

LEGISLATIVE REFERENCE LIBRARY
TH7641 .M56x 1983
Minnesota. Dept. - Minnesota state plan to implement



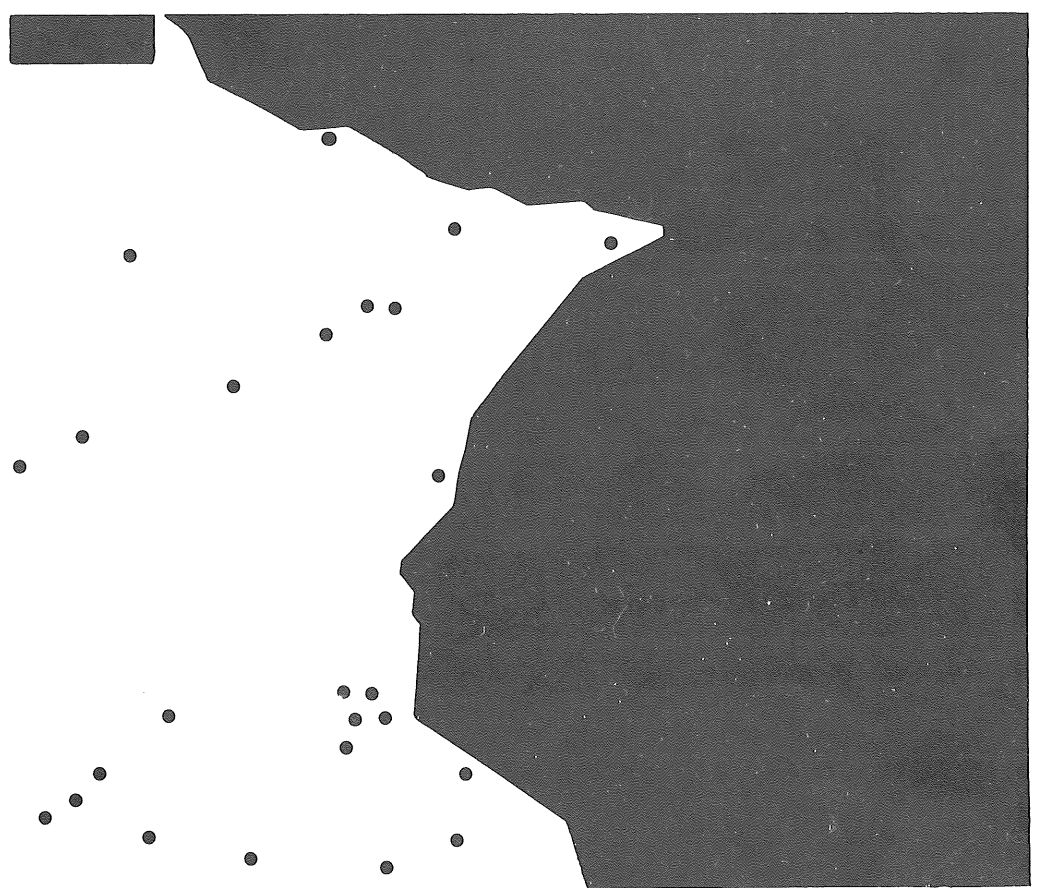
3 0307 00063 1724

830628

2 copies

MINNESOTA

Minnesota State Plan to Implement District Heating



TH
7641
.M56x
1983

Submitted to the
Department of Energy
March 1983

MINNESOTA STATE PLAN TO
IMPLEMENT DISTRICT HEATING

FINAL REPORT

Energy Division
Department of Energy, Planning & Development
150 East Kellogg Boulevard
St. Paul, Minnesota 55101

March 15, 1983

Prepared for
The U.S. Department of Energy Under
Contract No. DE-AC02-80CS-24360

FOREWARD

District heating can make a major contribution to our nation by reducing the demand for oil and natural gas and providing stable low cost heating to our communities. A district heating system is a community resource. It stabilizes the local economy by providing incentive for community economic development, and revitalization of downtown areas.

The State of Minnesota could not have taken the lead in district heating nationwide without forging a partnership with federal and local government, the legislature, private business, community organizations and the many citizens serving on advisory and evaluation committees.

DOE funds provided impetus for the State to determine our potential for district heating, assess existing steam systems, assist cities with their planning efforts, and develop demonstration projects which will serve as an example for the rest of the nation.

As a result of the work done as part of the State Plan, over 20 cities in Minnesota have started to assess the potential for district heating in their communities. This is only the beginning. In the next 10 years, many district heating projects, both large and small, public and private, will be constructed in Minnesota.

We hope this State Plan, which we developed to assist the communities in Minnesota, will serve as a model and inspiration for other cities and states across the country.

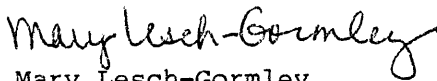

Mary Lesch-Gormley
District Heating Programs Coordinator

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	TECHNICAL RESEARCH	3
III.	TECHNICAL ASSISTANCE	5
IV.	PUBLIC INVOLVEMENT	8
V.	LEGISLATIVE INTIATIVES	9
	Overview	9
	Preliminary Planning Grant Program	9
	Bonding Bill	12
VI.	MARKETING	15
	State Plan Final Report	15
	Distribution of the Guidebook	16
	Targeting Communities with District Heating Potential	16
	District Heating Outreach	17
	Preliminary Planning Grant Follow-Up Services	17
VII.	APPENDIX	19
	Preliminary Planning Grant Rules (Permanent)	
	Design Loan Rules (Permanent)	
	Construction Loan Rules (Temporary)	
	State District Heating Bonding Bill	
	Summary of District Heating Preliminary Planning Grant Projects	

INTRODUCTION

Minnesota is a State with no native fossil fuel supplies. It became painfully aware of its vulnerability to energy supply disruptions during the 1973-74 energy crisis. To avoid a repeat of that trouble the 1974 State Legislature created the Minnesota Energy Agency (MEA).

MEA's task was to determine how the State could conserve energy and reduce its reliance on insecure fossil fuel supplies. In its first Biennial Report to the Legislature, MEA identified district heating as one means of reducing Minnesota's use of fossil fuels.

MEA's endorsement of district heating did not signal the advent of a concept new to Minnesota. In the 1930's, the State had 30 steam district heating systems. These were especially prevalent in the communities of the Iron Range, where they were considered simply another utility service. They were called "city heat systems."

As inexpensive oil and natural gas became increasingly available, district heating systems became less competitive and economical. As a result, there has been almost yearly abandonment of systems around the State. Currently only 14 steam systems are in operation. However, these systems are old and in need of improvements.

MEA concluded that state assistance would be needed to salvage the district heating operations which remained, and to establish a new district heating industry in Minnesota. The structure of such a new industry would need to have the capacity to recognize where the potential for district heating is greatest, and be able to provide technical assistance to communities in feasibility assessment, system design, financing strategies, regulatory requirements, and institutional barriers. In addition, it would have to do so at moderate costs so that cities would be willing to undertake the initial exploration of district heating feasibility without risking large amounts of money.

MEA developed the "Minnesota State Plan to Implement District Heating". This document provided a cohesive framework upon which MEA could develop its various projects to aid implementation of district heating in Minnesota communities.

The Energy Division of the Department of Energy, Planning and Development (DEPD) (formerly the Minnesota Energy Agency) sought to boost district heating by establishing several projects which could provide both an opportunity to observe district heating development and also nurture early district heating expertise. The projects developed by the Energy Division were aimed at reducing the risk of implementing district heating.

The Energy Division staff realized that communities needed financial assistance to plan, design and construct district heating systems. In addition, cities needed technical assistance during the initial planning phase of development.

In response to these needs, the Energy Division created three mechanisms to assist communities and promote district heating throughout the state. One of the financial mechanisms was a \$300,000 Preliminary Planning Grant Program passed by the 1981 legislature. The second financial mechanism was a \$50 million bonding program that allows communities to borrow up to 90 percent of their design and construction costs from the State. The third device to reduce community risk is a workbook that explains the stages of district heating development and discusses some of the issues a community must address when examining the feasibility of implementing district heating locally. These mechanisms are discussed in detail in later sections of the report.

TECHNICAL RESEARCH

In order to determine the potential energy savings district heating offers to Minnesota Communities, it has been necessary to carry out a wide spectrum of technical research projects to shed light on a variety of issues. Technical research is a necessary first step for developing district heating. It not only offers access to information for localities and their potential for district heating, but also provides the opportunity to investigate new technologies. In 1977, DOE sponsored a project which analyzed the feasibility of district heating development in the Twin Cities. This investigation of hot water cogeneration district heating was conducted by the Swedish firm of Peter Margen of Studsvik Energiteknik. The objective of the study was to determine the economic feasibility of district heating in a northern U. S. city, and it resulted in DEPD recommending St. Paul as a site for a pilot study.

A 20 year planning implementation period for this project envisions an eventual Twin Cities system with a total thermal demand of 2,600 to 4,100 MW. This system would provide up to an 85% reduction in scarce fuel use by its customers. This would be equivalent to 31 million barrels of oil or greater--enough to heat 200,000 homes annually.

