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New air quality study identifies coal as minimal source of Edmonton's air pollution

An independent analysis of the sources of air quality issues in and around the Edmonton area, conducted over the past six months, has now been completed by University of Alberta scientist Dr. Warren Kindzierski. The [full report](#) and the [executive summary](#) are now available.

It has become accepted as fact that coal plants west of Edmonton are a major source of Edmonton's air quality issues and responsible for measureable human health effects. However, the argument that health impacts in Edmonton are related to coal is not substantiated by scientific research conducted in Alberta.

Dr. Kindzierski's work has determined, using provincial government monitoring data, that emissions from coal-fired generation are a minimal source of Edmonton's air pollution. This research questions the frequently reported assertion that health quality issues in Alberta are related to coal-fired generation.

Dr. Kindzierski is an Associate Professor at the School for Public Health at the University of Alberta specializing in assessing factors contributing to environmental contaminant exposure, particularly from air emissions.

Dr. Kindzierski used data taken from provincial monitoring stations over the last nine years. His research can be summarized as follows:

- Dr. Kindzierski examined the chemical "signatures" for emissions related to air quality concerns in Edmonton and found that they point to several sources, including local industries, vehicles and fireplace wood burning. A signature is a unique chemical fingerprint that identifies the composition and the source of particulate matter.
- Dr. Kindzierski found that there was no evidence that points to coal plants as a major factor contributing to Edmonton's air quality issues. Emissions from coal combustion are minor contributors.
- Some particulate matter in the airshed comes directly from sources such as residential wood-burning, but the majority of particulate matter is formed through atmospheric chemical reactions, referred to as secondary particulates or aerosols.
- Secondary organic aerosols, which are formed from emissions from vehicles, local industry and a variety of other activities outside of Edmonton are, in fact, the largest single source of particulates, accounting for 29 per cent of particulate matter in the Edmonton area.
- Secondary nitrate (16.4 per cent) — largely from transportation — and secondary sulfates (21.5 per cent) — largely from industry such as oil and gas, refineries and chemical plants — combined, account for almost 38 per cent of particulate matter in the Edmonton area.
- Only about 10% or less of all particulate matter in the airshed can be attributed to coal combustion emissions.
- The study also looked at 17 years of wind patterns and confirmed that, in most seasons, the local winds around Edmonton predominately blow into the city from the south and southeast, not from the west where coal-fired generation is concentrated.

In addition, the study examined trends in Edmonton's air quality and observed the following:

- Hourly concentrations of nitrogen dioxide (NO₂), sulfur dioxide (SO₂), total hydrocarbon (THC) and carbon monoxide (CO) have steadily decreased since 1998;
- Hourly concentrations of particulate matter are unchanged since 1998, and;
- Hourly concentrations of ozone (O₃) show inconsistent change.

The research used data collected from three ambient air quality monitoring stations that are configured to measure air contaminants and calculate the provincial air quality health index. These three stations are directly managed by Alberta Environment. A fourth station's data, the National Air Pollution Surveillance (NAPS) program, which measures particulate matter, was also analyzed for the study.

TransAlta financially supported Dr. Kindzierski's work, but had no direct involvement in the scientific investigation or the interpretation of the results.

Claims of a causal relationship have been made by other parties based on hypothetical modeling in other jurisdictions, chiefly the United States, and have limited, if any, applicability to Alberta. The current

research suggests that it has limited scientific value in the Alberta context.

Three important points arise from this work:

1. Accelerating the closure of coal plants will have little, if any, impact on Edmonton's air quality.
2. Edmontonians and residents in outlying communities are entitled to know that, although health concerns may be legitimate, the important sources of pollutants are not coal facilities. Appropriate actions should be taken to better understand and deal with the major sources of pollutants if the municipality and the province chose to address this issue.
3. Drawing a linkage between human health concerns and coal fired generation west of Edmonton is unsubstantiated by science and should not continue as a rationale for closing coal units.

TransAlta, ATCO and Maxim have submitted a "Dial Down – Dial Up" proposal to the province that addresses the government's climate change objectives. We stand by our commitment to work collaboratively and reiterate our offer to work with environmental groups, communities, unions and the province on a forward-looking solution.

November 20, 2015

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