

APPENDIX 9

Load Forecasting Information Required for Integrated Regional Resource Planning

Introduction

An important consideration in any electricity supply study is the expectation for electricity demand in the region. As such, the development of a demand forecast is a key step in the regional planning process. Over the past few years, the OPA, working with transmitters, local distribution companies (LDCs), and the IESO, has undertaken a number of regional plans. Based on this experience, the following approach to the development of demand forecasts for the purpose of regional planning is proposed.

Regional Planning Demand Forecast Scope and Development

Similar to provincial level forecasting, regional planning requires a long-term projection (20 years or longer) for electricity demand in order to assess the adequacy and reliability of electricity supply. However, due to the local focus of regional planning, the scope and process used for developing a regional forecast will differ somewhat from that used in provincial level forecasting. For example, unlike provincial level forecasts which include energy and peak demand components, regional planning requires a peak forecast; local delivery infrastructure must be sized to meet the highest demand in the area, while energy requirements are met through system planning. Also, due to the unique characteristics of a local area (such as customer type and demand shape, and environmental factors related to the geographic location of the area) this peak demand may not occur at the same time as the Ontario system peak. Accordingly, it is important that the peak demand forecast is established on a local basis, using the best available local knowledge. Regional planning requires detailed information about the specific location expected demand. The capability of the delivery system will vary across a local area, and the

location of expected demand growth is an important component for assessing the reliability of electricity supply to the area.

LDCs are well positioned to assess the expectation of future gross electricity demand, particularly over the near- and medium-term. LDCs have local knowledge of the customer mix in the region, expected customer connections, and municipal/regional growth plans which are key demand drivers. The OPA, as the lead planning and contracting authority for new conservation and generation supply in Ontario, can add to this LDC information forecasts around the contribution of conservation and distributed generation resources to meeting local demand.

Additionally, the OPA has a mandate to forecast electricity demand for the medium- and long-term. To deliver on this mandate, the OPA uses an End Use Forecast approach that forecasts electricity demand in each of the ten IESO zones on an hourly basis. While this zonal level forecast will likely differ from the gross demand forecast developed by LDCs (due to differences in the distribution and make-up of customer types, and the rate of economic development etc. in local areas versus the larger regional and provincial level) this information can be used to help inform the development of the medium- and longer-term portion of the regional planning forecasts. The OPA is able to work with regional planning teams to align forecasts in the medium- and longer-term.

Forecast Methodology and Requirements

The following section outlines the details of the proposed methodology and requirements for developing a regional demand forecast. While this approach is expected act as a basis for the general process, in certain cases, where local circumstances warrant, variations may be agreed upon by the study team.

1. The OPA develops 5-year historical demand information based on actual electricity demand data from the IESO, LDCs, Transmitter and other sources. This information provides a starting point for forecast development and a “reality check” of growth trends.

2. A starting point for the forecast is selected by the study team based on the area's historical peak electricity demand.
3. Area LDCs prepare a 20 year gross peak electricity demand forecast (or longer if agreed). While the methodology used to develop this gross forecast may differ among LDCs, certain common features are required in order to ensure consistency:
 - Forecasts are in megawatts (MW) and power factor assumptions are provided;
 - Forecasts are to the transformer station or bus level;
 - Forecasts are for median weather conditions;
 - Forecasts are for the local area-coincident peak demand hour (the definition of this hour will need to be coordinated among LDCs in the region);
 - Forecasts include natural conservation, meaning that the forecast considers economic factors and includes forecasts of how customers will adopt energy efficient technologies and behaviours. (These natural levels of energy efficiency adoption are motivated by changes in energy prices and by minimum codes and equipment standards that exist and require compliance.)
 - Forecasts will exclude projected levels of additional energy efficiency beyond natural conservation resulting from policy decisions including projections of future regulations, time of use pricing, and incentive programs, as well as the contribution of distributed generation resources.
4. On a transformer station or bus level, the OPA will prepare a forecast of the contribution of additional energy efficiency beyond natural conservation, as well as distributed generation resources.

5. The study lead will compile the LDC and OPA forecasts to produce an area net demand forecast, making an adjustment for extreme weather conditions.
6. The study lead will prepare sensitivities of the net demand forecast to reflect both higher and lower growth scenarios.