

# DSM in Denmark after liberalisation

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## 1. SYNOPSIS

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After liberalisation and restructuring of the electricity sector, the grid companies still plan to spend 0,6 EURO/MWh on demand side management (DSM) activities. Gas and district heating companies will also work for energy efficiency in the future.

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## 2. ABSTRACT

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The restructuring of the Danish energy sector has not disturbed the political focus on energy savings. On the contrary new laws have been passed that continue the DSM obligations of the electricity sector and place the gas and district heating companies under an obligation to work for energy efficiency. Furthermore, new demands for co-ordination of the many saving activities have been introduced.

The electricity utilities have been split into new companies with new tasks. Non-commercial grid companies, with the obligation to maintain the grid and ensure security of supply to the customers, have been created. These companies are also obliged to continue working for electricity savings.

As a result, the 82 Danish electricity utilities have described their DSM activities for the coming years in “Plan 2000”. One of the main objectives of Plan 2000 was to set standards for “monitoring” the resulting savings. The focus on “measuring” of savings results is connected to the liberalisation, where economic efficiency and feasibility are becoming increasingly important.

A new Energy Saving Act put co-operation between the different supply companies high on the agenda. The law prescribes that the electricity, gas and district heating supply companies together with the municipalities form regional energy saving councils. These regional councils must co-ordinate the activities of the different supply companies. The councils should be functioning by the summer 2001. The companies are currently taking steps to form the councils and define their future tasks.

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## 3. BEFORE LIBERALISATION

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Since the oil crisis in the beginning of the 70's Denmark has had an active and widely accepted energy policy. Over the years, focus has shifted from securing a diversified and economically reasonable energy supply to environmental issues. Energy savings have, through out the whole period, played a major role – first as a means for reducing the dependency on oil – later as a means for reducing the environmental impact of the energy supply.

Energy savings have been promoted through many channels and by many different parties. Subsidies for saving activities and taxes on energy use, as well as information are instruments that have been used often in the Danish energy policy.

Since 1992 the electricity utilities have been obliged to offer demand side management activities. These activities have been offered to all types of consumers – residential, industry, services, small and large etc. All consumers have financed the activities equally over the electricity bill.

The electricity utilities both produced and distributed electricity and this led to discussions about their willingness to work seriously for reducing the electricity demand. Some critics have pointed out a conflict between selling electricity and reducing the demand for electricity – assuming that this would lead to lack of enthusiasm in the energy saving activities. In the political choice between different possible ambassadors for energy savings the utilities' natural close contact to the consumers was regarded as more important than the fear of conflicting interests. This was also heavily influenced by the fact that the Danish electricity utilities were not commercial – but subject to non-profit regulation, and owned by the consumers or by the local municipality.

By giving the electricity utilities an obligation to work with demand side management the government insured that all consumers – regardless of size and geography were offered some kind of advice on energy savings. Typical activities of the utilities are shown in table 1.

**Table 1. Types of electricity utility DSM programmes**

<i>Households</i>	<i>Industry, trade and services</i>
<b>Counselling of individual consumers</b>	
Individual advice and counselling	Individual advice and counselling – energy assessment
Conversion of electrical heating	Advice regarding new installations
Appraisal of electrical heating	Energy management and auditing
Advice on heat pump installations	
<b>General information</b>	
Activities changing energy behaviour	Meetings about energy topics
Education of school children	Show and display rooms
Lending out of meters and low-energy light bulbs	Informative electricity bills
Show and display rooms	
Articles, advertisements, magazines etc.	
PC-programme about energy use and saving	
Informative electricity bills	
<b>Technical campaigns:</b>	
Street lighting	
Standby	
Technology procurement	

The utilities do not have many programmes that involve given direct subsidies to the consumers. Direct financing and installation of appliances is not forbidden, but has only been practised very little. The reason for this is partly tradition, but also the fact that there are a number of subsidy schemes financed by the state and run by the Energy Agency is a reason. Much of the advice and counselling performed by the utilities include promotion of and help to apply for existing subsidies.

