

Infrastructure / Operations Resiliency Projects (in \$000s)

PFC2014-0316  
ATTACHMENT 2

Identifier	Provincial Submission #	Department	Business Unit	Project Summary	Project Outcome (Benefits)	Capital Program #	2014 Capital Budget (000's)	Operating Program #	Annual Operating Budget (000's)	Future Years	Recommend for Approval Yes/No	Rationale
I-1		Community Services & Protective Services	CEMA	Pandemic Supply Top Up	Replace stock used during the floods, masks, gloves. Identify all hazard items that would also be beneficial during a pandemic and stock them as well.	935	100				Yes	Restock emergency response supplies
I-2		Community Services & Protective Services	CFD	72 hour kits for fire stations	Station Resiliency	935	450	NB - Roll up into C-2 - funding ask			No	
I-3		Community Services & Protective Services	CFD	Fire station in a box	Fire Station alerting systems, radios, and communications	935	140				Yes	Restore fire station wireless if impacted
I-4		Community Services & Protective Services	CFD	Temporary Fire Station	Sprung Structure as temporary fire station			001	120		Yes	Pre-build for use vs. 4 day wait
I-5		Community Services & Protective Services	CFD	Critical Equipment and PPE	Critical Equipment and PPE to supply staff for 72 hours	935	150	001	5		Yes	Equipment & supplies for support staff
I-6		Community Services & Protective Services	CFD	Towing and Recovery Vehicle	Enable the recovery of CFD fleet assets during extreme weather events.	935	550	001	10		Yes	Vehicle used to retrieve stranded vehicles
I-7		Community Services &	CFD	72 Hr kits for staff	Preparedness for staff	935					No	

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		Protective Services					300					
I-8	P8 P9 P10	Community Services & Protective Services	Parks	Bowness Park Lagoon Inlet Structure Protection - The 2013 flood caused significant damage to the lagoon inlet structure. During the course of completing the repairs to the structure gabion mattresses were installed to provide additional protection to the inlet.	The gabion mattresses should protect the inlet structure from future damage due to flood or high water, reducing or eliminating future costs related to flood repairs.	932	90				Yes	
I-9	P8 P9 P10	Community Services & Protective Services	Parks	Bowness Park - Washrooms and Facilities • 2 Seasonal and 1 Year-round washrooms – mechanical put on roof of all washrooms, originally on	Relocation of electrical or mechanical components above or out of areas susceptible to flood damage will protect them from damage due to future flood events. Resilient flooring will be resistant to future flood	932	500				Yes	

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				ground level. Went from tile to acrylic flooring on all washrooms	damage.							
I-10	P8 P9 P10	Community Services & Protective Services	Parks	Prince's Island - During the 2013 flood the causeway was completely destroyed. The causeway was also completely destroyed after the 2005 event. In order to increase the resilience of the causeway additional concrete and rip rap was incorporated into the structure. Final landscaping will be completed in the spring of 2014.	After the 2005 event the shallow and deep utilities that run through the causeway were relocated below the anticipated depth of future erosion due to flooding. This resilience measure proved to be successful. The current resilience measures are designed to provide protection from further flood damage and will reduce The City's exposure to future flood related repair costs and if faced with a similar event, will maintain a critical connection to the Island for emergency responders.	932	100				Yes	

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I-11	P8 P9 P10	Community Services & Protective Services	Parks	Beaver Dam Flats - During the June 2013 flood event, high water levels within Beaverdam Flats eroded and washed out a significant portion of the regional pathway and causeway.	The intent of the restoration work is to not only re-establish the functionality of the pathway and causeway, but to add resiliency to the structures for future high water events. If effective future flood related will be reduced or eliminated.	932	70				Yes	
I-12	P8 P9 P10	Community Services & Protective Services	Parks	Griffith Woods Park Washrooms - Raised mechanical above flood line and flooring upgraded from tile to acrylic. Mechanical upgrades \$15,000.00 Flooring upgrades \$7,000.00	Relocation of electrical or mechanical components above or out of areas susceptible to flood damage will protect them from damage due to future flood events. Further flooring resilient to flood waters was installed.	932	20				Yes	
I-13	P8 P9 P10	Community Services & Protective Services	Parks	Carburn Park - Depot - Mechanical raised above flood line and eliminated	Relocation of electrical or mechanical components above or out of areas susceptible to flood damage will	932	135				Yes	

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				downdraft furnaces. All moved above ground with ducting through roof. Further resilient flooring was installed. Mechanical costs \$125,000.00 Upgraded flooring \$9,000.00	protect them from damage due to future flood events. Resilient flooring will be resistant to future flood damage.							
I-14	P8 P9 P10	Community Services & Protective Services	Parks	Sue Higgins Bridge Transitions - High water during the 2013 flood scoured out the pathway to bridge transitions from the Sue Higgins Pedestrian Overpass to the community of Douglasdale on one side and Fish Creek Park on the other. The current design for the project includes a steel I-beam	Given this pedestrian overpass is an important link in the transportation network and heavily used for recreational purposes, resilience measures incorporated in the current design will minimize negative impacts by future flood events and allow for uninterrupted use during a similar event.	932	300				Yes	Planning & design in 2014 Preparation & construction in 2015/2016  Relates to C-12

