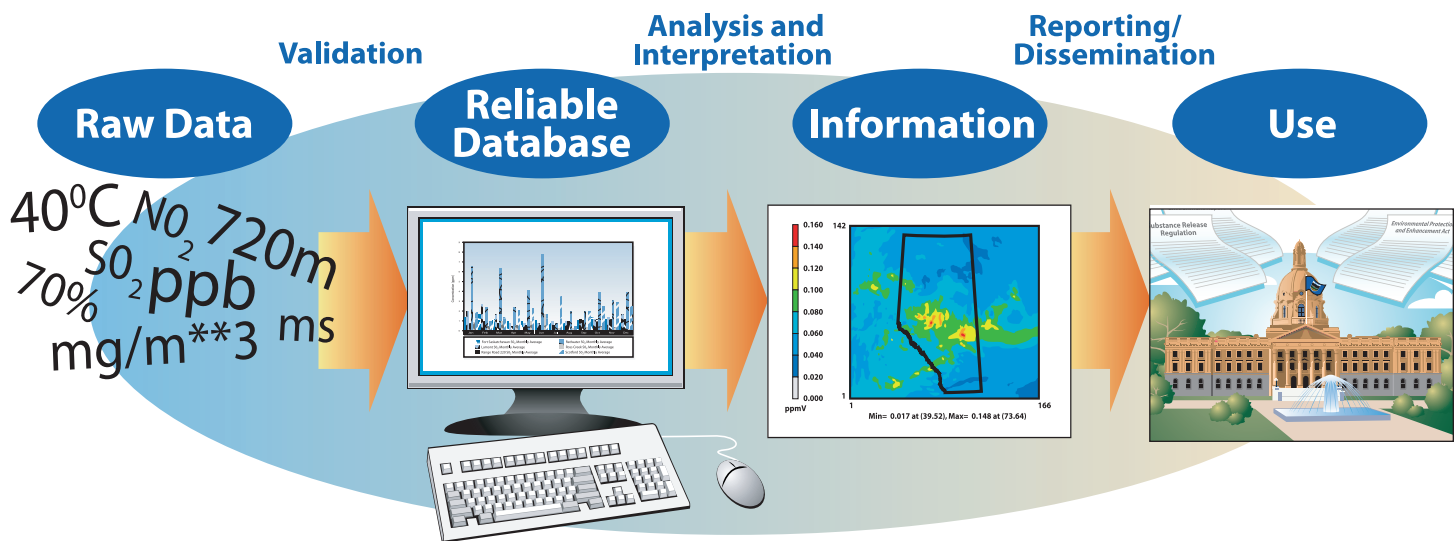# HOW AIR QUALITY MONITORING DATA IS USED

Ambient air quality data from air monitoring stations in Alberta is accessible to everyone from the **Clean Air Strategic Alliance (CASA)** Data Warehouse. Ultimately, the purpose of monitoring air quality is not simply to collect data, but to provide information required by scientists, policy makers and planners to enable them to make informed decisions on managing and improving the environment.

Raw Data — **Validation** → Reliable Database — **Analysis and Interpretation** → Information — **Reporting/ Dissemination** → Use

$40^0C \ N0_2 \ 720m$
$S0_2 \ ppb$
70%
$mg/m**3 \ ms$

Who Collects Air Quality Monitoring Data?

In Alberta, air quality is monitored by a network of stations operated by Alberta Environment, airsheds (air quality management zones), Environment Canada and industry. Many of the monitoring stations report data from the previous hour to websites operated by airsheds and Alberta Environment. After the data has been validated, it is archived in the CASA Data Warehouse.

What Air Quality Data is Available?

Concentrations of pollutants are monitored and compared with the Alberta **Ambient Air Quality Objectives** (AAAQO). These Objectives are pre-established concentrations of certain pollutants that are considered harmful to the environment or human health (see fact sheet *Regulating Air Quality In Alberta*). If an AAAQO is exceeded, airsheds report this result to Alberta Environment.

One hour average concentrations of a variety of substances are monitored. Some of these substances are ammonia, carbon monoxide, hydrogen sulphide, oxides of nitrogen, ozone, particulate matter, and sulphur dioxide. Meteorological factors such as wind speed, wind direction and ambient temperature are also recorded to help interpret the monitoring results. Monthly average concentrations of some substances are also obtained from passive monitors (see fact sheet *How is Air Quality Monitored?*).