In 1996 a new saving promoter – the Electricity Saving Fund – was formed to supplement the activities of the electricity utilities and other actors. This fund was financed by a fixed supplement of 0,008 EURO/kWh from households and public services. Anybody can in principle apply for support from the fund to projects that reduce the electricity consumption in Danish households and services, and if the projects are good enough support will be given. But in reality the fund itself defines and runs campaigns and activities of different kinds. Some examples of activities financed by the Electricity Saving Fund are given in the table 2. The Fund has its own secretariat and board, which administers the money paid by the household consumers and the consumer in the service sector. [REF.1]

**Table 2. Current activities financed by the electricity saving fund April 2001**

Subsidies to end consumers for conversion from electrical heating to district heating or natural gas
The A-club – helping “big buyers” (public companies and household complexes) buy energy efficient appliances.
“Super A” – development of very efficient freezers and refrigerators together with Vestfrost, Danish Technological Institute and Technical University of Denmark
Energy Efficient clothes washing – test of more efficient technologies using hot water in stead of electricity.
Competition on good and efficient “hall lighting” in offices and education buildings.

The Electricity Saving Fund was formed because there was a wish for a new type of energy promotion and new ways of giving subsidies. The main difference between the fund and the traditional subsidy schemes is the use of “auctioning” and other more market based methods for distributing subsidies. Another difference is that the fund, because of its autonomy, to a large extent can choose which methods to use, and can experiment with new methods.

The roles of the different promoters of energy savings have not been described in the laws – and this has at times led to discussions and overlap in the activities of the different parties. There are both examples of well functioning co-operation between the electricity utilities and the Electricity Saving Fund and of competition between the two.

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#### **4. LIBERALISATION AND RESTRUCTURING THE ELECTRICITY SECTOR**

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When the parliament in March 1999 entered an agreement on liberalisation of the Danish electricity sector, it was emphasised that environmental goals and consumer protection were still important goals in the energy policy – and that the future regime should be designed according to these goals. On this background the Danish government proposed a new electricity act, which protects windmills, biomass and small CHP installations, and in which the DSM activities of the electricity companies and the activities of the Electricity Saving Fund were maintained. During the reading of the act it was emphasised that energy savings are still to play a major role in the Danish energy policy. Therefore, existing obligations were maintained and new ones were added.

With the passing of the new Electricity Supply Act on the 2nd June 1999 the Danish parliament started the liberalisation and restructuring process in the electricity sector. [REF.2] The liberalisation of the electricity sector will be fully implemented by January 2003, when all consumers regardless of the size of their electricity consumption will have the possibility of buying power on the free market.

The Danish liberalisation has resulted in a major restructuring process, where one main point of focus is separation of commercial and non-commercial activities in different companies. The former electricity distribution companies are being divided into non-commercial grid companies, commercial electricity trading companies and semi-commercial supply obligation companies, whose role it is to buy electricity on the market on behalf of the customers, who do not want to trade on the market themselves.

The grid companies are responsible for maintaining the distribution grid, ensure security of supply and for distributing electricity to all end users. Because of the natural contact to all users, the companies have been given the obligation to offer non-commercial energy savings advice to all consumers – in other words, continue the DSM activities.

Also the semi-commercial supply obligation companies have been given an obligation to work with energy savings. The supply companies are obliged to offer commercial energy savings counselling to customers who choose to buy electricity from the company.

In the old regime the obligations were formulated broadly, and there were no demands for specific activities. In the new Electricity Supply Act the obligation to offer advice on energy efficiency to all types of consumers has been strengthened. At the same time demands for specific activities have been introduced. All grid companies are obliged to present information about the development of electricity consumption and comparisons with similar consumers on the electricity bills. In the departmental order on energy savings activities it is also pointed out that the grid companies are obliged to offer general information about energy efficiency to all consumers, individual advice to all households. Towards trade, industry and service consumers the grid companies are obliged to take the initiative and offer advice and counselling. [REF.3]

##### **Discussions about grid companies role**

Before and during the liberalisation there have been discussions in Denmark about the future role of the grid companies regarding DSM activities. Some people feel that there is a conflict of interest between working for energy savings and surviving as a grid company. But in this context it is often missed that the grid companies

are still subject to non-profit regulation. The companies are neither allowed to earn or lose money. Any expense must be covered by the payment from all consumers. Economic efficiency is ensured through benchmark regulation by the Danish regulator. The expenditure on DSM is not included in the expenses that will be benchmarked, thus allowing the grid companies to choose their own level of expenditure only limited by the amount of economically efficient activities (see next chapter). The benchmarking on other expenses is done on the basis of the size of the grid and not on basis on the size of electricity consumption in the company's area. Thus a reduced consumption does not reduce the revenue of the grid company.

