



EB-2007-0031
***Progress Report on Research of
Relevant Rate Design
Experience in Other Jurisdictions***

December 12, 2007



Status of Jurisdictional Review (1)



- ERA is in the process of conducting a survey of electricity distribution rate design methodologies, practices and principles in selected jurisdictions throughout the world using published sources from regulatory agencies and regulated utilities in Scandinavia, USA, Australia and Europe.
- ERA is augmenting the information obtained from the initial environmental scan (web sites, published literature, leads provided by USA based consulting experts and the Edison Electric Institute) through additional information requests using email and/or by telephone contact with knowledgeable regulatory tribunal and utility staff in order to provide context and clarification.
- Focus of research is on those jurisdictions (including selected LDCs) that have deployed or are currently deploying Advanced Metering Infrastructure (AMI) and Demand Response (DR) Programs and Tariffs (including pilot projects).

11/12/2007

Elenchus Research Associates

2

Status of Jurisdictional Review (2)

- Jurisdictions under review include: Norway (The Norwegian Water Resources and Energy Directorate (NVE)), United Kingdom (Ofgem), France (Commission de Régulation de l'Energie (CRE)), Italy (L'Autorità per l'energia elettrica e il gas), Australia (IPART, New South Wales; Essential Services Commission, Victoria) and the United States (California, Washington, Pennsylvania and Arizona),
- Research activities include examination of: customer classifications, tariff structure, fixed/variable split, billing determinants, revenue-to-cost ratios (and any associated cross-subsidization issues/matters) and results of any smart metering/time-varying pricing, including TOU pricing, CPP and real-time pricing (RTP), pilots and programs that have been implemented.
- Currently in the data collection and data compilation stage of the process.

11/12/2007

Elenchus Research Associates

3

Further Planned Work (1)

- More in depth analysis needs to be performed to identify (isolate) and focus on those jurisdictions that have developed rate designs that exploit the benefits of smart meters and have adopted rate design principles and innovative practices that can be considered a good "fit" for Ontario.
- Next steps include building on the information being assembled via the survey by speaking to individuals with extensive first-hand knowledge of the relevant rate design objectives and processes from the perspectives of (i) the relevant regulatory bodies, (ii) the regulated companies and (iii) other significant stakeholders both within and outside the jurisdiction. The "interviews" will focus on obtaining facts and views that are pertinent to the issues and public policy considerations at hand.

11/12/2007

Elenchus Research Associates

4

Further Planned Work (2)



- A stand-alone document, documenting the results of the survey, will be produced in time for the January 2008 consultation group meeting.
- This report can be used as background information for consultation group members in completing the project. In this respect:
 - The survey information can be used as the basis for identifying and assessing leading/best practices including a review of lessons learned and current thinking on the topical issues currently under consideration.
 - Before any results from other jurisdictions can be applied to Ontario, it would be useful to develop an information data base based on a survey of current rate design principles, objectives and practices in selected other jurisdictions.

11/12/2007

Elenchus Research Associates

5

Candidate Jurisdictions (1)



- Based on the initial environmental scan, the following jurisdictions and/or utilities have been identified as potential candidates for further consideration in the context of this initiative and the Ontario electricity market:
 - Examples where residential and small commercial customers are now being offered TOU rates as an option (as a way of lowering their bills) include the Salt River Project in Phoenix, Arizona, Pacific Gas and Electric Company in California, and Potomac Electric Power Company in Washington, D.C., and Maryland. Each of these utilities has several thousand residential customers on TOU rates.
 - California - pioneered state-wide smart meter pilot several years ago (i.e., California's Statewide Pricing Pilot [SPP] was based on modern principles of experimental design and involved some 2,500 customers from July 2003 to December 2004). The SPP was designed to test a variety of pricing options, including TOU rates and CPP rates. Significant interest in the benefits of dynamic rates exists in California - one of the benefits of the California experiment is the availability of data for analysis.

11/12/2007

Elenchus Research Associates

6

Candidate Jurisdictions (2)



- Puget Sound Energy, Washington state - successfully rolled out smart meters to mass market customers. Puget Sound Energy carried out the program as a large-scale pilot project that involved some 300,000 residential customers and 20,000 small commercial customers. The experiment featured a fairly mild TOU rate, with a peak-to-off-peak ratio of about 1.3:1.
- Gulf Power, subsidiary of Southern Company, Florida - has implemented similar program to Puget Sound Energy. Gulf Power offers a form of critical-peak pricing to its very largest residential customers.
- Utilities in Australia are introducing TOU options for three-phase supply on residential and small and medium commercial and industrial customers to damp peak loads caused by larger end-use appliances, such as central air conditioners and water heaters and have conducted special studies on the extent of cross-subsidies among peak and non-peak electricity consumers inherent in the peak/off-peak period (e.g., Integral Energy/IPART of New South Wales, Australia) .

11/12/2007

Elenchus Research Associates

7

Candidate Jurisdictions (3)



- Electricité de France (EDF) - a utility with a long history of TOU pricing. EDF introduced the practice to its residential customers on a voluntary basis in 1965. Currently, a third of the customer population receives electricity on a TOU rate. In 1993, EDF introduced a new rate design, tempo, which is a form of critical-peak pricing. EDF's tempo program has over 120,000 residential customers.
- Orion Energy, New Zealand - a distributor that has implemented CPP for mass markets over the last decade. Orion Energy has been able to eliminate all growth in its peak demand in that time frame, despite strong economic growth.
- PPL, Pennsylvania, National Grid, Massachusetts, Centre point, Texas, Commonwealth Edison, Illinois and Georgia Power have either implemented or are conducting experiments with smart meter/real time pricing pilots or programs.

