Background and Previous Council Direction

Background

What is NFPA 1710?

Published by the National Fire Protection Association (NFPA) in the US, NFPA 1710, Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments (as opposed to volunteer fire departments) delineates levels of service, staffing, deployment capabilities and other critical requirements for career fire departments. The NFPA 1710 standard is a benchmark specifying the minimum criteria addressing the effectiveness and efficiency of career public fire suppression operations, emergency medical service and special operations delivery in protecting the citizens of a jurisdiction and the occupational safety and health of fire department employees.

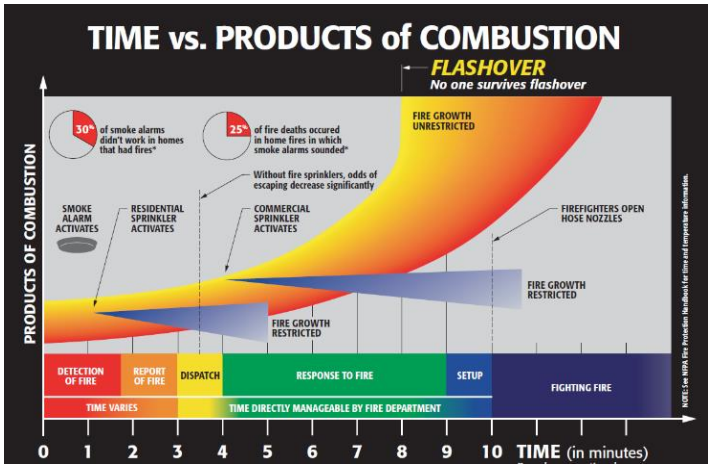
Within NFPA 1710, service delivery requirements are specified, including the deployment of personnel, equipment and resources for an initial arriving company, the initial full alarm assignment, and additional alarm assignments based on the geographic area and type and complexity of an emergency incident.

NFPA 1710 is not a legislated standard in Canada, but rather a benchmark for career fire departments. Our research did not find any comparable Canadian cities that reach NFPA 1710 standards for response times.

Response Time Objectives and Critical Tasking: Why do they matter?

Critical tasking at fire suppression incidents involves assigning tasks to firefighting personnel that need to be conducted quickly to preserve life, property, the environment, and to extinguish the fire. Extended response times to emergencies increase risk to citizens, including the likelihood of injury, fatality, property damage, and property loss. Striving to meet Calgary's established targets ensures an appropriate, acceptable, and affordable level of service to Calgarians. The risks directly correlate with time for all types of responses including critical medical intervention, fire, motor vehicle collisions, and hazardous material incidents. The probability of civilian death can increase by 243% when the fire moves beyond the room or origin, and under the same circumstance, the dollar loss due to fire increases by 1,736%.

Figure 1.1 Time vs. products of combustion



In Calgary, density in new areas affects the severity of fires along with modern building materials that burn faster and hotter. New

neighbourhoods are built at almost double the density of older neighbourhoods. Houses built closer together means fires spread beyond the structure of origin faster.

Crew size directly affects the ability to begin and complete critical tasks to mitigate the incident. For Calgary, this is relevant to ensuring apparatus are staffed with enough people so that more critical tasks can be completed faster, without waiting for more firefighters to arrive on separate apparatus.

Total response time is comprised of three time intervals:

1. Dispatch: This time interval begins when a citizen calls 9-1-1 and ends when the fire station receives notification from 9-1-1.
2. Turnout: This time interval begins when the fire station receives notification from 9-1-1 and includes preparing to respond and leaving the station.
3. Travel: This time interval begins when the unit leaves the station and ends when the unit arrives on scene.

Two categories of response time objectives tied to critical tasking exist: first-arriving unit (arrival of an engine staffed with a minimum of four personnel) and initial full alarm assignment - also referred to as effective response force (ERF). ERF is the minimum number of firefighters and apparatus that must cumulatively reach a specific emergency incident location within a defined travel time. ERF is commonly used across Canada as a measure of resource deployment efficiency and typically is based upon municipally approved standards.

The Calgary Fire Department's Response Time Standards

The Calgary Fire Department's (CFD) Service Level and Response Time Targets (SLRTT), approved by City Council in 2008 and reaffirmed in 2018 are used to capture the level of service citizens should expect from CFD and performance is measured against these targets.

SLRTT's development and adoption began in 2005, when CFD was directed to bring a report on standards of response to the Standing Policy Committee (SPC) on Community and Protective Services (CPS) (CPS2005-88). CFD engaged in an extensive strategic analysis, including consultation with International Association of Fire Fighters Local 255 throughout 2006 and 2007, to develop the principles and guidelines for establishing new service level and response time performance benchmarks. At the January 9, 2008 meeting of the SPC on CPS, the proposed Calgary-specific fire and rescue and emergency medical incident response time targets and service level benchmarks were approved (CPS008-03). Additionally, Council directed that annual reporting of CFD's performance measures be presented to the SPC on CPS no later than September each year.

Response Time Standards: NFPA 1710 vs. SLRTT (Calgary)

While NFPA 1710 denotes varying response time standards depending on structure type and hazard level, at this time SLRTT has set general response time standards across Calgary regardless of hazard level or structure type, and CFD dispatches staff according to the acuity level of the incident. Tables 1.1 and 1.2 below outline response and apparatus staffing benchmarks for SLRTT and NFPA 1710, as well as Calgary's current operational response practice.