Another aspect is the ownership of grid companies in Denmark. The grid companies are for the most part owned either by the local municipality or by the consumers. The municipalities are probably more inclined to working loyally to fulfil national policies than private companies would be. The consumer owned grid companies are expected to work for solutions that reduce the costs for the consumers.

One aspect that can result in a conflict of interests is the ownership of the production companies. The production companies are owned jointly by the grid companies. Profit from the production companies can be distributed to the grid companies. So it could be argued that savings would reduce the profitability of the production companies. But as the price of electricity is set on the North Pool, covering Norway, Sweden, Finland and Denmark, a reduced consumption in Denmark will have very little effect on the price, and thereby on the profit of the production companies.

It can be concluded that there is no serious conflict of interests, obstructing the incentives for the grid companies to work on DSM.

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## **5. PLANNING, APPROVAL AND FUNDING OF THE DSM-ACTIVITIES**

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The grid companies are obliged to plan and perform DSM activities directed at all types of consumers: households, trade, industry and services and public administration. Plans for the activities in the coming years as well as an account for the money spent in the last year must be submitted to the Danish Energy Agency every year. Every third year a new plan is made, while the annual plans in between are only supposed to be minor updates and revisions. The plans should describe the activities and the expected cost of each activity for the utility, for the state if the activity involves subsidies, and for the consumers. The account for the past year's activities has to describe the costs and obtained savings for every programme. This is described in a standardised format. The plans have to be co-ordinated between the more than 80 Danish electricity grid companies.

The Danish Energy Agency sends the plan to the Regulator. When the plan has been submitted to the authorities, the costs of the DSM activities can be included in the grid tariffs and are paid by all customers in the grid companies' supply area.

The Regulator monitors the grid companies' use of consumers' money for DSM activities. The size of the grid companies' expenses on DSM activities has so far only been limited by demands for efficiency and cost effectiveness. There has not so far in Denmark been a fixed limit to the amount of money the companies can spend on DSM and it is not expected that such a limit will be set. Nor is the cost of DSM activities included in the expenses of the grid companies that will be benchmarked according to the ministerial order implementing the electricity supply act. This means that DSM expenses can be passed on to consumers in any case, but it is still expected, that the Regulator will monitor the expenses spent on DSM.

There has also been no minimum expenditure requirement, but the Energy Agency has monitored the amount of activities in each company, and low expenditures have been commented. Through there are companies that spend very little on DSM, there are no longer any "black spots" on the DSM map. The new obligations to present informative electricity bills to all consumers, and to ensure that all consumers have an offer of information and advice about energy savings are means of forcing all grid companies to run DSM activities.

The principle in planning DSM activities has always been that the activities should be evaluated according to the social cost of reducing CO<sub>2</sub> emissions. In this way it is only the amount of cost-efficient activities that limits the expenditure on DSM. This principle is maintained in the new system.

### Calculating social costs

The Danish Energy Agency has published a set of guidelines for calculating the social cost of CO<sub>2</sub> reduction. On the cost side all investments, maintenance and operation costs must be included as must all programme costs and all consumer costs. On the profit side the avoided costs for the society are calculated by using a value of electricity. The calculation must be done for the lifetime of the energy efficiency activity and the value of electricity differs over the years. In the first years the value is relatively low, as there is expected to be excess capacity in the region. In the end of the period the price is higher, as it reflects the cost of producing electricity on new gas fired plants – including investment costs. The value of electricity in 1999 was set to 0,019 Euro/kWh increasing to 0,039 Euro/kWh in 2015. The interest rate used is 6%.

