



City of Richmond

Report to Committee

To: General Purposes Committee **Date:** September 13, 2015
From: Phyllis L. Carlyle **File:** 09-5125-03-01/2015-
 General Manager, Law and Community Safety Vol 01
Re: **Lessons Learned from the Windstorm of August 29, 2015**

Staff Recommendation

That the report titled "Lessons Learned from the Windstorm of August 29, 2015", dated September 13, 2015, from the General Manager, Law and Community Safety, be received for information.

Phyllis L. Carlyle
 General Manager, Law and Community Safety
 (604-276-4104)

REPORT CONCURRENCE	
ROUTED TO:	CONCURRENCE
Communications	<input checked="" type="checkbox"/>
Parks Services	<input checked="" type="checkbox"/>
Roads & Construction	<input checked="" type="checkbox"/>
Sewerage & Drainage	<input checked="" type="checkbox"/>
Fire Rescue	<input checked="" type="checkbox"/>
Transportation	<input checked="" type="checkbox"/>
Information Technology	<input checked="" type="checkbox"/>
Human Resources	<input checked="" type="checkbox"/>
Recreation Services	<input checked="" type="checkbox"/>
REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE	INITIALS:
APPROVED BY CAO 	

Staff Report

Origin

At the September 8, 2015 General Purposes Committee, there was discussion on the recent windstorm that swept through the Lower Mainland on August 29, 2015 and the potential for staff to examine what was learned as a result of the storm in relation to the City's emergency preparedness. The following referral was carried:

- (1) *That staff examine lessons learned as a result of the recent windstorm in relation to the City's emergency preparedness.*

This report responds to this referral.

This report supports Council's 2014-2018 Term Goal #1 A Safe Community:

Maintain emphasis on community safety to ensure Richmond continues to be a safe community.

- 1.3. *Improved perception of Richmond as a safe community.*

Background

After several months of unseasonably warm and dry weather, a significant rainstorm brought on by two storms that merged two jet streams into a river of sub-tropical moisture, otherwise known as the pineapple express, was forecast.

Environment Canada issued a Special Weather Statement on the afternoon of Thursday August 27 warning of heavy rain on the South Coast with an estimated 80 – 120 mm expected between Friday August 28 and Monday August 31 and the risk of flash flooding due to the drought conditions and the soil's reduced capacity to absorb the rains. WeatherNet, the City's contracted weather forecast service, predicted a stormy Saturday August 29 with moderate to heavy showers and possible thunderstorms, gusty winds in the afternoon, and tree limbs that may come down in the stronger gusts.

On the afternoon of Friday August 28, Environment Canada issued a rainfall warning for the Howe Sound and Metro Vancouver with an estimated 50 – 80 mm forecast for Howe Sound and the North Shore beginning Friday night and continuing on Saturday with lesser amounts expected in other areas of Metro Vancouver and possible localized flooding in low lying areas. WeatherNet again predicted a stormy Saturday beginning with light showers quickly becoming moderate to heavy rains with possible thunderstorms and an increase in wind and continuing to be gusty into Saturday night.

On the morning of Saturday August 29th, a wind warning was issued for Greater Victoria, the Sunshine Coast, Howe Sound and Metro Vancouver, forecasting winds to southeast 70 km/h ahead of the front that morning followed by gusts to 90 km/h early in the afternoon with the passing of the front. WeatherNet, which issued their forecast at noon, repeated the Friday forecast rather than providing a fresh updated one.

The winds grew in intensity starting about 7:00 a.m. until they reached their peak gusts of 80 km/h at 12:16 p.m. and gradually subsided about 4:00 p.m.

Analysis

This was a significant storm that occurred after months of drought conditions. Trees were stressed and weakened by the drought and in full foliage, creating wind sails to catch the wind. Had this happened in winter when we usually experience sub-tropical rain storms, fewer trees and branches would have come down as their branches would be bare of leaves and the soil able to absorb greater amounts of water.

Approximately 35 staff were brought in on overtime to respond to the following impacts of the windstorm:

- (1) The first major power outages occurred at 8:08 am and impacted 12 of the City's sanitary and storm stations. A second wave of power outages occurred around noon, impacting another 21 stations and multiple traffic signals. At one point in the afternoon, 48 sanitary and six drainage stations had lost power. Staff were brought in on overtime to move portable generators and vacuor trucks to maintain operations and prevent flooding. Stations came back on line when power was restored, but staff were required to check them to ensure they were 100% operational.

