

## COMPETITIVE BIDDING OF DEMAND SIDE MANAGEMENT

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### ABSTRACT

Electric utility planning and resource acquisition strategies have changed dramatically over the past decade. In some jurisdictions, bidding programs to acquire specified amounts of power have been developed to control the amount of independent power that is constructed while seeking the most cost-effective acquisition of power by the utility. At the same time, least-cost planning and load management activities have led to a great deal of interest in demand side management (DSM) programs. A recent development has been the call for bidding programs for the acquisition of power to be opened up to demand side management programs. The reasoning is that a utility should consider all sources of power on an equal basis, whether they be megawatts or "negawatts."

The New York State Public Service Commission (PSC) recently directed New York's utilities to implement power acquisition and DSM bidding programs. The New York State Energy Research and Development Authority (NYSERDA), the New York State Energy Office (SEO) and PSC staff concluded that there was a need for New York utilities to demonstrate and evaluate promising DSM bidding strategies. Orange and Rockland Utilities (ORU) volunteered to participate in such a collaborative effort. NYSERDA sponsored a survey of utility experiences with DSM bidding and then convened a workshop in March 1988 for New York utilities, PSC staff and SEO to: (1) review the experiences of several New England utilities that had experimented with DSM bidding; and (2) discuss the issues that should be considered in demonstrating and evaluating a DSM bidding program. Based on workshop discussions and further analysis of the strengths and weaknesses of various DSM bidding models, ORU and NYSERDA collaborated in the design of a DSM bidding prototype.

This paper explores the major areas of uncertainty associated with DSM bidding with emphasis on those concerns identified in the PSC proceeding. Then, a summary is presented of utility experiences with DSM bidding and related programs that were discussed at the March workshop. Programs examined include those conducted by the Bonneville Power Administration, Boston Edison, Central Maine Power, Commonwealth Electric, New England Electric System, and Northeast Utilities. The programs are then compared in terms of a number of salient features common to each. Such characteristics include bid criteria, demand/supply integration, market coverage, method of payments, energy vs. demand reduction, administrative burden, program overlap, procedures to encourage long payback measures, and performance guarantees/quality assurance procedures. Lessons learned from our analyses of strengths and weaknesses of existing DSM bidding models are described. Finally, the preliminary design of the ORU bidding program is presented.

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## INTRODUCTION AND BACKGROUND

Electric utility planning and resource acquisition strategies have changed dramatically over the past decade. With the passage of the Public Utility Regulatory Policies Act of 1978 and promulgation of regulations and orders by state regulatory bodies to govern independent power projects, many utilities have altered their resource planning strategies. For example, the output from cogeneration facilities must be measured against the cost and reliability of power generation from central stations. In some jurisdictions, bidding programs to acquire specified amounts of power have been developed to control the amount of independent power that is constructed while seeking the most cost-effective acquisition of power by the utility.

At the same time, least-cost planning and load management activities have led to a great deal of interest in demand side management (DSM) programs. A diverse set of programs have been developed and adopted throughout the United States as utilities seek to defer the need for additional generation capacity, shape loads, serve their customers better, or meet regulatory orders. A recent development has been the call for bidding programs for the acquisition of power to be opened up to demand side management programs. The reasoning is that a utility should consider all sources of power on an equal basis, whether they be megawatts or "negawatts."

The New York State Public Service Commission (PSC) recently directed New York's utilities to implement power acquisition and DSM bidding programs. While directing utilities to evaluate how to include DSM resources, the PSC noted that the utilities, PSC staff and intervenors had identified what appear to be major barriers to the implementation of DSM bidding programs. To help overcome these barriers, the New York State Energy Research and Development Authority (NYSERDA), the New York State Energy Office (SEO) and PSC staff concluded that there was a need for New York utilities to demonstrate and evaluate promising DSM bidding strategies. Orange and Rockland Utilities (ORU) volunteered to participate in such a collaborative effort.

