

# BUSINESS AS PLANNED SCENARIO

A BAP scenario is akin to a business as usual scenario but it is more realistic to Saskatoon's future state as it takes into account the projects that are in progress or planned but not yet completed. It assumes no additional policies, actions, or strategies are implemented between now and 2050, beyond those that are currently underway.

The BAP scenario was developed by Sustainability Solutions Group and whatIf? technologies with detailed data inputs provided by the City. For a detailed discussion on methodology and modelling assumptions, see appendix D. This provides an analysis of energy, fuel, and emissions if only planned actions are taken over the next 30 years for comparison with a LEC Plan scenario.

The Business as Planned scenario assumes that the City continues to grow, reaching a population of over 500,000 by 2050. With population growth, there are associated increases in employment, number of cars, buildings, and fuel use. While for the most part this results in a similar increase in GHG emissions, there are some notable exceptions:

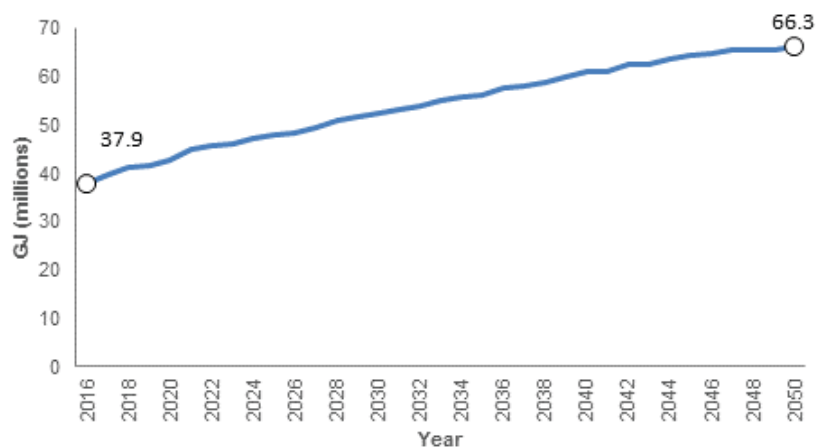
- The Government of Canada will require a full phase out of coal by 2030, causing a significant decrease in electricity emissions. Other fuel emission factors are also expected to decrease as the Environmental Protection Agency (EPA) legislates additional efficiency and Canada follows.
- New buildings will become more efficient to comply with the National Building Code / National Energy Code for Buildings (2017)
- Planned activities such as Environmental Performance Contracting (EPC), LED streetlight replacement, the Active Transportation Plan, Plan for Growth, and a Curbside residential organics programs results in emissions reductions from vehicles, municipal buildings, and waste. These are included in the BAP Scenario

## Energy Use

Energy use is projected to increase by over 31.6 GJ (8,777,778 MWh), or by 83%, by 2050 in the BAP scenario.

However, per capita energy use is projected to decrease by 17 MJ. While the population increases, space heating and water heating demands are projected to decrease due in part to smaller new homes (on average), increased energy efficiency in new buildings, and reduced heating demand days due to warmer winters.

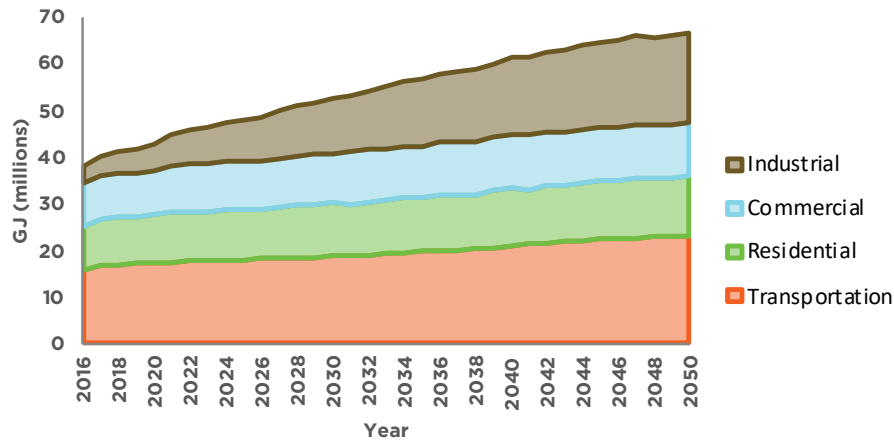
**Figure 7:** Energy use is projected to increase by over 31.6 GJ (8,777,778 MWh), or by 83%, by 2050