The City of Moorhead was the subject of another study. The district heating market in Moorhead is composed primarily of two colleges, who would comprise almost 50% of the heat load for the system. Contracts with both engineering and economic consultants were sponsored by DOE.

Moorhead, located across the Red River from Fargo, N.D. saw a district heating system as a way to provide an economic advantage to businesses undecided on which state to locate in. The presence of a district heating system would assure an inexpensive, reliable energy source.

The City of Red Wing was also a recipient of DOE funds for the study of a district heating system. Red Wing's city government worked with DOE, DEPD, and private consultants to investigate a steam/hot water hybrid district heating system. Eighty-five percent of the annual load consists of two industrial users, who would utilize a steam main directly from the NSP Power Plant in Red Wing beginning in Fall 1984. The nearby downtown would be served by a hot water system fueled by a converter station on the steam line. Approximately 60 to 70 businesses are expected to hook up in fall 1985.

Using the information gained in Moorhead, Red Wing and St. Paul the Energy Division decided to develop a workbook to assist other communities in developing district heating projects.

TECHNICAL ASSISTANCE

Guidebook

District Heating Planning in Minnesota: A Community Guidebook was developed to promote district heating in Minnesota by making available basic tools, resources, and educational information about district heating. It constitutes a resource manual for municipal officials and others interested in the investigation of district heating potential in their communities. These may include mayors, council members, community development directors, administrative personnel, city engineers, municipal utility managers, other community leaders and interested individuals. It has been assumed that these people have limited or no prior exposure to district heating.

The guidebook responds to a community's district heating development needs in three areas. First, it provides basic information and a self-evaluation questionnaire with which a community may determine without any expenditures or extensive work effort whether conditions in the community are favorable for district heating. Second, the guidebook outlines a process and the tools necessary for a community to undertake a preliminary assessment at the local level without outside consultation. Third, the guidebook describes a methodology for undertaking the conceptual design and economic feasibility of a district heating system, requiring expert consultation, and leading to a community decision about designing and constructing a system.

Indicative of the need for such a guidebook was the lack of response to DEPD's solicitation for assistance in writing the guidebook. Only four firms submitted proposals, three of whom had gained district heating expertise through prior work with DEPD. Thus, if consultants feel they have inadequate knowledge of district heating, DEPD could only surmise the lack of district heating awareness on the part of community officials.

The Energy Division wanted a consultant experienced in dealing with small communities and capable of assisting communities in making economic decisions. The past experience of Planning and Management Services, Inc. (PMS) team members indicated fulfillment of the requirements. The team consisted of Mike Barnes of Scantec Inc. (formerly with KVB Engineering), Carrol Easton, a private consultant to the St. Paul project, Lloyd Graven, Graven & Assoc., and Lee Anderson of PMS, a subsidiary of Ellerbee, Inc.

This project assessment workbook was developed to provide assistance to communities to conduct heat load surveys and the preliminary engineering and economic assessment needed for a community to determine whether a district heating system is feasible for them. The Energy Division will use the workbook as both a management tool for the state district heating grant and loan programs and as a technical tool to assist communities in applying for these programs.

The preparation of this guidebook occurs at a time when significant events in district heating are underway both in Minnesota and across the nation. The results of district heating development projects now in the planning and construction phases will add greatly to the base of knowledge available. New legislation, changes in tax rulings, revised policies, fuel price changes, and the experience gained on completed district heating projects may significantly alter the accuracy of portions of the guidebook materials, especially the most crucial aspects of district heating development, the ownership and funding questions.

Additions and changes will be made in the guidebook contingent upon further funding. As major issues are identified by communities using the guidebook, they will be incorporated into a modified edition. Particular attention will be paid to the twelve planning grant cities currently being used to field-test the guidebook.

Modifications to the guidebook might include new financing strategies, changes in tax rulings, case studies of systems actually constructed, and the possibility of using refuse-fired district heating systems as a means of solving landfill problems. The latter point has proven to be a real concern of communities and a prominent cause of many inquiries into district heating.

A copy of District Heating Planning in Minnesota: A Community Guidebook is enclosed with this report.

PUBLIC INVOLVEMENT

Because hot water district heating is an emerging technology in the U.S., the Energy Division worked with a wide range of federal, state and local government officials and agencies, as well as organizations and community groups to receive public input into the district heating development process.

In the fall of 1980, individual cities formed a task force which was sponsored by the League of Minnesota Cities. The objective of the task force was to draft district heating legislation. This task force consisted of mayors, planners, utility superintendents, and others from both large and small communities throughout the state. They represented communities with existing steam systems, proposed new hot water systems and combinations of the two.

In December 1980, the League was one of the leaders in developing 13 proposals for the HUD sponsored preliminary planning grant program. The League helped identify potential projects and encouraged these communities to apply. They provided communities with technical assistance in developing grant applications. Unfortunately none of these communities received funding.

In May 1981, 15 persons representing various sectors of the communities were selected to assist with the development of the guidebook. The primary objective in selecting advisory committee members was to involve state agencies and organizations that normally assist communities with economic development projects, and persons currently or previously involved in district heating projects. A few representatives from private financial institutions were also included as members.

The advisory committee met monthly for six months and reviewed sections of the guidebook as it was developed. Because these people regularly work with local governments, they knew how both large and small communities would react to the guidebook and what questions readers might have. With their insights, comments and criticisms the advisory committee members proved to be most helpful.

LEGISLATIVE INITIATIVES

Overview

At the request of Governor Quie, the Energy Division developed a legislative proposal for the 1981 state legislative session that would assist communities with district heating development. This program included assistance at each step of project development from preliminary planning through design and construction. During the 1981 legislative session, the DEPD worked with the House and Senate energy committees and the Department of Administration to develop the final legislative package. The League of Minnesota Cities also played a very active role by forming and leading a district heating task force composed of mayors and representatives of fifteen cities in the state. This task force reviewed the legislative proposals, made suggestions, and worked with legislators to obtain support for the legislation. The legislation was authored in the House of Representatives by State Representative Gordon Voss and in the Senate by State Senator Hubert Humphrey, III.

The legislation was broken into two parts: 1) a program that will provide grants of up to \$20,000 to communities for preliminary planning of district heating projects, and 2) a loan program to allow communities to borrow up to ninety percent of the design and construction cost of district heating development. Administrative rules for both pieces of legislation have been developed by the DEPD. Permanent rules were developed for the grant program and temporary rules were put into place for the design and construction loans. The temporary rulemaking process allows current projects to borrow money now, when they need it to meet schedule deadlines, rather than wait until permanent rules are in effect. A copy of the rules is included in the appendix of this report.

Preliminary Planning Grant Program

The legislature appropriated \$300,000 to the DEPD for grants to communities to develop preliminary plans for district heating projects. The Energy Division

selected and followed the non-controversial rulemaking process in developing permanent rules for the Preliminary Planning Grant Program. This process does not require a public hearing, however, the Energy Division is required to solicit extensive outside opinion to develop the rules. Both draft rules and proposed rules must be published with sufficient time allowed for public comment. If during the comment period, the Energy Division receives seven or more written objections to the proposed rules, the process changes; the rules are considered controversial and must go before a hearing examiner.

Development of the rules for the Preliminary Planning Grant Program took 6 months. Because of the non-controversial process, a great deal of time was spent discussing the proposed rules with City Councils, Economic Development Councils, Municipal Utility Commissioners, District Heating Task forces, and other groups. The agency received only 3 comments and therefore was able to complete the process without going through the hearing examiner.

Because the League of Minnesota Cities has a broader relationship with Minnesota communities, the Energy Division asked the League for their assistance with this program. The Energy Division served as technical advisor to the League in evaluating and processing grant applications.

In December 1981, the League received \$200,000 from the DEPD to be distributed as grants to local governments. The remaining \$100,000 in grant money was lost in State budget reductions.

The grant program was announced by letter to all member cities of the Leagues 778 communities on November 18, 1981. To maximize participation in the program, applications for individual grants of up to \$20,000 were accepted every two months. Communities not selected in one funding cycle received letters on how to improve their applications and could then resubmit their applications for consideration in another funding cycle.

Applications for Cycle One were due December 28, 1981. The DEPD received 13 proposals from communities throughout the state. The proposed systems varied from the conventional steam system to extracting heat from an abandoned iron mine. Heatloads ranged from 3 MW to 235 MW. The DEPD recommended Ely, Grand Marais, Minneapolis, and Rochester for funding based on the criteria listed in the program rules and the completeness of their applications.

Cycle Two applications were due March 1, 1982. The DEPD received eleven proposals and recommended seven for funding. Those seven included Bloomington, Duluth, Fairmont, Grand Rapids, Hibbing, New Brighton and Willmar. The proposals from Bloomington, Grand Rapids, New Brighton, and Willmar were submitted in Cycle One but not funded. The Energy Division staff then worked with these cities to improve their applications and as a result the cities were funded in Cycle Two.