NYSERDA sponsored a survey of utility experiences with DSM bidding and then convened a workshop in March 1988 for New York utilities, PSC staff and SEO to: (1) review the experiences of several New England utilities that had experimented with DSM bidding; and (2) discuss the issues that should be considered in demonstrating and evaluating a DSM bidding program. Based on workshop discussions and further analysis of the strengths and weaknesses of various DSM bidding models, ORU and NYSERDA collaborated in the design of a DSM bidding prototype.

This paper explores the major areas of uncertainty associated with DSM bidding with emphasis on those concerns identified in the PSC proceeding. Then, a summary is presented of utility experiences with DSM bidding and related programs that were discussed at the March workshop. Finally, the lessons learned from our analyses of strengths and weaknesses of existing DSM bidding models are described in the context of the design of the ORU bidding program.

#### UNCERTAINTIES OF DEMAND SIDE MANAGEMENT BIDDING PROGRAMS

Four concerns were identified by utilities, PSC staff and intervenors during the PSC proceeding (Case No. 29409) relevant to DSM bidding:

- 1) The PSC staff was concerned that DSM bidders might be seeking credit for conservation efforts that customers would have undertaken anyway regardless of the bidding program, i.e., "free riders." Staff also saw the need for clearly defined criteria for the kinds of DSM measures that would be acceptable in a bid process as well as techniques for measuring and estimating the quantity of negawatts that each DSM alternative would supply.
- 2) The New York Power Pool (NYPP) said it would be inconsistent to allow customers to receive avoided costs for DSM projects, while utilities sponsoring such projects would instead recover expenses on a cost-of-service basis. Can utilities more effectively offer incentives for customers to adopt DSM measures at a lower overall cost-of-service as compared with accepting DSM bids at prices which could range up to avoided costs? Should lost revenues from investing in DSM measures be included when avoided costs are determined?
- 3) The NYPP was also concerned that any incentive for customers to conserve on their own initiative would possibly be impaired if they thought it would be better to wait for a third party to package a project and then receive a negotiated portion of the avoided cost.
- 4) Another intervenor was concerned that direct bidding by customers alone or in cooperation with third parties would present powerful competition to supply side bids because of the combination of subsidy payments received from successful bids in addition to the value of retail savings.

In light of the uncertainties and concerns summarized above, NYSERDA initiated a meeting with representatives of the PSC staff, SEO and interested utilities to discuss the perceived problems with DSM bidding programs and the potential merits of conducting a pilot demonstration project. The group identified and prioritized concerns with DSM bidding which resulted in the following list of questions that should be addressed in a pilot demonstration project:

1. How should ceiling prices be determined?
2. How do you measure DSM impacts obtained through bidding?
3. How do you avoid subsidizing efficiency or load management that would happen anyway?
4. Should bidding focus of kW versus kWh reduction?
5. How do you assess the effectiveness of bidding as compared to conventional DSM programs?
6. What issues need to be addressed before proceeding with pilot demonstrations and what issues can be addressed afterwards?
7. How should non-price factors be considered?
8. How do you compare supply side vs DSM bidding?
9. What incentives are required to stimulate utility in bidding?
10. What are the limiting factors which force competition?

The group concluded that NYSERDA should conduct a survey of DSM bidding programs undertaken by other utilities and should organize a workshop to: (1) provide a forum for representatives of those utilities to describe the characteristics of their bidding programs, lessons learned from current field experience, and potential modifications that they would recommend; and (2) discuss the scope of a pilot demonstration project in New York and the concerns and issues that should be considered in evaluating the results. Following is a brief overview, from the survey and workshop, of utilities that have implemented some form of demand side management bidding program.

#### CURRENT UTILITY EXPERIENCES WITH DSM BIDDING

##### The Bonneville Power Administration (BPA) Purchase of Energy Savings (PES) Program

Following a demonstration and pilot phase, the final PES design was determined. Energy service companies (ESCOs) were selected for participation based on their general qualifications, and given the authority to market to a number of buildings within a geographical area. Seven ESCOs were selected to participate. Payments were to be made to the ESCO over seven years. Identification of customers and marketing of the program were the responsibility of the ESCOs. Some 42 buildings were selected for the first year of the program. The latter years of the program were cancelled as part of an agency-wide budget reduction. It appears that twenty of the initial 42 transactions will be successfully completed (the withdrawal of one large property owner caused this dramatic drop). BPA offered financial incentives for the installation of approved measures on either an estimated or measured energy savings basis. The program required inclusion of all measures for which

total cost is less than long run marginal cost (with exceptions if measures interfere with business).

