



# TRIUMF Accelerators Inc. Application to Renew Operating Licence

Staff Presentation

**CMD 22-H6.B**

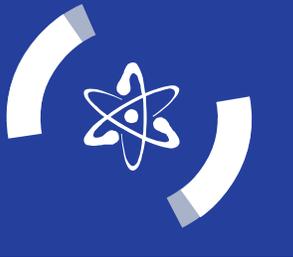
Commission Hearing  
March 23, 2022



CMD 22-H6.B - TRIUMF Accelerators Inc. Licence Renewal, March 23, 2022

# Presentation Outline

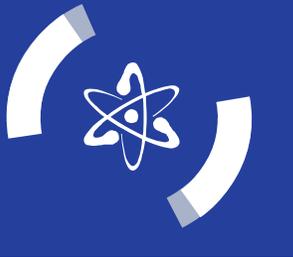
- Purpose of hearing
- Licence renewal
  - Regulatory oversight
  - Performance assessment of selected Safety and Control Areas
- Proposed financial guarantee
- Other matters of regulatory interest
- Licence transfer
- Conclusions and recommendations



## Errata

- Section 1.2 – clarification about CSA N286-12 standard
  - CSA N286-12 is the most recent version of the N286 standard and is the first version with a broadened scope of all nuclear facilities.
- Section 3.4.3.1 Page 30
  - There were two action level exceedances instead of one

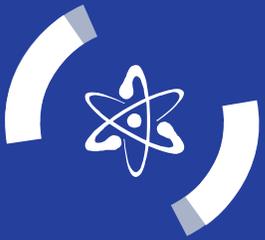
The errata listed do not impact the conclusions and recommendations in the CMD



# Purpose of Hearing

## **To present CNSC staff's assessment and recommendations relating to:**

- Licensee's request to renew its operating licence for a period of ten years
- Licensee's proposed financial guarantee
- Licensee's request to transfer the licence from TRIUMF Accelerators Inc. (TAI) to TRIUMF INC.



# SECTION I

## Licence Renewal

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# TRIUMF Facility Overview

- Nuclear and particle physics research and radioisotope production
- Located at University of British Columbia Campus
- In operation since 1975



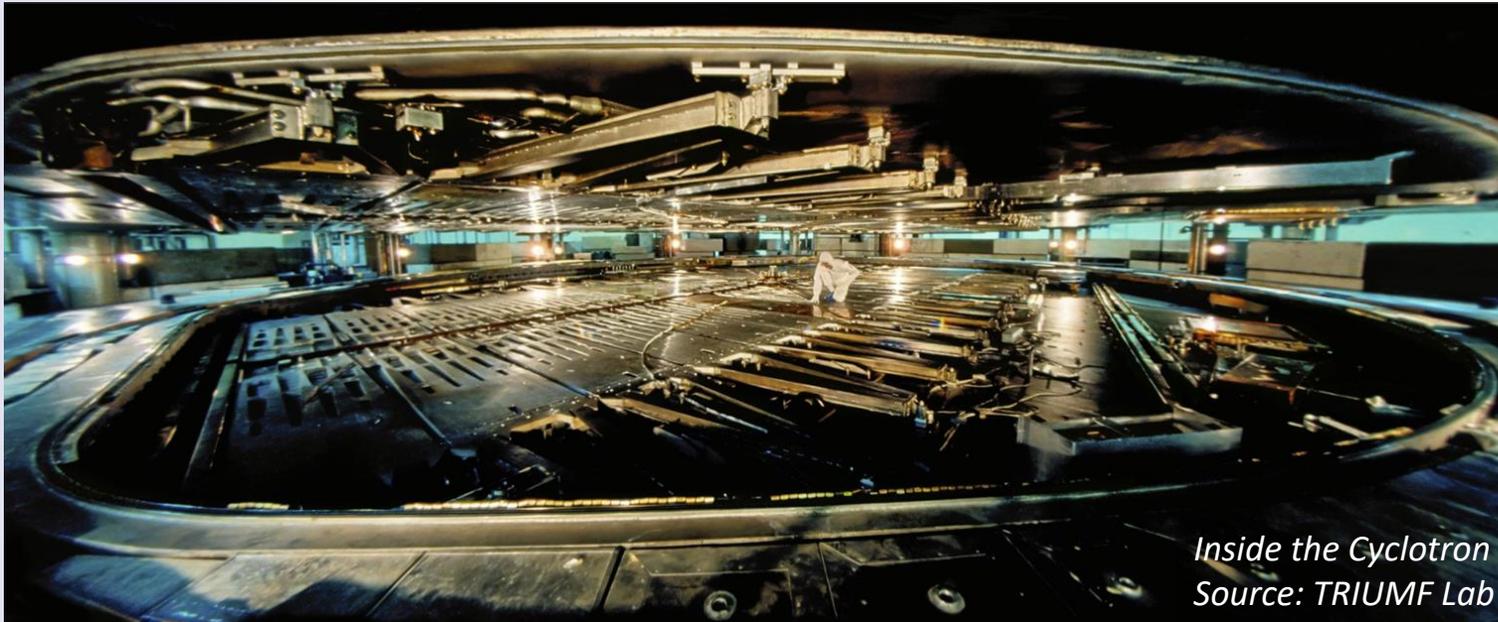
Aerial view of TRIUMF site  
Source: TRIUMF Accelerators Inc.