Cycle Three applications were due June 7, 1982. Three proposals from communities that had not applied in either of the first two cycles were received. It is assumed this is because only \$9,000 remained in the grant appropriation. The funds were awarded to International Falls.

The proposals were reviewed by an evaluation committee consisting of 6-8 members of the following organizations: American Society of Civil Engineers, American Institute of Architects, Minnesota Planning Association, League of Minnesota Cities, Minnesota Pollution Control Agency, and the DEPD.

The committee members ranked the proposals according to the criteria listed in the program rules and made recommendations to the director of the DEPD. The director made recommendations to the Legislative Advisory Committee (LAC) and the LAC advised the Governor. On March 23, 1982, the LAC and the Governor approved all eleven recommendations from both Cycle One and Cycle Two. The Cycle Three Grant was approved at the June 23, 1982 LAC meeting.

The communities started their feasibility studies in June and July of 1982 and have up to one year complete their work. A brief summary of funded projects is included in the appendix.

If preliminary planning grants become available on a nationwide basis or in other states, DEPD recommends that the grants be awarded in cycles. This assures that those communities with deficiencies in their applications but with basically good projects are not permanently rejected. The approach has been well received by all the cities that applied. In most cases, cities welcomed comments on their proposals and resubmitted them in another funding cycle. DEPD's approach was that as the quality of the applications is improved, it assures that public money is spent more effectively.

If DEPD runs this program again, three month cycles may be used, since the proposals must be approved by the Legislative Advisory Committee (LAC) and Governor, and the LAC meets only quarterly.

The purpose of the LAC is to advise the Governor on financial matters when the legislature is not in session. The committee consists of the chairmen of the tax committees in both the House and Senate, the chairmen of the Finance Committees in both the House and Senate, the Finance Commissioner, and the Governor.

Bonding Bill

Another mechanism to assist communities in reducing the risk of implementing district heating is the bonding bill. Because district heating projects are highly capital intensive, the purpose of this bill was to assist cities in financing the first few district heating projects in the state.

The District heating bonding bill provides \$50 million from State general obligation bonds for loans to communities for design and construction of district heating systems. The interest rate will be the same as that of the state bonds.

Communities will repay the loans over twenty years. The loan principle can be deferred for six years to ease cash flow during the early years of system development. After the sixth year, the loans would be repaid on a twenty-five year payment schedule with a balloon payment at the end of the twentieth year.

The bill provides loans for fifty percent of design costs for cities of the first class (Minneapolis, St. Paul, and Duluth) and ninety percent of design costs for all other cities. It also provides loans of up to fifty percent of construction costs for cities of the first class, eighty percent for cities of the second class and ninety percent for all other cities.

In Minnesota, cities of the first class are defined as those cities with populations greater than 100,000. Second class cities are from 20,000 to 100,000 people, third class are 10,000 to 20,000 and fourth class are those with less than 10,000 people.

To qualify for a district heating construction loan, a city must demonstrate that the project is economically and technically feasible. They must also demonstrate that adequate provisions have been made to assure proper and efficient operation and maintenance of the project. The security the city must pledge for the loan depends on the economic viability of the project and can vary from project revenues to an ad valorem tax on the city.

The Energy Division is directed by legislation to develop the administrative rules necessary to implement this law and is authorized to develop temporary rules to allow current projects to proceed. Under existing rules, the loan application is made to the Energy Division. The Division prepares and transmits supporting material to the legislative advisory committee. The governor directs the commissioner of finance to make loans to communities upon the recommendation of the legislative advisory committee.

To date, two cities have applied for design loan money. In November, 1981 the Willmar Municipal Utilities Commission submitted an application for \$191,000

to convert 76 customers in the downtown area from steam to hot water district heating. The City of St. Paul also submitted an application in November for a \$500,000 design loan. Both applications were reviewed by the LAC and approved by the Governor at the December 8, meeting.

In April 1982, the Willmar Municipal Utilities Commission withdrew their application for a design loan. The City of Willmar decided to issue general obligation bonds supported by utility revenues for both design and construction of the system.

The reason Willmar and other cities such as Hibbing and Duluth are not using the bonding bill is that the State has taken a very cautious financial position. It was determined by the Legislature and Governor in the 1981 session that the district heating bonding bill could not impact the general fund. Therefore, the State is requiring nearly the same guarantees as the City would need if they sold general obligation bonds. This makes city general obligation bonds almost as competitive.

Other factors that discourages cities are that the State requires them to borrow an additional 20 months debt service payment to be placed on reserve with the State. In addition, the Governor wanted to require an ad valorem tax which the cities strongly opposed. Consequently, the Governor said he would not require an ad valorem tax but if cities missed a payment, the payment would be taken out of their state aid.

The bonding bill was developed by DEPD based on state practices. These practices appear to be too strict for some cities and DEPD is examining ways to rectify this problem.

At the present time, there is a gap between the planning grants and the bonding bill. Most of the 12 Preliminary Planning Grant cities have found that the \$20,000 planning study will not provide them with all the data required for the design loan application. The Energy Division is currently exploring ways to fill this gap.

MARKETING

While the benefits district heating offers to Minnesota are obvious, the means of convincing communities to install district heating systems are less so. The complications of district heating are not technological in nature; rather they are institutional, financial, regulatory, and political.

The Energy Division plans to sponsor a wide range of services, studies, materials, and meetings to help not only gain a better understanding of the barriers district heating faces, but to spread understanding of these to communities interested in installing district heating.

Several projects have been planned for the upcoming year. These range from programs which are extensions of current projects, to hybrid programs, to new projects which open new methods of realizing the potential for district heating in Minnesota communities. Realization of these planned activities is pending further financing, due to the lack of sufficient funds in the current district heating budget. Following are brief descriptions of the planned activities.

State Plan Final Report

One of the fundamental tasks to be completed is a final report on Implementation of District Heating in Minnesota (The State Plan). While one primary incentive for this task is to fulfill the requirements of a contract with the U.S. Department of Energy, it will also be a valuable resource for DEPD. This will primarily be a research project involving a compilation of the sections, figures, facts, and findings along the way to implementing the State Plan.

A prominent feature of the State Plan is the workbook District Heating Planning the Minnesota: A Community Guidebook, created to assist district heating development in Minnesota communities. A copy is enclosed.

Distribution of the Guidebook

DEPD will work to build capacity within existing organizations to help deliver the guidebook to communities. This will be done through networking with other organizations holding close ties to Minnesota communities and leaders. The Regional Development Commissions, League of Minnesota Cities, Minnesota Planning Association, and International District Heating Association-Upper Midwest Section are examples of such organizations. The purpose of using these organizations is to market the guidebook as a planning tool and to develop technical assistance networks.

DEPD intends to solicit aid from these groups by scheduling presentations about the guidebook at their meetings, and placing articles in their newsletters and other publications. After networks have been established, the Energy Division will schedule workshops to provide training on the use of the guidebook to members of these associations. These workshops are designed to be presented to audiences with an interest in using the Guidebook to help their clients explore the possibility of district heating. We have selected these planning organizations to reach a larger group than would be possible through on-site visits to individual cities.

The workshops will allow DEPD personnel to explain the planning process and apply this process to a hypothetical city. Such training will provide DEPD with sound technical assistance for supporting development of district heating statewide.

Targeting Communities with District Heating Potential

This will involve utilization of existing software to identify communities with district heating potential. To date, two potential programs have been identified. One is at Argonne and one at Brookhaven National Laboratories. We

are continuing to research other government programs as well as programs in the private sector.

DEPD personnel will either use this model as is or will use it as an example to create a similar model calibrated to the characteristics of Minnesota communities. This model will allow DEPD to identify individual communities that are likely to succeed in installing district heating systems and will provide data on the potential for district heating throughout the State.

Those communities that are identified as having potential for district heating will be contacted by Energy Division staff and basic follow-up services will be provided by either DEPD staff or by the network organizations that have been established.

District Heating Outreach

Closely tied to targeting communities is the district heating outreach program. As a sequel to targeting, district heating outreach will identify three communities as having the greatest potential for district heating using the computer model. The Energy Division will provide intensive staff services to assist these community leaders to promote formal explorations of district heating potential within their communities.

Preliminary Planning Grant Follow-up Services

To further complement the district heating program, the Energy Division has three projects proposed. These projects are outlined below:

- * On-Site assistance to the 12 communities that received district heating planning grants. This assistance will help communities proceed to the construction stage and also develop case studies on the economic potential of the grantees to successfully implement district heating.

* A workshop for the 12 preliminary planning grant communities to allow them to learn about each other's projects and discuss problems and solutions. After short presentations from each community, small groups will be formed to generate in-depth discussions of various issues such as burning solid waste, selecting piping, financing, ownership, and others.

* A financing workshop will also be held. This is primarily intended for preliminary planning grant communities who need assistance in getting to the next step. The workshop will include consultants and speakers familiar with existing financing strategies and creative options available for funding projects.