#### BPA's Commercial Incentive Pilot (CIP) Program

This program is operated through the retail utilities which buy and distribute power from BPA. Separate packages of services are offered to large (over 150,000 kWh) vs. small (under 48,000 kWh) customers. The large customers are offered a more complex audit and a series of payments over time. Intermediate customers (48,000 to 150,000 kWh) may be treated as large or small customers, depending on the nature of the audit and the conservation measures. The program requires inclusion of all measures for which total cost is less than long run marginal cost (with exceptions if measures interfere with business). Program implementation, including customer identification and marketing, varies between retail utilities. One utility is using its own bond financing, and thereby offering all consumers a cash rebate. Some smaller utilities are offering only the small consumer rebate portion of the program. Two of the large utilities are working with energy service companies to implement the program. Since 1987, 216 buildings have received rebates under the program and 50 facilities have completed contracts under the investment portion of the program.

#### Boston Edison's Encore Program

Boston Edison is offering a retrofit program to a statistically designed sample of residential, commercial, and industrial customers. A subsidy, to be paid over a period of up to ten years, is offered, along with assistance in dealing with ESCOs which provide walk-through audits and bid on packages of conservation measures. The customer is responsible for selecting an ESCO and managing relations. The utility will assist in the selection process upon request. The incentive goes directly to the ESCO. At this point in time, seven contracts have been signed with commercial customers, with 30 more anticipated in the next several months.

#### The Central Maine Power (CMP) Power Partners Program

CMP has recently received bids on a solicitation for power purchases. Coordinated solicitations were released for demand side and supply side sources. The utility hopes to use the solicitation to acquire between twenty and thirty average megawatts of demand side resources, in addition to acquiring supply side resources. The procedures for considering non-price attributes of energy resources are still being worked out. Currently, the first round of proposals is being reviewed and negotiations have been initiated with seven bidders.

#### CMP's Shared Savings Program

For the past fourteen months, CMP has offered loans for energy efficiency measures or cogeneration facilities to offset internal loads. The loan would be paid back out of energy savings over a number of years. Currently, the

utility has several letters of intent for participation. No transactions have been completed to date.

#### Commonwealth Electric's Cash Rebate Program (Com Electric Program)

This utility's program is similar to Boston Edison's program, with some exceptions. The ESCOs are required to offer a shared savings or guaranteed savings arrangement, to assure that the ESCOs are directly accountable for the amount of savings. Customers work independently of the utility with contractors who identify and install energy efficiency measures. A group of energy service companies have been pre-screened and approved for the program. The pre-screening is designed to ensure that the method for measuring savings is appropriate to the proposed conservation measures, and that there is some sort of guarantee or protection for the customer if the conservation measures fail. The utility offers to pay if the conservation measures fail. The utility offers to pay an incentive to the customer over a period of two to several years, but heavily discounts the payments if the period of payment is short. This is intended to encourage long-term maintenance relationships between customers and ESCOs. To date, 41 customers have signed contracts to participate in the program representing over 300 buildings. This could result in 24 million kWh of savings and six MW of demand reduction.

#### The New England Electric System (NEES) Performance Contracting Program

Groups of customer buildings were offered to bid to 120 ESCOs which have registered with the utility. Franchises were awarded to five ESCOs to work with a specific group of customers. Bids were selected based on the greatest savings at the least cost, and on the qualifications of each firm. A list of approved measures has been developed, but ESCOs can propose additional measures. The utility expects the program to be attractive only to customers over 500 kW demand. To date, while the exact number of transactions is unavailable, over 300 kW have been delivered through this program.