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# Current Licence

**Last renewed July 1, 2012, valid until June 30, 2022**

Authorizes TRIUMF to operate and service the following facilities:



*Inside the Cyclotron  
Source: TRIUMF Lab*

## Class I:

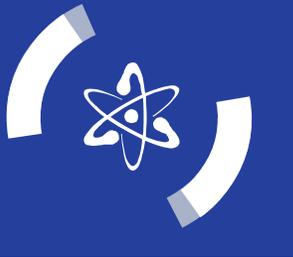
- 520 MeV cyclotron and its associated beamlines and targets

## Class II:

- CP42, a 42 MeV cyclotron
- TR30-1, a 30 MeV cyclotron
- TR30-2, a 30 MeV cyclotron
- TR13, a 13 MeV cyclotron
- ISAC I, a radioactive ion beam accelerator
- ISAC 2, a radioactive ion beam accelerator



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# Licence Renewal

## **TRIUMF has requested the Commission to:**

- Renew its operating licence for a period of 10 years
- Maintain authorized activities as in current licence

No changes requested to authorized activities

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# Review of the Licence Renewal Application

## CNSC staff:

- Verified that the information submitted in support of the application is complete for all applicable safety and control areas (SCAs)
- Assessed TRIUMF's past performance and record

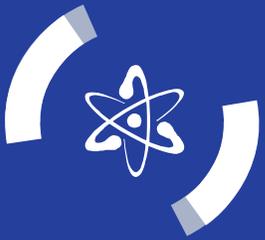
CNSC staff conclude that the application  
complies with regulatory requirements

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# Indigenous Engagement

- No requests received from any Indigenous Nations or communities regarding TRIUMF facility
- Participant Funding offered by the CNSC
  - No applications for funding were received
- Licence application is for an existing research facility, with minimal releases to the environment

CNSC staff are available to engage with any interested Indigenous Nation or community regarding TRIUMF upon request



# Performance Assessment

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# Assessment of Safety and Control Areas (SCA)

- CNSC staff assessed all 14 safety and control areas for TRIUMF's licence application
- Information submitted in support of the application satisfies CNSC requirements under the NSCA and its regulations
- Assessment criteria and results are summarized in CMD 22-H6 and CMD 22-H6.A

## Safety and Control Areas

### Management System

Human Performance Management

Operating Performance

Safety Analysis

Physical Design

Fitness for Service

### Radiation Protection

### Conventional Health and Safety

### Environmental Protection

Emergency Management and Fire Protection

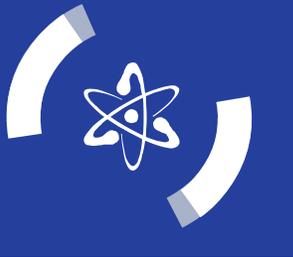
### Waste Management

Security

Safeguards and Non-Proliferation

Packaging and Transport

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# SCA – Management System

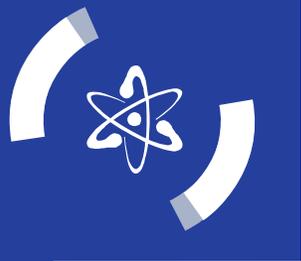
## CNSC staff assessment:

- CSA N286-12, *Management System Requirements for Nuclear Facilities* standard introduced as a requirement in 2016
- TRIUMF was unable to meet its commitment to implement the standard by 2018
- In 2020 TRIUMF submitted a revised quality manual that meets the requirements of N286-12