The above projects would allow DEPD to continue its efforts to provide Minnesota communities with incentives, experience, information and support in developing community based district heating systems. As more systems are developed in our state, more information will become available and the nation as a whole will benefit. However, DEPD is plagued by lack of funds and will only be able to perform the services described in the Marketing Section if funds become available.

District Heating is a well-proven technology of obvious merit to Minnesota. Delaying it's development will impede Minnesota's ability to reduce imports of expensive, non-renewable, and unpredictable energy sources.

1 Rules as Adopted

2 6 MCAR S 2.4001 Authority and purpose.

3 A. Authority. Rules 6 MCAR SS 2.4001-2.4007 implementing
4 the district heating preliminary planning grants program are
5 promulgated by the agency pursuant to Laws of 1981, ch. 356, S
6 30.

7 B. Purpose. The objective of the district heating
8 preliminary planning grant program is to encourage the
9 development and expansion of economically viable district
10 heating systems which have the potential to save energy and
11 displace scarce fuels such as oil and natural gas. The program
12 shall encourage: construction of new hot water district heating
13 systems; reconstruction or major expansion of existing steam
14 district heating systems; and expansion of district heating
15 systems by development of satellite systems or heat islands
16 which could be connected to an existing or proposed major
17 central heating system later.

18 6 MCAR S 2.4002 Definitions. For the purpose of 6 MCAR SS
19 2.4001-2.4007 the words or terms defined in this rule have the
20 meanings given them.

21 A. Agency. "Agency" means the Minnesota Energy Agency.

22 B. Applicant. "Applicant" means a municipality as defined
23 in F. as well as any organization submitting a joint application
24 with the municipality. No application shall be accepted unless
25 submitted by a municipality as sponsor or co-sponsor.

26 C. Community heatload survey and map. "Community heatload
27 survey and map" means a description of the district heating
28 market including location of heat source, location, type and age
29 of heating systems of potential nonresidential customers, annual
30 energy consumption and temperature requirements and approximate
31 load duration for process heat customers.

32 D. Director. "Director" means the director of the Minnesota
33 Energy Agency.

34 E. Major central system. "Major central system" is one that
35 does not rely on oil or natural gas.

1 F. Municipality. For purposes of applying for grants under
2 this program, "municipality" means a city however organized.

3 G. Project. "Project" means the preliminary planning
4 project.

5 H. Satellite or heat island. A "satellite or heat island"
6 system relies on oil, natural gas or the combustion of waste
7 material and is a heating system which in the future would
8 become a part of a major central system.

9 6 MCAR S 2.4003 Preliminary planning grant program.

10 A. Application schedule. The agency shall accept grant
11 applications on two-month intervals after the effective date of
12 6 MCAR SS 2.4001-2.4007. Applications received shall be ranked,
13 and the director shall recommend ranked applications which meet
14 all the criteria to the legislative advisory committee for
15 approval and funding. No municipality shall be awarded more
16 than two grants out of the same appropriation.

17 B. Review process. Applications shall be reviewed and
18 ranked by the agency. The director shall prepare and submit to
19 the legislative advisory committee a list of all district
20 heating grant requests. The list shall contain the necessary
21 supporting information. The recommendations of the legislative
22 advisory committee shall be transmitted to the Governor. The
23 Governor shall approve, disapprove, or return for further
24 consideration each project recommended for approval by the
25 legislative advisory committee. Upon approval by the Governor,
26 a grant agreement shall be negotiated with the agency in
27 accordance with 6 MCAR S 2.4006. Comments on applications not
28 selected for grant awards shall be forwarded to the applicant.
29 Applications not funded shall be included in the next funding
30 round unless withdrawn. Applicants may modify or supplement
31 their proposals for the next funding interval if desired.

32 6 MCAR S 2.4004 Contents of preliminary planning grant
33 applications. Applications shall contain the information
34 required by Laws of 1981, ch. 356, S 30, and at least the
35 following information:

1 A. A community heatload survey and map. The survey shall
2 contain a description of the heat source and an estimate of the
3 district heating market.

4 1. If plans call for an existing heat source such as an
5 electric generation plant or a coal-fired boiler, the
6 application shall include at least a discussion of: type, size,
7 age, fuel, present use and emission controls. If a new heat
8 source is proposed to be used, the application shall include:
9 fuel, estimated cost of fuel and fuel availability.

10 2. The estimate of the district heating market shall
11 contain nonresidential building information including location,
12 type and age of heating system, type of fuel and annual energy
13 consumption and a description of process load including
14 temperature requirements and load duration.

15 3. The map shall show the location of the heat source and
16 major load concentrations.

17 B. Community benefit. Briefly discuss the impact of the
18 district heating system on the community and how it would relate
19 to community development plans.

20 C. Community commitment. Include written expressions of
21 interest and commitment from major potential loads, owner of
22 heat source, and the municipal governing body.

23 D. Project plan. The project plan shall include a list of
24 tasks, time estimates for each task and a list of deliverables.
25 It should also include rough estimates of time required in
26 successive stages such as design and construction.

27 E. Project budget. Include an estimate of expenditures by
28 categories such as personnel and travel and estimates of costs
29 by project plan task.

30 F. Project organization chart and use of consultants.
31 Assistance in preparing applications can be obtained from the
32 agency.

33 6 MCAR S 2.4005 Ranking criteria. Applications will be ranked
34 according to the following criteria, which are listed in order
35 of importance:

36 A. Estimated capital cost per million BTU of energy sold per

- 1 year;
- 2 B. Benefit to the community;
- 3 C. Project plan;
- 4 D. Community commitment;
- 5 E. Thoroughness of community heatload survey;
- 6 F. Qualifications of project personnel;
- 7 G. Clarity and conciseness.
- 8 6 MCAR S 2.4006 Agreement. After approval by the Governor, the
- 9 applicant shall enter into an agreement with the agency.
- 10 A. Contents. The agreement shall specify the grant amount
- 11 and the duration of the grant. The agreement shall include
- 12 assurance that the local share will be provided and that the
- 13 agreed-upon work program will be carried out. A grant agreement
- 14 based upon a joint application must be executed by the lead
- 15 applicant. Amendments and extensions may only be made in
- 16 writing and must be signed by all parties.
- 17 B. Funding period. Planning grants will be approved for a
- 18 period of up to one year.
- 19 C. Grant limitations. Planning grants shall not exceed 90
- 20 percent of eligible planning costs. No single grant shall
- 21 exceed \$20,000.
- 22 D. Disbursement schedule. Ninety percent of grant monies
- 23 shall be disbursed at the outset upon receipt of invoice to the
- 24 agency of project costs. The remaining ten percent shall be
- 25 disbursed upon completion and receipt of a satisfactory final
- 26 report.
- 27 E. Required reports. The grantee shall submit to the agency
- 28 on the first of each month a report briefly stating the
- 29 activities that have transpired during the month. The grantee
- 30 shall provide the agency with three copies, one of which shall
- 31 be a camera-ready copy, of the final preliminary planning report.
- 32 F. Records. The grantee shall maintain for a period of not
- 33 less than three years from the date of the execution of the
- 34 contract all records relating to the receipt and expenditures of
- 35 grant monies.
- 36 G. Contract deviations. No grant funds shall be used to

1 finance activities by consultants or local staff if the
2 activities are not included in the grant contract, unless agreed
3 upon in writing by the agency. Unless agreed upon by the
4 agency, a municipality may not contract out all its
5 energy-related activities to consultants.

6 6 MCAR S 2.4007 Evaluation.

7 A. Evaluation. The agency shall conduct an evaluation
8 within 60 days of the submission by the grantee to the agency of
9 the final report and all the required reports and financial
10 documents. The evaluation shall assess:

11 1. Whether the local share contributed was equal to or
12 greater than ten percent of the total cost of the preliminary
13 planning project;

14 2. Whether the agreed-upon work program was completed;

15 3. Whether the governing body has formally reviewed the
16 completed preliminary district heating plan.

17 B. Review. Upon completion of a satisfactory evaluation the
18 remaining ten percent of the grant shall be disbursed to the
19 grant recipient. If the results of the evaluation are
20 unfavorable to the grantee and the grantee does not agree with
21 the findings of the evaluation, the grantee may request a review
22 by the director.

1 6 MCAR S 2.4011 Definitions.

2 A. Applicability. For the purposes of 6 MCAR SS
3 2.4011-2.4017 the terms defined in B.-G. have the meanings given
4 them.

5 B. Act. "Act" means Laws of 1981, ch. 334.

6 C. Commissioner. "Commissioner" means the Commissioner of
7 the Department of Energy, Planning, and Development.

8 D. Department. "Department" means the Department of Energy,
9 Planning, and Development.

10 E. Design loan. "Design loan" means a loan made to fund
11 those activities required to be completed during the final
12 design phase of a district heating system in order to finance
13 and construct the system. These activities include conducting
14 economic feasibility analyses, obtaining heat source commitments
15 and customer contracts, structuring financing, and related
16 management tasks.