It is important to note that the City has only nine portable generators to move around to all the pump stations that had lost power and had the power outage had a greater impact, the City would not have been able to provide sufficient back up power. Consideration should be given to a capital project submission for additional generators to provide backup power to key City critical infrastructure during a large scale power outage.

- (2) There were over 100 tree failures. Staff worked until 2:00 a.m. Sunday morning and returned later in the day to make the area around the trees safe. Initial response was to simply cut the trees and branches and remove them to the side of the affected roadways, contractors were brought in to remove the fallen debris. This work is anticipated to continue until mid-October.
- (3) Approximately 85 traffic signals lost power at various times during the windstorm. There were approximately 15 traffic signals equipped with Uninterruptable Power Supplies (UPS) which were not affected by the power failures and continued to function normally throughout the storm. Most of the 85 traffic signals which lost power came back to normal operation automatically once power was restored, while approximately 11 traffic signals remained in red flash mode which required a manual reset. The City's traffic signal system automatically sends a text message to Traffic Signals staff and a maintenance contractor (Cobra Electric) when a location goes into flashing red mode for manual reset or when the UPS is activated. The Works Yard Dispatch communicates directly with Cobra Electric at all times on any public calls regarding other signals issues including power failures. As the UPS were proven to be reliable in providing continuous power to maintain normal and safe traffic operation during the power failure, staff are

continuing to expand their addition to other key intersections as part of the City's annual capital program for traffic signal improvements.

- (4) E-Comm was significantly overwhelmed by the windstorm with over 40% of calls to 911 receiving a busy signal. E-Comm also reported a challenge with the downstreaming of calls to emergency response agencies. E-Comm needs to develop more call taking capacity to meet the demands of an emergency and to formalize the downgrading of response deployment of emergency response agencies quickly especially in high volume incidents.
- (5) Richmond Fire Rescue had 61 calls over the same date last year, representing a 244% increase in call volume, all relating to wires and trees down, motor vehicle accidents at intersections where traffic signals had lost power, citizens trapped in elevators, and alarms triggered by the power outage.
- (6) Public Works Dispatch received 25 calls for downed wires, each location requiring staff response to keep the area clear until BC Hydro was able to respond.
- (7) Watermania and the Richmond Ice Centre lost power from 1:00 p.m. until their respective closures on Saturday and reopened on Sunday without incident.
- (8) Thompson Community Centre, West Richmond Community Centre and Hamilton Community Centre all lost power but remained open with limited operations using natural daylight.
- (9) Security alarms for numerous City facilities were activated by the power outage. While the alarms had back up power and the facilities remained secure, nevertheless alarms were triggered to the monitoring company and from there to Public Works Dispatch.

An estimated 450 – 500 calls were received by Public Works Dispatch. A second dispatcher was brought on to assist with the call volume at 1:00 p.m. From 3:00 p.m. – 5:00 p.m., three dispatchers responded, with one dispatcher leaving at 5:00 p.m. and the second at 5:40 p.m. While one dispatcher received incoming calls allowing the other to make outgoing calls to dispatch response resources, a second dispatch workstation would support multiple dispatchers in an emergency. Calls to BC Hydro to report downed wires were placed in queue on hold for up to 30 minutes. New protocols have been developed to support Public Works Dispatch when there are high call volumes. Staff will examine the feasibility of a second dispatch work station, and in large scale events, consider activating the emergency call centre as required.

Contributing to the volume of calls to Dispatch was the inability of the BC Hydro website to cope with the volume of people accessing it. An estimated 750,000 people lost power in the windstorm on Vancouver Island and the South Coast with no access to information on how long their outage would last. Many turned to their local authority hoping for information.

From a communications to the public perspective, staff ran a number of advisories throughout the weekend based on the rainfall warning and monitored the City's response to the storm and social media. Most social media traffic was related to the power outages and the traffic gridlock resulting from the traffic signals offline. Staff responded by posting a Tweet advising that City

crews were working hard to address problems and advised motorists to remain off roads unless necessary.

The City's smartphone network was critical to mobilizing and coordinating staff and resource deployment in a very effective manner and enabled staff to distribute real time multi-media situation reports.