TRIUMF established the program in accordance  
with CSA N286-12



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# SCA – Management Systems

CNSC

Introduction of N286-12 as regulatory requirement

Approval of Quality Manual

Management System Inspection

Follow-up inspection

2016

2018

2020

2021

2022

2023

TRIUMF

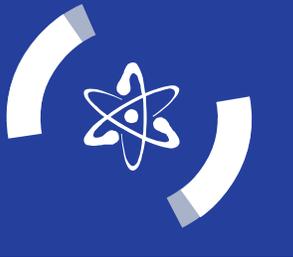
Commitment to comply to N286-12 by 2018

Quality Manual updated to N286-12

Action Plan

Expected implementation

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# SCA -Management System

- CNSC staff are satisfied with TRIUMF's Management System program
- Out of twenty Notices of Non-Compliance (NNCs) sixteen have now been closed
- TRIUMF has provided an acceptable plan to close the remaining four NNCs
- CNSC staff will monitor progress through to completion

CNSC staff are satisfied with TRIUMF's progress towards regulatory compliance with CSA N286-12

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# SCA – Radiation Protection

## CNSC staff assessment:

- TRIUMF's radiation protection program meets the *Radiation Protection Regulations*
- TRIUMF revised and enhanced their RP program
- TRIUMF's radiation protection program keeps whole body doses well below regulatory dose limits
- Two action level exceedances during licence period
  - Both were reported to the Commission

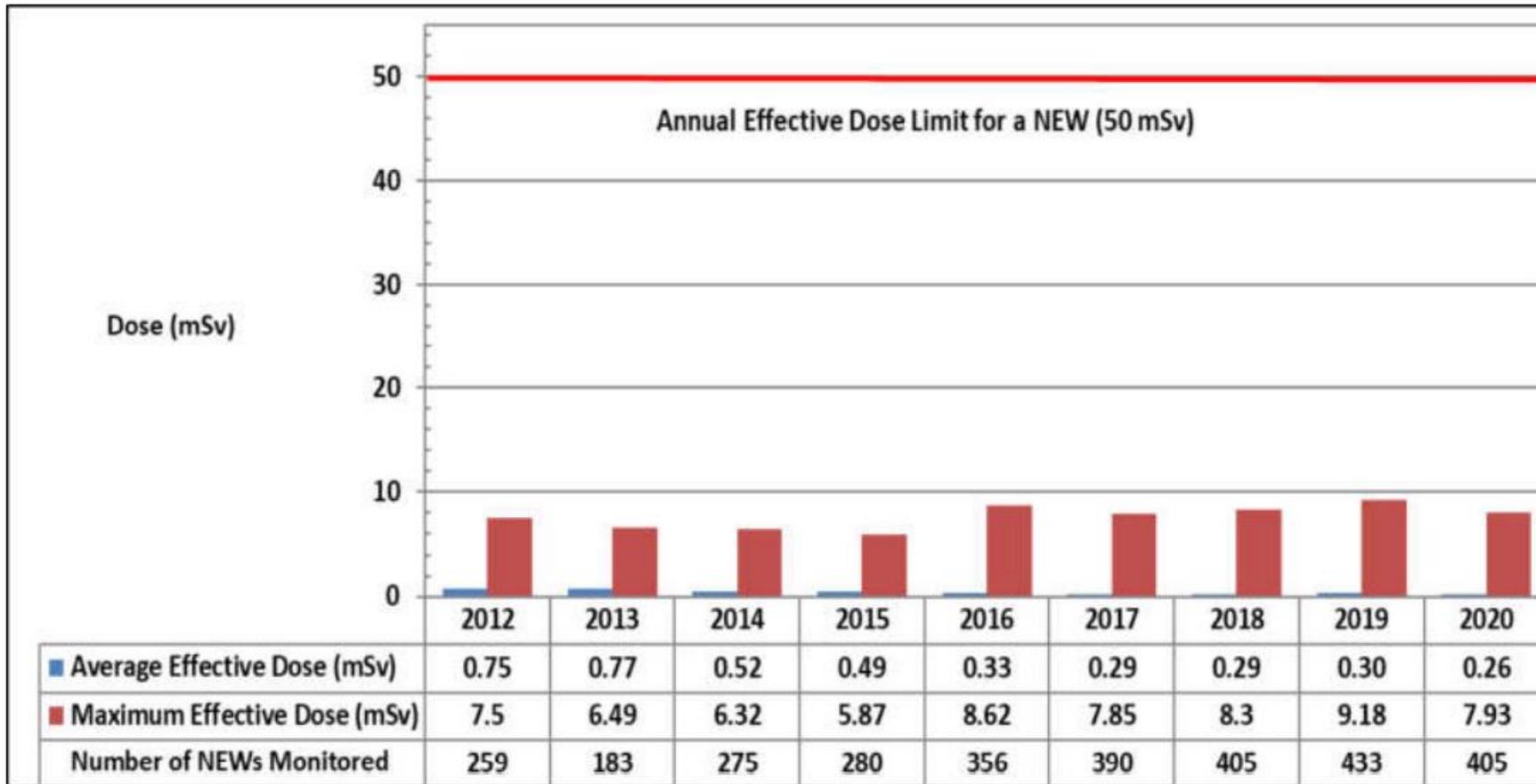
TRIUMF's Radiation Protection Program meets applicable  
CNSC regulatory and performance objectives



