Incident Summary (# II-710415-2018)(17800) FINAL

SUPPORTING INFORMATION	Incident Date		*June 27, 2018*
	Location		*Coquitlam*
	Regulated industry sector		Electrical Low Voltage (30v to 750v)
	Impact – Injury	Qty injuries	*No injuries*
		Injury description	*none*
		Injury rating	*none*
	Impact – Damage	Damage description	*Damage to the electrical consumer service.*
		Damage rating	*Minor*
	Incident rating		*Minor*
	Incident overview		*A worker power washing the exterior of a residential multi dwelling unit building in the area around the overhead electrical consumer service heard crackling and saw electrical arc flashes and smoke coming from a junction box located on the exterior soffit of the building.*
INVESTIGATION CONCLUSIONS	Site, system and components		*The raceways and equipment for an overhead electrical consumer service contain the un-fused service conductors which feed power from the supply utility to the building. When located outside these components are required to be rated for use outdoors.* *The neutral or identified conductor of an electrical consumer service is to be without joints and splices. And any splice or joint to conductors are to be made by approved methods and mechanically secured so that they do not become loose with normal stresses like movement and vibration. When joints and splices are made they are required to have the same insulation quality as the conductor they are insulating.*
	Failure scenario(s)		*The overhead electrical consumer service raceways and conductors were extended from the left corner of the building along the exterior approximately 40 feet to the new point of attachment location for connection to the supply authorities conductors feeding power to the building.* *When the service was extended to the new location a metal junction box which was rated for use indoors only was installed to splice the conductors so they could be extended. The splices in the junction box were made with bare copper split bolts taped with only a layer of vinyl electrical tape which over time had deteriorated.* *The water from the power washing or the vibration caused from the power washer spray caused one phase of the system to come in contact with the bonded metal junction box causing an electrical fault to ground and subsequent arc flashes.*

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Facts and evidence	***Witness Statements:*** *Worker power washing around the consumer service junction box:* *The worker stated he started to power wash the exterior of the building with a 2000psi power washer on a dry sunny day from a boom lift around the area of the metal junction box. The spray was not directly on the box when he saw an electrical arc flash (multiple flashes of sparks and blue and white flames) coming from the box. He stated the sparks were shooting out approximately 2-3 feet. He stated he turned off the power washer and immediately came down from the boom lift as the arc flash continued to happen.* *Worker who witnessed the incident:* *He stated they were working around 2pm on a nice day when he saw smoking and sparking coming from a box on the exterior of the building. He stated he and the other workers ran to the back of the building and called 911. The box continued to*

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	smoke and spark until the fire department and the power utility arrived approximately 10 minutes later and disconnected the power. *<u>Electrician called to repair the service:</u>* *He stated he was contact by an agent of the owner to restore power and arrived on site at 5pm approximately 3 hours after the incident had occurred. When he arrived on-site he saw the supply authority had disconnected power he confirmed this visually outside and checked by metering the main switch. He stated the ground was dry below him it was a sunny day and when he opened the junction box he noticed it was a type 1 metal junction box for use indoors only, he inspect the box and it appeared to be dry. He stated he could see where one phase had come in contact with the bonded metal box and the damage the fault had caused to the box. He stated the connections were made with copper split bolts tapped with vinyl tape and the tape was not in good condition when he looked at the other connection points that were not damaged. He stated from his inspection he thought the vibration from the power washer water spray caused one of the phase conductors that was already in close proximity to the metal box enclosure to fault to the bonded box due to poor and deteriorating vinyl electrical tape used for insulation around the connections.*
Causes and contributing factors	*The arc flashes and damage to the equipment was likely caused by the deteriorating vinyl electrical tape used to insulate the copper split bolt connection points which were used to extend the service conductors. The vibration caused by the power washer spray or water ingress from the power washer spray into the electrical junction box which was rated for use indoors only caused the already compromised insulation to fail and one phase to fault to ground.*

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Yellow Arrow: The yellow arrow is pointing to the junction box where the incident occurred. The junction box was partially repaired when this picture was taken.

White Arrow: The white arrow is pointing to existing bolt through point of attachments located on the exterior of the building.

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Orange Arrow: The orange arrow is pointing to the screw in point of attachments for the supply conductors feeding power to the building.

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Blue Arrow: The blue arrow is indicating the location where the incident occurred.

Green Arrow: The green arrow shows the connection point to the supply authorities conductors.