DSM bidding in competitive markets

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1 - SYNOPSIS

In competitive electricity and gas markets, DSM bidding can be a good tool for a utility in the product development of energy services for the industrial and commercial sectors.

2 - ABSTRACT

Demand-side management (DSM) bidding has been developed and successfully used in the USA as an innovative type of DSM programme. An electric and/or gas utility issues a call for tenders to large customers and private energy service companies who bid to implement energy efficiency measures at the utility's customers. Thus, DSM measures are delivered in a competitive way, ensuring lower costs and using the full spectrum of available energy efficiency technologies.

Such a DSM bidding scheme has been tested for the first time in Europe in a SAVE-sponsored project of Stadtwerke Düsseldorf (a municipal utility serving 600,000 people) with assistance from the Wuppertal Institute for Climate Environment Energy. As the electricity and gas market in Germany is now open for full retail competition, it is not possible to fund the DSM measures delivered in the bidding scheme via the electricity and gas prices as before. Therefore, new ways to realign the business interests of the utility, the bidders, and the customers had to be found. The utility, e.g., is offering to finance cost-effective energy efficiency measures with third-party financing schemes. It is furthermore expecting to contribute to its CO_2 reduction targets and to gain experience in DSM technologies to use in product development for its own energy service activities.

3 - INTRODUCTION AND BACKGROUND

During the last years, an increasing number of utilities in several European countries, e.g., Denmark, France, Germany, Greece, Ireland, Italy, The Netherlands, Portugal, Spain, Sweden, and the UK, have discovered that their business can go beyond selling kilowatt-hours of electricity or gas. E.g., in a recent survey by VDEW, the association of German electric utilities, over 200 utilities from all levels (there are nine connected grid companies generating more than 80 % of all power, around 50 regional and about 800 municipal electricity distribution utilities in Germany; most of the municipal utilities offer also natural gas and sometimes district heat from cogeneration plants) answered that they offered around 500 demand-side management (DSM) programmes to their customers (VDEW 1997).

However, most DSM programmes in Europe so far were targeted at households or small commercial customers. Thus, the even larger and more cost-effective (e.g., Öko-Institute / Wuppertal Institute 1995; Thomas/Zander 1997) potentials for end-use energy efficiency in the segments of larger commercial and industrial customers have been largely untapped to date by utility DSM activities.

The goal of this project is, therefore, to advance the knowledge on DSM programme implementation and evaluation by field testing an innovative type of DSM programmes which is particularly suitable for larger customers: DSM bidding (also called NEGAWatt bidding), i.e. a bidding/tendering procedure for electricity-saving projects. This type of DSM activity is explicitly mentioned in the RPT directive proposed by the European Commission[1]. It has been developed and practised in the USA, but so far no experiences in Europe are known. In the USA, DSM bidding has been implemented in the context of Integrated Resource Planning (IRP; cf., e.g., Wuppertal Institute 1996) as a market-based approach to acquire least-cost resources. The utilities buy "conserved power" from energy service companies just like they purchase power from a generator, and just like purchased megawatts, the NEGAWatts acquired via the DSM bidding are financed via the rates.

Recently, liberalising the markets for electricity and gas has opened competition for generation and supply. Therefore, the possibility for utilities to compensate, via moderate rate increases, for the sales reductions which are the goal of the DSM is very limited. However, DSM activities can be very attractive to utilities also in liberalised energy markets:

- if they increase customer loyalty, or
- if they can be billed directly to the customers who benefit from the cost reductions, e.g., Third-Party Financing (TPF).

Their higher transaction costs make TPF and similar instruments less suitable for smaller customers and smaller projects. But for the larger customers which are usually the first to be able to change their supplier, TPF is well applicable.