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# SCA – Radiation Protection

## Occupational exposures to NEWs



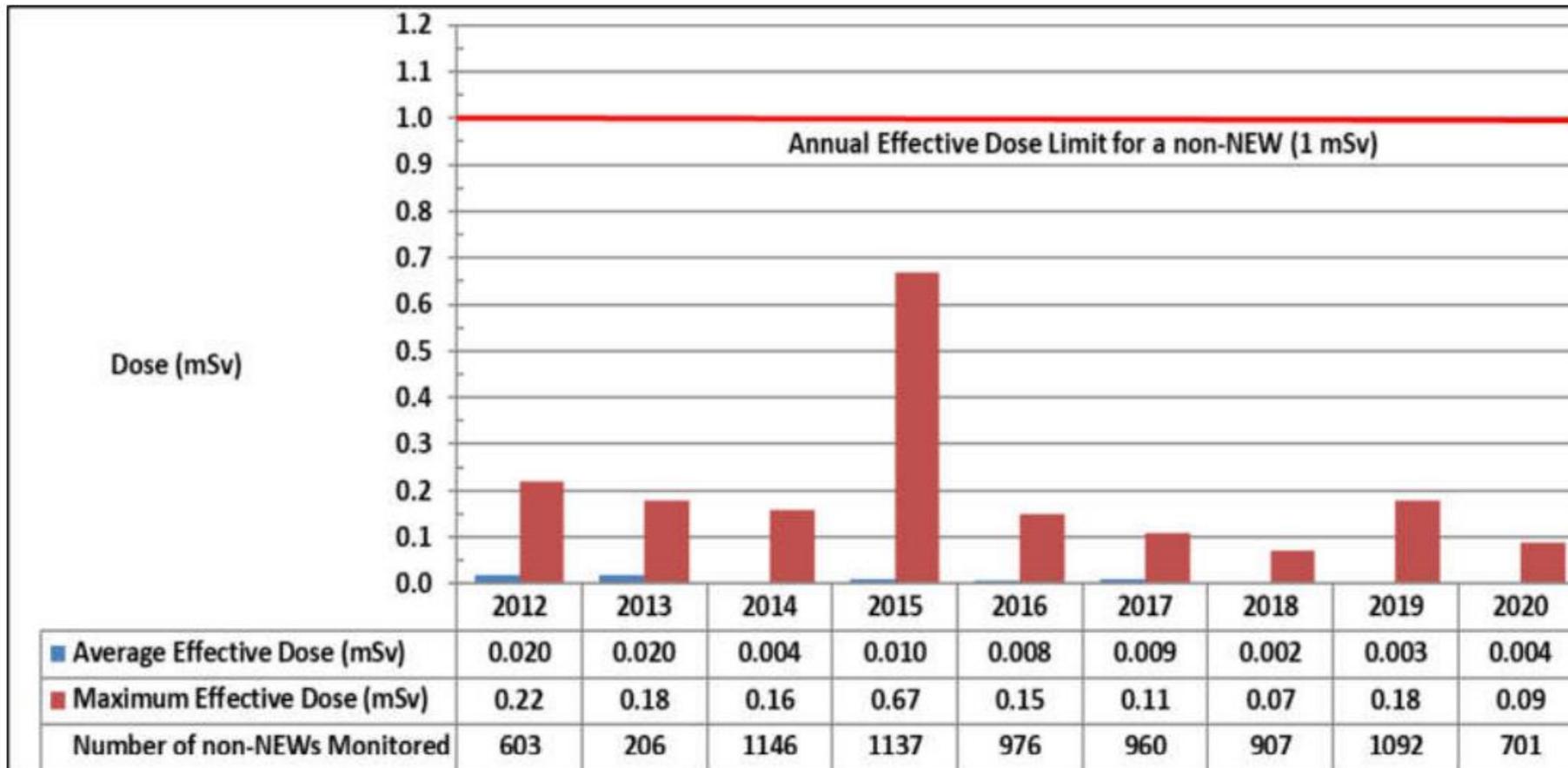
CNSC staff conclude that TRIUMF's performance in the Radiation Protection SCA is satisfactory