Following the windstorm, staff did take advantage of the windstorm to promote emergency preparedness and sign up to the City's Emergency Notification System at RichmondBCAlert.ca. This is a standard communications protocol after any significant emergency that occurs either locally, in the region, or worldwide.

Given the extended shutdown of the BC Hydro website during the storm, staff are reviewing the resiliency of the City's website and associated systems to ensure it is capable of handling the high volume of traffic likely to occur during a major emergency and to review existing contingency plans should the website go down in an emergency.

From an emergency management perspective, the response to the windstorm was managed within the usual operational parameters and did not trigger an emergency response. Had it been a prolonged event, occurred during winter with low temperatures, or resulted in an evacuation, etc, then the Emergency Operations Centre may be activated to manage the response.

The City will apply for Disaster Financial Assistance for eligible response and recovery costs. Examples of response costs would be overtime for staff to remove trees or large branches to ensure public safety or maintain essential public works and local authorities may receive 100 % of eligible response costs. Recovery costs would include debris removal for secondary and residential streets and sidewalks, etc. and may be reimbursed at 80% of costs over \$1,000.

Of note are the onerous processes to apply for Disaster Financial Assistance. Required documentation to support an application includes:

1. Purchase requisition that includes justification why the purchase was essential to incident response
2. Invoices for all goods and services being claimed.
3. Proof of payment, including financial reports, i.e. timesheets, general ledger detail, complete with copies of cheques. To support overtime costs, copies of timesheets to verify dates and hours of overtime, payroll records to demonstrate calculation of overtime hours, rates, etc., and financial reports to verify payments are required. Documentation should include whether an employee is casual or full time, pay rate, type of work, regular hours per day, days per week in a daily overtime master spreadsheet so that overtime is evident.
4. GST calculations – as only the portion not recoverable by GST rebate is applicable.

While staff have codes that can be set up for easier tracking of emergency expense costs to support the City's application for Disaster Financial Assistance, generation of the required supporting documentation will require dedicated resources to complete.

Lessons Learned

1. Weather Forecasts: For significant weather events, staff to monitor weather forecasts from different sources to ensure the City has as accurate a forecast as possible.
2. Disaster Financial Assistance: Staff to set up Hansen and PeopleSoft codes for events that have the potential to be eligible for Disaster Financial Assistance.
3. Portable Generators: Staff to develop business cases for additional portable generators for future capital budget submissions.
4. Critical Infrastructure: Power redundancy for critical infrastructure is necessary for continued operations. Staff to review critical infrastructure to ensure there is alternate power supply capability. This may include transfer switches, permanent standby generators, photovoltaic cells, wind generated power, etc. Retrofitting may be required for existing structures, and for new facilities, incorporation into design and construction.
5. Generator Fuel: Staff to develop procedures for portable and permanent generator fuelling so that fuel levels are monitored, fuelled during extended power outages and refuelled after every use.
6. Traffic Signals: Staff to continue to incorporate the inclusion of an alternative power source, such as a UPS, as part of the traffic signal improvement program so that traffic signals can continue to function normally during a power outage.
7. E-Comm: E-Comm is aware that they were significantly overwhelmed by the windstorm. Staff will continue to support E-Comm and their efforts to increase their capacity.
8. BC Hydro: BC Hydro's call taking capacity, website and response to downed wires were significantly overwhelmed during the windstorm. Staff have obtained non-public contact information for BC Hydro to report power outages for a more immediate response and their expected return to service.
9. PW Dispatch Capacity: Staff to examine the feasibility of a second dispatch work station and, for large scale events with high call volumes, consider activating the emergency call centre.
10. City Website: Staff to review the resiliency of the City's website and associated systems to ensure it is capable of handling the high volume of traffic likely to occur during a major emergency and to review existing contingency plans should the website go down in an emergency.

11. Staff Development: Staff have been working hard on creating a culture through training and support to foster team development and the building of capacity for critical timely decision-making. The effectiveness of the City's response is an indication that staff should continue to work in this direction.

Financial Impact

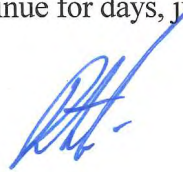
None

Conclusion

Staff responded to the windstorm of August 29, 2015 using their usual operational response protocols. The windstorm was an excellent reminder to the general public to be prepared for any emergency that may occur and expect that it may continue for days, just as the City continues to be prepared to respond to any emergency.



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DP:dp