Alberta Data Centres: Boom or Bust?

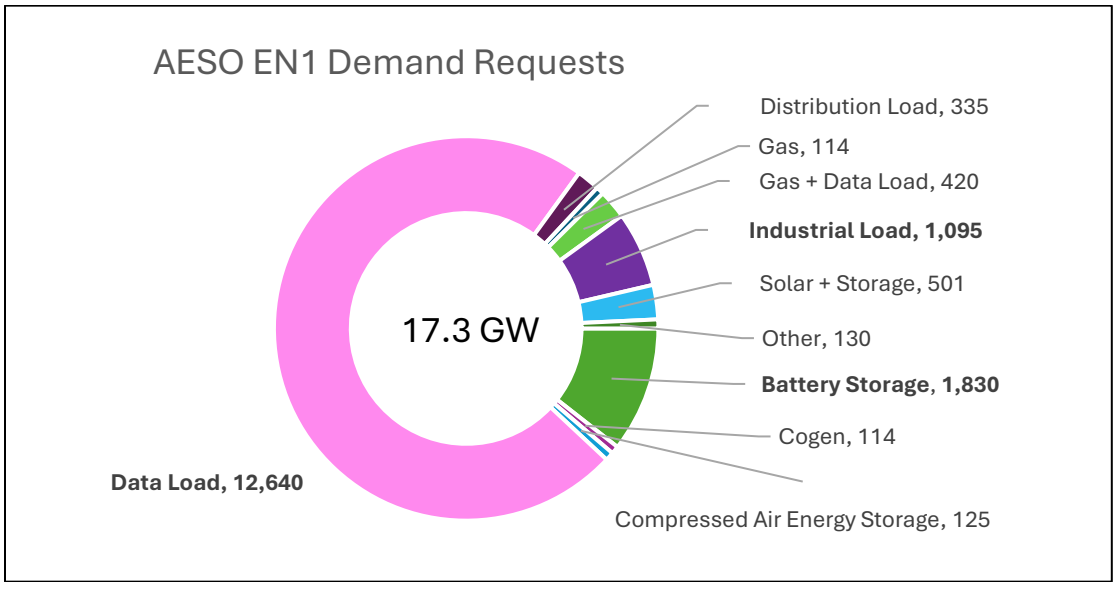
Banzi Advisory

Can data centres deliver an infrastructure boom for Alberta?

$300 Billion data centre opportunity awaits Albertans

The opportunity

Data centre developers have collectively applied for electricity connections to the Alberta grid for ~13GW of power by 2030. While costs range for the use type of the data centre, Cushman & Wakefield propose a median average of US$ 11.7M / MW. 13 GW of data centre load could represent more than CAD $205 Billion of direct investment into Alberta, by 2030.



Source: AESO Connection Project List, July 2025

13GW of new power demand, be it grid connected, or behind-the-fence generation will need 115 TWh/yr of energy. This represents an additional 130% of Alberta's existing 89 TWh/yr consumption, pushing Alberta to over 200 TWh/yr, which would make Alberta the biggest electricity market in Canada (Quebec: 185TWh; Ontario 150TWh) and would place

5th largest in the US states behind Texas (550TWh), Florida (260TWh) Pennsylvania (235TWh) and California (215TWh).

Meeting the high degree of reliability will require generation redundancy, Alberta grid operates at a reasonably efficient Net Capacity Factor of 41.5% (AESO LTO data), above the US median of 40%, but below the most efficient, Mississippi 56% which has a high percentage of natural gas fueled generation fleet (76%, EIA).

To meet the energy demands of data centres, an additional 30GW of generation capacity will be required, which is three times the current capacity in the planning queue, assuming we follow a historic generation mix. However, with the promotion of natural gas usage to meet data centre energy needs and the potential development of one or two Small Modular Reactors (SMRs), capacity efficiencies are expected to improve from historical averages but would still require about 23.5 GW of new generation, assuming a Mississippi possible outcome.

Generation costs vary widely depending on technology. AESO LTO planning tool estimates a 2030 capital cost range from $8.4M/MW for SMR nuclear fission to $3.5M/MW for combined cycle gas with CCUS to $1.4M/MW for wind and solar. While technology choices will be the subject of many debates, let us assume a Mississippi type grid future, that gets us 56% net capacity factor with 74% thermal gas, 18% nuclear and 8% renewables, to maintain low carbon standards. According to the AESO LTO technology costs, a weighted average capital cost of $4,250,000/MW should be expected. At 23.5GW NCF total capital spend on generation infrastructure for data load only would amount to $100billion.

Economic multipliers from construction jobs, building material production increases, HVAC and electrical system manufacturing, etc, to support this boon would no doubt add significantly to this total.

Before constraining ourselves with the “ifs and buts” (and there are many) data centre developers are very bullish on Alberta, snapping up property rights and trying to secure access to power for their sites. $205 Billion of capital from data centres + $100 Billion for the electrical generation to meet this demand, makes a very big number which isn’t being noted very widely.