19.10%
4 years	2	2.90%
5 years	9	13.20%
6 years	13	19.10%
7 years	4	5.90%
8 years	11	16.20%
9 years	3	4.40%
10 years	1	1.50%
11 years	1	1.50%
12 years	4	5.90%
13 years	2	2.90%
> 13 years	0	0.00%
Unknown	1	1.50%
	68	100.00%

Saturday Nov 24, 2018

No of Children Attended -- 68

Location	Number	Percentage
Ingersoll	39	57.60%
Tillsonburg	5	7.40%
Woodstock	4	5.90%
Mt Elgin	4	5.90%
Salford	4	5.90%
London	2	2.90%
Thamesford	2	2.90%
Mossley	2	2.90%
Beachville	1	1.50%
Dorchester	1	1.50%
Unknown	4	5.90%
	68	100.30%

Friday Nov 30, 2018

No of Children Attended -- 80

Age Group	Number	Percentage
< 2 years	5	6.30%
2 years	3	3.80%
3 years	8	10.00%
4 years	3	3.80%
5 years	4	5.00%
6 years	11	13.80%
7 years	5	6.30%
8 years	7	8.80%
9 years	13	16.30%
10 years	8	10.00%
11 years	7	8.80%
12 years	4	5.00%
13 years	2	2.50%
> 13 years	0	0.00%
Unknown	0	0.00%
	80	100.40%

Friday Nov 30, 2018

No of Children Attended -- 80

Location	Number	Percentage
Ingersoll	44	55%
Tillsonburg	10	12.50%
Woodstock	8	10.00%
Beachville	5	6.30%
Norwich	3	3.80%
Kintore	2	2.50%
Kitchener	2	2.50%
Niagara Falls	1	1.30%
Eden	1	1.30%
Waterdown	1	1.30%
Unknown	3	3.80%
	80	100%

Saturday Dec 1, 2018

No of Children Attended -- 111

Age Group	Number	Percentage
< 2 years	5	4.50%
2 years	7	6.30%
3 years	12	10.80%
4 years	12	10.80%
5 years	14	12.60%
6 years	14	12.60%
7 years	8	7.20%
8 years	16	14.40%
9 years	6	5.40%
10 years	10	9.00%
11 years	5	4.50%
12 years	1	0.90%
13 years	1	0.90%
> 13 years	0	0.00%
Unknown	0	0.00%
	111	99.90%

Saturday Dec 1, 2018

No of Children Attended -- 111

Location	Number	Percentage
Ingersoll	72	64.90%
Woodstock	12	10.80%
Salford	7	6.30%
London	4	3.60%
Thamesford	4	3.60%
Mt Elgin	3	2.70%
Sweaburg	2	1.80%
Belmont	2	1.80%
Thorndale	1	0.90%
Burgessville	1	0.90%
Unknown	3	2.70%
	111	100.00%

Friday Dec 7, 2018

No of Children Attended -- 88

Age Group	Number	Percentage
< 2 years	4	4.50%
2 years	6	6.80%
3 years	11	12.50%
4 years	9	10.20%
5 years	5	5.70%
6 years	11	12.50%
7 years	13	14.80%
8 years	7	8.00%
9 years	5	5.70%
10 years	1	1.10%
11 years	7	8.00%
12 years	1	1.10%
13 years	3	3.40%
> 13 years	0	0.00%
Unknown	5	5.70%
	88	100.00%

Friday Dec 7, 2018

No of Children Attended -- 88

Location	Number	Percentage
Ingersoll	48	54.50%
Woodstock	10	11.40%
Thamesford	9	10.20%
Dorchester	3	3.40%
Mt Elgin	3	3.40%
London	2	2.30%
Otterville	2	2.30%
St Marys	2	2.30%
Maryhill	2	2.30%
Embrow	2	2.30%
Mossley	2	2.30%
Tillsonburg	2	2.30%
Unknown	1	1.10%
	88	100.10%

Saturday Dec 8, 2018

No of Children Attended -- 163

No of Children Attended -- 163

Age Group	Number	Percentage	Location	Number	Percentage
< 2 years	10	6.10%	Ingersoll	74	45.40%
2 years	9	5.50%	Woodstock	24	14.70%
3 years	18	11.00%	Tillsonburg	13	8.00%
4 years	15	9.20%	Mt Elgin	8	4.90%
5 years	15	9.20%	London	6	3.70%
6 years	17	10.40%	Dorchester	3	1.80%
7 years	21	12.90%	Culloden	3	1.80%
8 years	23	14.10%	Hickson	3	1.80%
9 years	13	8.00%	Thamesford	2	1.20%
10 years	6	3.70%	Mississauga	2	1.20%
11 years	6	3.70%	Mossley	2	1.20%
12 years	3	1.80%	St Marys	2	1.20%
13 years	4	2.50%	Salford	1	0.60%
> 13 years	0	0.00%	Delhi	1	0.60%
Unknown	3	1.80%	Langton	1	0.60%
	163	99.90%	Meadowridge	1	0.60%
			Vienna	1	0.60%
			Unknown	16	9.80%
				163	99.70%

Friday Dec 14, 2018

No of Children Attended -- 104

Age Group	Number	Percentage
< 2 years	5	4.80%
2 years	4	3.80%
3 years	12	11.50%
4 years	10	9.60%
5 years	14	13.50%
6 years	16	15.40%
7 years	10	9.60%
8 years	9	8.70%
9 years	8	7.70%
10 years	8	7.70%
11 years	3	2.90%
12 years	2	1.90%
13 years	1	0.96%
> 13 years	0	0.00%
Unknown	2	1.90%
	104	99.96%