A recent survey among key account customers in the USA, e.g., found that about half of these very large customers are interested in purchasing packages of energy and energy services, e.g., energy management in lighting and HVAC, maintenance and operation of turbines, boilers, chillers, air compressors, and their infrastructure. These services have additional benefits for the utility:

- The margin on these services is 20 to 30 percent or more, in particular if the supplier realises the energy efficiency optimisation potential for his own profits.
- These businesses are conducted on the customers' premises and tend to be customised, so they have more switching resistance than for the commodity energy.
- Many large customers indicate that they would prefer to buy both commodity energy and services from the same supplier, if both can be credibly and cost-effectively supplied.

Furthermore, this study made a scenario analysis of the revenues and profits from both the supply of electricity and gas in fully competitive markets, and of energy services. The findings were that in 10 years from now, the energy services could contribute a third to the revenues, but 90 % to the profits of the model utility (Diamond 1998).

Our project has undergone a similar development as utility DSM in general. The original concept for the DSM bidding pilot was developed in the "Energy 2000" action plan of Stadtwerke Düsseldorf (FhG-ISI/Wuppertal Institute 1997). It started from an IRP background, as a market-based instrument to achieve cost-effective energy savings in the industrial and commercial sectors. After the deregulation of the German electricity and gas markets, the project has changed its focus. It is now an instrument with two targets: helping Stadtwerke Düsseldorf to contribute to its CO_2 reductions targets, and assisting the utility in developing its energy service activities further.

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1 As the proposal states, member states shall "promote the integration of Demand Side Management options into capacity tendering procedures in the distribution sector where these exists". The European Parliament even called for making this ìcompulsoryî in its resolution of 11/12/96

4 - THE HISTORICAL RECORD OF DSM BIDDING

4.1. What is DSM Bidding?

DSM Bidding can have two different forms:

_ either, a tendering for the implementation of predefined DSM programmes to promote certain energy-efficient technologies is organised by the utility which wants the programmes implemented but does not have the skills or capacity to implement them itself;

_ or, a tendering for energy efficiency measures in the industrial and commercial sectors is organised. In this case, the utility only specifies the maximum amount of conserved energy which it wants to achieve, but not the specific technologies which can be used. This open type of tendering can also be a part of an integrated (i.e., including both energy conservation and new generation resources) bidding procedure.

It is this second type of an open tendering procedure which was tested in the pilot project of Stadtwerke Düsseldorf.

With an open DSM bidding as originally developed and practised in the USA, the utility asks for bids up to a certain limit of conserved capacity (MW) and energy (GWh) as specified by the capacity expansion/modernisation plan developed, e.g., in an IRP process (cf. figure 1). Private energy service companies (ESCos), e.g. engineering consultants specialised on lighting, ventilation, cooling, or other projects, or large customers with own expertise in demand-side energy efficiency offer projects which can provide quantifiable savings against a reference case. The utility then selects projects according to a range of criteria, most important the price per kW or kWh saved which is offered for the project, but also the credibility of the bidders or the load shape of the savings. Finally, the utility contracts projects up to the electricity conservation limit given in the tender, or up to a pre-determined upper boundary price.

Thus, NEGAWatt bidding is one of the most market-oriented DSM activities because the costs of the DSM projects contracted are determined in a market-like process. Figure 1 shows how this type of DSM bidding is carried out in an IRP context.

