

Annex II

COMMUNICATIONS TECHNOLOGIES FOR DEMAND-SIDE MANAGEMENT

1. *Objective*

The objective of this Task is to assess the best available options for applying communications technologies to demand-side management (DSM) programmes in the Participants' countries, and to specify the research, development and demonstration efforts which are required to bring these options to fruition. The range of communications technologies to be considered includes options for load control, data transmission, data processing, load management, advanced metering, automated meter reading and billing, customer interface services, and automation for improving distribution quality and system security. The main criteria for evaluating these technologies will be their potential to improve the efficiency of energy resource use and to provide customers with better service at lower cost. Due regard will also be given to their potential for integration into services for other energy systems, particularly district heating schemes, and utility services generally.

2. *Means*

In order to accomplish the foregoing objective, Participants will carry out the following Subtasks:

(a) Subtask II/1 Assessment of Communications Requirements for Utilities and for Different Classes of Utility Customers

Participants will survey the particular communications needs of utilities and their customers, distinguishing between different types of residential, commercial, and industrial energy users. The needs to be considered shall include at least the following:

- (1) Provision of tariff information to customers;
- (2) Adjustment of demand to time-variant tariffs;
- (3) Automated control of appliances and machinery;
- (4) Remote meter reading and automatic billing;
- (5) Improved phase and voltage monitoring of the electric grid;
- (6) Quicker isolation of system faults;
- (7) Collection of system load data for planning purposes;
- (8) Provision of information on weather and road conditions;
- (9) Control of street lighting and other public services.

(b) Subtask II/2 Assessment of Communications Technology Options in Various Demand-Side Management Programme Contexts

Participants will collect and collate national data on the application of communications technologies in meeting specific DSM performance criteria, following a format developed by the Operating Agent. In doing so, Participants will correlate different communications systems adopted with the stringency of DSM performance goals to be met. Participants will also examine the potential for new technologies, now in a trial or demonstration phase, to meet various DSM performance goals. The Operating Agent will then analyze Participants' information to arrive at conclusions on the best communications options for meeting clearly defined DSM performance criteria. Aspects of communications systems to be considered include:

- (1) System parameters and methods, including the design requirements for data transmission, data processing, communications systems and protocols;
- (2) Customer interface technologies for in-house energy optimization, automatic load

management, advanced metering and tariffs, and automated meter reading and billing;

- (3) Distribution control interfaces for maintaining security and quality in the electricity supply system;
- (4) Regulatory environment for communications in different Participants' countries.

(c) Subtask II/3 Assessment of Means for International Harmonization of Communications Technology Standards

Participants will describe the characteristics of the communications systems available in their countries and will list the suppliers of these systems. They will then assess the extent of system compatibility and standardization between different equipment suppliers. Based on Participants' assessments, the Operating Agent shall consider the scope for developing harmonized standards to allow system compatibility on an international scale and will make recommendations for future action.

(d) Subtask II/4 Assessment of Priorities for Research, Development and Demonstration of DSM-Related Communications Technologies

Participants will forecast the pattern and development of DSM national policy and show expected trends in the future application of communications technologies. They will then identify areas of weakness where future research, development and demonstration efforts may be directed. Based on Participants' responses, the Operating Agent shall examine R&D and demonstration priorities for communications technologies.

3. *Results*

The results of the joint activities will be:

- (a) A report describing the communications requirements of utilities and different classes of residential, commercial, and industrial customers, as surveyed under Subtask II/1 as described in sub-paragraph 2(a) above;
- (b) A report assessing the best types of communications technology for meeting different performance criteria in pursuit of demand-side management goals, pursuant to Subtask II/2 as described in sub-paragraph 2(b) above;
- (c) A report on the potential to develop harmonized standards for communications technology which would allow system compatibility across Participants' countries, with recommendations for action in pursuit of such standards, pursuant to Subtask II/3 as described in sub-paragraph 2(c) above;
- (d) A report on key priorities for research, development, and demonstration to bring emerging DSM-related communications technologies to the marketplace, pursuant to Subtask II/4 as described in sub-paragraph 2(d) above.

4. *Time Schedule*

This Annex shall remain in force for three years. It may be extended by agreement of two or more Participants, acting in the Executive Committee, taking into account any recommendation of the Agency's Committee on Energy Research and Technology concerning the term of this Annex, and shall thereafter apply only to those Participants*.

5. *Specific Responsibilities of the Operating Agent*

In addition to carrying out the specific responsibilities enumerated in Article 5 of this Agreement, the Operating Agent shall prepare, review, revise and distribute to Participants the documents and reports specified in paragraph 3 above.

* This Annex entered into force on 1st October, 1993 pursuant to a decision by the Executive Committee in accordance with Article 2(d) of this Agreement.

6. *Funding*

- (a) *Common Fund.* A Common Fund shall be established by the Executive Committee and shall be included in the Annual Programme of Work and Budget for the purpose of funding the obligations of the Operating Agent under this Annex.
- (b) *Task Costs.* The overall three-year Budget of the Operating Agent for carrying out the management of the Annex is set at US \$1,196,400 at January, 1993 prices. Of this amount, expenditure for the first year that the Annex is in effect is estimated at US \$250,000. If significant changes in price levels or the scope of activities under the Annex occur, the Executive Committee, acting by unanimity of the Participants, shall consider whether to adjust the Programme of Work to the available funds or increase the Budget.
- (c) *Sharing of Task Costs.* The Budget shall generally be funded by Participants through a standard contribution of five per cent of the Budget plus a pro rata contribution based on countries' percentage contributions to the Budget of the Agency, where pro rata percentages are applied to the portion of the Budget which remains to be funded after the standard contributions are made. However, this formula may be modified by the Executive Committee, acting by unanimity of the Participants in the Task. The contributions of the European Communities and Associate Contracting Parties shall be determined by the Executive Committee, acting by unanimity of the Participants in this Annex.
- (d) *Changes in Number of Participants.* If the number of Participants changes, the shares of contributions to the costs will be adjusted accordingly by the Executive Committee, acting by unanimity of the Participants. New Participants shall pay the full share of the costs beginning with the project year in which they become Participants.
- (e) *Individual Financial Obligations.* Aside from the contributions described in sub-paragraph (c) above, each Participant shall bear all the costs it incurs in carrying out its obligations under the Annex.
- (f) *Task-Sharing Requirements.* The expected contribution of each Participant to task-sharing under the Annex is 5 person-months of effort during each year that the Annex remains in force.

7. *Operating Agent*

EA Technology Limited, United Kingdom, is designated as Operating Agent.

8. *Participants in this Task*

The Contracting Parties which are Participants in this Task are the following:

The Energy Research and Development Corporation (ERDC) (Australia),
The Ministry of Trade and Industry (Finland),
Le Ministère de l'Industrie, des Postes et Télécommunications
et du Commerce Extérieur (France),
ENEL S.p.a. (Italy),
The New Energy and Industrial Technology Development
Organization (NEDO) (Japan),
The Netherlands Agency for Energy and the Environment (NOVEM),
The Norwegian Water Resources and Energy Administration (NVE),
The Ministry of Industry and Energy (Spain),
The Swiss Federal Office of Energy,
The Department of Trade and Industry (United Kingdom),
EA Technology Ltd. (United Kingdom).

* See footnote p. 28.
** See footnote p. 28.