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				structure attached to the bridge abutment and anchored by concrete footings installed in the respective parks on both sides of the bridge. Further fortified riverbank armouring and erosion protection will be provided.								
I-15	P14	Community Services & Protective Services	Recreation	Shouldice Aquatic Centre – Flood Control Planning and Implementation	Comprehensive investigation / determine options to improve flood protection and control (such as berms, floodway channels and protective barriers)	933	100			2015 400	Yes	Investigate how to protect mechanical equipment in basement
I-18		Corporate Administration	City Clerks	Alternate Council / Committee facility	Fully operational audio/visual and technology to support an alternate Council Chamber	958	250				No	
I-19		Corporate Administration	Corporate Security	SOCC - Generator	To ensure redundant power and network for SOCC located at	955	100	810	10		Yes	

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					<b>Manchester</b>							
I-20		Corporate Administration	Corporate Security	Alarm Receiver Redundancy	1. To implement a redundant intrusion alarm receiver due to failure (caused by power and network outages) 2. To ensure load balancing across two pairs of alarm receivers	955	80				No	
I-21		Corporate Administration	Corporate Security	Lenel Redundancy	1. To implement virtualised redundancy for Lenel (Intrusion and Access Control) software due to failure (caused by power and network outages) 2. To ensure load balancing across two pairs of virtualised servers	955	60				No	
<b>I-22</b>		<b>Corporate Administration</b>	<b>Corporate Security</b>	<b>Mobile Command Vehicle</b>	<b>1. To establish primary communications (tethered wired and wireless) to allow MCV to connect remotely to security system head-ends and information management systems; 2. To establish a secure wireless access point from the MCV; 3. To establish</b>	<b>955</b>	<b>120</b>	<b>810</b>	<b>12</b>		<b>Yes</b>	

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					secondary communications through a satellite modem; 4. To establish back-up voice communications; 5. To establish dedicated IT infrastructure to operate enterprise physical and information security systems remotely							
I-23		Corporate Administration	Corporate Security	Technical Operations Centre (TOC) - Generator	To ensure redundant power and network for TOC located at Manchester	955	50	810	5		Yes	
I-24		Corporate Administration	Corporate Security	Omnipresence (Physical Security Information Management System) Redundancy	1. To implement virtualised redundancy for omnipresence (PSIM) hardware and software due to failure (caused by power and network outages) 2. To ensure load balancing across two pairs of virtualised servers	955	150				No	
I-25		Corporate Administration	Corporate Security	CCTV Integration with CEMA Common Operating Picture	To integrate all Corporate Security CCTV cameras into the COP	955	50				No	

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				(COP)								
I-26		Corporate Services	Corporate Properties & Buildings	Reduce the rate of ground water flow into the building by sealing cracks in the building envelope, tunnels, sewers, and other areas of water ingress.	Outcome is to slow the rate of water entry into the buildings and limit the points of ingress.	937	150	694	85		Yes	
I-27		Corporate Services	Corporate Properties & Buildings	Channel any water entering the building away from critical building systems and into surge tanks (tunnel) or other holding basins.	Equipment and structure damage will be reduced by diverting water into safe containment areas.	937	550	694	10		Yes	
I-28		Corporate Services	Corporate Properties & Buildings	Remove the water in the holding basins at a rate that matches or exceeds the flow rate of water entering the building and accumulating in the holding basins.	Water must be removed from holding basins to ensure capacity remains for additional water containment.	937	350	694	50		No	

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I-29		Corporate Services	Corporate Properties & Buildings	Relocate electrical switch that distributes emergency generator to a physical point above any high water mark.	This action will eliminate the need to declare a building uninhabitable. It will not restore the facility to 'fit for purpose', however it will speed any repair process and reduce risks to any persons in the building.	937	600	694	18		Yes	Pre-design underway, can be completed in 2014
I-30		Corporate Services	Corporate Properties & Buildings	Establish two administrative workplace hubs in both north and south sectors of Calgary.	Enable continuity of City service delivery to citizens and employee productivity.	937	900	694	10		No	
I-31		Corporate Services	Corporate Properties & Buildings	Update CPB CAD drawings to digitize, maintain and store so that they are available to stakeholders.	This action will enable timely and accurate access to building drawings. It will speed recovery and repair efforts and enable operator knowledge and access of building systems and location information.	937	700	694	10		No	
I-32		Corporate Services	Corporate Properties & Buildings	Develop a CPB Emergency and Continuity Management Plan	Development and maintenance of this E&CM Plan will ensure that critical services within CPB are maintained before, during, and after a	937		694	150		Yes	To create a resiliency plan for emergency business continuity