Friday Dec 14, 2018

No of Children Attended -- 104

Location	Number	Percentage
Ingersoll	57	54.8%
Woodstock	11	10.6%
Tillsonburg	5	4.8%
London	4	3.8%
Cambridge	3	2.9%
Alymer	2	1.9%
Thamesford	2	1.9%
Brownsville	2	1.9%
Tavistock	2	1.9%
Springfield	2	1.9%
Goderich	2	1.9%
Mt Elgin	2	1.9%
Norwich	1	0.96%
Mississauga	1	0.96%
Brantford	1	0.96%
Unknown	7	6.7%
	104	99.8%

Saturday Dec 15, 2018

No of Children Attended -- 165

Age Group	Number	Percentage	Location	Number	Percentage
< 2 years	6	3.60%	Ingersoll	71	43.00%
2 years	17	10.30%	Woodstock	17	10.30%
3 years	18	10.90%	London	7	4.20%
4 years	24	14.50%	Salford	6	3.60%
5 years	17	10.30%	Embro	6	3.60%
6 years	16	9.70%	Tillsonburg	6	3.60%
7 years	14	8.50%	Dorchester	5	3.00%
8 years	12	7.30%	Beachville	5	3.00%
9 years	11	6.70%	Sweaburg	4	2.40%
10 years	10	6.10%	Clinton	4	2.40%
11 years	11	6.70%	Thamesford	4	2.40%
12 years	5	3.00%	Norwich	3	1.80%
13 years	1	0.60%	Mt Elgin	3	1.80%
> 13 years	0	0.00%	Putnam	2	1.20%
Unknown	3	1.80%	Wellsley	2	1.20%
	165	100.00%	Oxford Centre	1	0.60%
			Lakeside	1	0.60%
			Otterville	1	0.60%
			Unknown	17	10.30%
				165	99.60%

Friday Dec 21, 2018

No of Children Attended -- 82

Age Group	Number	Percentage
< 2 years	3	3.70%
2 years	5	6.10%
3 years	5	6.10%
4 years	8	9.80%
5 years	5	6.10%
6 years	10	12.20%
7 years	6	7.30%
8 years	17	20.70%
9 years	8	9.80%
10 years	4	4.90%
11 years	3	3.70%
12 years	3	3.70%
13 years	4	4.90%
> 13 years	0	0.00%
Unknown	1	1.20%
	82	100.20%

Friday Dec 14, 2018

No of Children Attended -- 82

Location	Number	Percentage
Ingersoll	43	52.40%
Woodstock	15	18.30%
Dorchester	6	7.30%
London	4	4.90%
Innerkip	3	3.70%
Springfield	2	2.40%
Eden	2	2.40%
Paris	1	1.20%
Mt Elgin	1	1.20%
Kintore	1	1.20%
Unknown	4	4.90%
	82	99.90%

Saturday Dec 22, 2018**Saturday Dec 22, 2018**

No of Children Attended -- 117

No of Children Attended -- 117

Age Group	Number	Percentage	Location	Number	Percentage
< 2 years	10	8.50%	Ingersoll	67	57.30%
2 years	8	6.80%	Woodstock	14	12.00%
3 years	9	7.70%	Tillsonburg	11	9.40%
4 years	8	6.80%	Dorchester	5	4.30%
5 years	8	7.70%	Ilderton	3	2.60%
6 years	15	12.80%	Brampton	3	2.60%
7 years	6	5.10%	Brantford	2	1.70%
8 years	10	8.50%	Salford	2	1.70%
9 years	9	7.70%	Mt Elgin	2	1.70%
10 years	9	7.70%	London	2	1.70%
11 years	13	11.10%	St Thomas	2	1.70%
12 years	6	5.10%	Plattsville	1	0.90%
13 years	3	2.60%	Unknown	3	2.60%
> 13 years	0	0.00%		117	100.20%
Unknown	3	2.60%			
	117	100.70%			

Week 1 -- Friday Nov 23 and Saturday Nov 24

No of Children Attended -- 269

Age Group	Number	Percentage
< 2 years	8	3.00%
2 years	18	6.70%
3 years	34	12.60%
4 years	21	7.80%
5 years	32	11.90%
6 years	37	13.80%
7 years	20	7.40%
8 years	32	11.90%
9 years	20	7.40%
10 years	12	4.50%
11 years	11	4.10%
12 years	4	1.50%
13 years	5	1.90%
> 13 years	1	0.40%
Unknown	14	5.20%
	269	100.10%

Week 1 -- Friday Nov 23 and Saturday Nov 24

No of Children Attended -- 269

Location	Number	Percentage
Ingersoll	128	47.60%
Woodstock	49	18.20%
Mt Elgin	16	5.90%
London	14	5.20%
Thamesford	11	4.10%
Tillsonburg	7	2.60%
Beachville	5	1.90%
Salford	5	1.90%
St Marys	3	1.10%
Burgessville	3	1.10%
Norwich	3	1.10%
Wellsley	3	1.10%
Ilderton	2	0.70%
Delhi	2	0.70%
Mossley	2	0.70%
Komoka	1	0.40%
Paris	1	0.40%
Dorchester	1	0.40%
Unknown	13	4.80%
	269	99.90%