#### Northeast Utilities' Energy Action Program (EAP)

Northeast Utilities has designed the EAP as a comprehensive approach to delivering demand side management services to their commercial customers. Contractor/Arrangers (C/As) are paid to perform audits and assist commercial customers in managing retrofit transactions. The utility pays for part of the cost of the audit upfront, and part upon installation of the measures. The utility also offers an upfront incentive for installation of measures. The first phase of the program is designed to reach 36 buildings. The C/As were selected through a competitive solicitation based upon qualifications and experience. During contract negotiations, end-use sectors were assigned to each C/A based upon their qualifications. Installation of all measures that cost less than long run marginal cost is encouraged through the structure of the incentive payments. Initial results show strong customer interest. After five months, about 60 customers are participating in various stages of the program.

## SALIENT FEATURES OF DSM BID PROGRAMS

The characteristics of each of these programs with regard to a variety of design issues is presented in Table 1. Each of the features is discussed below.

### Bid Criteria

All programs offer some degree of competition for participation. Some offer a fixed price for energy savings, and evaluate bids based on the qualifications of each firm, the proposed efficiency measures, the proposed market, and the proposed work plan. Others focus competition primarily on the price of the energy or demand savings. Still others compete on many of these factors at once. Each of these approaches has distinct advantages and disadvantages.

#### Price Bidding

Bid processes which use price as the predominant selection criteria ensure that the lowest cost resources are contracted for and that the lowest cost providers are hired. However, a bid process dominated by price considerations does not ensure that the contractors can be relied upon to provide savings. Unreliable savings create problems for utility resource planners, even if the utility only pays for the savings which actually occur. This is because the utility must provide for backup sources of power due to unreliable savings. Unreliable ESCOs also expose the utility to risks of customer dissatisfaction or, in extreme cases, liability for the failure of savings to accrue.

Furthermore, a bid process which emphasizes price considerations may lead ESCOs to find savings which are so low cost that consumers would be likely to pursue them without utility incentives. Many utilities refer to this effect as "free-riders." This problem can be addressed through exclusion of certain measures from the program. However, exclusion of measures diminishes the opportunities for contractors to create packages of measures which will be attractive to consumers and financially rewarding. Procedures which select the lowest cost resource also discourage contractors from installing a comprehensive package of measures. This may make it difficult to install some measures which are cost-effective from a utility perspective.

#### Qualifications Bidding

The Com Electric program provides a predetermined price or incentive structure and allows ESCOs to bid on the provision of energy resources for a specific targeted group of customers based on qualifications and quality of services to be provided. This approach puts a priority on finding firms that can deliver the energy savings and satisfied customers. Such assurances are most important if utility payments are made on the basis of estimated savings. Predetermining price is most risky where the price of savings is unclear. Setting the price too high will cost utilities more money than necessary, while setting the price too low will doom the program to failure, i.e., too low of a price will not attract contractors to the program. Thus, predetermined prices are most appropriate for sector-specific programs where the savings opportunities and the costs are well defined.

## Combined Bidding

Programs such as Boston Edison's use bid processes which consider both the price of the resource and the quality of the firm and its work plan. While this addresses two sets of important issues, it is difficult to do effectively. An evaluation process with too many objectives can be confusing and irritating to both the reviewers and the proponents. Unless the process is carefully structured, it is difficult to exclude firms which have strengths in one area and weaknesses in another. Boston Edison addresses these ambiguities by focusing on price as the most important criteria. NEES uses a bidding process which focuses on price, but also goes through a process to carefully screen firms for their capabilities.

## Demand/Supply Integration

Concerns about equity and administrative simplicity make it desirable to acquire energy efficiency and generation resources through a consistent process. The primary disadvantage of a consistent approach may be a diminished ability to consider the unique features of each type of resource in the bid process.

## Market Coverage

Programs can be designed to apply to only the largest customers with the most energy savings or can be designed to reach both large and small customers. Different program procedures are effective for large vs. small customers. Some programs, like the CMP and NEES programs, are targeted exclusively to large consumers. Others, like the BPA CIP program, have special sub-programs with different incentive and administrative rules for smaller customers. Programs like the Com Electric, Boston Edison, and BPA's PES program attempt to use ESCOs for both large and small customers. The Boston Edison and Com Electric programs are open to residential, commercial, and industrial customers. While a limited number of medium-sized commercial customers participated in BPA's programs, the procedures tended to be too complex to appeal to smaller customers. Although its program experience is limited, Boston Edison is discovering that the complexities of performance contracting make it difficult to implement for single-family residences.

