



**Discussion of Potential
For
Industrial DSM Activities to Reduce BC
Hydro Capacity Requirements**

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BC Hydro

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1.0 INTRODUCTION

A Conservation Potential Review (CPR) has been recently completed for BC Hydro's jurisdiction. The official title of this review was: "BC Hydro Conservation Potential Review 2002: (Base Year Fiscal 2000/2001)". The Review concentrated on efficiency measures which would reduce the annual amounts of electrical energy used by BC Hydro customers. The Review estimated the impact of energy saving measures in reducing BC Hydro capacity requirements. However, it is realized that there are additional Demand Side Management (DSM) activities which could target capacity requirement reduction (and not energy saving measures) and that the implementation of these activities would further impact BC Hydro's capacity needs. Accordingly, BC Hydro employed Willis Energy Services to perform this preliminary study on the potential for industrial DSM activities to be specifically targeted to reduce BC Hydro capacity requirements.

The objectives of this report are as follows:

- ◆ Discuss value of reducing BC Hydro's capacity requirements;
- ◆ Identify customer actions that would reduce capacity requirements;
- ◆ Indicate BC Hydro activities that would motivate customer actions;
- ◆ Discuss on a preliminary basis the potential for capacity requirement reduction.

It is important to note that this study is very preliminary in nature and should only be used to determine whether it would be worthwhile for BC Hydro to spend more effort in the investigation of this subject. The report concentrates on the forecast year 2010/11 and only deals with the industrial sector.

2.0 SUMMARY

The Conservation Potential Review 2002 estimates that the implementation of industrial energy saving measures would reduce the forecast peak demand for electricity by over 250 MW in the forecast year 2010/11. This preliminary investigation indicates the reduction potential could be increased to over 550 MW if DSM activities specifically targeted at capacity requirement reduction were also considered.

DSM measures to reduce the peak demand for electricity on the BC Hydro system, or in a particular region of the system, herein referred to as capacity requirement reduction, would involve the following:

- ◆ peak shaving;
- ◆ short-term load shifting;
- ◆ long-term load shifting;
- ◆ load curtailment – market and operation optimization;
- ◆ load curtailment – fuel switching – self generation.

If industrial production curtailment were considered this capacity requirement reduction potential could be further increased from over 550 MW to over 750 MW.

This preliminary capacity requirement reduction potential estimate is based on reducing the annual forecast peak demand which, for the BC Hydro system or regions within the system, occurs during on-peak hours during the winter. BC Hydro plans to ensure it has adequate dependable capacity resources available to meet the forecast annual peak demand, including planning reserves. It is realized the situation is more complex than the previous sentence suggests, so a discussion on the value of capacity requirement reduction is included in section 4.

The key to reducing the peak demand for electricity through customer DSM measures is providing customers with the proper price signal. For example, the present electricity tariff structure indicates to customers that the cost to BC Hydro of serving them is the same regardless of when they use electricity. However, BC Hydro's system requirements are affected by when customers use electricity. If this price signal were communicated, it could result in cost savings.

To a certain extent there is a tension or conflict between capacity requirement reduction measures and energy saving measures. There are some capacity requirement reduction activities, such as load shifting ones, which would actually result in higher annual energy consumption. Therefore, if BC Hydro developed a DSM program which targeted capacity requirement reduction in addition to energy conservation, the value of specific capacity requirement reduction measures such as load shifting would have to take into consideration their impact on energy consumption. This report does not attempt to address this issue.

A Note on Scope

The discussion of how to assess the dependability or reliability of a DSM capacity requirement reduction option is outside the scope of this report. However, if DSM

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activities can be considered reliable enough for meeting new capacity requirements, it would be necessary to estimate their economic benefits. The intent of this report is to provide information on the potential for capacity requirement reduction. It should be noted this report deals only with domestic customer electricity usage. It does not consider the impact of export volumes or export patterns on capacity requirements.