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To: Council Members File: 0530.01  
From: Councillor Gord Baird Date: January 16, 2019  
Subject: **Regional Vegetation Management Strategy: A Regional Low Carbon Resilience (LCR) approach to address tree canopy death with respect to fire risk, flood mitigation, and carbon sequestration**

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Our bio-region has observed an alarming increase in die-off of Douglas Firs and Cedar trees, both in number of tree deaths and speed of individual tree death. This has been predicted in climate models; however this climate impact is occurring much sooner than expected. Research from Northern California, Oregon and Washington has observed similar trends, with Oregon State having performed the most research to date.

The cause of the die-off is initiated by drought stress, which the trees are not able to overcome, that then leads to a variety of secondary afflictions from fir beetle to various fungi that take advantage of the weakened trees and expedite their death. The result is rapidly increasing areas of dead trees that become an increased fuel load in both the rural and urban areas.

These natural assets are relied upon for ecological services including temperature management, soil stabilization, storm water management, water filtration, air cleaning, and supporting intact wildlife habitat including fish bearing streams.

With hotter drier summers, fires move faster, burn hotter and are more destructive as recently witnessed in the past several years throughout BC, Washington, Oregon and most notably, California.

Fire Smart BC has been working to educate community policy makers that vegetation management is the single biggest action we can perform to reduce fire risk. Communities ravaged by fire have focused on fuel reduction and planting deciduous buffer strips in replacement of highly flammable coniferous forests to mitigate the wildfire interface to protect communities (Gov. of Alberta, 2012; Prov. of BC, n.d.; "Tree Species List - Wood Buffalo," n.d.).

In the CRD region we have been spared to date, but the risks associated with wildfire continue to rise. In addition to the direct human impacts including the potential loss of life, smoke inhalation, and infrastructure loss that wild fire poses, there are several other impacts often not considered:

- **Temperature moderation:** Loss of forest canopy leads to increased regional temperatures. Tree canopies provide the natural asset of keeping areas cooler – reducing energy use in cities, (Alexander & McDonald, 2014).
- **Storm water management and water filtration:** Increased soil erosion occurs due to direct rainfall upon soils that have lost the 'calming effect' that vegetation and tree canopies offer during heavy rain events. Additionally, damaged soils from wildfire are less infiltrative (due to less carbon) and hence more susceptible to soil erosion. Additionally, we observe less filtration of surface waters. We have seen repeatedly that flooding follows wildfires, (Moench & Fusaro, n.d.)
- **Ground and surface water contamination:** In areas of wildfire fighting activities, where retardants are used, we see rapid infiltration of retardants into aquifers, and hence we see Health Authorities across the province with new testing procedures. Fire retardants used in wildfire fighting are not the toxic halogenated ones we use on clothes, personal items, and

building materials but they will still render groundwater and surface waters non-potable until enough precipitation has occurred to flush them out the aquifers. This could result in rural areas with no access to potable water (“Island Health - Recommended Precautions for Water and Food Affected by Fire Retardants,” n.d.)(Wilson, n.d.)

- **Impacts to Riparian areas:** Loss of stability and ecology in watersheds most notably impact the salmon bearing streams. Increased silty runoff due to lower canopy impairs spawning beds while decreased tree canopy increases stream temperatures. Increased stream temperatures lend to impaired fish spawning and lower stream levels and higher predation on fish species in streams.
- **Loss of wildlife habitat** for large areas.
- **Social and health implications** of communities suffering impacts of wildfire show trends of higher drug and alcohol use, higher rates of domestic violence, and higher rates of mental illness. Mitigating risk is directly linked to maintaining the health of a community (Financial Post, In the Shadow of the Beast, 2018).
- **Loss of sequestered forest carbon:** The loss of the forest canopy is a loss of sequestered carbon. Using ecological methods to increase eco-sequestration is becoming a mature science, (Nijnik, 2010).
- **Loss of sequestered soil carbon:** The loss of forest canopy exposes the soil and results soil carbon loss that stems from lower soil moisture and enhanced nitrification of stored carbon, (Achat, Fortin, Landmann, Ringeval, & Augusto, 2015).

### The Ask

Request the CRD and the participating municipalities co-apply for a grant application to the Community Resiliency Investment program’s (CRI) Strategic Wildfire Prevention Initiative. This grant is up to \$100k per municipality, per year, and local/regional governments can co-apply and receive more funds. Potentially the region could leverage \$1.5 million over three years to fund a three-year, three phase regional Vegetation Management Strategy and draft Policy.

The three phases:

1. Research and draft a vegetation management strategy
  - Research the rate of actual tree species die-off
  - Review research on replacement species (deciduous fire-resistant species) which both environment Canada and the BC Forestry Centre have completed, as well as the research from Oregon State
2. Test vegetation management strategy
  - Design one or more pilot projects based on the draft strategy
  - Implement the pilot project
  - Review results and lessons learned
3. Finalize vegetation management strategy
  - Based on the results of the pilot project, update the management strategy
  - From the strategy, draft a model policy that municipalities can implement
  - Draft a framework for implementing policy through an implementation plan.

### Elephants to consider

As we move into a predictably hotter, dryer future with a robust scientific imperative for a rapid timeline of 11 years to make drastic cuts to emissions. We must simultaneously seek solutions to decrease GHGs, sequester carbon, and build local resilience. Our choices are limited and we must act rapidly. We are faced with the dilemma of reforesting using native species that are no longer suited to handle our changing climate versus using non-native species that are better suited for a hotter, dryer climate. We have to be aware that we do not have the luxury of time on our side. Delaying action will result in greater fire impacts to our communities.

Another issue relates to private forested lands and working with these private land owners to participate in reforesting their changing lands. This issue requires education and incentive programs while developing strategies to aid private property owners.

**Motion:**

That staff be directed to write letters to the Capital Regional District and all member Local Governments requesting an indication of their interest in participating in a co-application submitted by the CRD on behalf of its members to UBCM's Community Resiliency Investment Program for the development of a regional vegetation management strategy to assess the following:

- forest die-off,
- recommend alternative fire-resistant vegetation replacements,
- initiate a pilot project, and
- use the results to create a regional strategy, model policy and implementation plan,
- and further, pending the responses from the CRD and member local governments, request that the CRD convene a meeting of interested parties to develop and submit an application.

**References:**

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