## One Time Payments or Installments

Under some programs, a utility provides a cash payment as soon as measures are installed and inspected by the utility. This is the case with Northeast Utilities, NEES, and with many rebate programs offered by other utilities and agencies. The Boston Edison, CMP's Power Partners, Com Electric, and BPA's PES and CIP programs provide for utility payments over a number of years. Payments over several years provide contractors and customers with more incentive to maintain energy efficiency measures and limits the financing burden on the utility from the program. However, since either the customer or the ESCO must finance the initial cost of the measures, either utilities must make a larger financial contribution or ESCOs will limit their investments to measures with a very short payback.



### Payment for Energy (kWh) Vs. Demand (kW) Reduction

This issue depends largely on the load shaping needs of individual utilities. For example, BPA and Com Electric's programs pay exclusively for energy reductions. The NEES program pays for energy savings, but uses a set of adjustment factors to modify the payment to adjust for the impact of specific measures on peak loads.

### Administrative Burden

An ideal program involves a minimum number of parties and simplifies administrative procedures in order to proceed rapidly while keeping costs low. However, administrative procedures must be sufficient to minimize program risks and ensure program reliability. One of the key determinants of the administrative burden of a program is the incentive design. Another is the relationship between the utility, the customer, and any third parties. Programs where the utility deals primarily with one party are likely to be simpler to administer than programs where there are relationships between all three parties.

### Program Overlap

Utilities must decide if they want new programs to compete with existing efficiency programs or not. If not, provisions must be made to exclude the potentially overlapping service territories or measures from one program to the other. Boston Edison, CMP, Northeast Utilities, and BPA have provisions to prevent a customer or ESCO from getting paid twice through different programs for the same costs.

### Procedures to Encourage Long Payback Measures

Inexpensive energy efficiency measures are attractive if they can provide for energy or demand savings at a low cost. However, programs which base their incentive on marginal cost pay the same amount for efficiency measures which are high cost vs. low cost. The result is that customers or ESCOs will tend to emphasize less expensive measures to capture a larger profit margin, and ignore more expensive measures which may still be cost-effective from the utility's perspective. This creates a problem if the utility is trying to acquire the entire efficiency resource. In addition, most of the programs pay more for measures which have a longer lifetime and are expected to save more energy.

Utilities may also wish to minimize their payments for the least expensive and easiest to install measures because customers are most likely to install these measures on their own. Thus, these measures do not really reduce utility loads beyond what would have happened without utility incentives. It can also lead to a situation where the utility incentive is greater than the installed cost of the measure. BPA has dealt with this issue by limiting its payment to no more than the installed cost of the measure. The Northeast Utilities program, the BPA PES program, and the large buildings part of the BPA CIP program minimize payments for inexpensive measures and encourage the installation of longer payback measures through their incentive structures,

which pay just enough to equalize the payback or rate-of-return of different measures. That is, the customer finances the cost of the program associated with a less than 2-3 year payback.

### Performance Guarantees and Quality Assurance Procedures

A number of mechanisms have been used by utilities to make ESCOs accountable for failure of energy or demand savings to accrue. Table 2 provides a summary of the procedures used by each utility. These mechanisms are explained below.

#### Measured Savings

One form of quality assurance is payment based on actual measured performance. Utilities can take measured savings into account in several ways. The simplest is to make payments based partially or entirely on the amount of measured savings. Com Electric, Boston Edison and CMP's Power Partners program pay on a measured savings basis over a number of years. The Com Electric program requires that savings be measured prior to the award of payments. NEES requires metering to verify a drop in the connected load before payment. BPA offers contractors a larger incentive if they are paid on a measured basis, but offers to pay for estimated savings as an alternative. If the utility elects to pay only on measured savings, further choices are available between: (1) one-time measurements vs. periodic measurements; (2) billing data vs. submetered data; and (3) various procedures for adjusting for weather, business activity and modifications of the building or plant.