Week 2 -- Friday Nov 30 and Saturday Dec 1

No of Children Attended -- 191

Age Group	Number	Percentage
< 2 years	10	5.20%
2 years	10	5.20%
3 years	20	10.50%
4 years	15	7.90%
5 years	18	9.40%
6 years	25	13.10%
7 years	13	6.80%
8 years	23	12.00%
9 years	19	9.90%
10 years	18	9.40%
11 years	12	6.30%
12 years	5	2.60%
13 years	3	1.60%
> 13 years	0	0.00%
Unknown	0	0.00%
	191	99.90%

Week 2 -- Friday Nov 30 and Saturday Dec 1

No of Children Attended -- 191

Location	Number	Percentage
Ingersoll	116	60.70%
Woodstock	20	10.50%
Tillsonburg	10	5.20%
Salford	7	3.70%
Beachville	5	2.60%
London	4	2.10%
Thamesford	4	2.10%
Norwich	3	1.60%
Mt Elgin	3	1.60%
Kintore	2	1.60%
Kitchener	2	1.00%
Sweaburg	2	1.00%
Belmont	2	1.00%
Niagara Falls	1	0.50%
Eden	1	0.50%
Waterdown	1	0.50%
Thorndale	1	0.50%
Burgessville	1	0.50%
Unknown	6	3.10%
	191	100.30%

Week 3 -- Friday Dec 7 and Saturday Dec 8

No of Children Attended -- 251

Age Group	Number	Percentage
< 2 years	14	5.60%
2 years	15	6.00%
3 years	29	11.60%
4 years	24	9.60%
5 years	20	8.00%
6 years	28	11.10%
7 years	34	13.50%
8 years	30	12.00%
9 years	18	7.20%
10 years	7	2.80%
11 years	13	5.20%
12 years	4	1.60%
13 years	7	2.80%
> 13 years	0	0.00%
Unknown	8	3.20%
	251	100.20%

Week 3 -- Friday Dec 14 and Saturday Dec 15

No of Children Attended -- 251

Location	Number	Percentage
Ingersoll	122	48.60%
Woodstock	34	13.50%
Tillsonburg	15	6.00%
Thamesford	11	4.40%
Mt Elgin	11	4.40%
London	8	3.20%
Dorchester	6	2.40%
St Marys	4	1.60%
Mossley	4	1.60%
Culloden	3	1.20%
Hickson	3	1.20%
Otterville	2	0.80%
Maryhill	2	0.80%
Embro	2	0.80%
Mississauga	2	0.80%
Salford	1	0.40%
Delhi	1	0.40%
Langton	1	0.40%
Meadowridge	1	0.40%
Vienna	1	0.40%
Unknown	17	6.80%
	251	100.10%

Week 4 -- Friday Dec 14 and Saturday Dec 15

No of Children Attended -- 269

Age Group	Number	Percentage
< 2 years	11	4.10%
2 years	21	7.80%
3 years	30	11.10%
4 years	34	12.60%
5 years	31	11.50%
6 years	32	11.90%
7 years	24	8.90%
8 years	21	7.80%
9 years	19	7.10%
10 years	18	6.70%
11 years	14	5.20%
12 years	7	2.60%
13 years	2	0.70%
> 13 years	0	0.00%
Unknown	5	1.90%
	269	99.90%

Week 4 -- Friday Dec 14 and Saturday Dec 15

No of Children Attended -- 269

Location	Number	Percentage
Ingersoll	128	47.60%
Woodstock	28	10.40%
Tillsonburg	11	4.10%
London	11	4.10%
Thamesford	6	2.00%
Salford	6	2.00%
Embryo	6	2.00%
Mt Elgin	5	1.90%
Dorchester	5	1.90%
Beachville	5	1.90%
Norwich	4	1.50%
Sweaburg	4	1.50%
Clinton	4	1.50%
Cambridge	3	1.10%
Alymer	2	0.70%
Brownsville	2	0.70%
Tavistock	2	0.70%
Springfield	2	0.70%
Goderich	2	0.70%
Putnam	2	0.70%
Wellsley	2	0.70%
Mississauga	1	0.40%
Brantford	1	0.40%
Oxford Centre	1	0.40%
Lakeside	1	0.40%
Otterville	1	0.40%
Unknown	24	8.90%
	269	99.30%

Week 5 -- Friday Dec 21 and Saturday Dec 22

No of Children Attended -- 199

Age Group	Number	Percentage
< 2 years	13	6.50%
2 years	13	6.50%
3 years	14	7.00%
4 years	16	8.00%
5 years	13	6.50%
6 years	25	12.60%
7 years	12	6.00%
8 years	27	13.70%
9 years	17	8.50%
10 years	13	6.50%
11 years	16	8.00%
12 years	9	4.50%
13 years	7	3.50%
> 13 years	0	0.00%
Unknown	4	2.00%
	199	99.80%

Week 5 -- Friday Dec 21 and Saturday Dec 22

No of Children Attended -- 199

Location	Number	Percentage
Ingersoll	110	55.30%
Woodstock	29	14.60%
Dorchester	11	5.50%
Tillsonburg	11	5.50%
London	6	3.00%
Innerkip	3	1.50%
Ilderton	3	1.50%
Brampton	3	1.50%
Mt Elgin	3	1.50%
Springfield	2	1.00%
Eden	2	1.00%
Brantford	2	1.00%
Salford	2	1.00%
St Thomas	2	1.00%
Paris	1	0.50%
Kintore	1	0.50%
Plattsville	1	0.50%
Unknown	7	3.50%
	199	99.90%