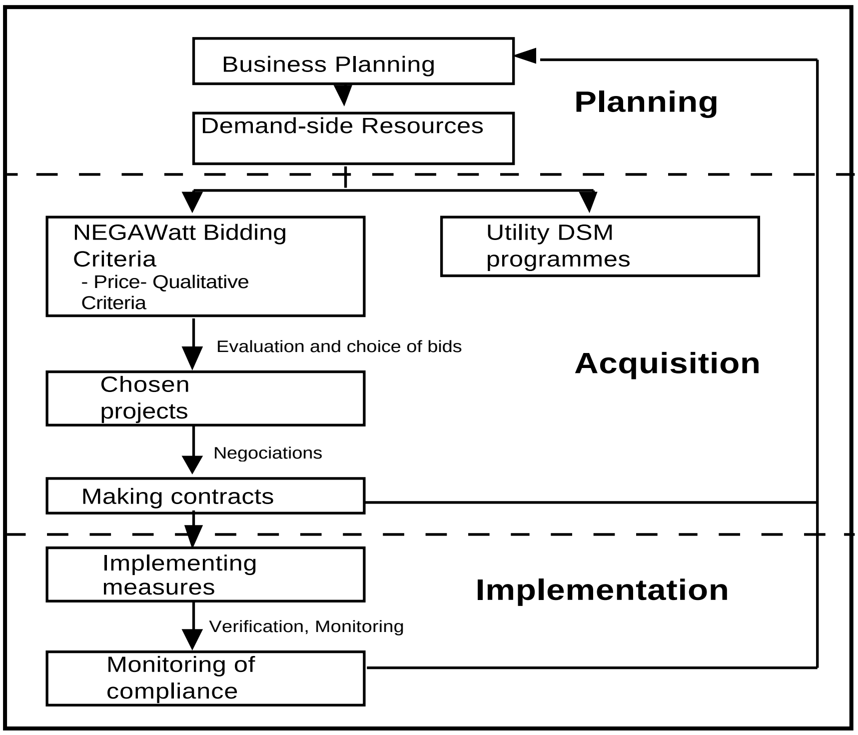

Figure 1. *DSM Bidding in an IRP context.*

Advantages of DSM Bidding compared to other utility DSM programmes (e.g., rebate programmes) are:

- the lower effort required, as the utility does not have to identify and realise the savings potentials itself, yet is able to keep the necessary amount of control;
- the lower overall costs because of the competitive choice of DSM projects;
- the use of specialisation advantages of the ESCos;
- the possibility to shift a large proportion of the risks of project development and performance to ESCos and customers;
- the possibility of benchmarking own DSM activities against the projects tendered;
- the possibility to intensify the relations to big industrial and commercial customers.

4.2. Experiences in the USA

In the USA, such bidding schemes have been performed typically for 3 to 50 MW (where it has to be noticed that utilities typically are bigger than Stadtwerke D¸sseldorf). According to Goldman/Kito (1994), until 1993 DSM Bidding had been implemented by 28 utilities across the USA. Tenders were over-bid by a factor three on average: 1,500 MW of conserved power were offered. The utilities chose 170 projects with ca. 425 MW of energy conservation.

It has to be noted, however, that the market for ESCos is more developed in the USA than in Germany. 87 % of the bids were from ESCos. Apparently, the industrial customers were afraid of the costs of preparing a bid (which were estimated between 4,000 and 40,000 EUR), and of the risk to guarantee the savings to the utility.

Compared to supply-side bidding schemes for new capacity, the chances to be successful were higher in DSM bidding (with 40 % of the proposals accepted) than in supply-side bidding (only 13 %). The share of failed projects was equal in DSM and supply-side bidding; ca. 20 % failed during the detailed engineering, i.e. before the actual investment in hardware (Goldman/Kito 1994).

Altogether, these experiences are quite encouraging for testing this approach in Europe as well.

4.3. Experiences in Europe

Tendering for implementation of predefined DSM programmes to promote certain energy-efficient technologies has been used before in Europe, e.g., by the Energy Savings Trust in the UK, or in Denmark for the realisation of fuel-switching from electrical heating to district heating.

However, to our knowledge no technologically open tender for energy efficiency measures in the industrial and commercial sectors has been performed in Europe before.

5 - STADTWERKE DÜSSELDORF'S PROJECT FOR DSM BIDDING

5.1. Project goals

The goals of the pilot project are:

1. to test the readiness of the German/European market for the provision of energy service projects related to electricity savings,
2. to examine the feasibility of DSM bidding under German utility conditions (both from the organisational and economic aspect and taking into due consideration the introduction of competition into the electricity and gas markets), and
3. to evaluate the effectiveness (in terms of kW/kWh saved) and cost-effectiveness (relative to avoided generation costs) of this new instrument.

The transferability to other European countries is also to be examined.