The figures used in this calculation can be discussed, but as the same assumptions are used when calculating the social costs of different types of CO<sub>2</sub> reduction activities it is possible to compare different activities and chose the most efficient ones.

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## 6. NEW ACTIVITIES

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The new electricity supply act continues the planning and accounting praxis of the old regime. But the new act also introduces new obligations on the grid companies, e.g. all electricity bills from the grid companies are from 2001 obliged to inform about the last three years' use of electricity, so that the consumer can spot increasing electricity demand. The bills should also compare the consumer's electricity use to the use of similar consumers. These obligations for "informative electricity bills" are not limited to households but should in principle include all types of consumers. This gives some challenges to the grid companies, as it is difficult to find methods for comparing the electricity use of for example different production companies.

General information and education of schoolchildren about energy use and savings possibilities is another task with high priority. This type of activity is explicitly mentioned in the ministerial order, as an activity that is important, in spite that the CO<sub>2</sub> reduction costs is often high.

The new Electricity Act also introduces an obligation and possibility for the grid companies to co-operatively finance research and development activities within the energy saving area.

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## 7. PLAN 2000

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Since 1992, the electricity utilities have systematically planned and performed DSM activities. Since DSM became obligatory in 1992 the utilities have made three DSM plans. The first came in 1995, the second in 1997, and the newest plan was submitted to the Danish Energy Agency in January 2000. With each planning round the ambitions regarding knowledge, planning and monitoring have increased. Through the years the co-operation between the more than 80 Danish electricity utilities about both planning and carrying out the DSM activities has increased.

Many small electricity utilities have joined together in running local Energy centres or have jointly engaged consultants to perform for example energy audits in companies. In this way the small utilities can carry out DSM activities with reasonable cost. Also the planning of future DSM activities has been done in co-operation between the utilities.

The latest plan was made under great uncertainty about the future regulatory system, since the new law from 1999 was still being implemented. But in spite of this the plan is ambitious both regarding the size of the expected savings and regarding the quality of the planning, registration and evaluation of the activities.

The activities in the year 2000 are expected to result in energy savings of 167 GWh in the first year. The average lifetime of the efficiency measures is estimated to be 7,8 years. Over their lifetime, the efficiency measures, that are a result of the activities in the year 2000, will result in savings of 1.300 GWh. This implies that if the same

level of DSM activities is maintained over a number of years, the savings will correspond to 4% of the electricity demand. The figures are presented in table 3.

**Table 3. Activities in year 2000**

Electricity demand	DSM costs	1. year saving	Saving over lifetime	CO <sub>2</sub> reduction	CO <sub>2</sub> reduction costs
33 TWh	55 million Euro	167 GWh	1.300 GWh	0,8 mill. ton	33 Euro/ton

The result will then be a reduction in CO<sub>2</sub> emission of 0.8 million tons per year. The cost of obtaining this CO<sub>2</sub>-reduction is 20 million Euro for the utilities and another 35 million Euro paid by the customers. The average social cost per ton of CO<sub>2</sub> reduced is 33 Euro, which in the Danish context is very reasonable. Using the Danish calculation standard the cost of converting coal-fired power plants to gas would be around 45 Euro/ton CO<sub>2</sub>.

The different activities result in different savings. Some activities result in investment in new household appliances, some result in investment of new production facilities in the industry, and other result in changes in the behaviour towards energy use. The average lifetime of these efficiency-improving measures is calculated to be 7.8 years. This may seem relatively short, but behavioural measures are for example only believed to last a year or two.

The DSM activities are directed at all types of consumers – households, agriculture, industry, trade, service and public administration. There is a big difference between the types of activities. The activities include everything from energy audits in companies - about complicated technical saving possibilities, to brochures to households - about boiling vegetables with little water.

70% of the savings will be obtained within trade, services, industry and agriculture, which corresponds to these sectors' share of the electricity consumption. The rest will be obtained within the households.

