



# APPLICATION FOR COUNCIL INNOVATION FUND

CC 941 (R2019-10)

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Date of Submission

2020-07-14

Name of Project

Virtual Reality Fire and Life Safety Education Pilot

Sponsoring Councilor

Councillor Jyoti Gondek

Applicant Name

Steve Dongworth

Applicant Contact Number

(403) 813-9912

Include area code, no spaces

Applicant Business Unit or Name of Organization

Calgary Fire Department

Affected Business Units and/or Departments

Amount of Funds Requested - please attach budget breakdown details in an attachment

\$75,000.00

Draft PFC cover report attached

Yes  No

Please list supporting documents provided.

Attachment 2 - Proposed Virtual Reality Fire and Life Safety Education Pilot Budget

Attachment 3 - Letters of Support for the Virtual Reality Fire and Life Safety Education Pilot

Attachment 4 - Council Innovation Fund Terms of Reference

Applications for the Council Innovation Fund are to be submitted to the Chief Financial Officer Department (name of person) no later than six (6) weeks in advance of the targeted Priorities and Finance Committee (PFC) meeting date.

**Only completed applications supported by a PFC cover report will be submitted for placement on the PFC agenda. The PFC will review the report and proposal and provide their recommendation to Council. The recommendation and report will then be forwarded to Council at their next scheduled meeting.**

Provide a summary description of the project to a maximum of 2 pages.

With the Innovation Fund's support, in 2020, the Calgary Fire Department (CFD) will work towards creating a fire and life safety education virtual reality (VR) pilot project experience for children, seniors and other vulnerable groups to help realistically simulate what it would like to experience a fire in their own homes and then teach them what to do next, whether it be to use a fire extinguisher, find two exits from the home or meet at a muster point outside the home. The more realistic and impact the simulation, the better prepared the participant will be if a fire should break out. CFD also envisions making the technology available in multiple languages to reach populations who may have English as a second language. The mobility of the VR technology will allow CFD to provide fire safety education in community spaces year-round whether that be at cultural associations, schools, community events, senior's centres, etc, while not having experiential education efforts limited by the language capabilities of our staff.

If the pilot project is successful, expansion opportunities for the VR model include providing internal CFD training to firefighters, adding additional fire and life safety emergency modules and collaboration opportunities with other regional fire departments that could benefit from the unique fire education opportunities provided by the VR model.

Attached below is a link to a virtual reality experience developed in New Zealand that demonstrates what a CFD VR experience might be like: <https://vr.escapemyhouse.co.nz/>

CFD continues to see a growing need for its service in areas vital to community safety, with a recent spike in injuries due to fires. Calgarians are at greatest risk for fires in their homes, which are most often due to careless behaviours, cooking or defective electrical appliances. Vulnerable populations like children, seniors, and new Canadians, are at further risk because they often react differently in a fire emergency as compared to the rest of the population.

CFD targets its programs primarily to high-risk and vulnerable groups, as there is an extensive body of research that suggests that the risk of fire and injury can be lowered through targeted fire and life safety education. Education delivered through interactive mediums such as VR are particularly effective at increasing learning and changing behaviors amongst these vulnerable populations. Virtual reality is the computer-generated simulation of a three-dimensional image or environment that can be interacted with in a seemingly real or physical way by a person using special electronic equipment, such as a helmet with a screen inside or gloves fitted with sensors.

Previous research on human behaviour during real-world fire incidents has shown that a lack of understanding of the spread and movement of fire often means that occupants are unprepared and misjudge appropriate actions. People often misjudge how fast smoke and fire spread. Research indicates that by utilizing VR technology, participants will be more prepared and less anxious to face fire-related emergencies and be able to identify potential fire hazards in their homes, passing along the learned information onto others around them. Using a VR immersive experience also allows CFD to reinforce the consequences of accidental fires by simulating a fire incident without putting anyone at risk. Experiencing firsthand what it is like to be in a residential fire and extinguishing it or escaping it, for example, is both shocking and impactful. In the past, CFD has had success by using a Fire Safety Trailer, which mimics real-world experiences and has shown through pre/post diagnostic tool to improve knowledge. The trailer however, is limited to hosting outdoor events in larger spaces and requires a minimum of two to three staff to be on hand, while the VR technology does not have these limitations.