5.2. Redefining the Concept

Due to the deregulation of the electricity and gas supply industry in Germany, a longer and detailed review of the concept of DSM Bidding has been necessary to adapt it to a more liberalised market. The original DSM bidding concept as practised in the USA means that the costs of purchasing the DSM resource would be financed through the electricity prices (see chapter 4.1). Similar to other rate-financed DSM programmes, e.g., rebate programmes, DSM bidding would most likely reduce **bills** but increase **rates.** This is the well-known paradox of many cost-effective DSM programmes: prices are total costs divided by sales. If a DSM resource reduces total costs, but sales are reduced more than costs, the result of dividing the lower costs by the even lower sales is a modest price increase. Even a modest price increase is, however, less attractive to utilities in a market with retail competition for electricity sales.

Therefore, the new concept still includes a call for proposals which will be evaluated according to the IRP methodology. However, the utility will now offer to realise cost-effective DSM projects in third-party financing (TPF). To make the contest more attractive to possible bidders, the ten most attractive bids will be rewarded a certain payment to acknowledge their effort in developing the projects. For the utility, this concept will help to build up a market for TPF for demand-side energy efficiency. Furthermore, the utility can present itself to the customers as provider of energy efficiency services who is concerned for the environment and for the competitiveness of the customers.

In short, the new concept is as follows:

- As the Stadtwerke Düsseldorf feel that their very big customers are at present only looking for price reductions and will thus not be interested in energy efficiency services, the main target group is medium-sized industrial and commercial customers.
- To these, the programme will be communicated as a joint effort to realise cost-effective CO_2 reductions, under the title "2000 tons of climate protection - a benefit to economy and environment" ("2000 Tonnen Klimaschutz - Gewinn für Wirtschaft und Umwelt").
- The target for the DSM bidding is therefore expressed as reducing CO_2 emissions by **at least** 2,000 tons/year, not in terms of energy (kW or kWh).
- There is no upper limit for the energy conservation or CO_2 reductions which may be reached: in principle, Stadtwerke Düsseldorf offer to realise every cost-effective project in TPF.
- The project is also no longer restricted to electricity savings. However, since TPF for electricity conservation is more innovative and more cost-effective than heat conservation (e.g., by installing new boilers in TPF), each tender must have at least 50 % of the possible investment for electricity conservation; pure load management is excluded. The remainder can be innovative heat conservation (i.e., not just renovation of boilers and not CHP) or renewable energies.
- To make the project easier to handle, each tender must include at least electricity savings of 100,000 kWh/year. One tender can bundle several customers.
- For the awards to the ten best proposals, a total of 150,000 DM (76,700 EUR) is offered by Stadtwerke Düsseldorf. This will be distributed as follows: 15,000 DM for the best, 10,000 DM for the second, and 5,000 DM for the third best proposal. The remaining 120,000 DM will be distributed among the 10 winners according to their share in the total CO_2 reduction, but no one winner will receive more than 20,000 DM out of this budget.

Figure 2 shows how the DSM bidding scheme and the TPF for implementation are linked.