## Total Energy Use by Sector

The industrial sector sees the greatest change, at almost 440%, due to a large anticipated increase in industrial floor space. Despite slight gains in their energy efficiency, new homes will add substantially to residential energy consumption, increasing by almost 70%. Commercial building energy use increases with its added floor area, changing energy use in that sector by over 26%. Increased vehicle ownership pushes energy consumption up by almost 47% in the transportation sector.

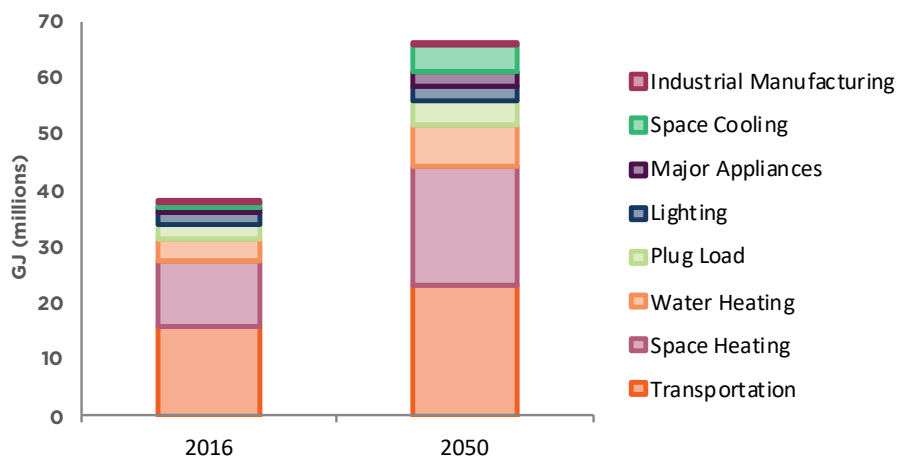
**Figure 8:** Projected total energy use by sector



## Total Energy Use by End Use

Transportation and space heating account for the majority of energy use between 2016 and 2050. Space heating demands are projected to increase by almost 94% over the time period as many new homes are built. Similarly, water heating is projected to use 112% more energy in 2050 than 2016. Plug loads and energy use from major appliances increases with housing as well, increasing by 65% and 163% respectively. Transportation energy consumption increases only moderately through to 2035, due to improved fuel efficiency standards in vehicles and an incremental uptake of electric vehicles (which contributes to increased electricity consumption), and escalates thereafter as projected increases in vehicle kilometres travelled outpace any fuel efficiency gains.

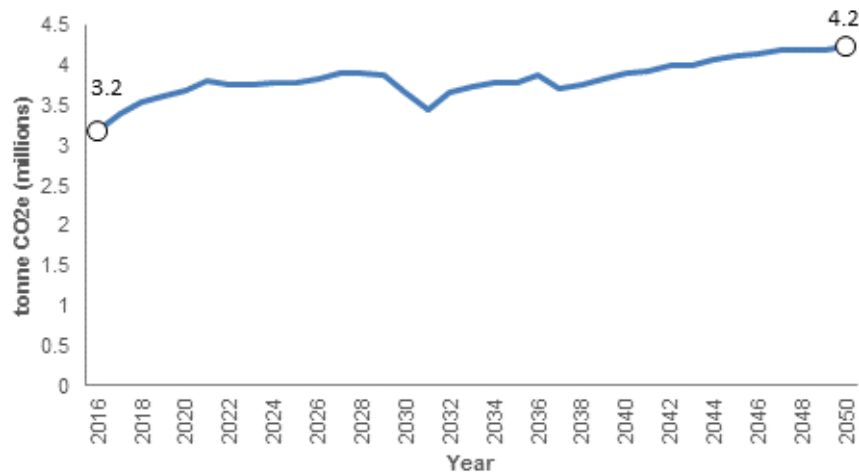
**Figure 9:** Projected total energy use by end use