Alberta Environment has defined an **Air Quality Index (AQI)** that is calculated from air quality measurements. AQI ratings provide people with a basic measure of outdoor air quality. The pollutants used to calculate the AQI are carbon monoxide, nitrogen dioxide, ozone, fine particulate matter and sulphur dioxide. A rating of 0-25 indicates good air quality, 26-50 is fair, 51-100 is poor, and greater than 100 is very poor air quality. Alberta's Air Quality Index is updated every hour, 24 hours a day, and can be accessed at **http://www.telusgeomatics.com/tgpub/ag_air/ default.asp** or by phoning **1-877-247-7333**.
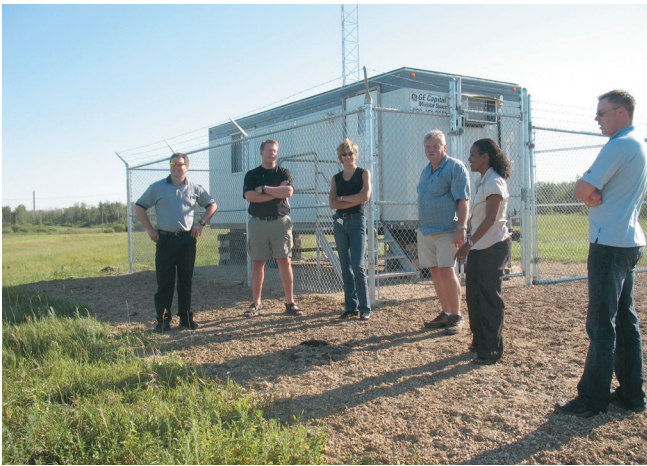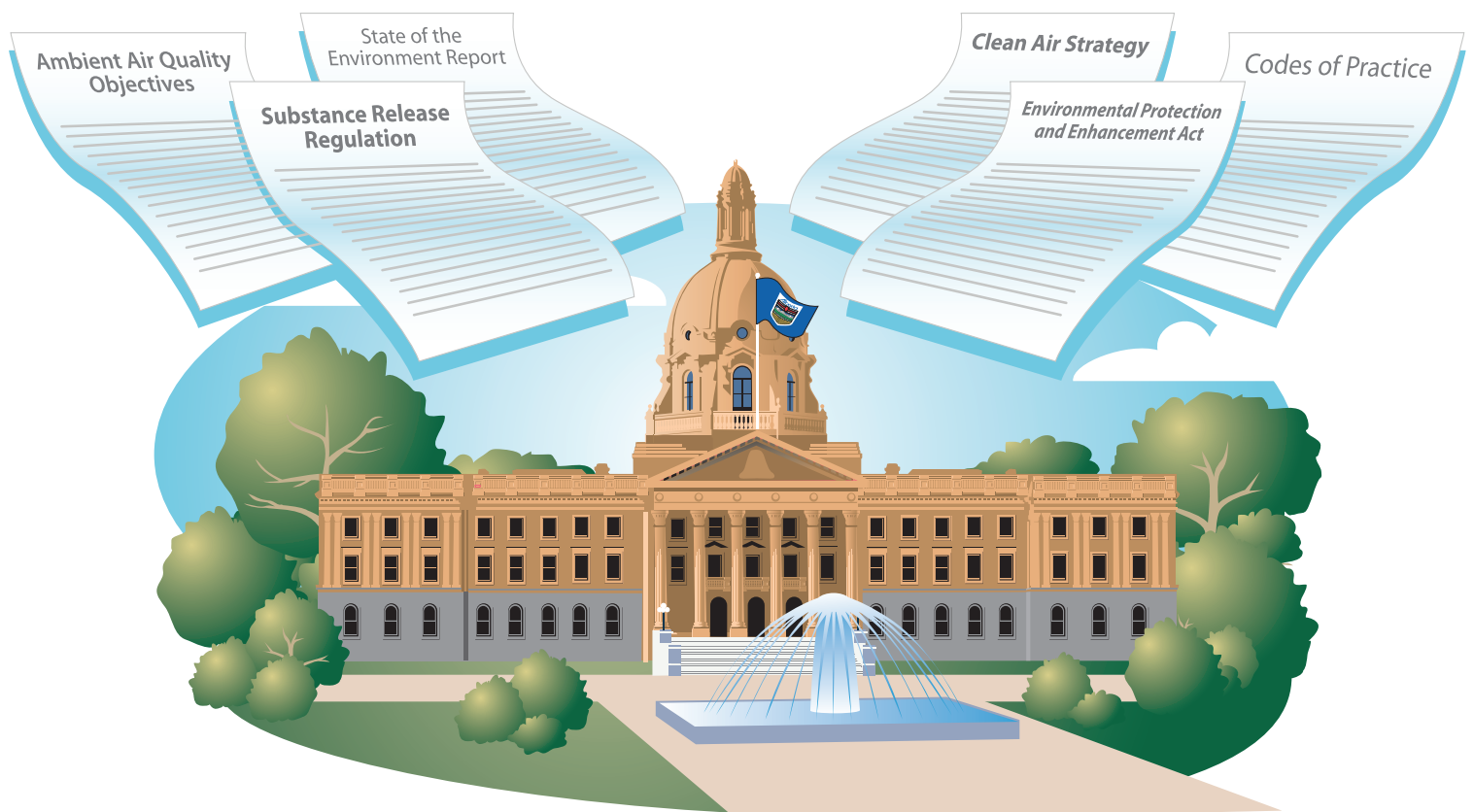
In addition, the **National Air Pollution Surveillance (NAPS)** Network, a joint program of federal and provincial governments, monitors and assesses ambient air quality in Canadian urban centers. Airsheds provide NAPS with air quality data and enable air quality comparisons with more than 152 stations in 55 cities across Canada.

