### The Interface of Wildfires and Electrical Utilities in Western Canada

**Case Study I: Australia’s Black Saturday**
- February 7, 2009, in the State of Victoria, Australia
- 216 bushfires led to 173 human deaths, Royal Commission investigation
- 5 major fires were ignited by electrical utilities, including the Kilmore East Fire, which caused 119 deaths and 232 casualties
- Cause determined to be a termination which was incorrectly installed and compromised the electrical line integrity

**The investigation concluded:**
- Asset Management Program was inadequate
- Condition-based replacement used for assets nearing or already past their engineering life estimate

**Case Study II: California’s Camp Fire**
- December 8, 2018, near Paradise California
- 85 deaths, 18,000 buildings destroyed, 150,000 acres burned
- PG&E eventually filed for Chapter 11 Bankruptcy, liable for over USD $30B
- Ignition was from a transmission line conductor component failing, contacting the tower and repeatedly spraying molten metal below

**The investigation concluded:**
- Asset and vegetation inspections rare on private land
- No systematic method for identifying hazardous trees
- Regulation only focused on vegetation within the Right-of-Way, not trees which could fall onto lines

**Case Study III: Western Canada**

**Wildfire Modelling**
- Wildfire patterns are becoming extremely difficult to predict and wildfire behaviour is becoming hard to anticipate
- Climate change is leading to vegetation changes which models do not incorporate
- The Federal Gov. modelling suite *Prometheus* is at end-of-life and there is no replacement. Trials of new ones are underway in 2023

**The Big Picture**
- Alberta records fires ignited by the “powerline industry”: 924 between 2006-2018, 87% under 1 hectare but 2 were over 5,000 hectares
- BC doesn’t categorize wildfires except for “lightning”; “person”; or “unknown”
- 2011 Utikuma Fire Complex (AB) ignited by transmission line burned Whitefish First Nation 459
- Lack of data in BC to determine ignition from infrastructure
- 2023 St. Mary’s River Fire (BC) likely started by transmission line and burned ?aq’am Community

**CONCLUSIONS**
- Changes to laws, responsibilities of utilities, municipalities, and oversight by the Regulator
- Use of drones and satellite imagery for infrastructure inspection and vegetation models
- Both companies began installing hardware and software safety settings for electric circuits in High Risk Areas
- Reduced Victorian ignitions by 80%
- Reduced PG&E ignitions by 74%

**Mitigation and Prevention**
- Companies are committing enormous resources to M&P
- Mitigation both protects infrastructure and prevents ignitions by removing fuel sources
- Infrastructure maintenance is a gap in this research
- Vegetation management is the most common practice for M&P but is not where it needs to be for 2023
- Long line distances and infrastructure remoteness is problematic
- Vegetation in some regions can grow faster than companies are able to manage it due to limited resources
- Right of Ways are very limited in National Parks

**Insurance**
- Insurance companies are worried about the impacts of climate change and are committing enormous resources to this issue
- Strong wildfire mitigation programs lead to policy savings
- Companies found liable for igniting wildfires may be pursued for recovery costs and may never get wildfire insurance again
- May soon be impossible to buy insurance in some high-risk areas

**RECOMMENDATIONS**
- Asset and Vegetation Management Programs should be expanded
- Infrastructure Replacement should depend on both age and condition and be comprehensive of all components
- Infrastructure materials need to change, transmission lines should only be metal
- Government policies need to be aligned at all levels
- Provincial Utility Commissions should work with companies to ensure Wildfire Mitigation Programs are approved

**REFERENCES**
- Intergovernmental Panel on Climate Change. (2023).
- Prometheus overview
- FireGrowthModel.ca. (2023, January 20).
- Prometheus overview
- Intergovernmental Panel on Climate Change. (2022).