#### Financial Security

Another option is to require that ESCOs provide some form of security such as a bond, irrevocable letter of credit, escrow account, expense account, or insurance. Under this approach, if the savings do not occur, the incentive payment for those savings can be refunded to the utility. The Boston Edison and NEES programs both require security for some portion of the value of savings and provide several options for it. The NEES security provisions cover both failure of measures and failure of the firm to reach the contracted level of market penetration. Under the CMP Shared Savings program, the utility acquires a lien on the improvement or the property, or outright ownership of the improvement, as a form of assurance that their funds will be repaid. The CMP Power Partners program requires an expense account as assurance against failure of the savings to accrue, and also includes provisions for liquidated damages if a customer should abandon the agreement. Experience to date indicates that security requirements add expense to a program, and in at least one instance at NEES, restricted the number of bidders responding to the program solicitation.

#### Site Inspections

If an engineering estimate is used as the basis for payments, other procedures can be used to ensure savings. The utility may perform site inspections of all or a sample of the installations as a way of ensuring savings. BPA, Com Electric, CMP, and Northeast Utilities perform some site inspections. When

NEES performs its adjustment calculation for savings, it also inspects the installed measures.

#### LESSONS LEARNED AND APPLICATION TO ORU BIDDING PROGRAM

The NYSERDA workshop on DSM bidding programs provided participants with an opportunity to systematically survey and assess a comprehensive comparison of DSM bidding models as presented above. As a result, ORU and NYSERDA focused on the potential advantages and disadvantages of various bidding strategies derived from workshop discussions and site visits to several New England utilities conducted prior to the workshop. The lessons learned are reflected in the preliminary design of the ORU bidding program presented in Table 3 (per the salient features outlined in the preceding section). Following is a discussion of the rationale behind major program design decisions.

##### Market Coverage

Based on the experiences of both Northeast Utilities and Boston Edison, ORU concluded that residential applications of DSM bidding do not appear to be viable at this time. Major contributing factors in arriving at this conclusion include: (1) the lack of an established infrastructure of ESCOs or other third parties which are capable of offering DSM options on a competitive bidding basis in this sector; (2) the results of an evaluation of the residential component of Northeast Utilities' bidding program which indicates that standard residential DSM options can be delivered by the utilities at lower cost than through ESCOs; and (3) the administrative complexity and cost to process competitive bids which might be received directly from residential customers.

However, the results of the CMP and NEES programs indicate that large commercial and industrial (C/I) customers are interested in participating in bidding programs and bidding program administration is manageable for these sectors. Consequently, in designing the ORU bidding program the decision was made to focus on large C/I and institutional customers because of the likelihood of achieving greater customer response and the desire to minimize administrative complexity. ORU will continue to offer other DSM services to its residential customers.

##### Eligible Bidders

Many utility DSM bidding programs have relied upon ESCOs as the primary service delivery mechanism. This approach exploits an existing market infrastructure for delivering DSM services. The utility subsidy paid to the ESCO supplements the shared savings transaction between the ESCO and participating customer. In concept, the ESCO shares a portion of the subsidy with the customer which effectively passes the incentive to the customer to undertake DSM investments. Also, the long-term nature of shared savings deals, the contingent payment scheme based on performance, and the equipment operation and maintenance provisions of agreements between ESCOs and customers all help to ensure that the DSM measures reliably deliver their avoided capacity and energy savings benefits over the life of the equipment.

Consequently, ORU decided to include ESCOs as the principal delivery mechanism for its DSM bidding program. In order to provide incentives for ESCO participation, ORU will request ESCOs to bid on the following pre-established market segments: (1) governmental institutions (federal/state/local) including public schools; (2) hospitals and other health care facilities; (3) office buildings and service establishments; (4) industrial facilities; and (5) wholesale and retail establishments. ESCOs will be given an exclusive franchise to market DSM services to the market sectors on which they bid and win, except the government sector for which three winning bidders will be assigned. Government agencies will then be able to conduct their own competitive evaluation of the bidders pre-qualified through ORU's program.