**Figure 1. Savings according to consumer types**

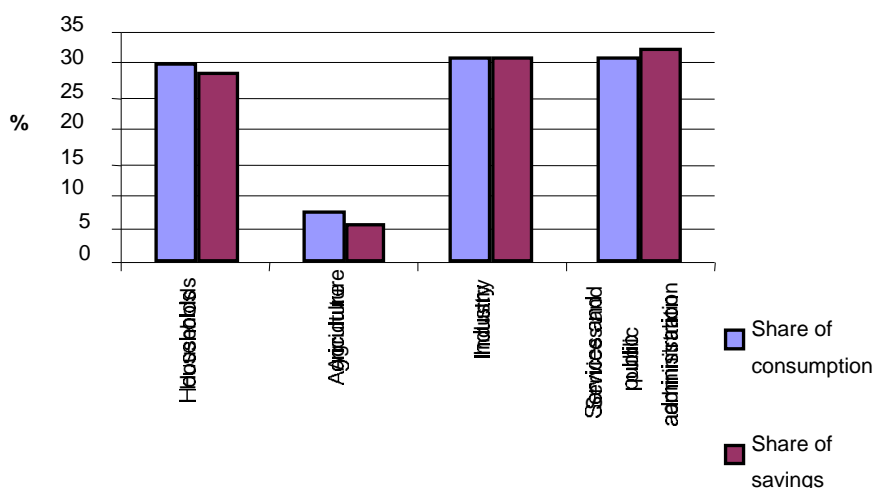


Figure 1 shows the share of savings and share of consumption of the different types of consumers. Electricity savings are obtained in all sectors, and there is little difference between the percentage of savings obtained in the different sectors. This reflects that it is a political priority both nationally and locally to have DSM activities directed at all types of consumers.

The costs of the DSM activities in terms of Euro per ton CO<sub>2</sub> reduced vary between programmes directed at customers with small yearly electricity consumption and customers with big demands. Programmes directed at consumers with a yearly consumption of more than 2.000 MWh have an average cost of 18 Euro per ton CO<sub>2</sub>, while the average cost of programmes directed at consumers with a yearly demand of less than 20 MWh is 57 Euro per ton. See table 4.

Table 4.

	Share of electricity consumption	Share of savings	Social costs (Euro/ ton CO <sub>2</sub> )
0-20 MWh	33%	25%	57
20-100 MWh	15%	15%	43
100-200 MWh	7%	7%	24
200-500 MWh	9%	11%	16
500-2000 MWh	14%	19%	13
More than 2000 MWh	23%	23%	18
All	100%= 33 TWh	100%= 152 GWh <sup>1</sup>	30

<sup>1</sup>First year saving – the result over the lifetime of the saving is 1.189 GWh.

### Better monitoring

One of the main objectives of last year's planning has been to set standards for "measuring" the results - in terms of savings - of the DSM activities. All the DSM programmes have been categorised as either "measurable", "difficult to evaluate" or as "pilot projects". In order to be "measurable" the programmes must typically result in savings involving investments in new appliances or machinery, and there has to be a follow-up procedure in order to register the impact of the programme. Pilot projects are programmes involving new types of activities, where it is difficult to know which impact the programme will have. 80% of the savings included in Plan 2000 will come from programmes that are "measurable".

Auditing and advising industrial consumers about energy savings is a typical example of "measurable" activities. The energy adviser has close contact with the industrial consumer, draws up a plan for investments that should be implemented and calculates the expected saving. After a year the adviser returns to the consumer, and asks which investments have been carried through, and which have not. Thus the assumptions about the savings are based on firm knowledge.

A typical programme that is "difficult to evaluate", is a homepage with information about saving possibilities. The amount of visitors can be monitored, as can the costs of creating and maintaining the page, and these figures can be compared between the companies. But it is very difficult or costly to monitor, what the consumers do after visiting the homepage – this is based on assumptions.

Another objective of the planning has been to insure that all utilities use the same assumptions about the impact of similar programmes. This objective has resulted in formulating a number of "model programmes" covering types of programmes that many of the utilities have. So far nine "model programmes" have been created for the domestic sector. In this sector, the uncertainty about the impact of a DSM programme is large, and is often connected to lack of knowledge about what the customers do, once they have received advice about savings. Monitoring the effect of domestic programmes is resource demanding, as each domestic consumer has only a small potential for savings, and follow-up by contacting each consumer can be unreasonably expensive. It is therefore important to have good assumptions about what the domestic consumers do, when they have received advice. In table 5, the model programmes in the Plan 2000 are presented.