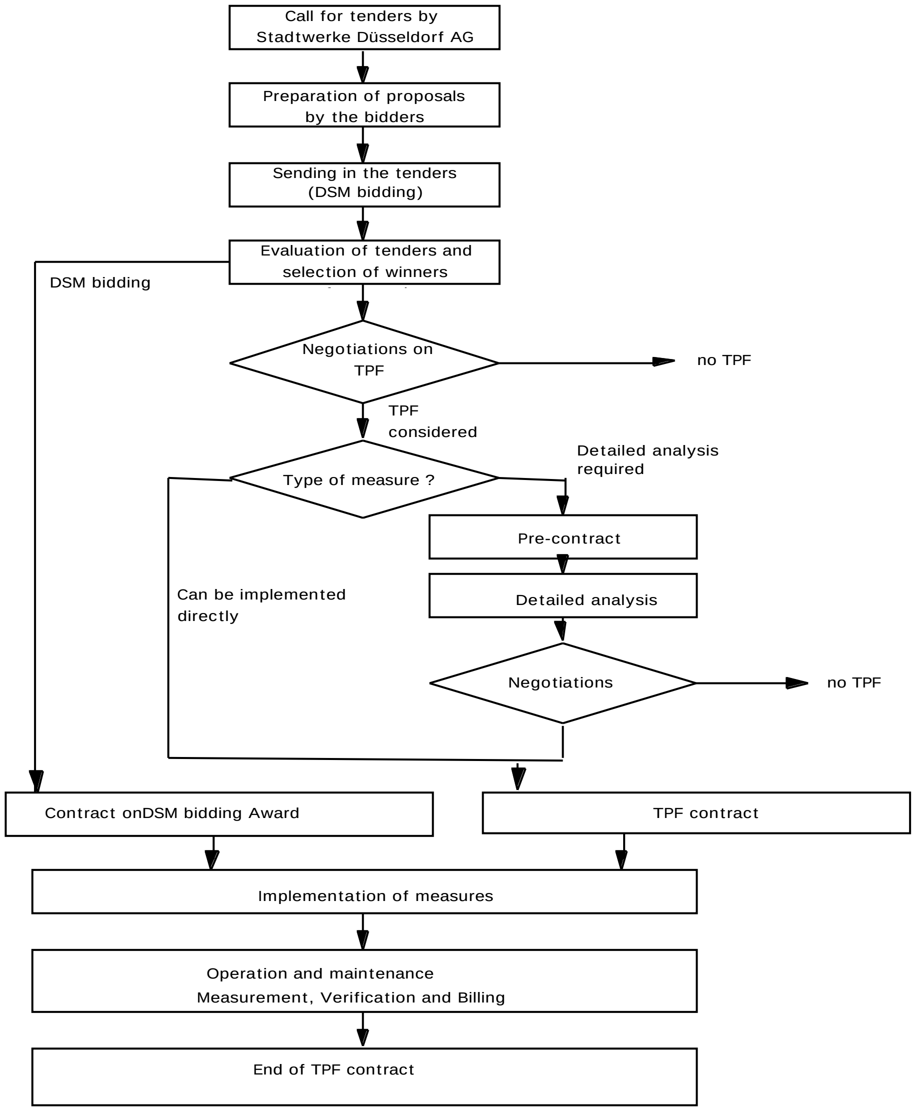

Figure 2: *DSM Bidding and Third-Party Financing (TPF) Pilot Project of Stadtwerke Düsseldorf AG*

Representing the many details which have been specified, we wish to present the criteria for evaluation of the tenders. A maximum of 100 points can be scored.

Table 1. Evaluation scheme of Stadtwerke Düsseldorf

Factors	maximum number of points
result of total resource cost test	40
plausibility of implementation concept	15
extent (max. 5 points) of savings times persistence (2 points)	10
renewable energies are a part of the package of measures	10
innovative energy conservation measures	5
transferability of energy conservation measures	5
possibility to measure savings in different times of day	5
proposed measurement and verification concept	5
experience and technical competence of tenderer	5
total	**100**

In the modified scheme, the measurement and verification of the savings are the responsibility of either the utility or the tenderer: if there is a TPF, the utility has to prove to the tenderer that the savings in the TPF will be realised. This will also be the basis for an eventual award. If the tenderer realises the savings without the help of utility TPF, it is the tenderer who has to prove the savings to the utility. For guidance in the choice of appropriate measurement and verification methods, the partners use existing standards, guidelines and recommendations, e.g., the International Performance Measurement and Verification Protocol (IPMVP).

The IPMVP defines four measurement and verification options which are applicable to different types of performance contracts, project values and risk sharing between the utility and the bidder. The four options allow for variations in the cost and methods for assessing savings.