17 F. Preliminary engineering design. "Preliminary engineering
18 design" means a design effort with the objective of estimating
19 district heating design and construction costs within 15 percent
20 of the actual costs.

21 G. Project. "Project" means a district heating design
22 project.

23 6 MCAR S 2.4012 Authority, purpose, and applicability.

24 A. Authority. Rules 6 MCAR SS 2.4011-2.4017 are authorized
25 by Minn. Stat. S 116H.31, subd. 11.

26 B. Purpose. Rules 6 MCAR SS 2.4011-2.4017 are promulgated
27 for the purpose of allowing prompt and proper applications for
28 design loans after comprehensive preliminary engineering,
29 economic, and design studies have been completed. Rules 6 MCAR
30 SS 2.4011-2.4017 set forth the procedures that municipalities
31 must follow to apply for loans and establish the criteria by
32 which the applications are reviewed.

33 C. Applicability. Rules 6 MCAR SS 2.4011-2.4017 apply to
34 the department and to any municipality applying for design loans
35 under the act.

1 6 MCAR S 2.4013 Application procedure. Applications for design
2 loans under the act and 6 MCAR SS 2.4011-2.4017 shall be
3 submitted to the commissioner. Ten complete copies shall be
4 submitted. Applications will be accepted beginning on the date
5 6 MCAR SS 2.4011-2.4017 become effective.

6 6 MCAR S 2.4014 Application contents. An application shall
7 contain the following information:

8 A. Name, address, and telephone number of the responsible
9 official of the municipality;

10 B. A comprehensive business plan for the project as
11 specified in 6 MCAR S 2.4015;

12 C. A resolution in support of the project from the
13 governing body of the municipality, which must include the
14 pledges the municipality proposes to make to guarantee repayment
15 of the design loan;

16 D. A resolution or letter of intent from the proposed
17 owner or operator of the district heating system indicating that
18 he would expect to proceed with construction if the results of
19 the design and final feasibility project are consistent with the
20 preliminary feasibility study;

21 E. Identification of all licenses, permits, zoning
22 regulations, and other requirements of federal, state, or local
23 governments with which the project would be expected to comply,
24 and the present status of each;

25 F. A list of key personnel and their qualifications as
26 they relate to the project;

27 G. An estimate of the type and amount of fuel to be saved
28 per year from the full operation of the district heating system
29 compared to the type and amount of fuel used by the existing
30 system;

31 H. A copy of a completed environmental impact statement,
32 or a negative declaration of the need for an environmental
33 impact statement from a completed environmental assessment
34 worksheet, or in those cases where no environmental rules or
35 regulations apply, a statement as to the environmental effects
36 of the project.

1 6 MCAR S 2.4015 Contents of comprehensive business plan.

2 A. Minimum contents. The comprehensive business plan
3 submitted under 6 MCAR S 2.4014 A.2. must contain no less than
4 the information specified in B.-H.

5 B. Preliminary engineering design. A preliminary
6 engineering design of the project must include the following
7 information.

8 1. An analysis of the proposed piping layout must address
9 optimum service to the total designated area; reliability of
10 service; system temperatures and pressure requirements; thermal
11 and hydraulic operability for normal and emergency conditions;
12 optimum piping configuration to provide service; and flexibility
13 for future expansion.

14 2. An analysis of the proposed piping design must address
15 reliability of service; ease of construction; ease of
16 maintenance; installation methods; and specifications and
17 standards.

18 3. An analysis of the heat source design must define the
19 proposed roles of the following heat sources in the development
20 and the future operation of the system: base load heating
21 plant; peaking plants; large boiler plants in existing
22 buildings; mobile boilers; accumulators; and future heat sources
23 such as solid waste, solar, and industrial waste heat.

24 C. Market study. The comprehensive business plan must
25 include a market study of customers who represent 90 percent of
26 the proposed thermal load of the district heating system defined
27 by the business plan. This study must show detailed information
28 on present fuel consumption or heating demand and the present
29 heating system in each building.

30 D. Preliminary expansion plan. A preliminary expansion plan
31 must show how the system could be expanded to serve other parts
32 of the community.

33 E. Preliminary economic analysis. A preliminary economic
34 analysis must include a preliminary financing and development
35 plan for the district heating system and cash flow, income, and
36 balance sheets for a 20-year planning period. This analysis

1 must also contain a cost estimate and expenditure schedule for
2 all transmission and distribution piping; heat source
3 conversion, purchase, or rental; operating and maintenance costs
4 excluding fuel costs; and building heating conversion costs.

5 F. Letters of intent to purchase heat. The applicant shall
6 submit copies of letters of intent to purchase heat supplied by
7 the project, from major customers representing at least 50
8 percent of the thermal load.

9 G. Letter of intent to furnish heat. The applicant shall
10 submit a copy of a letter of intent to furnish heat, from the
11 owner of the heat source or the proposed system owner or
12 operator.

13 H. Engineering opinion. The business plan requires an
14 opinion by a registered professional engineer that the system
15 described by the preliminary designs is technically feasible and
16 that the preliminary engineering design and cost estimate is
17 within standard engineering practice.

18 6 MCAR S 2.4016 Application review criteria. The commissioner
19 shall review each application as it is received according to the
20 eligibility and priority criteria of Minn. Stat. S 116H.31; the
21 sophistication and reasonableness of the technical approach as
22 detailed in the application; the experience and qualifications
23 of the applicant as they relate to the project; the project
24 organization and personnel assignment; and the estimated cost of
25 the project.

26 6 MCAR S 2.4017 Expenditures not required. Rules 6 MCAR SS
27 2.4011-2.4017 do not require expenditure of money not available.

1 Rules as Proposed

2 6 MCAR S 2.4021 Definitions.

3 A. Scope. For the purposes of 6 MCAR SS 2.4021-2.4034, the
4 terms defined in B.-L. have the meanings given them.

5 B. Act. "Act" means Minnesota Statutes, section 116J.36.

6 C. Assistant commissioner of energy. "Assistant
7 commissioner of energy" means the Assistant Commissioner of the
8 Energy Division of the Department of Energy, Planning and
9 Development.

10 D. Commissioner. "Commissioner" means the Commissioner of
11 the Department of Energy, Planning and Development.

12 E. Debt service cost. "Debt service cost" means the sum of
13 all costs amortizing lease indebtedness, bond indebtedness,
14 urban development action grant indebtedness, and any state
15 indebtedness that is attributed to the project on an annual
16 basis.

17 F. Debt service coverage. "Debt service coverage" means the
18 gross revenues of the project minus the operating expenses, plus
19 the debt service cost. The debt service coverage is expressed
20 as a percentage of the debt service cost.

21 G. Department. "Department" means the Department of Energy,
22 Planning and Development.

23 H. Financial consultant. "Financial consultant" means a
24 reputable person or firm experienced in working with complex
25 revenue-supported financial plans and qualified to assess the
26 financial condition and operation of the project.

27 I. Gross revenues. "Gross revenues" means all revenues,
28 fees, user charges, rents, franchise fees, special assessments,
29 and other income and receipts derived from the ownership or
30 operation of the project, the proceeds of any insurance that
31 insures against the loss of gross revenues, any investment
32 income from money or securities derived from the state loan
33 under the act, and any other income and receipts attributable to
34 the ownership or operation of the project from whatever source
35 derived, calculated on an annual basis.

36 J. Operating expenses. "Operating expenses" means as defined in the

RECEIVED IN THE
DIVISION OF STATUTES
OFFICE BY:
MUT

1 expenses directly and properly attributable to the operation of
2 the project on an annual basis. Examples are: expenses for
3 operation, maintenance, repairs, ordinary replacement, ordinary
4 acquisition of equipment, fuel and heat, labor and fringe
5 benefits, lease rental payments, insurance premiums,
6 administration, legal services, engineering services, payments
7 of all indebtedness, and any other current expenses or
8 obligations required to be paid by the municipality or owner of
9 the project, all to the extent properly and directly
10 attributable to the operation of the project. Operating
11 expenses do not include any costs or expenses for new
12 construction or any allowance for depreciation.

13 K. Project. "Project" means a district heating construction
14 project as described by the business plan.

15 L. Take-or-pay contract. "Take-or-pay contract" means a
16 contract between a district heating system and a thermal load
17 customer whereby the customer agrees to take a predesignated
18 amount of thermal energy over a certain time period or to pay a
19 sum equivalent to the value of the predesignated amount of
20 thermal energy, even if less is taken.

21 6 MCAR S 2.4022 Purpose.

22 The purpose of rules 6 MCAR SS 2.4021-2.4034 is to allow
23 district heating projects that have already completed
24 comprehensive engineering, economic, and design studies to make
25 prompt and proper application for construction loans. Rules 6
26 MCAR SS 2.4021-2.4034 set forth the procedures that
27 municipalities must follow to apply for loans and establish the
28 criteria by which the applications are reviewed.

29 6 MCAR S 2.4023 Scope of rules.

30 Rules 6 MCAR SS 2.4021-2.4034 apply to the department and
31 to any municipality applying for construction loans under the
32 act.