Santa's Village 2018 -- Total of 1183 Children

Age Group	Week 1	Week 2	Week 3	Week 4	Week 5	Total	Percentage
< 2 years	8	10	14	11	13	56	4.70%
2 years	18	10	15	21	13	77	6.50%
3 years	34	20	29	30	14	127	10.70%
4 years	21	15	24	34	16	110	9.30%
5 years	32	18	20	31	13	114	9.60%
6 years	37	25	28	32	25	147	12.40%
7 years	20	13	34	24	12	103	8.70%
8 years	32	23	30	21	27	133	11.20%
9 years	20	19	18	19	17	93	7.90%
10 years	12	18	7	18	13	68	5.70%
11 years	11	12	13	14	16	66	5.60%
12 years	8	5	4	7	9	33	2.80%
13 years	5	3	7	2	7	24	2.00%
> 13 years	1	0	0	0	0	1	0.10%
Unknown	14	0	8	5	4	31	2.60%
	273	191	251	269	199		99.80%
						1183	
	Week 1	Week 2	Week 3	Week 4	Week 5	Total	Percentage
Friday	205	80	88	104	82	559	47.30%
Saturday	68	111	163	165	117	624	52.70%
	273	191	251	269	199		100.00%
						1183	

No of Children Attended -- 1183

Location	Wk 1 Fri	Wk 1 Sat	Wk 2 Fri	Wk 2 Sat	Wk 3 Fri	Wk 3 Sat	Wk 4 Fri	Wk 4 Sat	Wk 5 Fri	Wk 5 Sat	Total	Percentage
Ingersoll	89	39	44	72	48	74	57	71	43	67	604	51.10%
Woodstock	45	4	8	12	10	24	11	17	15	14	160	13.50%
Tillsonburg	2	5	10	0	2	13	5	6	0	11	54	4.60%
London	12	2	0	4	2	6	4	7	4	2	43	3.60%
Mt Elgin	12	4	0	3	3	8	2	3	1	2	38	3.20%
Thamesford	9	2	0	4	9	2	2	4	0	0	32	2.70%
Dorchester	0	1	0	0	3	3	0	5	6	5	23	1.90%
Salford	1	4	0	7	0	1	0	6	0	2	21	1.80%
Beachville	4	1	5	0	0	0	0	5	0	0	15	1.30%
Norwich	3	0	3	0	0	0	1	3	0	0	10	0.80%
Embro	0	0	0	0	2	0	0	6	0	0	8	0.70%
St Marys	3	0	0	0	2	2	0	0	0	0	7	0.60%
Sweaburg	0	0	0	2	0	0	0	4	0	0	6	0.50%
Mossley	0	2	0	0	2	2	0	0	0	0	6	0.50%
Wellsley	3	0	0	0	0	0	0	2	0	0	5	0.40%
Ilderton	2	0	0	0	0	0	0	0	0	3	5	0.40%
Burgessville	3	0	0	1	0	0	0	0	0	0	4	0.30%
Springfield	0	0	0	0	0	0	2	0	2	0	4	0.30%
Clinton	0	0	0	0	0	0	0	4	0	0	4	0.30%
Delhi	2	0	0	0	0	1	0	0	0	0	3	0.25%
Kintore	0	0	2	0	0	0	0	0	1	0	3	0.25%
Eden	0	0	1	0	0	0	0	0	2	0	3	0.25%
Otterville	0	0	0	0	2	0	0	1	0	0	3	0.25%
Culloden	0	0	0	0	0	3	0	0	0	0	3	0.25%
Hickson	0	0	0	0	0	3	0	0	0	0	3	0.25%
Mississauga	0	0	0	0	0	2	1	0	0	0	3	0.25%
Cambridge	0	0	0	0	0	0	3	0	0	0	3	0.25%
Brantford	0	0	0	0	0	0	1	0	0	2	3	0.25%
Innerkip	0	0	0	0	0	0	0	0	3	0	3	0.25%
Brampton	0	0	0	0	0	0	0	0	0	3	3	0.25%
Paris	1	0	0	0	0	0	0	0	1	0	2	0.20%
Kitchener	0	0	2	0	0	0	0	0	0	0	2	0.20%
Belmont	0	0	0	2	0	0	0	0	0	0	2	0.20%
Alymer	0	0	0	0	0	0	2	0	0	0	2	0.20%
Brownsville	0	0	0	0	0	0	2	0	0	0	2	0.20%
Tavistock	0	0	0	0	0	0	2	0	0	0	2	0.20%
Goderich	0	0	0	0	0	0	2	0	0	0	2	0.20%
Putnam	0	0	0	0	0	0	0	2	0	0	2	0.20%
St Thomas	0	0	0	0	0	0	0	0	0	2	2	0.20%
Maryhill	0	0	0	0	2	0	0	0	0	0	2	0.20%
Komoka	1	0	0	0	0	0	0	0	0	0	1	0.10%
Niagara Falls	0	0	1	0	0	0	0	0	0	0	1	0.10%
Waterdown	0	0	1	0	0	0	0	0	0	0	1	0.10%
Thorndale	0	0	0	1	0	0	0	0	0	0	1	0.10%
Langton	0	0	0	0	0	1	0	0	0	0	1	0.10%
Meadowridge	0	0	0	0	0	1	0	0	0	0	1	0.10%
Vienna	0	0	0	0	0	1	0	0	0	0	1	0.10%
Oxford Centre	0	0	0	0	0	0	0	1	0	0	1	0.10%
Lakeside	0	0	0	0	0	0	0	1	0	0	1	0.10%
Plattsville	0	0	0	0	0	0	0	0	0	1	1	0.10%
Unknown	13	4	3	3	1	16	7	17	4	3	71	6.00%

100.25%

1183



Department: Community Services

Report Number: CS-007-19

Council Meeting Date: February 11, 2019

Title: Fusion Centre 2018 Statistics

Objective

To provide Council with Fusion's 2018 year-end statistics.