Table 1.1 Response Time Targets and Number of Staff

Event/Response Type (NFPA)		Response time target, 90th percentile (min: sec)		Number of Staff	
		NFPA 1710	SLRTT	NFPA 1710	Calgary
1st-in engine	Fire suppression *(All)*	6:24	7:00	4-6	4
Initial Full-alarm Assignment/ERF	Single-family dwelling *(Low hazard fire)*	10:24	11:00	16-17	Measured to 12 firefighters, 2 engines, 1 aerial. Additional staff dispatched according to event acuity.
	3-story garden-style apartment *(Medium hazard fire)*	10:24		27-28	
	Open-air strip shopping centre *(Medium hazard fire)*	10:24		27-28	
	High-rise building *(High hazard fire)*	12:34		42-43	

Table 1.2 Apparatus Staffing Levels

Apparatus Type	NFPA 1710			SLRTT/City of Calgary Adopted Standard
	Minimum Staffing	High-volume/ geographic restrictions	Tactical hazards dense urban areas	
Engine	4	5	6	4
Aerial	4	5	6	2
Rescue	4	5	6	2

Previous Council Direction

Since 2008, service levels and targets have been subject to thoughtful examination, including the presentation of CFD's 10-year Sustainability Plan and the 2015 Zero-Based Review. Within the last five years, CFD has experienced losses, gains, and adjustments while being asked to maintain or increase service levels. The below table outlines the 2008 adoption of the SLRTT, as well as service level examinations, adjustments, reductions, and recent gains within the past five years, including Council's 2018 reaffirmation of the SLRTT.

DATE	REPORT NUMBER	DIRECTION/DESCRIPTION
3/15/2022	EC2022-0365	*2023-2026 Service Plans and Budgets – Calgary Fire Department, Item #8.2.6 Notice of Motion* Council directed Administration to: 1. Report back through the Executive Committee no later than June 2022 with: a. A high-level overview of risks facing the Calgary Fire Department, and associated mitigation strategies currently in place along with a preliminary assessment of these strategies' effectiveness; b. An estimate of resources (reflecting both operating and capital costs) required to meet the applicable staffing levels and service model recommended by NFPA Standard 1710; c. Potential timelines for a phased approach for meeting applicable staffing levels recommended by NFPA Standard 1710; and d. Options for approaches to Fire & Emergency Response service levels for the 2023-2026 budget cycle for discussion, informed by the above.2. Report back, as part of the deliberations for the 2023-2026 budget cycle, with: a. A recommended approach to Fire & Emergency Response service levels for the 2023-2026 budget cycle, informed by the above discussion at 1d; and b. A general overview of the relationship between municipal fire protection service levels and home insurance costs in Calgary.
11/24/2021	C2021-1436	*2022 Adjustments – Council Proposed Investments. Increase relief factor and training for The Calgary Fire Department* Council approved CFD's 2022 operating budget including 56 new firefighter positions, 6 new training officer positions, the reallocation of funds to develop an in-house Officer Development program and funds to cover leasing costs for two temporary fire stations. Council also approved an increase in positions to

DATE	REPORT NUMBER	DIRECTION/DESCRIPTION
		support training and firefighter relief factor (currently under recruitment).
11/26/2020	C2020-1215	*2020 Mid-cycle adjustments* SAVE program: reductions to CFD Wellness services and staffing, non-essential value-added services, and insourcing of all light fleet. 20 positions reduced through attrition and lower recruit hiring numbers. Increase in service level for Critical Medical Interventions: response time shortened from seven minutes to six minutes and 30 seconds. Performance indicator change: to “arrival of two engines, one aerial unit, and a minimum of 12 firefighters within 11 minutes” from “arrival of 12 firefighters and necessary equipment to arrive within 11 minutes” at serious and escalating fires.
3/19/2018	PUD2018-0173	*Fire Service Provision in Growth Strategy* Independent consultant’s review of Calgary’s response time targets identified gaps between SLRTT and NFPA 1710, opportunities to increase efficiency, and improve measurement. Council reaffirmed existing SLRTT policy.
7/31/2017	PFC2017-0445	*Strategic Growth and Funding in the South Shephard Area Structure Plan* Administration directed to undertake a review of CFD’s service delivery and business model, and have an independent consultant complete a review of Calgary’s response time target policy (SLRTT).
01/09/2008	CPS2008-03	*Calgary Fire Department Service Levels and Response Time Targets* Service levels and response time targets (SLRTT) approved. CFD directed to incorporate SLRTT into 2009-2011 business plan and budget cycle and to provide annual accountability reporting on performance and new emerging benchmarks.

Bylaws, Regulations, Council Policies

The following Bylaws and Council Policies relate to the CFD operations:

CPS033 Integration of Emergency Services into The City of Calgary Land Use, Infrastructure and Mobility Planning Policy

Council Policy CPS033 guides collaborative planning between Calgary's emergency services and business units involved in land use, infrastructure, and mobility planning, enhancing safety and contributing to the development of safe communities.

Bylaw 55M2014 Fire Operations and Fees Bylaw

Bylaw Number 55M2014 provides the Fire Department with its authorities, governance and operating framework including the provision of policy and programs and its services.