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					crisis, major emergency, or disaster.							
I-33		Corporate Services	Corporate Properties & Buildings	Create an Emergency Service Counter plan and response	This initiative will ensure critical citizen-facing corporate services are available outside of the downtown core after an interruption of normal service within the downtown core or affecting access to the downtown core. Readiness to deploy by end of May 2014.	937	150	694	10	2015 450	Yes	Two counters created in 2014, remainder deferred to 2015
I-34		Corporate Services	Corporate Properties & Buildings	Disaster response resources, supplies, technology, exercises, and training.	Specific to the protection of CPB structures and the required training needed to deploy and maintain services.	937	45				Yes	Required for training to deploy in future
I-35		Corporate Services	Corporate Properties & Buildings	Upgrade sump pumps and ensure a backup generator and transfer switch is available for the Alberta Trade Centre (ATC)	Will enhance the sump pump capability and capacity to maintain business continuity and life safety building systems.	937	200	694	40		Yes	

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				<b>building.</b>								
I-36		Corporate Services	Corporate Properties & Buildings	Continued development of the Facility Management Network Operations Centre (FMNOC)	CPB Tactical Operations Centres, combined with an incident management structure will ensure proper information flow and prioritization of objectives.	937	50	694	10		No	
I-38		Corporate Services	Office of Land Servicing & Housing	Emergency Management/ Response Plan	<b>Complete a EMP in preparation of future events</b>	943	20				Yes	
I-39		Transportation	Calgary Transit	LRT tigger hi-rail truck	Allows trains to be pulled through unpowered sections	947	850	110	10		No	
I-40		Transportation	Calgary Transit	Access Calgary IVR network switch/backup	Provides customers (people with disabilities) ability to check trip status and provides AC system required to send out automated messages to customers	947	250	110	50		Yes	
I-41		Transportation	Calgary Transit	Access Calgary Phone backup system	Provides customers ability to book trips, provides communication with AC service providers and external parties during	947	300	110	30		Yes	

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					major outages							
I-42		Transportation	Calgary Transit	Access Calgary Internet mobile backup connection	Ability to provide continuity computer system use when regular hard wired internet connection fails – Access Calgary	947	25	110	20		Yes	
I-43		Transportation	Roads	Signal Cabinet Retrofit	Ability to quickly restore power via alternate sources (generator) without further damage to controller units; plug and play ability	948	300				Yes	Related to C 18 & 19
I-44	P-33	Transportation	Roads	Provide Alberta Environment and Sustainable Resource Development alternate, safe access to WID headgates and sluice gates in case of flooding	Alberta Environment can safely access and adjust flow into WID	948	350				No	Delayed for consulting & design Related to C-7
I-45		Transportation	Roads	Centre St Bridge - lower deck hanger modifications. Provide a detail that is more resistant to streamflow and debris impact	Lessen or eliminate the damage to hangers from impact	948	500				No	Removed as request at Director

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I-46		Transportation	Roads	Inglewood Bird Sanctuary Bridge C - construction of a deep (piled) foundation	Bridge has been dislodged twice (2005 & 2013) due to foundation failure. A piled foundation would provide greater resistance to streamflow and debris pressures.	948	500				Yes	
I-47		Utilities & Environmental Protection	Environmental and Safety Management	Emergency equipment for staff	Better prepared staff to continue their work and respond in emergency situations	950	25				No	Removed at request of Director
I-48		Calgary Police Service	Calgary Police Service	Radio System - Add to Pool of portable radios	Increase number of standby radios to allow for increased deployment during major events	953	975				Yes	Required for faster response
I-49		Calgary Police Service	Calgary Police Service	Livelink Database replication	Protect our records management system against data centre failure	953	50	070	15		No	
I-50		Calgary Police Service	Calgary Police Service	Mainframe Storage Upgrade	Upgrade backup storage system for PIMS	953	100	070	10		No	
I-51		Calgary Police Service	Calgary Police Service	Satellite Radio	Purchase 250 Satellite Radio units to deploy in the event of loss of the radio system or deployment of CPS staff to location not covered by radio system	953	500	070	300		No	

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I-52		Chief Financial Officer	Finance & Supply	Supply warehouse preparation (yard prep, equipment, PPE, space and electronics preparation)	F&S has redundancy in place should a flood event occur			481	75		Yes	
Total of all Recommendations												
<b>Total Infrastructure/Operations Resiliency Projects Recommended for Immediate Funding</b>							\$ 12,305		\$ 1,065	\$850		
							<b>\$6,590</b>		<b>\$650</b>	<b>\$850</b>		

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