Background

Fusion management has compiled and analyzed the 2018 statistics for Council's information and review.

Analysis

- In 2018 Fusion had 269 new members, the highest number of new memberships since 2006, the year that the youth centre opened. 52% of new members were female, while 48% were male. This is a marked improvement from past years where the percentage of female membership has been as low as 24% of all new memberships and is attributed to the recruitment plan put in place in 2016 that focused on recruiting females and providing more programs that they are interested in based on their feedback.
- The attendance trends and new membership trends continue to show that the Centre is being highly utilized by younger youth. The highest number of memberships were seen in the 10-12 year old demographic and the highest participation was seen with youth under 16. The older age demographic, particularly 17 and 18-year-olds, continues to be the lowest percentage of new members and participants at the Centre. The charts below represent the statistics for both membership and participation by age.

New Membership By Age Demographic	
Ages	# of memberships
10	67
11	63
12	47
13	35
14	13
15	15
16	14
17	7
18	8
Total	269

Participation Number Visits by Age Demographic	
Ages	# of Youth
10	1418
11	1965
12	3010
13	3532
14	2757
15	2058
16	1089
17	922
18	574
Total	17,325

- In the 2016 census data for the Town of Ingersoll, there are 790 youth between the ages of 10-14 and 835 youth between the ages of 15-19. In 2018, Fusion tracked the number of unique individuals that accessed programs at Fusion. There were 782 unique individuals which represents approximately half of the youth living in Ingersoll.
- In 2018 Fusion maintained a high level of participation. While attendance numbers were slightly lower than in 2017, the numbers were lower in the summer and fall months and can be attributed to Fusion no longer tracking the number of participants in the skatepark as staff do not directly supervise the park as recommended by the Town's insurance company. In 2016 the skatepark had 2367 youth visits, it was closed in 2017 for safety reasons and replaced in the fall of 2017, and in 2018 visits were not tracked but the skatepark was always very busy, and participation was consistent with past participation. There was also a gap in programs during Haunted House prep time, which was longer this fall due to only having one Full-Time staff member that had done the set-up for the event in past years, so participation was also lower in the fall months due to this event. The following charts provide a monthly snapshot of youth participation:

Program Visits Made By Youth			
Month	2017	2018	Increase/Decrease
January	1169	1300	+131
February	1604	1543	-61
March	1660	1823	+163
April	1673	1562	-111
May	1476	1702	+226
June	1505	1517	+2
July	1550	1454	-96
August	1567	1374	-193
September	1700	1309	-391
October	1519	1219	-300
November	1621	1522	-99
December	998	1000	+2
Total	18,042	17,325	-717

- The daily average was 59 youth participating in Youth Centre activities
- In 2018 there were a total of 2,955 youth visits in Fusion’s community outreach program
- The following statistics represent youth visits to specific types of programming at Fusion:
 - Art Programs – 2,284 visits
 - Music & Recording – 1,048 visits
 - Sports & Recreation – 2999 visits
 - Technology Programs – 710 visits
 - Culinary Programs – 501 visits
 - Leadership Programs – 221 visits

Overall, Fusion had a very positive year and has maintained high levels of participation. Other 2018 highlights include:

- There were significant upgrades to Fusion’s outdoor community space which has improved the space considerably and provided for more recreation opportunities such as outdoor basketball, ball hockey, and beach volleyball. This was made possible by a community grant from the Ingersoll Community Foundation.
- Fusion’s Wifi was upgraded through a grant from GM Cami, and this has greatly improved connectivity and the potential for more technology programs at Fusion. Both the youth participants and community partners have noted a significant difference.
- The music studio upgrades were completed through a grant from the “Pause for Love” event that took place in 2017 which provided funds to ensure the studio was providing youth with the opportunity to learn recording arts on equipment that is used in the current industry.
- In 2018 Fusion also secured a lease with Pat’s Driving School and driver’s education is offered on site through this partnership.
- Community partners such as ISSI, VON, and Wellkin continue to offer programs to Ingersoll residents during hours that youth programming is not taking place in order to maximize the Centre’s usage and to provide vital services in the Ingersoll community.

Financial Implications

None

Recommendation

THAT staff report CS-007-19 be received by the Council for the Town of Ingersoll as information.