Market research conducted during the NEES program indicated that some C/I customers believe that they have the technical and financial expertise to implement DSM investments themselves. Nevertheless, utility subsidies were apparently needed to provide an incentive for action. Also, some customers indicated that they did not want to work with ESCOs e.g., to protect trade secret concerns regarding production processes or products. As a result, ORU decided to allow C/I customers to directly bid for DSM measures.

#### Verification of DSM Impacts

In the NEES program, specific DSM options were selected for emphasis, apparently to mitigate perceived difficulties in measuring DSM impacts. NEES had an extensive load research database on the effect of these DSM measures on electricity demand in different classes of facilities. Having selected measures with known impacts and verified that particular measures were installed and operating effectively, NEES had the confidence to make a one-time upfront payment. In addition to reducing uncertainties about measuring or estimating impacts, this verification and payment approach helped to reduce program administrative complexity and costs. Since NEES used ESCOs as the principal delivery mechanism, it also had confidence that the long-term shared savings agreement would help to ensure that the DSM benefits would be achieved over the life of the agreement.

ORU also decided to emphasize the implementation of a pre-specified set of DSM measures. ORU is experiencing significant growth in its summer peak demand. Therefore, peak load reduction measures of interest to ORU include efficient lighting, efficient air conditioning, cool storage and non-electric cooling, efficient heat pumps, and efficient motors. ESCOs and large C/I customers will be encouraged to invest in these pre-specified measures, although other measures could also be proposed with adequate technical justification relevant to ORU's goal of reducing summer peak demand.

As part of forthcoming program evaluation efforts, ORU decided that a sampling methodology would be developed to facilitate a periodic evaluation of the DSM load reduction impacts based on a random sample of projects which received subsidies. This periodic sampling process will estimate load reduction impacts achieved during different bidding cycles and identify any systematic problems which may require further study. ORU anticipates

establishing a database management system to track DSM investments implemented through bidding and other DSM programs.

#### Ceiling Prices for DSM Bids

NEES developed an innovative methodology for establishing a ceiling price in \$/kW for each kW of load reduction achieved by DSM measures without including any lost revenue impacts associated with investing in the measures. "Adjustment factors" were used to account for the relative contribution to the utility's avoided cost from implementing a particular measure. Measures received higher adjustment factors if they made a greater contribution to achieving the utility's goals, e.g., reducing peak demand at a particular time of the day or year. Multiplying the bid price by the adjustment factor gives the ceiling price on a subsidy for a particular measure. This ceiling price was considered in evaluating DSM bids.

In designing its DSM bidding program to emphasize peak load reduction, ORU decided to establish ceiling prices which include lost revenue impacts associated with cost recovery on fixed capital plant. Moreover, in evaluating avoided costs and lost revenues, the feasibility of including DSM measure performance degradation and free rider effects associated with each particular measure selected will be considered. However, ORU decided that it would not impose constraints on the financial transactions between ESCOs and customers, allowing ESCOs to negotiate compensatory financial terms that would make their participation in the program attractive. Program evaluation efforts will focus on customer and ESCO perceptions of potential changes in ceiling prices in future bidding stages and perceived incentives for customers to either accelerate or defer DSM investments (in order to get a better deal).

#### Security Provisions

Both the NEES and CMP bidding programs required bidders to provide some kind of security as a guarantee that aggregate DSM benefits proposed in bids would be achieved by successful bidders within a specified period. Similar security arrangements will be used in the ORU program in the form of escrow accounts, letters of credit, or performance bonds. However, the magnitude of the security which must be provided will be reduced based on NEES's experience and a desire to treat supply and demand side bids on an equal basis.

#### Proposal Evaluation and Contract Negotiations

Procedures similar to those used by CMP and NEES will be used by ORU to evaluate proposals received from customers and ESCOs and to negotiate agreements with the highest ranking bidders. Proposals will receive an initial screening to eliminate unqualified respondents from further consideration. A weighted ranking methodology will be used to evaluate proposals to implement pre-specified DSM measures. Price, reliability, and compliance with security provisions will be the major evaluation criteria. The provisions of contract terms and conditions between ESCOs and customers will be evaluated. Additional evaluation criteria such as verification of load reduction impacts will be considered in evaluating proposals for other than pre-specified DSM measures.

