**Report**

**on**

**LIGHT WATER NUCLEAR REACTORS**

The title of the report must appear at the top of the first page of the introduction, followed by a first-level heading.

Background: Lots of it! Some readers might become impatient wanting to know the purpose and contents of this report.

Finally, purpose and overview of this report. (The Association is invented.)

Scope: what this report will not do.

Overview of the contents of this report.

Detailed overview of the contents of each section of the report.

**I. INTRODUCTION**

As of 1983, there are approximately five hundred nuclear power plants in operation or under construction worldwide. These plants can produce as much as 370,000 megawatts of electricity. These nuclear power plants can be categorized into four types: light water reactors, heavy water reactors, gas-cooled reactors, and breeder reactors. Regardless of the type, nuclear power plants operate by having a central unit, called the *core*, in which nuclear fission reactions take place and produce heat. A liquid, called the *coolant*, flows through the system and absorbs the heat produced in the core. The coolant is then converted into steam that drives a turbogenerator to produce electricity.

The purpose of this report is to present the basic design, operation, and safety measures of light water reactors to the Association of U.S. City Councils, which is currently investigating alternatives to coal-fired production of elecricity. This report provides high-level detail on the two types of light water reactors, their design, operation, and their safety and economic aspects. Although their operation does involve complex chemistry and physics, these topics will be minimized.

The four parts of this report discuss:

* Design and operation of light water reactors
* Safety measures employed
* Economic aspects of light water reactors

The sections on light water reactors describe their components and operation. The section on safety measures discusses the threat and causes of meltdown, safety measures to prevent such occurences, and the role of the Nuclear Regulatory Commission. The final section will review the costs of construction and operation of light water nuclear power plants.