

despite the current emphasis on thermally-generated power, water-power is still far in the lead.

Of the 281,000 million kilowatt hours of electrical energy generated in Canada in 1974, 211,000 million kilowatt hours (about 75 per cent) were generated by hydroelectric stations; the remainder were generated by conventional and nuclear-electric plants. Industry used almost half the total energy, with commercial operations, residences, farms and street-lighting accounting for most of the remainder.

Every year, new generating capacity is added to help satisfy modern Canada's rapidly-increasing demand. In recent years, there has been a marked trend to the installation of thermal plants because in many parts of Canada most of the hydroelectric sites within economical transmission distance of the population and industrial centres have been developed. Planners have, therefore, had to turn to other sources of electric energy. However, advances in extra-high-voltage transmission techniques, together with spiralling costs of fossil fuels, are providing a renewed impetus to the development of water-power sites previously considered too remote.

### *Thermal-electric generation*

In thermal-electric generation, electrical energy is generated in fuel-fired steam-plants utilizing the combustion of fossil fuels (coal, oil and gas) or from heat generated by controlled nuclear fission of uranium (or other fissile material). Such plants require a convenient source of fuel at reasonable cost and adequate supplies of cooling water for steam condensers. As shown in Appendix II, thermal plants withdrew, during 1974, 29,720 million litres (6,538 million gallons) of water a day from lakes, rivers and wells — more water than all other types of industry combined. Besides discharging heat, fossil-fuelled plants also release combustion products into the environment, and both factors may place significant restrictions on the choice of sites for these plants.

All thermal plants, including nuclear plants, use fuel resources that, once employed, cannot be replaced, although, in terms of current consumption, reserves of coal and uranium are very large. As water-power sites are used up, considerable effort is being made to improve methods of turning these large reserves into electric power with minimal disturbance to the environment.