33 6 MCAR S 2.4024 Contents of application.

34 The application for construction loans shall contain the
35 following information:

APPROVED IN THE
REVISOR OF STATUTES
OFFICE BY:

- 1 A. name, address, and telephone number of the responsible
2 official of the municipality;
- 3 B. a comprehensive business plan for the project, as
4 described in 6 MCAR S 2.4025;
- 5 C. a resolution in support of the project from the governing
6 body of the municipality, as described in 6 MCAR S 2.4029;
- 7 D. identification of all licenses, permits, zoning
8 regulations, and any other requirements of federal, state, or
9 local governments with which the project would be expected to
10 comply, and the present status of each;
- 11 E. a list of key personnel and their qualifications as they
12 relate to the project;
- 13 F. an estimate of the type and amount of fuel saved per year
14 from the full operation of the district heating system compared
15 to the type and amount of fuel to be used by the system; and
- 16 G. a copy of the environmental assessment worksheet or
17 environmental impact statement prepared for the project. If
18 neither is required, then the applicant shall submit a statement
19 as to the environmental effects of the project.

20 6 MCAR S 2.4025 Comprehensive business plan.

21 The comprehensive business plan required by 6 MCAR S 2.4024

22 B. must include all of the following information:

- 23 A. a complete engineering design of the project, as
24 described in 6 MCAR S 2.4026;
- 25 B. a market study of customers of the district heating
26 system defined by the business plan who represent 90 percent or
27 more of the proposed thermal load, as described in 6 MCAR S
28 2.4027;
- 29 C. a preliminary plan that shows how the system could be
30 expanded to serve other parts of the community;
- 31 D. a complete economic analysis, as described in 6 MCAR S
32 2.4028, that includes cash flow, income, and balance sheets for
33 a 20-year planning period, and a financing and development plan
34 for the district heating system prepared by a financial
35 consultant;
- 36 E. a certification by the municipality that a bid package

APPROVED IN THE
OFFICE OF THE
REVISOR OF STATUTES
OFFICE BY:

1 for the construction of the project has been completed and is
2 available to the department if requested;

3 F. a copy of the standard contract entered into with
4 customers of the project with a list of customers already under
5 contract, listing the thermal load of each customer presently
6 under contract and comparing the total of the thermal load
7 already contracted with the total load of the project; and

8 G. a copy of the contract for the furnishing of the heat
9 source or fuel for the project.

10 6 MCAR S 2.4026 Engineering design.

11 The complete engineering design of the project required by
12 6 MCAR S 2.4025 A. must include at least the following
13 information:

14 A. an analysis of the proposed piping layout that addresses
15 the areas of optimum service to the total designated area,
16 reliability of service, system temperatures and pressure
17 requirements, thermal and hydraulic operability for normal and
18 emergency conditions, optimum piping configuration to provide
19 service, and flexibility for future expansion;

20 B. an analysis of the proposed piping design that addresses
21 the areas of reliability of service, ease of construction, ease
22 of maintenance, installation methods, and specifications and
23 standards; and

24 C. an analysis of the heat source design that defines the
25 proposed roles of the following heat sources in the development
26 and the future operation of the system: base load heating
27 plant, peaking plants, large boiler plants in existing
28 buildings, mobile boilers, accumulators, and future heat sources
29 such as solid waste, solar, and industrial waste heat.

30 6 MCAR S 2.4027 Market study.

31 The market study required by 6 MCAR S 2.4025 B. must show
32 detailed information on present fuel consumption or heating
33 demand and the present heating system in each building.

34 6 MCAR S 2.4028 Economic analysis.

35 The economic analysis required by 6 MCAR S 2.4025 D. must

APPROVED BY THE
REVISOR STATUTES
JULY 1983

1 include a cost estimate and expenditure schedule for all
2 transmission and distribution piping; heat source conversion,
3 purchase, or rental; operating and maintenance costs, excluding
4 fuel costs; and building heating conversion costs.

5 6 MCAR S 2.4029 Resolution in support of project.

6 The resolution required by 6 MCAR S 2.4024 C. must include
7 the pledges the municipality proposes to make to guarantee
8 repayment of the construction loan and evidence of the
9 municipality's financial capability to sponsor the project.

10 6 MCAR S 2.4030 Application procedures.

11 A. Submitting. Applications for construction loans under
12 the act and 6 MCAR SS 2.4021-2.4034 must be submitted to the
13 commissioner.

14 B. Effective date. The period for accepting applications
15 begins on the date 6 MCAR SS 2.4021-2.4034 become effective.

16 C. Copies. Ten complete copies of the application must be
17 submitted to the commissioner.

18 6 MCAR S 2.4031 District heating advisory task force.

19 A. Membership. Under Minnesota Statutes, section 15.014,
20 the assistant commissioner of energy shall appoint a district
21 heating advisory task force consisting of at least four members
22 in addition to the assistant commissioner of energy who shall
23 act as chairperson.

24 Task force members must be knowledgeable in the area of
25 district heating, but cannot be directly or indirectly involved
26 in any district heating project under consideration by the
27 commissioner.

28 The assistant commissioner of energy may from time to time
29 add or delete task force members, subject only to the
30 limitations in A.

31 B. Task force duties. The task force shall review each
32 application for a loan under the act, and shall advise and
33 assist the commissioner in carrying out the requirements of the
34 act and 6 MCAR SS 2.4021-2.4034. The commissioner shall retain
35 final responsibility for all statutory and rule requirements.

1 6 MCAR S 2.4032 Feasibility assessment.

2 The commissioner shall review each application as received
3 according to the following feasibility assessment parameters:

4 A. the eligibility and priorities criteria of Minnesota
5 Statutes, section 116J.36, subdivisions 3 and 4;

6 B. the debt service coverage represented by the business
7 plan;

8 C. the debt service coverage from revenues currently under
9 contract;

10 D. the total cost of the project;

11 E. the ratio of the state loan under the act to the total
12 cost of the project;

13 F. the terms of the contracts with customers; and

14 G. the total number of customers for the project.

15 6 MCAR S 2.4033 Evaluation of application.

16 Upon reviewing each application, the commissioner shall
17 award points to applicants based upon the following criteria:

18 A. four points to applicants that have a debt service
19 coverage of at least 130 based upon the revenues currently under
20 contract;

21 B. four points to applicants that have take-or-pay contracts
22 for at least the term of the state loan under the act; two
23 points, if the contracts are for a term less than the term of
24 the state loan under the act;

25 C. two points to applicants whose total project cost is less
26 than \$5,000,000 or whose state loan under the act would be less
27 than 50 percent of the project's total cost;

28 D. two points to applicants that have 50 or more customers
29 identified in the marketing study of their business plans, if
30 these customers comprise at least 50 percent of the project's
31 thermal load.

32 6 MCAR S 2.4034 Recommendation.

33 A. Tallying points. The commissioner shall tally the points
34 awarded to each applicant under 6 MCAR S 2.4033 and shall make
35 recommendations based upon the standards set forth in B. and C.

1 B. Eight or more points. For applicants who have been
2 awarded a total of eight or more points, the commissioner shall
3 recommend that the revenues of the project be pledged for
4 repayment of the state loan under the act. In addition, the
5 state loan may take a position subordinate to other financing.

6 C. Seven or fewer points. For applicants who have been
7 awarded a total of seven or fewer points, the commissioner shall
8 recommend that the applicant pledge additional funds adequate to
9 ensure the repayment of the state loan under the act. If
10 additional funds are not available or the applicant chooses not
11 to pledge them, then the applicant may pledge to levy an ad
12 valorem tax of a similar amount.

APPROVED IN THE
REVISOR OF STATUTES
OFFICE BY:

District Heating Bonding Bill

1 A bill for an act
 2 relating to energy; authorizing the Minnesota energy
 3 agency to administer a program of loans to
 4 municipalities for establishing and improving district
 5 heating systems; authorizing the issuance of state
 6 bonds pursuant to Article XI of the Minnesota
 7 constitution; appropriating money; amending Minnesota
 8 Statutes 1980, Sections 412.321, Subdivision 1;
 9 412.351; 412.361, Subdivision 3; and 429.021,
 10 Subdivision 1; proposing new law coded in Minnesota
 11 Statutes, Chapters 116H, 216B, and 465.

12

13 BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF MINNESOTA:

14 Section 1. [116H.31] [DISTRICT HEATING LOANS.]

15 Subdivision 1. [POLICIES.] Developing and improving
 16 -----
 17 efficient and economical district heating systems is a public
 18 -----
 19 purpose for state financing and a proper function of state
 20 -----
 21 government. Climate and geography make a reliable, economic
 22 -----
 23 supply of energy essential for industrial, commercial, and
 24 -----
 25 residential heating. Imported supplies are increasingly costly,
 26 -----
 27 unreliable, and environmentally disadvantageous. District
 28 -----
 heating systems employing cogeneration techniques and innovative

 technology offer an important means of increasing the efficiency

 of Minnesota's energy systems and reducing the state's reliance

 on imported energy supplies. The combination of the large

 initial capital cost and investors' lack of familiarity with

 district heating has made the private market reluctant to

 provide the necessary capital for district heating projects. As

1 a result, public leadership, cooperation, and aid are needed to
2 demonstrate the feasibility of district heating systems by
3 establishing economically viable municipal district heating
4 systems as demonstration projects. Municipal district heating
5 systems may be financed by loans from the state.