**Table 5. Model programmes for household activities**

Advice by telephone
Public Energy Efficiency Meetings (inviting consumers to attend)
Education of school children
PC-programs registration energy usage
Homepage
Informative electricity bills
Regular meetings for consumers with larger than average electricity demand
Lending out appliances

For example a “model programme” has been made on lending electricity meters to households – here the critical parameters are how many of the consumers who lent a meter actually react and what do they do. The assumptions are that 12 % of the customers who lend a meter buy a new more energy saving device, while 5% of the consumers change their electricity use habits (turn out the light etc). The assumptions are based on the broad assessment made by a group of experienced energy advisers. By creating this model programme, the differences between the assumptions made in the different grid companies’ plans were reduced, making it possible to compare costs and efficiencies. In order to get more correct or verified assumptions it would be necessary to interview a large number of customers. As each customer only saves a little amount of electricity this would be very costly. More thorough surveys have not been done yet.

Within the trade and industry the most critical parameter in measuring the impact of savings is the lifetime of the energy efficiency investments. The technical lifetime of a specific appliance or machinery is the upper limit of the possible lifetime of the savings activities, but often machinery is replaced for economic reasons before it is technically run-down, or production is closed down or moved. Estimating the lifetime of savings is important, but also very resource demanding for each electricity utility to do on their own.

Another difficult parameter is setting the reference scenario - the “what would have happened if there was no DSM activities”. Setting these difficult parameters has been in focus in the Plan 2000 and will continue to be in focus in the coming years’ planning.

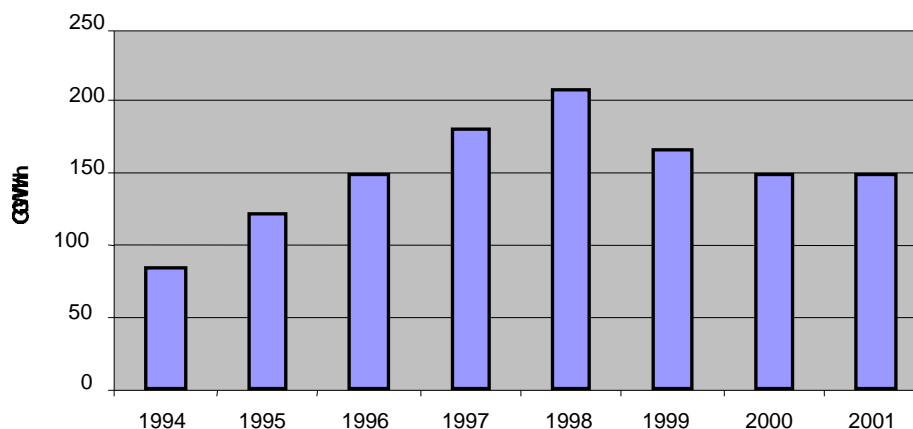
### **Costs and efficiency become more important**

In the liberalised market, there will be increasing interest in the expenses of also the grid companies. It will therefore be increasingly important to be able to document the effect of the DSM activities. The Danish electricity grid companies will continue to develop the DSM planning and monitoring, and have to this effect decided to form a joint secretariat which is to advise and help all companies in the future planning rounds. This is a natural result of the expectations about better planning and increased professionalism, which has characterised the DSM work since the beginning in 1992.

As a result of the better planning, greater experience in running the activities and better registration, the amount of savings due to DSM activities have increased over the years. Figure 2 shows an increase in saving from 1994 to 1998 – this increase is due to increase in DSM activities. The figure also shows that the expected saving is smaller in 1999 and 2000 than the realised saving in 1998. This is more due to change in the methods of calculations than it is a result of less activity. The focus on better monitoring and realistic calculations has decreased the expected savings of each activity.

