

## **D. SITE SUPPORT SYSTEMS**

### **ENABLING OBJECTIVES:**

- 5.12 Match each of the following systems or departments with its purpose:
- a) Bulk Electrical System;
  - b) Centralized Maintenance;
  - c) Bruce Bulk Steam System.

External to CANDU stations are processes and work-groups that exist to meet station needs. Facilities and services on site which can be shared by two or more stations reduce costs to Ontario Hydro and hence its customers. This section describes the purpose and, in some cases, basic operation of some of these external support systems.

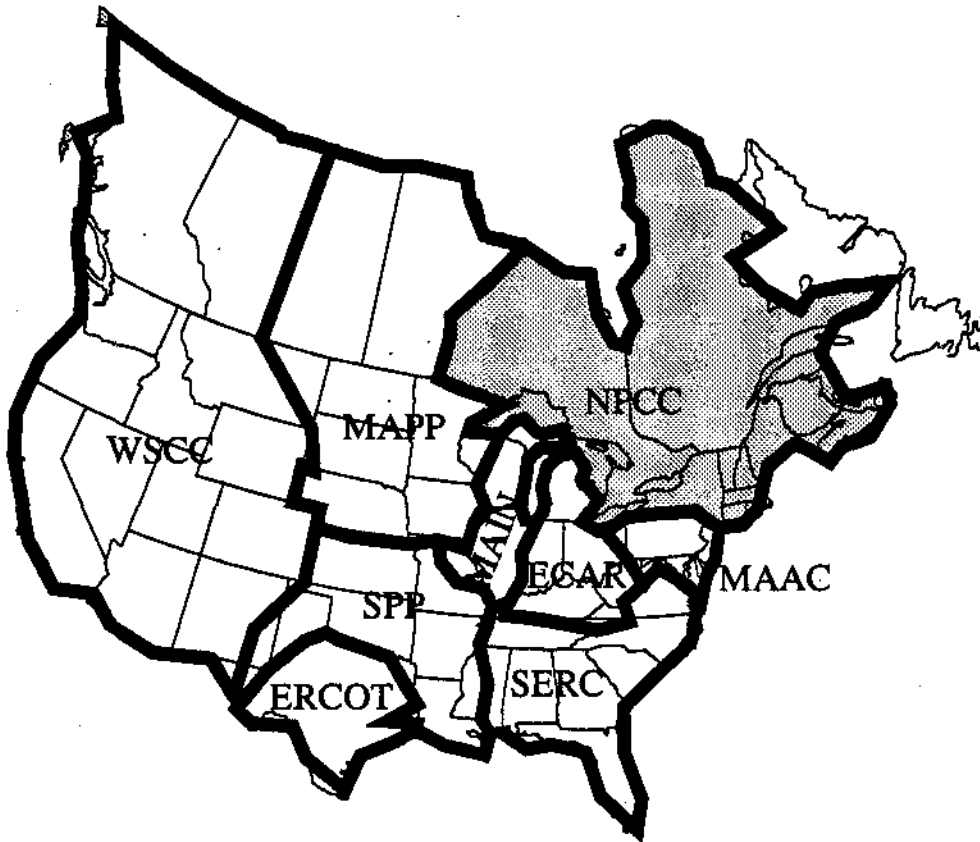
### **BULK ELECTRICAL SYSTEM**

Generation, transmission and distribution of electrical power across Ontario is controlled by the **System Control Centre (SCC)** at Clarkson. To meet the needs of our customers, the SCC must ensure:

- no interruptions in supply;
- a reliable supply (ie. it will still be available tomorrow);
- stable frequency and voltage;
- lowest overall cost.

Ontario Hydro's **Grid** (power system) is part of a much wider **Bulk Electrical System (BES)** that makes up the North American grid. Operation of the grid is coordinated by the **North American Electric Reliability Council (NERC)** which is composed of nine Regional Reliability Councils. Ontario Hydro is a member of the **Northeast Power Coordinating Council (NPCC)**. Figure 5.5 provides a map of the BES and a list of the various regional councils. The NERC was formed by the electric utilities in 1968, to promote the reliability of bulk power supply for the electric utility systems in North America.

<b>ECAR</b>	East Central Area Reliability Coordination Agreement
<b>ERCOT</b>	Electric Reliability Council of Texas
<b>MAAC</b>	Mid-Atlantic Area Council
<b>MAIN</b>	Mid-America Interconnected Network
<b>MAPP</b>	Mid-Continent Area Power Pool
<b>NPCC</b>	Northeast Power Coordinating Council
<b>SERC</b>	Southeastern Electric Reliability Council
<b>SPP</b>	Southwest Power Pool
<b>WSCC</b>	Western Systems Coordinating Council



**Figure 5.5**  
**North American Electric Reliability Council (NERC)**

### **CENTRALIZED MAINTENANCE SERVICES**

As a large organization with a number of similar facilities, it makes economic sense to centralize certain functions rather than duplicating

them at each facility. In the area of maintenance, the construction departments at both Bruce A and Pickering provide centralized services such as maintenance support for extended outages. In addition Bruce B runs a central maintenance facility that provides a pool of maintenance staff to assist station maintenance staff on outages and other large projects.

### **BRUCE BULK STEAM SYSTEM**

The **Bruce Bulk Steam System (BBSS)** is one of the largest steam production facilities in the world. It was designed to supply steam from Bruce A to meet the needs of four heavy water plants and to supply heating steam to buildings on site. Two heavy water plants were cancelled and the original plant decommissioned. This left the BBSS with a large excess steam capacity. Private enterprise in conjunction with Ontario Hydro and the Ontario Government eventually developed a plan to use this excess heat in an energy park located adjacent to the BNPD site. The Bruce Energy Centre (BEC) now houses several ventures, including greenhouses, plastics manufacturing, alcohol production and alfalfa pelletization.

The BBSS consists of a steam transformer plant located next to Bruce A to convert high pressure steam into medium pressure steam, a steam plant to provide steam when Bruce A is unavailable, and a network of steam and condensate return lines.

### **ASSIGNMENT**

1. Why is Ontario Hydro connected into the BES?
  
  
  
  
  
  
  
  
  
  
2. Why was the BBSS built? And, what has it evolved into?