6 Subd. 2. [DEFINITIONS.] In this section:

7 (a) "Commissioner" means the commissioner of finance.

8 (b) "Director" means the director of the Minnesota energy
9 agency.

10 (c) "District heating" means the use of a central energy
11 conversion facility to produce hot water or steam for
12 distribution to homes or businesses. District heating
13 facilities may also produce electricity in addition to hot water
14 or steam.

15 (d) "Municipality" means any county, city, town, municipal
16 power agency, or public utility, as defined in section 452.01,
17 subdivision 3, owned and operated by a city, however organized.

18 Subd. 3. [ELIGIBILITY.] The commissioner of finance, upon
19 request of the director of the energy agency, may make loans to
20 municipalities for the acquisition and betterment of district
21 heating systems. A loan shall be made only to a municipality
22 that has demonstrated that:

23 (a) The municipality has the financial capability to
24 sponsor the project;

25 (b) The project is technologically feasible;

26 (c) The district heating project will become a cogeneration
27 facility or, if the project involves an existing district steam
28 heating system, the project will become integrated with a hot
29 water district heating system; and

30 (d) The municipality has made adequate provision to assure
31 proper and efficient operation and maintenance of the project
32 after construction is completed.

33 Subd. 4. [PRIORITIES.] The director shall give higher
34 priority to a project that does more to achieve the following
35 goals:

36 (a) The district heating conversion facility employs

1 cogeneration techniques;

2 (b) The facility uses renewable or nonpetroleum sources of
3 energy;

4 (c) The district heating facility will save petroleum or
5 natural gas;

6 (d) The operation of the district heating facility will not
7 have an adverse impact on the environment;

8 (e) The district heating facility may readily be expanded
9 to serve additional customers or to supply additional amounts of
10 energy, and market demand for the energy exists;

11 (f) The project has obtained additional financing from the
12 federal government, private sources, or other sources of
13 capital; and

14 (g) Other goals the director finds desirable for district
15 heating systems.

16 Subd. 5. [ELIGIBLE COST.] The eligible cost of any
17 municipal district heating project includes:

18 (a) Preliminary planning to determine the economic,
19 engineering, and environmental feasibility of the project;

20 (b) Engineering, architectural, legal, fiscal, economic,
21 and project administrative costs of the agency and the
22 municipality, and other investigations and studies;

23 (c) Surveys, designs, plans, working drawings,
24 specifications, procedures, and other actions necessary to the
25 planning, design, and construction of the project;

26 (d) Erection, building, acquisition, alteration,
27 remodeling, improvement, and extension of district heating
28 systems, including:

29 (1) The capital expense incurred by users of the system who
30 undertake modifications of their physical plants to utilize the
31 thermal energy; and

32 (2) The capital expense incurred by any wholesale supplier
33 of thermal energy to make those modifications necessary to
34 provide the thermal energy to the municipality;

35 (e) Inspection and supervision of construction; and

36 (f) Loans to potential users of the district heating system

1 to finance conversion of, additions to, or other necessary
2 alterations of their energy systems to facilitate use of energy
3 supplied by the district heating system.

4 Subd. 6. [AMOUNT.] The amount of a loan is limited to:

5 (a) 40 percent of the costs included under subdivision 5,
6 clause (a).

7 (b) 80 percent of the costs included under subdivision 5,
8 clauses (b), (c), (d), (e), and (f).

9 Subd. 7. [TERMS.] A loan is repayable over a period not to
10 exceed 20 years, with interest at a rate sufficient to cover the
11 cost to the state of borrowing the money.

12 Subd. 8. [APPLICATION.] Application for a loan shall be
13 made by a municipality to the director on a form prescribed by
14 the director by rule. The director shall review each
15 application and determine:

16 (a) Whether or not the project is eligible for a loan;

17 (b) The priority of the project when ranked with all other
18 eligible projects for which a loan application has been
19 submitted;

20 (c) The total estimated cost of the project;

21 (d) The amount of the loan for which the project is
22 eligible;

23 (e) The terms upon which the loan would be made; and

24 (f) The means by which the municipality proposes to finance
25 the project, including:

26 (1) A loan authorized by state law; or

27 (2) A grant of money appropriated by state law; or

28 (3) A grant to the municipality by an agency of the federal
29 government within the amount of money then appropriated to that
30 agency and allocated by it to projects within the state; or

31 (4) The appropriation of proceeds of bonds or other money
32 of the municipality to an account for the construction of the
33 project; or

34 (5) User charges, franchise fees, special assessments or
35 taxes; or

36 (6) Any or all of the means referred to in clauses (1) to

1 (5).

2 Subd. 9. [PROJECT APPROVAL.] The director shall prepare
3 and submit to the legislature a list of district heating
4 projects, if any, for which loan applications have been
5 submitted and reviewed. The list shall contain supporting
6 information, including descriptions of the projects, plans, and
7 the determinations made by the director pursuant to subdivision
8 8. The director shall request the commissioner of finance to
9 make loans for projects within the limits of appropriations
10 provided by the legislature.

11 Subd. 10. [PAYMENT; OBLIGATION.] The commissioner shall
12 not pay money to a municipality pursuant to an approved loan
13 until he has determined that:

14 (a) Financing of the project as proposed by the
15 municipality is assured by an irrevocable undertaking, by
16 resolution of the governing body of the municipality, to use all
17 money made available by the financing plan exclusively for the
18 eligible costs of the project, and to pay any additional amount
19 by which the cost of the project exceeds the estimate by the
20 appropriation to the construction account of additional
21 municipal money or the proceeds of additional bonds to be issued
22 by the municipality; and that

23 (b) The governing body of the municipality has adopted a
24 resolution obligating the municipality to repay the loan
25 according to the terms in the loan. The obligation may be
26 payable from user charges, franchise fees, special assessments
27 or other money available to the municipality. The resolution
28 shall obligate the municipality to annually impose and collect
29 user charges, franchise fees, special assessments, or to use any
30 other money available to it from any other specified source, in
31 amounts and at times that if collected in full will annually
32 produce at least five percent in excess of the amount needed for
33 all annual costs of the system, including annual repayment on
34 state loans. A municipality may also pledge to levy an ad
35 valorem tax to guarantee the payments under the loan agreement.
36 For the purpose of repaying the loan, the municipality by

1 resolution of its governing body may fix the rates and charges
2 for district heating system service and products, may enter into
3 contracts for the payment by others of costs of construction,
4 maintenance, and use of the project in accordance with section
5 444.075 and may pledge the revenues derived therefrom. The
6 commissioner shall condition a loan upon the establishment of
7 rates and charges or the execution of contracts sufficient to
8 produce annually the revenues pledged for repayment of all
9 annual costs of the system, including annual repayment of the
10 state loan.

11 Subd. 11. [RECEIPTS.] All principal and interest payments
12 received by the commissioner in repayment of the loans
13 authorized by this section shall be deposited in the state
14 treasury and credited to the state bond fund and are
15 appropriated to the commissioner for the purposes of that
16 account.

17 Subd. 12. [RULES.] The director shall adopt rules
18 necessary to carry out this section. The director shall adopt
19 temporary rules pursuant to section 15.0412, subdivision 5,
20 meeting the requirements of this section. The rules shall
21 contain as a minimum:

- 22 (a) Procedures for application by municipalities; and
 - 23 (b) Criteria for reviewing loan applications, including
- 24 those specified in subdivisions 3 and 4.

25 Subd. 13. [SYSTEM AUDIT.] Any municipality operating a
26 district heating system funded in part under the lending
27 provisions of this section shall contract a qualified
28 engineering auditing firm to examine the performance of the
29 system every two years after the beginning of operation of the
30 system. The audit shall specifically examine the adequacy of
31 system revenues to insure the proper maintenance and long-term
32 operation of the system. The audit report shall be forwarded to
33 the governor, the legislative advisory commission, the energy
34 agency, and the commissioner of finance.

35 Sec. 2. Minnesota Statutes 1980, Section 412.321,
36 Subdivision 1, is amended to read:

1 Subdivision 1. [AUTHORITY TO OWN AND OPERATE.] Any
2 statutory city may own and operate any waterworks, district
3 heating system, or gas, light, power, or heat plant for
4 supplying its own needs for utility service or for supplying
5 utility service to private consumers or both. It may construct
6 and install all facilities reasonably needed for that purpose
7 and may lease or purchase any existing utility properties so
8 needed. It may, in lieu of providing for the local production
9 of gas, electricity, water, hot water, steam, or heat, purchase
10 the same wholesale and resell it to local consumers. After any
11 such utility has been acquired, the council, except as its
12 powers have been limited through establishment of a public
13 utilities commission in the city, shall make all necessary rules
14 and regulations for the protection, maintenance, operation,
15 extension, and improvement thereof and for the sale of its
16 utility products.