Attachments

None

Prepared by: Andrea Brown, Manager, Fusion Youth Centre
Approved by: Kyle Stefanovic, Director, Community Services
William Tigert, CAO



Department: Community Services

Report Number: CS-008-19

Council Meeting Date: February 11, 2018

Title: Smoking Bylaw

Objective

To consider changes to the smoking by-law

Background

Currently, the Town of Ingersoll has smoking by-law No. 10-4550, and it has been updated by No. 15-4848

There is also the smoke-free Ontario act. The smoke-free Ontario act restricts smoking on numerous areas including:

1. Schools/day nursery and childcare centres – 20m from the perimeter of the property
2. Playgrounds- 20m from the playground
3. Sports fields- 20m from the sports field or spectator area
4. Recreation Facility- 20m from the perimeter of the property
5. Workplaces- all indoor workplace and workplace vehicles
6. Bar and restaurant patio- 9m from the perimeter of the property (this is including fairs and festivals where food and drink is being offered)
7. Hospital property- the entire property
8. Long term care homes- 9m from any entrances or exits
9. Enclosed Public Place (any structure that is covered with a roof)

The Town's smoking by-law restricts smoking on the following Town properties:

No person shall smoke outdoors on any portion of property of the following Town facilities:

1. Ingersoll District Memorial Arena
2. Victoria Park Community Centre
3. Town Centre
4. Fusion Youth Activity & Technology Centre
5. Public Washrooms.

No person shall smoke outdoors within 9 meters of any facility entrance of the following Town facilities:

1. Fire Hall
2. Police Station
3. Public Works Department.

Between the Town's Smoking by-law and the Smoke-Free Ontario Act, many of the properties in Town are covered. Also, all structures like the gazebo downtown are required to be smoke-free, and you cannot smoke within 9 meters of the structure. The same is true of all playground equipment.

In the end, the only areas where smoking may be allowed on town lands are in some of our parks that are not home to a recreation facility and only in areas 9 meters away from any playground equipment or structures.

That may leave a few areas in some of the parks and some of the town's trails where smoking may not be prohibited by the current smoke-free Ontario act and our Smoking by-law.

Public Health advises us that some municipalities are updating their by-laws to prohibit smoking on all municipal properties.

Analysis

Currently, our by-law is enforceable, but most of our properties are also covered under the Smoke-Free Ontario Act, which is also enforceable by Public Health who advise staff that they do issue tickets.

If Council proceeds to prohibit all town lands, our bylaw will be enforceable on all town-owned lands, but the perimeter lands beyond town property line will only be enforceable by Public Health.

This issue is truly a policy issue so we ask for Council's direction on how they would like to proceed.

Interdepartmental Implications

Amending the by-law to prohibit smoking on all town-owned lands could create more requirements for by-law enforcement.

Financial Implications

More by-law enforcement will lead to increased expenditures.

Recommendation

THAT Staff report CS-008-19, be received by the Council for the Town of Ingersoll as information.

AND THAT Council:

Directs staff to bring forward a by-law to amend the smoking by-law to prohibit smoking on all Town-owned lands.

OR

Directs staff to maintain the prohibitions established under the current smoking by-law.

Attachments

None

Prepared by: Michael Graves, Director of Corporate Services/Clerk-Deputy CAO
Kyle Stefanovic, Director of Community Services

Approved by: William Tigert, Chief Administrative Officer



Department: Operations

Report Number: OP-006-19

Council Meeting Date: February 11, 2019

Title: Installation of Cansel GPS Station

Objective

To receive approval from Council to install a Cansel station for the Town's GPS on the Town Centre roof.

Background

In order to pick up data with the Town's GPS and data collector equipment, the units require a station to be able to connect to satellites. Until two years ago, the Town had three locations with stations to be able to connect to (Stratford, London, and Tillsonburg). The Tillsonburg station has been removed, and there is a dead area along the 401 corridor in Ingersoll where it is difficult to receive reception, and staff have noticed a decrease in the vertical accuracy because of this dead area.

Analysis

Cansel has received complaints about this decrease in vertical accuracy from the Town and a number of clients in the Woodstock, Ingersoll area. Because of these complaints, Cansel approached the Town about placing the station on the roof of Town Centre. The Town Centre building is in the middle of the dead zone for Ingersoll and Woodstock and is high enough to receive the signal clearly. The station would be independent to any Town system, would not be attached to the roof but would need a connection to a modem, which would be placed in the Town's telephone panel in the IT storage room. This modem would have its own telephone line, separate from the Town's. The Town would supply power for the modem and a location for the station. Cansel would supply all the equipment, and the Town would sign a five-year hosting agreement. In exchange, Cansel will provide IT resources to host and manage the entire network including

communications and will provide the Town with one Can-Net VRS subscription for the duration of the contract.

Engineering staff have discussed the location of the station with the Property Manager, who is comfortable with the station being on the roof as long as no added holes are placed in the roof. Since the station does not need to be lagged to the roof and there is an empty conduit already in the roof for the modem connection, there will be no holes placed in the new roof.

Staff have also discussed with the IT department to ensure the station will not interfere with any of the Town's or OPP towers on the roof.

Staff will ensure that Cansel has the appropriate insurance and training for the installation and maintenance of the station.

Financial Implications

Cansel has indicated that if the station is located on the Town Centre roof, they will provide the Town with one Can-Net VRS subscription for the duration of the contract. The Town has two subscriptions for its two data collectors, and one subscription would save the Town about \$4200.00 a year.

Recommendation

THAT Staff report OP-006-19 be received by the Council for the Town of Ingersoll as information

AND THAT Council approve the signing of a five-year agreement for the installation of the Cansel station on the Town Centre roof.

Attachments

None

Prepared by: Sandra Lawson, P.Eng, Town Engineer
Approved by: William Tigert, CAO



NOTICE

CEO BREAKFAST

You're invited to attend a breakfast of the Shareholders of ERTH Corporation. Details below:

Date: **Thursday, February 14, 2019**

Time: **8:30 AM – 10:30 AM**

Meeting Location: **Elmhurst Inn
415 Harris Street
Ingersoll, ON N5C 3K1**

James Harris Lounge

Please forward the names of your three (3) representatives to Eustacia.Young@ERTHCorp.com by Monday, February 11, 2019. If you have any questions, please don't hesitate to call (519) 518-6117 x 255.