## Projected Total GHG Emissions

Saskatoon's total GHG emissions for the 2016 baseline year is 3,260,000 tonnes CO<sub>2</sub>e. Total projected GHG emissions increase to 4,350,000 tonnes CO<sub>2</sub>e by 2050 (an increase of 33.4%). A per capita GHG emissions decrease by 4.4 tonnes CO<sub>2</sub>e between 2016 and 2050, or -48% is projected.

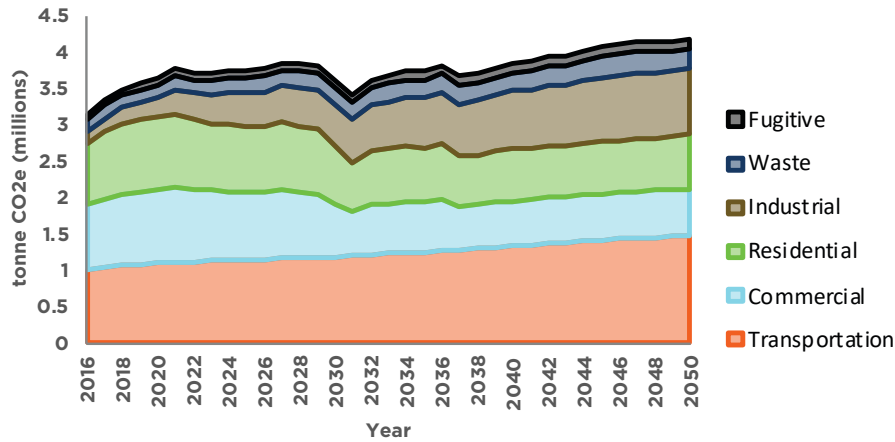
**Figure 13:** Projected total GHG emissions in megatonnes



## Total GHG Emissions by Sector

The transportation, residential, and commercial sectors are responsible for the vast majority of Saskatoon's GHG emissions in 2016, with 32%, 26%, and 28% of total 2016 GHG emissions, respectively. In a BAP scenario it is projected that by 2050 transportation emissions will increase by over 47% as car ownership increases. All building sectors will see significant emissions reductions from the phase out of coal-fired electricity production through the mid-2030s. Commercial building sector emissions will decrease by almost 30% as Heating Degree Days decrease and only moderate floor space is added. The residential sector will see a 10.0% emissions increase, despite significant added housing because of the switch away from coal. The industrial sector is expected to expand its floor space greatly by 2050, adding significantly to its energy use and emissions, which rise by almost 450%.



**Figure 14:** Projected total GHG emissions by sector

### Total GHG Emissions by Fuel Source

In 2016, the highest emitter by fuel type was electricity (38.6% of total GHG emissions) followed by natural gas (21.7%) and gasoline (20.3%). Together, they constitute over four-fifths of total fuel emissions. GHG emissions associated with electricity production are projected to decrease by 21.5% over the time period, primarily due to the phase out of coal-fired electricity generation in the province. Much of the electrical generation capacity will switch to natural gas-fired plants, increasing emissions from natural gas by 115% by 2050. Additional vehicles drive gasoline related emissions up by over 50%. As the use of other fossil fuels increases with population, so too do their associated emissions.

**Figure 15:** Projected total GHG emissions by fuel type