## POSTSCRIPT

At this writing, implementation of ORU's pilot demonstration DSM bidding program is underway. NYSERDA and ORU are collaborating to hire two supporting contractors. One contractor is conducting market research with ORU's C/I customers and ESCOs active in the Northeast, to gather information to guide program design. The second contractor will design and undertake an extensive evaluation of the program, the results of which will inform other utility and PSC initiatives in the future. ORU intends to issue a Request for Proposals for DSM bids in September 1988.

## ACKNOWLEDGEMENTS

The authors wish to acknowledge the support and participation of management and staff of Orange and Rockland Utilities that have made this undertaking possible. In particular, Richard Onofry and William Vinhage have provided valuable guidance and assistance in planning and holding the workshop, in designing and implementing a pilot DSM bidding program, and in reviewing and commenting on this paper. The authors also wish to thank all of the people, too numerous to be listed here, who participated in the workshop and shared information about the programs discussed in this paper.

Table 1. Summary of Performance Contracting Programs

Program	Bidding Criteria	Demand/Supply Integration?	Market Coverage	One Time Payment or Installments?	Pay for kWh or kW?	Admin. Burden	Double Dipping Prohibited?	Encourage Long Payback Measures?
BPA Purchase of Energy Svgs Field Test Pilot Program	Both Qualifications	No	All Commercial	Installments	kWh	High	Yes	Incentive
BPA Comm Incentive Pilot	Qualifications	No	All Commercial Separate for Small vs. Large	Installments Installments Installments except Small Commercial	kWh kWh kWh	High High High	Yes Yes Yes	Incentive Incentive Incentive
Boston Edison Encore	Both, but price most important	No	Res + Comm + Ind	Installments	Both	Moderate to High	Yes	No
CMP Shared Savings	Qualifications	Onsite Cogen OK	Large Comm + Ind	One Time Loan	Both	Moderate	Yes	Exclude < 2 Yr Payback
CMP Power Partners	Mostly Price	Parallel Programs	All Resources	Installments	Both	Low	Yes	Exclude < 1 Yr Payback
Comm Electric Cash Rebate	Qualifications	No	Res + Comm + Ind	Installments	kWh	Moderate	No	0+Ms Excluded
NEES Performance Contracting	Both	T.A. for Cogeneration Standby Program	Large Comm + Ind	One Time	Both	Moderate to Low	Yes, but OK w/ some Programs	Some O&Ms are Excluded
Northeast Utilities Energy Action Program	Qualifications	No	All Comm + Ind (Res Separately)	One Time	kWh	Moderate	Yes	Incentive

6.25

Table 2. Quality and Performance Assurance Procedures for Performance Contracting Programs

Program	Measured Savings?	Security	Site Inspections?
BPA Purchase of Energy Savings			
Field Test	Optional	No	Yes
Pilot Program	Optional	No	Yes
BPA Comm Incentive Pilot	Optional	No	Yes
Boston Edison Encore	Yes	No	No
CMP Shared Savings	Optional	Yes	Yes
CMP Power Partners	Yes	Yes	Yes
Comm Electric Cash Rebate	Yes	Customer's Responsibility	Yes
NEES Performance Contracting	Verify Drop in Connected kW	Bond	Some
Northeast Utilities Energy Action Program	No	No	Yes

Table 3. Summary of Orange & Rockland Demand Side Management Bidding Program

<u>Salient Feature</u>	<u>Preliminary ORU Design</u>
Bidding Criteria	Bid price and size (100 kW minimum) Reliability of measures Qualifications of bidder
Demand/Supply Integration	Parallel Programs
Market Coverage	Large Commercial/Industrial (including government institutions)
One Time Payment or Installments?	One time (upon verification of installation/operation)
Pay for kWh or kW?	kW
Administrative Burden	Moderate to Low
Double-dipping Prohibited?	Yes
Encourage Long Payback Measures?	Pre-established measures ESCOs can continue to implement measures and receive subsidies for four years.
Measured Savings?	Sampling for evaluation
Security	Performance bond, letter of credit, or escrow account (\$20/kW bid)
Site Inspections?	Yes, for verification