The figure shows the registered savings in the first year, due to the activities in the specified year. Most of the DSM activities result in savings, which last more than a year - typically 5-10 years - and thereby the resulting reduction in the electricity consumption is larger than shown in the figure. A lot of uncertainty is connected to estimating the lifetime of savings – therefore first year savings give the best basis for comparing.



**Figure 2. First year savings (planned for 1999-2001)**

The total Danish electricity consumption has in the period 1992-1999 - in spite of the savings activities - increased with 7.6 % to 32,4 TWh, but from 1996 to 1999 the electricity consumption has almost been constant, with only an increase of 0,6 % over the three year period.

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## 8. NEW PERSPECTIVES - GAS AND HEAT

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New acts on gas and heat supply, which were passed in May 2000, open new perspectives for co-operation between the energy distribution companies in Denmark. As a part of the liberalisation of the gas sector and adjustment of the district-heating sector to the liberalisation of the electricity sector, the parliament has for the first time introduced obligations to work with energy savings on the gas- and district heating companies. According to the acts, the gas and district heating companies are to plan and perform DSM activities in the same way, as the electricity companies have been doing since 1992. This is a new priority in the Danish energy policy, and by introducing this regulation a large part of the end-use of energy is covered by DSM activities, which is expected to result in substantial savings. At the same time the grid companies' knowledge about consumption of energy is being used for savings purposes. The only end-use of energy that is not yet covered by DSM activities is oil consumption and energy for transport purposes.

The obligation to work with DSM imposed on the gas and district-heating companies also opens new opportunities for co-operation between electricity, heat and gas companies. The possibility for co-operation is highlighted in a new Energy Savings act, also from May 2000, which introduces regional energy savings councils, in which the DSM activities of the three types of supply companies should be co-ordinated with the participation of the community and local organisations working with energy savings.

The electricity grid companies, the district heating companies and the gas companies all have to participate in the councils and have to pay a secretariat function. The local municipalities can participate and are obliged to follow the work in the councils. The councils are open for participation for private companies and organisations of consumers and organisations of trade and businesses, environmental NGOs etc.

The councils are to discuss and co-ordinate the DSM activities of the electricity, district heating and natural gas companies, but these companies are not obliged to follow the decisions of the councils. Whether or not this will lead to conflicts is difficult to know, but the councils offer a unique opportunity for co-ordination and for inspiration from outside the energy businesses.

With the new Energy Savings Act it will be possible for the communities to prioritise the different energy savings activities within the community, while using the expertise of the distribution companies.

According to the regulation, the new regional savings councils should have been formed in the fall of 2000 and should be in operation in the spring of 2001. In the summer of this year the Energy Agency will do a survey of the number of councils and their coverage of the country.

Councils are therefore being formed all over the country – in most cases it is the electricity companies and the gas companies which have taken the initiative and invited to start up meetings. The district heating companies have been reluctant to participate. This reluctance is partly due to uncertainty among the companies about the future role and especially about the financing possibilities. But properly the fact that many district heating companies are very small with only a few hundred consumers also plays a major role. The problems of finance and defining and explaining the role of the district heating companies are being discussed between the organisations of district heating companies (DFF<sup>1</sup> and DKV<sup>2</sup>) and the Energy Agency – and different possibilities for representation of the smallest companies are being explored.

So far it is difficult to say whether or not the communities and other actors will play an active role in the councils. It is also difficult to say whether or not the councils will lead to a change in the type of DSM activities that the energy companies offer. But the forming of the councils has already led to more co-operations between the gas and electricity companies, and will lead to co-operation with the district heating companies.

This implies that the subjects that will be in focus in the coming years are advice involving all energy types directed at the consumers and co-ordination of general information about energy savings also covering both electricity, heat and gas. Just as the councils make it more natural for the different energy companies to work together on planning and monitoring issues.

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## 9. REFERENCES

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Ti-års statistik, Danske Energiselskabers Forening, December 2000.

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## 10. END NOTES

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<sup>1</sup> Danske Fjernvarmeværker Forening – [www.fjernvarmen.dk](http://www.fjernvarmen.dk)

<sup>2</sup> Foreningen Danske Kraftvarmeværker