Table 2. Measurement&Verification Options

Measurement & Verification Option	How Savings Are Calculated	Cost
Option A: Focuses on physical assessment of equipment changes to ensure the installation is to specification. Key performance factors (e.g., lighting wattage or chiller efficiency) are determined with spot or short-term measurements and operational factors (e.g., lighting operating hours or cooling ton-hours) are stipulated based on analysis of historical data or spot/short-term measurements. Performance and proper operation are measured or checked annually.	Engineering calculations using spot or short-term measurements, computer simulations, and/or historical data.	Dependent on no. of measurement points. Approx. 1-5% of project construction cost.
Option B: Savings are determined after project completion by short-term or continuous measurements taken throughout the term of the contract at the device or system level. Both performance and operations factors are monitored.	Engineering calculations using metered data.	Dependent on no. and type of systems measured and term of analysis/ metering. Typically 3-10% of project construction cost.
Option C: After project completion, savings are determined at the ìwhole-buildingî or facility level using current year and historical utility meter or sub-meter data.	Analysis of utility meter (or sub-meter) data using techniques from simple comparison to multivariate (hourly or monthly) regression analysis.	Dependent on no. and complexity of parameters in analysis. Typically 1-10% of project construction cost.
Option D: Savings are determined through simulation of facility components and/or the whole facility.	Calibrated energy simulation/modelling; calibrated with hourly or monthly utility billing data and/or end-use metering.	Dependent on no. and complexity of systems evaluated. Typically 3-10% of project construction cost.

Source: IPMVP, December 1997, www.ipmvp.org.

The revised concept resulted in the following work programme for the pilot project. In general, Stadtwerke Düsseldorf implement and finance the pilot project, with scientific assistance and evaluation by the Wuppertal Institute, and co-funding from the European Commission (SAVE programme).

5.2.1. Determination of details for the tender

Here, the technical and economic details were developed, like: procedure for evaluation of bids, determination of criteria for evaluation and ranking of bids, determination of award payment to successful bidders, and preliminary determination of methods to verify savings. Furthermore, the materials (questionnaires, guidelines, communication materials) for the call for proposals were developed.

5.2.2. Carrying out the tendering procedure

In this phase, it was made sure that both ESCos and customers are well informed about the call for tenders and its details. Therefore, both press releases and direct mails and contacts were used. Enough time was allowed to produce DSM projects to be offered in tenders.

5.2.3. Assessment of NEGAWatt project bids

This includes:

- an engineering assessment: are the proposed savings realistic? Are the proposed measures innovative, or would the savings probably occur without the NEGAWatt bidding scheme?
- an economic assessment: which are the costs and benefits offered by the single proposals?
- a ranking of projects according to the determined criteria

5.2.4. Making contracts

With the successful bidders, details for the award payments have to be negotiated. With all bidders offering cost-effective projects, details of TPF contracts have to be negotiated like TPF arrangements, duration of savings, verification of savings etc. The negotiations are the responsibility of Stadtwerke Düsseldorf, with assistance from the Wuppertal Institute.

5.2.5. Evaluation of results and final report

An evaluation of the single contracts and of the overall pilot project according to IRP criteria has to be done. The results of this evaluation as well as a summary of the process during the pilot project and the single proposals will be laid down in the final report. Evaluation and reporting is mainly the task of the Wuppertal Institute, in co-ordination with Stadtwerke Düsseldorf.

5.3. Implementation

The project was launched with the following elements of the communication:

- a press conference with top management;
- a direct mailing to 3,000 customers and dozens of engineering companies and ESCos;
- direct personal contacts to some key account customers;
- a seminar for interested customers and ESCos two weeks after launching the proposal;
- a telephone hotline during the duration of the tender (2 months);
- and an information/participation package with a detailed questionnaire and an information brochure, including an example for an offer.

5.4. Expected Results

At the time of writing this paper for final submission, the tendering phase was still going on. The tender was open until April 30, 1999. Therefore, the results on

- the number of tenders, and by whom they were made
- the number of measures
- the kind of measures (which technologies, which energies saved)
- the amount of energy savings offered and the respective total CO_2 reductions are presented at the ECEEE Conference but could not yet be included in this paper.

Until submission of the final paper, ca. 60 customers of Stadtwerke Düsseldorf and ESCos have asked for the information/participation package.