CFD has secured partial funds for this project through its relationship with ConocoPhillips. The funds secured will assist CFD in purchasing the hardware and components like headsets and gloves required for this program. CFD is seeking funds for software and programming costs to develop Calgary-based fire safety education modules in multiple languages.

Identify how this project meets the criteria as outlined in the Terms of Reference for the Council Innovation Fund.

**Please attach additional information as required.**

As stated above, this is a pilot project involving a unique fire safety education program that has never been done before by the Calgary Fire Department and would be unique in Canada. The project has the potential to connect with a broader and larger scope audience than currently available through traditional methods. With VR experiential learning shown to be effective as part of the New Zealand fire safety education program, the VR format shows exceptional educational promise.

As part of the project, a Request for Information (RFI) was issued in Q4 of 2019 to better understand the costs and capabilities of current virtual reality technology. Based on that RFI, a budget was created and presented to Corporate Sponsors for support for hardware costs and resulted in a request through the Innovation Fund for software development. The project will be managed through the Community Safety division and the Office of the Fire Chief, who have previous success in managing and launching large-scale education initiatives, the most recent of which are the Fire Safety Trailer and the Fire Safety Activity Book co-partnership with the Calgary Public Library. CFD has had previous success in managing an Innovation Fund grant for medical response units and plans to use the same principles and safeguards in managing the funds for this ask.

If successful, CFD plans to use the VR technology pilot for the long-term as part of The Department's larger fire and life safety education strategy. As part of One Calgary 2019-2022, the CFD, committed to increase the following, which will be assisted by the development of the VR program:

1. Support firefighters by developing the tools, training, programs and resources needed to successfully deliver public education.
2. Partner with community, cultural and faith-based groups and internal services to maximize reach to Calgarians.
3. Focus Community Safety Officers on delivering experiential education for high-risk Calgarians.
4. Public safety messaging through online tools, self-serve resources and corporate communications.

The project also supports the Citizen Priority Area, "A City of Safe and Inspiring Neighbourhoods" (One Calgary 2019-2022).

Outline the proposed timeline for this project, including the final report back date.

Put RFI out to Tender: Q4 2019  
 Review RFI Tender Respondents Corporate Sponsor Ask Q4 2019  
 Innovation Fund Ask Q3 2020  
 RFP for Tender Q3 2020  
 Select Successful Candidate Q3 2020  
 Development of Materials with VR Company Q3 2020- Q1 2021  
 Implement Pilot in Target Wards/Communities Q1-Q2 2021  
 Report Back to Council on Measured Outcomes of Module Q3 2021

Identify what success looks like, and how it will be measured.

The anticipated long-term successful outcomes of this initiative are:

1. To reduce the near term and long term risk of negative outcomes including fatalities, injuries, environmental and property damage due to fire.
2. To collaborate with community stakeholders in program content and delivery.

In the third quarter of 2021, a final report will be brought to Council outlining the steps taken and outcomes of the VR project and the results of the \$75,000 investment.

Based on the pre/post measures developed through the success of our Fire Safety Trailer and Education Program, the

following are associated short-term measures of success that would be tracked and evaluated:

1. Pilot Project VR developed
2. Partnerships with Vulnerable Group Representatives & Associations formed
3. Number of persons educated via VR experience
5. Pre and post knowledge test comparisons after VR experience
6. Reduction in fire incidents in targeted wards/communities
7. Reduction in civilian fire-related injuries and deaths in residential properties in target wards/communities

*Your personal information is being collected, used and disclosed for the administration and processing of your application for funding under the Council Innovation Fund Project. Your information is collected pursuant to section 33(c) of The Freedom of Information and Protection of Privacy Act ("FOIP Act") of Alberta. If you have any questions about the collection, use or disclosure of your personal information, please contact The City of Calgary's Chief Financial Office (#8003), The City of Calgary P.O. Box 2100, Stn. M, Calgary, AB T2P 2M5 and by calling at 403-268-5664.*