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# SCA – Radiation Protection

## Occupational exposures to non-NEWs



CNSC staff conclude that TRIUMF's performance in the Radiation Protection SCA is satisfactory

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# SCA – Conventional Health and Safety

## CNSC staff assessment:

- TRIUMF implemented programs for identifying and controlling hazards in accordance with WorkSafeBC requirements
- TRIUMF reported 16 lost-time injuries (LTIs) during licensing period; 4 reported since the last regulatory oversight report in 2020
  - Sprains/strains, lacerations, slips and falls comprised 75% of LTIs
- LTI rate comparable to similar institutions as classified by WorkSafeBC

TRIUMF's conventional health and safety program meets applicable CNSC regulatory and performance objectives

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# SCA – Environmental Protection

## CNSC staff assessment:

- TRIUMF's environmental protection program is implemented effectively and meets regulatory expectations
- The 2017 environmental risk assessment concluded that risk to people and the environment attributed to TRIUMF is negligible
- TRIUMF's environmental monitoring program results confirm that the environment and human health are protected

TRIUMF's environmental protection program  
meets applicable CNSC regulatory and performance objectives

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# SCA – Environmental Protection

## CNSC staff assessment:

- Air emissions are well below release limits
- Liquid effluent releases are well below release limits
- Estimated dose to public is well below regulatory limit of 1 mSv/year

CNSC staff expect no adverse effects on human health and the environment during the operation of the facility



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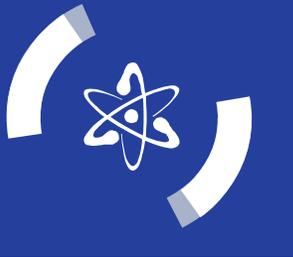
# SCA – Waste Management

## **CNSC staff assessment:**

- TRIUMF maintains waste management program
- Minimalization, segregation and characterization of radioactive waste is satisfactory

TRIUMF's waste management program meets applicable CNSC regulatory and performance objectives

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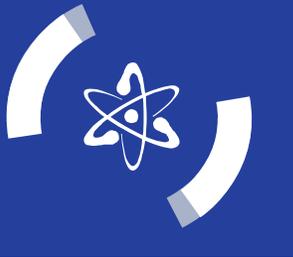
# Preliminary Decommissioning Plan

## CNSC staff assessment:

- Preliminary decommissioning plan (PDP) includes cost estimates for decommissioning which provide for establishing the financial guarantee for decommissioning
- TRIUMF's PDP meets *G-219, Decommissioning Planning for Licensed Activities*, and CSA Group N294-09, *Decommissioning of Facilities containing nuclear substances*
- The CNSC requires PDPs be reviewed on a minimum 5-year basis
- REGDOC 2.11.2, *Decommissioning* will apply in the next review cycle (2023)

TRIUMF continues to maintain a PDP in accordance with regulatory requirements

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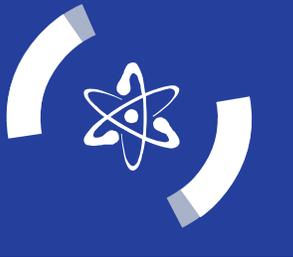


# Financial Guarantee

- The Commission approved an administrative change updating the financial guarantee instruments in June 2021
- TRIUMF's Financial guarantee for decommissioning is composed of:
  - Escrow Fund (\$14.78M in 2023)
  - Contribution Gap Agreement
- CNSC staff have determined that the estimated cost of decommissioning of \$69.87M (2022 Dollars) is credible
- Financial Guarantee meets G-206, *Financial Guarantees for the Decommissioning of Licensed Activities*

CNSC staff confirm that the proposed financial guarantee is adequate for the future decommissioning of TRIUMF's facilities

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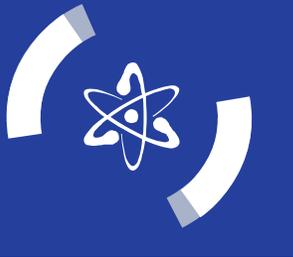