It was expected that about 10 to 20 of these customers and ESCos would tender, where 20 would already be a good success for such a pilot scheme. However, as this was such a new type of DSM activity, there was a high uncertainty in these numbers. It was estimated that this number of tenders would be sufficient to reach the target of the scheme, i.e., a reduction of CO_2 emissions by 2000 tons/year; for comparison: a tender with the minimum required saving of 100.000 kWh/year would generate CO_2 reductions of ca. 90 tons/year under the conditions of Stadtwerke Düsseldorf. Some tenders would achieve more than the minimum, also because of the possibility to add other fuel savings and renewable energies to the electricity savings.

For a medium-sized industrial or commercial customer, one to three measures can be enough to reach the minimum required saving of 100.000 kWh/year. At a present consumption of 1 million kWh/year, this is a 10 % saving which can be easily achieved. Stadtwerke Düsseldorf have about 70 big customers with a consumption of 1 million kWh/year or higher. Most of the 3.000 customers contacted directly by Stadtwerke Düsseldorf during the DSM Bidding scheme, however, have a consumption lower than 1 million kWh/year, down to around 100.000 kWh/year. The Stadtwerke concentrated on that customer group, because they felt that these might be more interested in energy services, while the large customers would, for the moment which was shortly after the German electricity market had opened for competition, rather look for price decreases. The main target group of medium-sized or smaller commercial/industrial customers had to co-operate to prepare one tender, or the tender had to be organised by an ESCo. For example, energy-efficient refurbishment of the lighting system in ca. 10 supermarkets and/or non-food retail stores was sufficient to reach the minimum saving. All in all, it was expected that 10 to 20 tenders would provide to Stadtwerke Düsseldorf between 20 and 50 individual energy efficiency measures as opportunities for TPF investments.

The participation questionnaire had six options for specific technical focuses: ventilation/air conditioning, circulation pumps, pressurised air, lighting, fuel switching, and other measures. These were identified as promising from the Wuppertal Institute's experiences with energy efficiency and TPF pilot projects in the industrial and commercial sectors. No prediction was made on the share of these options among the measures tendered; in fact, the process was completely open with regard to technologies in order to find out the needs and wishes of the customers.

6 - DISCUSSION AND CONCLUSIONS

At the time of finishing this paper, the tendering phase was still going on. It ended on April 30, 1999, so that a more experienced discussion and conclusions can be given at the ECEEE conference itself. This chapter is based on the project partners' expectations and on the experiences made during the tendering phase until finishing this paper.

6.1. Lessons to be learnt

With an open DSM bidding scheme like the one of Stadtwerke Düsseldorf, the project partners expected to learn more on the following questions:

- In which technical areas and end uses of commercial and industrial customers do the largest and most cost-effective energy efficiency potentials exist? Where do the customers focus their needs and wishes? This is most important for the utility to become more customer-oriented in the development of its energy efficiency services.
- What is the cost of conserved energy in these projects? I.e., how attractive is it for the customers, for a TPF investor (e.g., the utility), and for society?
- Are medium to large customers able to develop energy efficiency projects to a stage where the are ready to implement? How much time do they need for it? On one hand, this is important for assessing the possibilities of open DSM Bidding as an instrument to realise energy savings; on the other hand, it is important for energy policy: should this be a major problem for the customers themselves, it is a proof for the existence of a number of market barriers for end use energy efficiency. From our experience in other projects (e.g., Ramesohl et al. 1997), the partners did expect that a number of industrial customers have the

technical skills to develop energy efficiency projects, but often lack the time or the back-up by senior management to do so. Our project therefore had the aim to overcome these latter barriers by the offer of the awards to winning proposals, and the TPF possibility.