How is Data Used to Manage Air Quality?

Data from Alberta air monitoring stations is used by local airsheds, industry, Alberta Environment, Environment Canada, researchers and consultants to evaluate ambient air quality and trends in order to:

- Assess whether additional industrial activity in an area should be approved
- Establish operating conditions for approved industrial facilities
- Provide information that helps decision makers develop air quality management policies
- Ensure pollutant concentrations remain below levels that are considered safe for human exposure
- Assess how pollutant concentrations compare with government air quality standards
- Support policy monitoring programs
- Assess impacts of local emissions sources on air quality
- Evaluate long-term trends
- Inform the public
- Support research efforts
- Validate the accuracy of predictive air modeling computer programs

Alberta Environment is a primary user of the data. Data is used to ensure that industrial facilities are designed and operated so that ambient air quality remains below Ambient Air Quality Objectives. It is also used to support policy decisions such as the management of cumulative effects or ozone.

Ambient Air Quality Objectives

State of the Environment Report

Substance Release Regulation

Clean Air Strategy

Environmental Protection and Enhancement Act

Codes of Practice

How is Air Quality Data Reported and Explained?

Validated data is analyzed and reported by a variety of individuals and organizations in monthly and annual reports, educational materials, and other formats. Some examples include:

AIRSHEDS

Airsheds are a local resource for the public to learn about air quality in their region. Airshed societies may publish annual reports, educational materials for schools and fact sheets for the public. Airshed societies also post information on their websites, present air quality information to municipal councils and other interested groups, and respond to individual's inquiries about local air quality. Links to regional airsheds are found at **www.casadata.org**.

INDUSTRY

Industry is obligated to submit monthly and annual compliance reports to Alberta Environment. Additionally, individual industries and industry organizations sometimes use air quality data to develop communications materials for public consultation processes.

ALBERTA ENVIRONMENT

Alberta Environment uses air quality data in a variety of reports including the State of the Environment report on environmental indicators for air. This can be found at **www.gov.ab.ca/en/soe/air.html**.

NAPS

The NAPS network uses air monitoring data to provide the basis for evaluating air pollution control strategies, identifying urban air quality trends and for warning of emerging air pollution issues. NAPS publishes reports derived from the data and compares air quality with the National Air Quality Objectives prescribed under the *Canadian Environmental Protection Act*. **http://www.etc-cte.ec.gc.ca/NAPS/index_e.html**

Where Can Air Quality Data Be Found?

Open and transparent access to air monitoring data is available through a variety of sources:

TELUSGEOMATICS WEBSITE

Near real-time current air quality data is presented in graphic and tabular formats at **http://www.telusgeomatics.com/tgpub/ag_air/default.asp**

Note: Raw data submitted hourly to the Telusgeomatics website must undergo quality assurance and control procedures before it can be considered valid. Circumstances such as instrument malfunctions, connection problems, calibration times or power failures can render data invalid. If validated data is required for use in studies or published documents, it can be obtained from the CASA Data Warehouse.

AIRSHED WEBSITES

Air quality data that is specific to a particular airshed region or air quality management zone is shown on regional airshed websites.

CASA DATA WAREHOUSE

This database is a central repository for validated ambient air quality data collected in Alberta. Data is available in graphic and tabular formats on the CASA website at **www.casadata.org**

Definitions

<u>Air Quality Index (AQI)</u> - AQI ratings provide people with a basic measure of outdoor air quality.

<u>Ambient air</u> - air that is found outside buildings or structures.

<u>Ambient Air Quality Objectives</u> - standards established by Alberta Environment to define acceptable air quality for environmental and human health.

<u>Clean Air Strategic Alliance (CASA)</u> - CASA was established in 1994 as a new way to manage air quality issues in Alberta. It is a non-profit organization composed of diverse stakeholders from government, industry and non-governmental organizations such as health and environment groups. CASA is responsible for strategic planning related to air quality issues in Alberta and has endorsed a Comprehensive Air Quality Management System for the province. This system promotes the establishment of airshed zones to address regional air quality issues.

<u>National Air Pollution Surveillance (NAPS)</u> - NAPS is a joint program of the federal and provincial governments that monitors and assesses ambient air quality in Canadian urban centers.

FORT AIR PARTNERSHIP

Alberta