11/12/2007

Elenchus Research Associates

8

Candidate Jurisdictions (4)



- Italy (has invested heavily in latest technology in meters), Scandinavia (Norwegian Water Resources and Energy Directorate [NVE] completed in June 2007 a survey on costs and benefits of full-scale development of smart metering - Automatic Meter Management [AMM] and the main conclusion is that the benefits of a full-scale development of smart metering most likely outweigh the costs), and Ofgem (first trials for smart energy meters are to begin and Ofgem will provide a final report once the trials are completed in 2010).

11/12/2007

Elenchus Research Associates

9

Preliminary Findings (1)



- In the United States, The President signed the federal Energy Policy Act of 2005 (Energy Policy Act) into law on August 8, 2005. Certain sections of the Energy Policy Act amend the Public Utility Regulatory Policies Act of 1978 (PURPA) to add five new utility standards governing investor-owned electric utility operations, namely: 1) net-metering, 2) fuel sources, 3) fossil fuel generation efficiency, 4) interconnection, and 5) time-based metering and communications. The Energy Policy Act further amends PURPA to require that state regulatory authorities **consider** these new standards and determine whether they should be adopted as requirements for state regulated electric utilities (emphasis added). While the Energy Policy Act establishes a standard for “smart metering” to require that utilities make available to retail customers time-based metering and a time-of-use rate schedule, **adoption of same was not mandated by the Energy Policy Act** .

11/12/2007

Elenchus Research Associates

10

Preliminary Findings (2)



- Subsequent amendments to PURPA gave state regulatory authorities until August 8, 2007 to make a decision whether to adopt this standard. Certain Commissions have determined that it is not appropriate to require generally that electric utilities provide and install time-based meters and communications devices for each of their customers which enable such customers to participate in time based pricing rate schedules and other demand response programs as specified in the Energy Policy Act (e.g., Washington State Utilities and Transportation Commission, Arizona Corporation Commission). These Commission expects that time-of-use metering and rate designs will be examined on a case-by-case basis in rate investigations or other proceedings considering the varying circumstances of each utility and each utility's customer classes.

11/12/2007

Elenchus Research Associates

11

Preliminary Findings (3)



- In the United Kingdom, Ofgem has done meaningful work on electricity distribution rate design over the past several years. Recognizing that the structure of electricity distribution charges had not changed significantly since the 1980s, Ofgem launched, commencing in December 2000, a review of whether the then existing structure remained appropriate. The review was driven by concerns over the divergence of charging arrangements between different distribution companies and the recognition that the arrangements at that time needed developing given the expected increase in distributed generation (DG). In terms of background on the regulatory framework for distribution charging, an extensive consultation process on structure of electricity distribution charges (development of the longer term charging framework) initiated by Ofgem in 2005 provides a good grounding on the current (since April 2005) "interim" charging framework and the reasons for / options for the "longer term" framework. It is expected that developments and improvements to the interim regime will be completed for implementation by 2010.

11/12/2007

Elenchus Research Associates

12

Preliminary Findings (4)



- In Norway, The Norwegian grid is divided into three levels: Transmission grid (320-400 kV), Regional grid (45-132 kV) and Distribution grid (0,4-33 kV). The tariff system in Norway is nodal based. This means that consumers have access to all of the transmission system and get charged for usage in each node. The distribution tariffs are unbundled and have two components (fixed charge and energy (kWh) charge) and LDCs are allowed to include some of the fixed costs in the volumetric rate. In the distribution grid the consumers are differentiated into tariff groups based on their usage/size of load. The main tariff groups are: households (measured by energy consumption), cottages (measured by energy consumption), small industry (measured by energy consumption), and industry or customers whose consumption > 100.000 kWh/year (measured by energy consumption and kW demand). There are approximately 150 distribution operators and each may have a different number of tariff-groups (e.g., more detailed differentiation based on maximum amperage for households and kW demand for industry). In the distribution grid the consumer has the right to a TOU tariff differentiated at a minimum seasonally (summer/winter). Time-of day differentiation (e.g., day/night) is also permitted under certain terms and conditions (e.g., justified by relevant conditions in the grid).

11/12/2007

Elenchus Research Associates

13

Preliminary Findings (5)



- In France, the electricity market (the non-household segment) was opened up to competition on 1 July 2004 (the opening of the household market occurred on July 1, 2007) and distribution tariffs were unbundled on July 1, 2007. As required by article 1 of the law of 10 February 2000, the distribution tariff is uniform throughout France (geographical equalization). Despite the fact local distribution company (LDCs) costs may be higher or lower than the national average (for example, local distribution companies operating in rural areas, with significant grid lengths in geographically challenging zones and servicing a low number of subscribers per kilometre of line naturally incur costs higher than the national average, irrespective of the quality of their management), all LDCs must apply the same tariff even if their costs differ. This is accomplished through the operation of the electricity equalization fund (FPE) which has been set up to distribute surcharges and surplus revenue between LDCs. As well, on June 6, 2007, CRE outlined the policy to be followed for electricity metering at installations connected to low voltage public distribution grids for a power level of 36 kVA or less. This policy outline specifies the objectives to be attained by the metering measures that will be set up by electricity distribution system operators (e.g., announced pilot projects intended to set up large-scale advanced metering systems).

11/12/2007

Elenchus Research Associates

14