- Are energy service companies or engineering consultants able to develop such energy efficiency projects together with one or more customers? How much time do they need for it? This is important also for future TPF activities of the utility itself: How easy is it to convince customers of the benefits of energy efficiency?
- Combining the two previous questions: Which will be the share of tenders by customers, which by ESCos?
- Are the direct awards and the TPF offered attractive enough for customers/ESCos to develop proposals? This is crucial for other utilities who may wish to use such an open DSM Bidding to start their energy efficiency service business.
- Which effort is needed, and which (technology-specific) possibilities exist to measure and verify the energy savings? This is important for the whole energy efficiency services business.

6.2. Transferability to other utilities

6.2.1. Applicability of DSM Bidding to develop energy services and TPF

In principle, the approach to give the energy efficiency services and TPF business of a utility a jump-start by asking the customers for project ideas should be transferable to other utilities without problems. From the experiences of Stadtwerke Düsseldorf, the following conclusions can be drawn.

- The competition will only reach the target of starting the TPF business, if the conditions to handle a large number of projects from the start have been created by the utility. This includes (1) technical knowledge to assess the tenders made during the DSM bidding and to measure and verify the savings; (2) managerial skills for the negotiation and conclusion of TPF contracts.
- Like for every DSM activity, a financial incentive alone is not sufficient. A good and professional communication, and a co-operation with partners is needed to get the attention of the target group, in this case medium to large industrial and commercial customers, private energy service companies, and engineering consultants.

6.2.2. Applicability of DSM Bidding in an IRP context

The possibilities for IRP in the future are examined in another paper for this Conference by Thomas et al. In a liberalised market, DSM Bidding as a means to purchase NEGAWatt power and energy conservation is restricted to actors who can fund this in a way neutral to competition. This could be done

- either in a well-regulated transmission and distribution system, where the independent system operator (ISO) aims to match supply and demand in the future. The ISO could implement DSM bidding schemes to acquire DSM as one cost-effective resource for meeting future demands, and the regulator could allow to incorporate the costs into the transmission or distribution prices.
- Alternatively, the state could introduce a levy on energy prices to create an energy efficiency funds (like the Public Goods Charge in California, or similar levies in Denmark, Norway, and the UK), and create an independent energy efficiency organisation (like, e.g., the EST in the UK) which carries out DSM bidding to invest the funds in an efficient way.

In both cases, the DSM bidding could be both a tendering for the implementation of predefined programmes for the promotion of specific energy-efficient end-use technologies (refrigerators of the EU label class A, electronic ballasts ...), and an open DSM bidding for larger DSM projects, thus bringing the benefits of energy efficiency to all customer classes.

In energy markets which still have not introduced retail competition (i.e., in some non-EU countries), this type of DSM implementation can be realised by the existing distribution/supply utilities in an IRP context, like it has been done in the USA.

6.3. Conclusions

Liberalisation of the energy markets tends to focus customers' attention on the price of a unit of energy, at least in the short term. It can be expected that this is rather hindering the development of an energy efficiency services business which should in principle be a profitable way to realise the cost-effective energy efficiency potential for the medium to large customers in the industrial, commercial, and public sectors. A fact supporting this expectation of a negative effect of energy sector liberalisation may be that there are now around 400 companies offering TPF for energy efficiency in Germany, but they are all complaining about slow customer response to their business.

Among these ESCos are a large number of German and international electricity and gas suppliers. They have understood that they have to offer competitive energy prices, but that the offer of energy efficiency services alongside with competitive energy can be decisive for their success in the medium to long term. A successful open DSM Bidding scheme like the one described in this paper is a market -oriented action which can be hoped to increase the customers' attention again for the benefits of energy efficiency in reducing their energy bills, thus reducing the customers' primary focus on energy prices. Furthermore, it can help a utility to develop and start an energy efficiency service business unit and to better tailor the offers of this unit to the technical and economic needs and wishes of their medium to large customers, and differentiated by customer segment.

7 - ACKNOWLEDGEMENTS

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8 - ENDNOTES

1 As the proposal states, member states shall "promote the integration of Demand Side Management options into capacity tendering procedures in the distribution sector where these exists". The European Parliament even called for making this ìcompulsoryî in its resolution of 11/12/96

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