

The role of Atmospheric Energy systems

Atmospheric Energy (AE) systems utilize an energy source that is available everywhere in Canada and the U.S. and that has an almost unlimited capacity – the heat that can be extracted from the summer air and then stored for use in the winter. Such systems can be used for any type of building and for any population density.

AE systems could completely displace the use of fossil fuels for heating buildings. That is the source Canada's largest contribution to atmospheric CO₂, greatly exceeding the contribution from our cars or from our electrical power plants. Energy from the air is free, completely clean, permanently sustainable, and is capable of supporting the demands of a large growth in population.

Organizations that advocate the continued use of fossil fuels like to talk about “the need to conserve energy”, but that need does not really exist. There is enough heat in the summer air to provide all of the energy we will ever need for heating, and in fact there are other sources of clean energy that likewise can deliver large increases in our energy supply. The notion that we must conserve energy is false advice coming from people who really only want to stretch out the fossil fuel era.

Many homes in Canada are heated by electricity. While such homes do not produce CO₂ directly, they actually produce comparatively large amounts of CO₂ and air pollution overall because the peak power that they are employing is usually produced by burning coal. Most of the coal's energy is lost in the power station itself and in the power transmission system, so the net effect can be that more fuel is burned to heat those homes than would be needed if the home used a fossil fuel for heating in the first place!

The upshot is that AE systems could eliminate the primary source of CO₂ in Canada, with the caveat that the electricity it needs must also be produced from a clean source.

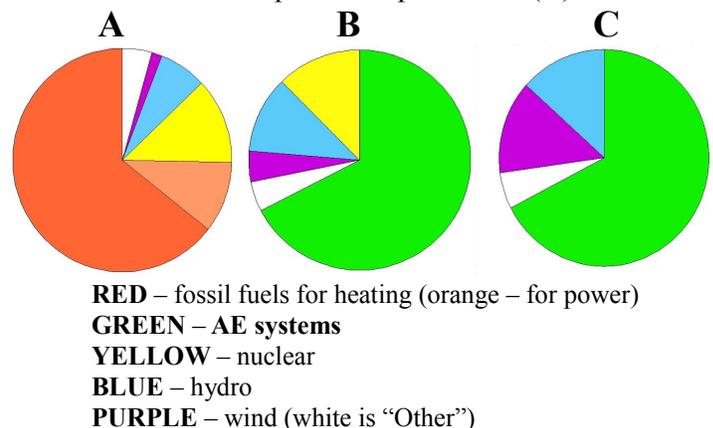
Impact on electricity production AE systems do not directly produce electricity but nonetheless they will make it possible to eliminate the use of fossil fuels for producing electrical power. At the present time Ontario uses three main sources of energy to produce power - nuclear, hydro and coal (which is eventually to be replaced by natural gas). The coal-fired plants are used primarily to meet the large summer peak demand created by air conditioners and the large winter demand that is largely created by the demand caused by the significant use of electricity for heating. By eliminating those demands the use of AE systems could flatten the power load, an effect that is aided by the capability of the AE systems to shift the demand from day to night (which is advantageous to both the producer and the user, who will soon be able to enjoy a much lower price for off peak power). However, AE systems use heat pumps in the winter so that is an offsetting factor that must be taken into account re. the power demand..

Impact on the use of other renewable energy sources As things stand Ontario cannot make much use of energy sources

like wind or solar power. Such sources cannot replace coal because they are not capable of meeting the winter and summer demand peaks. They cannot replace nuclear power because their output is too irregular to be used for baseload power. There would be no point in replacing hydro power because that is already a clean, sustainable source. However, there is strong popular demand for the use of such sources so governments have undertaken many initiatives to produce high profile examples, but such projects all have tiny budgets and they are encumbered with so many restrictions that there is little hope of achieving substantial results. The Ontario government's intentions for the use of renewable energy are clearly shown in their commitments for the coming two decades as outlined in the Ontario Power Authority submission to the Ontario Energy Board. The proposed use of renewable energy in those plans is nearly zero.

The use of AE systems would completely transform the picture. By flattening the power load it becomes possible to utilize wind and solar energy throughout the year. The supply fluctuations that are inherent with those sources can basically be handled by using the energy storage capacity of the hydro power stations. Wind (and possibly some solar) power could replace the use of coal or natural gas, but it would be used quite differently, as a continuous annual supply source rather than as a peak supply. Being able to switch to power from renewable energy sources in turn eliminates the caveat concerning the electrical power for AE systems. Balancing supply and demand will require the integration of the plans for all sources and all uses of energy, replacing the existing piecemeal plans that presently have giant gaps, most notably the lack of attention paid to the largest CO₂ source of all!

Summary The present pattern of energy use in buildings is shown for the present case (A), for the case where nuclear power continues to be used (B) and for the case where both fossil fuels and nuclear power are phased out (C). See Notes.



It is often claimed that “We have no choice but to use nuclear power and fossil fuels”, and that “Renewable energy is much more expensive than the existing energy sources”. Neither claim is true. Atmospheric Energy systems make the choice easy.

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