ERTH CORPORATION

180 Whiting Street
Ingersoll, Ontario, N5C 3B5

CEO BREAKFAST
Elmhurst Inn – James Harris Loung
February 14, 2019

SHAREHOLDER REPRESENTATIVES

NAME OF SHAREHOLDER: _____

NAME OF DESIGNATED REPRESENTATIVES FOR PURPOSE OF DISCUSSION:

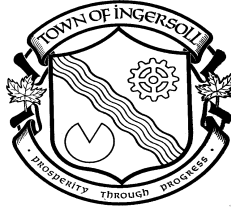
NOTE: THREE (3) Representatives from each of our Shareholders are invited to attend the breakfast. Please list the names and position of each attending representative. This would include Council members, Administrative staff and Board member.

POSITION:	NAME:
_____	_____
_____	_____
_____	_____

Date: _____

CAO/Clerk: _____

(Signature)



**Corporation of the Town of Ingersoll
By-law 19-5034**

**Being a by-law to amend By-law 06-4327, being a by-law to provide for the governing and regulation of traffic and parking in the Town of Ingersoll
(Designate Parking –Duke Street)**

WHEREAS Council adopted By-Law 06-4327 on the 16th day of October, 2006 for the governing and regulation of traffic and parking:

AND WHEREAS Council is desirous of amending the by-law:

NOW THEREFORE, the Council of the Corporation of the Town of Ingersoll enacts as follows:

- 1) **THAT Schedule “B” RESTRICTED PARKING** be amended to remove:

Highway	Side(s)	From	To	Period
Duke Street	East	King W	Charles W	3 hrs except no parking 3 am – 6 am

READ a first and second time in Open Council this 11th day of February, 2019.

READ a third time in Open Council and passed this 11th day of February, 2019.

Edward (Ted) Comiskey, Mayor

Michael Graves, Clerk



**Corporation of the Town of Ingersoll
By-Law 19-5035**

A bylaw to authorize the execution of an agreement with Her Majesty the Queen in right of the Province of Ontario represented by the Minister of Transportation for the Province of Ontario (the "Ministry") and the Town of Ingersoll (the "Municipality") related to funding provided by the Province of Ontario (the "Province") to the Municipality under the Dedicated Gas Tax Funds for Public Transportation Program

WHEREAS the Town is desirous of entering into an agreement with the Minister of Transportation related to funding provided by the Province of Ontario under the Dedicated Gas Tax Funds for a Public Transportation Program;

NOW THEREFORE, the Council of the Corporation of the Town of Ingersoll, enacts as follows:

1. That the Mayor and Treasurer of the Corporation of the Town of Ingersoll are hereby authorized to execute an agreement with Her Majesty the Queen in right of the Province of Ontario and to affix the seal of the Corporation
2. **AND THAT** a copy of the said agreement shall be annexed to and form part of this by-law;

READ a first and second time in Open Council this 11th day of February, 2019.

READ a third time in Open Council and passed this 11th day of February, 2019.

Ted Comiskey, Mayor

Michael Graves, Clerk

Ministry of
Transportation

Office of the Minister

Ferguson Block, 3rd Floor
77 Wellesley St. West
Toronto ON M7A 1Z8
416 327-9200
www.ontario.ca/transportation

Ministère des
Transports

Bureau du ministre

Édifice Ferguson, 3^e étage
77, rue Wellesley Ouest
Toronto ON M7A 1Z8
416 327-9200
www.ontario.ca/transports



JAN 22 2019

Mayor Ted Comiskey
Town of Ingersoll
130 Oxford Street, 2nd Floor
Ingersoll ON N5C 2V5

Dear Mayor Comiskey:

RE: Dedicated Gas Tax Funds for Public Transportation Program

This Letter of Agreement between the **Town of Ingersoll** (the “Municipality”) and Her Majesty the Queen in right of the Province of Ontario, as represented by the Minister of Transportation for the Province of Ontario, (the “Ministry”), sets out the terms and conditions for the provision and use of dedicated gas tax funds under the Dedicated Gas Tax Funds for Public Transportation Program (the “Program”). Under the Program, the Province of Ontario provides two cents out of the provincial gas tax to municipalities to improve Ontario’s transportation network and support economic development in communities for public transportation expenditures.

The Ministry intends to provide dedicated gas tax funds to the Municipality in accordance with the terms and conditions set out in this Letter of Agreement and the enclosed Dedicated Gas Tax Funds for Public Transportation Program 2018/19 Guidelines and Requirements (the “guidelines and requirements”).

In consideration of the mutual covenants and agreements contained in this Letter of Agreement and the guidelines and requirements, which the Municipality has reviewed and understands and are hereby incorporated by reference, and other good and valuable consideration, the receipt and sufficiency of which are expressly acknowledged, the Ministry and the Municipality agree as follows:

75. To support local public transportation services in the Municipality, the Ministry agrees to provide funding to the Municipality under the Program to a maximum amount of up to **\$55,496** (“the “Maximum Funds”) in accordance with, and subject to, the terms set out in this Letter of Agreement and, for greater clarity, the guidelines and requirements.