# Public Information Program

## CNSC staff assessment:

- TRIUMF uses multiple modes of communication to reach target audiences
- TRIUMF has met its public disclosure and reporting obligations throughout the licensing period
- TRIUMF's Public Information and Disclosure Program is in accordance with REGDOC 3.2.1, *Public Information and Disclosure*

TRIUMF's public information and disclosure  
program meets regulatory requirements

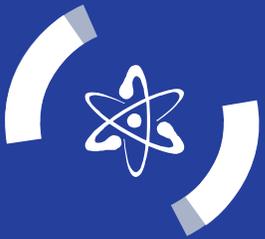


# Public Engagement

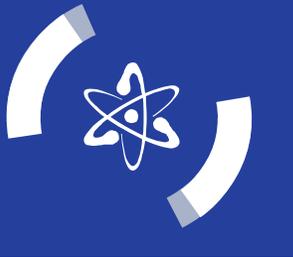
## The CNSC:

- Notified the public about the licence application and Commission hearing process
- Offered Participant Funding to participate in the regulatory review and Commission hearing process
  - No applications for funding were received
- 7 interventions were received regarding TRIUMF's request for renewal

CNSC staff are available to engage with members of the public regarding TRIUMF upon request



# Licence and Licence Conditions



# Proposed Licence

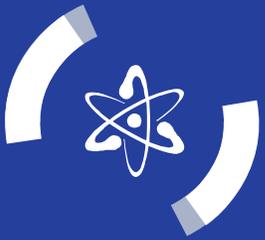
- No change to licensed activities
- 10 year licence term
- Licence Conditions
  - Reduction of timeline for submission of action level exceedance written reports (from 30 working days to 21 days) to align with similar facilities
  - Separation of the Safety Analysis and Physical Design SCAs and resulting administrative changes to licence conditions
  - Licence conditions will be updated to reflect current standardized language
- Recommendation to retain all other licence conditions

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# Proposed Licence Term

- A 10 year licence term consistent with current term
- TRIUMF's standardized licence and Licence Condition Handbook (LCH) framework provides for effective regulatory oversight
- TRIUMF's regulatory performance is satisfactory
- CNSC staff report regularly on TRIUMF's performance to the Commission

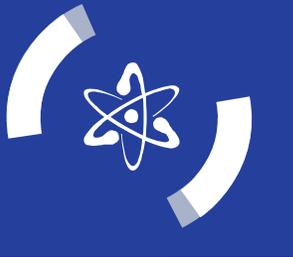
TRIUMF is operating safely



# SECTION II

## Licence Transfer

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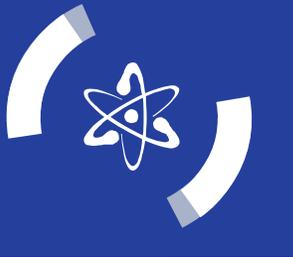


# Licence Transfer

CORPORATE CHANGES	Prior to June 2021	As of June 1 <sup>st</sup> , 2021	Proposed July 1 <sup>st</sup> , 2022
Governance	Member Universities		
Corporate Entity	TRIUMF JV	TRIUMF INC.	TRIUMF INC.
Licence Holder	TRIUMF Accelerators Inc. (TAI)		

No impact on the operation of the facility and licenced activities

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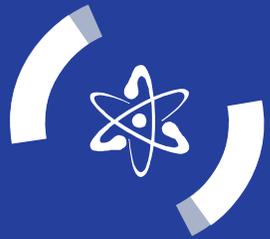
# Licence Transfer

- TRIUMF Accelerators Inc. requests the Commission to transfer its operating licence to TRIUMF INC. upon renewal of the current licence, including the Financial Guarantee
- No impact on the assessment covered in CMD 22-H6
- No impact to the operation of facilities

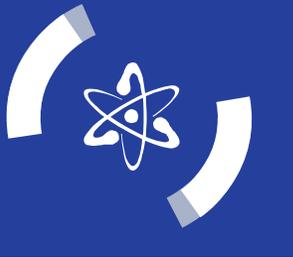
The proposed licence transfer does not pose a risk to the safe operations of the facilities



# Recommendations



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# CNSC Staff Recommendations

## CNSC staff recommend that the Commission:

- Conclude that
  - TRIUMF is qualified to carry out the activities authorized by the licence, and
  - TRIUMF will make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed
- Renew the proposed operating licence for a period of 10 years
- Accept the revised financial guarantee for decommissioning of TRIUMF facilities
- Approve transfer of the licence from TRIUMF Accelerators Inc. to TRIUMF INC.
- Delegate authority as set out in section 4.7 of CMD 22-H6



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