76. Subject to Section 1, the Ministry will, upon receipt of a fully signed copy of this Letter of Agreement and a certified copy of the authorizing municipal by-law(s) and, if applicable, resolution(s) for the Municipality to enter into this Letter of Agreement, provide the Municipality with **\$41,622**; and any remaining payment(s) will be provided thereafter.
3. If another municipality authorizes the Municipality to provide local public transportation services on its behalf and authorizes the Municipality to request and receive dedicated gas tax funds for those services also on its behalf, the Municipality will in the by-law(s) and, if applicable, resolution(s) described in section 2 confirm that the Municipality has the authority to provide those services and request and receive those funds.
4. The Municipality agrees that any amount payable under this Letter of Agreement may be subject, at the Ministry's sole discretion, to any other adjustments as set out in the guidelines and requirements.
5. The Municipality will deposit the funds received under this Letter of Agreement in a dedicated gas tax funds reserve account, and use such funds and any related interest only in accordance with the guidelines and requirements.
6. The Municipality will adhere to the reporting and accountability measures set out in the guidelines and requirements, and will provide all requested documents to the Ministry.
7. The Municipality agrees that the funding provided to the Municipality pursuant to this Letter of Agreement represents the full extent of the financial contribution from the Ministry and the Province of Ontario under the Program for the 2018/19 Program year.
8. The Ministry may terminate this Letter of Agreement at any time, without liability, penalty or costs upon giving at least thirty (30) days written notice to the Municipality. If the Ministry terminates this Letter of Agreement, the Ministry may take one or more of the following actions: (a) cancel all further payments of dedicated gas tax funds; (b) demand the payment of any dedicated gas tax funds remaining in the possession or under the control of the Municipality; and (c) determine the reasonable costs for the Municipality to terminate any binding agreement(s) for the acquisition of eligible public transportation services acquired, or to be acquired, with dedicated gas tax funds provided under this Letter of Agreement, and do either or both of the following: (i) permit the Municipality to offset such costs against the amount the Municipality owes pursuant to paragraph 8(b); and (ii) subject to section 1, provide the Municipality with funding to cover, in whole or in part, such costs. The funding may be provided only if there is an appropriation for this purpose, and in no event will the funding result in the Maximum Funding exceeding the amount specified under Section 1.

9. Any provisions which by their nature are intended to survive the termination or expiration of this Letter of Agreement including, without limitation, those related to disposition, accountability, records, audit, inspection, reporting, communication, liability, indemnity, and rights and remedies will survive its termination or expiration.
10. This Letter of Agreement may only be amended by a written agreement duly executed by the Ministry and the Municipality.
11. The Municipality agrees that it will not assign any of its rights or obligations, or both, under this Letter of Agreement.
12. The invalidity or unenforceability of any provision of this Letter of Agreement will not affect the validity or enforceability of any other provision of this Letter of Agreement. Any invalid or unenforceable provision will be deemed to be severed.
13. The term of this Letter of Agreement will commence on the date of the last signature of this Letter of Agreement.
14. The Municipality hereby consents to the execution by the Ministry of this Letter of Agreement by means of an electronic signature.

If the Municipality is satisfied with and accepts the terms and conditions of this Letter of Agreement, please print it, secure the required signatures for it, and then return a fully signed copy, in pdf format, to the following email account:

MTO-PGT@ontario.ca

Sincerely,



Jeff Yurek
Minister of Transportation

I have read and understand the terms of this Letter of Agreement, as set out above, and, by signing below, I am signifying the Municipality's consent to be bound by these terms.

Municipality

Per: _____
Mayor

Date: _____

Per: _____
Chief Financial Officer/Treasurer

Date: _____



**Corporation of the Town of Ingersoll
By-Law 19-5036**

**A bylaw to adopt and confirm all actions and proceedings of the Council of the
Town of Ingersoll at the Council meeting held on February 11, 2019**

WHEREAS Section 5 (3) of The Municipal Act, Chapter, S.O. 2001, c. M.25 as amended, states that a municipal power, including a municipality's capacity, rights, powers and privileges under section 9, shall be exercised by by-law unless the municipality is specifically authorized to do otherwise;

AND WHEREAS in many cases, action which is taken or authorized to be taken by Council or Committee of Council does not lend itself to or require an individual by-law

NOW THEREFORE, the Council of the Corporation of the Town of Ingersoll enacts as follows:

1. **THAT** all actions and proceedings of the Council of The Corporation of the Town of Ingersoll at the meeting held on February 11, 2019, are hereby adopted.
2. **THAT** the taking of any action authorized in or by the Council of The Corporation of the Town of Ingersoll are hereby adopted, ratified and confirmed.
3. **THAT** where no individual by-law has been or is passed with respect to the taking of any action authorized in or by the Council of The Corporation of the Town of Ingersoll, then this by-law shall be deemed for all purposes to be the by-law required for approving and authorizing the taking of the action.
4. **THAT** the Mayor and Officers of The Corporation of the Town of Ingersoll are hereby authorized and directed to do all things necessary to give effect to the recommendations, motions, resolutions, reports, action and other decisions of the Council and the Mayor and Clerk are hereby authorized and directed to execute all necessary documents in the name of The Corporation of the Town of Ingersoll and to affix the seal of the Corporation thereto.
5. **AND FURTHER THAT** this by-law shall become effective and shall come into force after third reading of the by-law.

READ a first and second time in Open Council this 11th day of February, 2019.

READ a third time in Open Council and passed this 11th day of February 2019.

Edward (Ted) Comiskey, Mayor

Michael Graves, Clerk