17 Sec. 3. Minnesota Statutes 1980, Section 412.351, is
18 amended to read:

19 412.351 [COMMISSION, JURISDICTION.]

20 The council shall, in the ordinance establishing the
21 commission, decide which of the following public utilities shall
22 be within the commission's jurisdiction: (1) the city water
23 system; (2) light and power system, including any system then in
24 use or later acquired for the production and distribution of
25 steam heat; (3) gas system; (4) sanitary or storm sewer system
26 or both, including the city sewage disposal plant; (5) public
27 buildings owned or leased by the city; (6) district heating
28 system. As used subsequently in sections 412.351 to 412.391,
29 the term "public utility" means any water, light and power, gas
30 or sewer system, or public buildings thus placed by ordinance
31 under the jurisdiction of the public utilities commission. Any
32 public utility not placed under the jurisdiction of the public
33 utilities commission by the ordinance establishing the
34 commission may be placed under the jurisdiction of the
35 commission by an amendment to the original ordinance.

36 Sec. 4. Minnesota Statutes 1980, Section 412.361,

1 Subdivision 3, is amended to read:

2 Subd. 3. The commission shall have power to buy all fuel
3 and supplies, and it may purchase wholesale electric energy,
4 steam heat, hot water energy, gas or water, as the case may be,
5 -----
6 for municipal distribution.

6 Sec. 5. Minnesota Statutes 1980, Section 429.021,
7 Subdivision 1, is amended to read:

8 Subdivision 1. [IMPROVEMENTS AUTHORIZED.] The council of a
9 municipality shall have power to make the following improvements:

10 (1) To acquire, open, and widen any street, and to improve
11 the same by constructing, reconstructing, and maintaining
12 sidewalks, pavement, gutters, curbs, and vehicle parking strips
13 of any material, or by grading, graveling, oiling, or otherwise
14 improving the same, including the beautification thereof and
15 including storm sewers or other street drainage and connections
16 from sewer, water or similar mains to curb lines.

17 (2) To acquire, develop, construct, reconstruct, extend and
18 maintain storm and sanitary sewers and systems, including
19 outlets, holding areas and ponds, treatment plants, pumps, lift
20 stations, service connections, and other appurtenances of a
21 sewer system, within and without the corporate limits.

22 (3) To construct, reconstruct, extend and maintain steam
23 heating mains.

24 (4) To install, replace, extend and maintain street lights
25 and street lighting systems and special lighting systems.

26 (5) To acquire, improve, construct, reconstruct, extend and
27 maintain water works systems, including mains, valves, hydrants,
28 service connections, wells, pumps, reservoirs, tanks, treatment
29 plants, and other appurtenances of a water works system, within
30 and without the corporate limits.

31 (6) To acquire, improve and equip parks, open space areas,
32 playgrounds and recreational facilities within or without the
33 corporate limits.

34 (7) To plant trees on streets and provide for their
35 trimming, care and removal.

36 (8) To abate nuisances and to drain swamps, marshes and

1 ponds on public or private property and to fill the same.

2 (9) To construct, reconstruct, extend, and maintain dikes
3 and other flood control works.

4 (10) To construct, reconstruct, extend and maintain
5 retaining walls and area walls.

6 (11) To acquire, construct, reconstruct, improve, alter,
7 extend, operate, maintain and promote a pedestrian skyway system.

8 (12) To acquire, construct, reconstruct, extend, operate,
9 maintain and promote underground pedestrian concourses.

10 (13) To acquire, construct, improve, alter, extend,
11 operate, maintain and promote public malls, plazas or courtyards.

12 (14) To construct, extend, and maintain district heating
13 systems.

14 Sec. 6. [465.74] [AUTHORIZATION TO OPERATE DISTRICT
15 HEATING SYSTEMS.]

16 Subdivision 1. [CITIES OF THE FIRST CLASS.] Any city
17 operating or authorized to operate a public utility pursuant to
18 chapter 452 or its charter is authorized to acquire, construct,
19 own, and operate a municipal district heating system pursuant to
20 the provisions of that chapter or its charter. Acquisition or
21 construction of a municipal district heating system shall not be
22 subject to the election requirement of sections 452.11 and
23 452.12, or city charter provision, but must be approved by a
24 three-fifths vote of the city's council or other governing
25 body. Loans obtained by a city pursuant to section 1 are not
26 subject to the limitations on the amount of money which may be
27 borrowed upon a pledge of the city's full faith and credit or
28 the election requirements for general obligation borrowing,
29 contained in section 452.08.

30 Subd. 2. [CITIES OF THE SECOND AND THIRD CLASS.] A city
31 authorized to operate an electric light plant or an electric
32 light and power plant pursuant to chapter 455 or its charter may
33 acquire, construct, own, and operate a municipal district
34 heating system under that chapter or its charter.

35 Subd. 3. [EXTENSION OF SERVICE OUTSIDE CITY.] A municipal
36 district heating system, operating pursuant to this section, may

1 sell energy to customers located outside of the municipality and
2 within the state but not more than a distance of 30 miles from
3 the corporate limits of the municipality.

4 Subd. 4. [NET DEBT LIMITS.] The loan obligations incurred
5 by a political subdivision pursuant to section 1 shall not be
6 considered as a part of its indebtedness under the provisions of
7 its governing charter or of any law of this state fixing a limit
8 of indebtedness.

9 Sec. 7. [216B.166] [COGENERATING POWER PLANTS.]

10 Subdivision 1. [FINDING.] The legislature finds and
11 declares that significant public benefits may be derived from
12 the cogeneration of electrical and thermal energy and that
13 cogenerated district heating may result in improved utilization
14 and conservation of fuel, the substitution of coal for scarce
15 oil and natural gas, the substitution of domestic fuel for
16 imported fuel, and the establishment of a reliable,
17 competitively priced heat source. Since the cost of cogenerated
18 thermal energy is dependent upon the method used to allocate
19 costs between the production of electric and thermal energy at a
20 power plant, and because the method of cost allocation can be a
21 significant factor in determining investment in district
22 heating, it is necessary to develop cost allocation methods
23 rapidly.

24 Subd. 2. [DEFINITIONS.] For the purpose of this section,
25 the following terms shall have the meanings given.

26 (a) "Cogeneration" means a combined process whereby
27 electrical and thermal energy are simultaneously produced by a
28 public utility power plant.

29 (b) "District heating" means a process whereby thermal
30 energy is distributed within a community for use as a primary
31 heat source.

32 (c) "District heating utility" means any person,
33 corporation, or other legal entity which owns and operates a
34 facility for district heating.

35 Subd. 3. [ALLOCATION.] The methods used to allocate or
36 assign costs between electrical and thermal energy produced by

1 cogeneration power plants owned by public utilities shall be
2 consistent with the following principles:

3 (a) The method used shall result in a cost per unit of
4 electricity which is no greater than the cost per unit which
5 would exist if the power plants owned by the public utility had
6 been normally constructed and operated without cogenerating
7 capability;

8 (b) Costs which the public utility incurs for the exclusive
9 benefit of the district heating utility, including but not
10 limited to backup and peaking facilities, shall be assigned to
11 thermal energy produced by cogeneration;

12 (c) The methods and procedures may be different for
13 retrofitted than for new cogeneration power plants; and

14 (d) The methods should encourage cogeneration while
15 preventing subsidization by electric consumers so that both
16 heating and electricity consumers are treated fairly and
17 equitably with respect to the costs and benefits of cogeneration.

18 Sec. 8. [APPROPRIATIONS.]

19 Subdivision 1. The sum of \$39,025,000 is appropriated from
20 the state building fund to the commissioner of finance for the
21 purpose of making loans to municipalities for district heating
22 systems pursuant to section 1. This appropriation is available
23 for the following projects:

24	(a) St. Paul	\$29,525,000
25	(b) Moorhead	\$5,000,000
26	(c) Red Wing and Minneapolis	\$4,000,000
27	(d) Preliminary planning, as defined	

28 in section 1, subdivision 5, clauses (a), (b) and (c),
29 for Bagley, Aitkin, and Virginia \$500,000

30 Subd. 2. The sum of \$100,000 is appropriated from the
31 general fund to the director of the energy agency for the period
32 ending June 30, 1982, for the purpose of administering loans to
33 municipalities pursuant to section 1. The approved complement
34 of the energy agency is increased by one position.

35 Subd. 3. The sum of \$2,700,000 is appropriated from the
36 state building fund to the commissioner of administration to

1 install district heating in the capital complex.

2 Subd. 4. The appropriations made by subdivisions 1 and 3

3 are available until expended and shall not cancel pursuant to

4 section 16A.28 or other law.

5 Sec. 9. [BOND SALE; DEBT SERVICE.]

6 To provide the money appropriated from the state building

7 fund by section 8, subdivision 1, the commissioner of finance

8 upon request of the governor shall sell and issue bonds of the

9 state in an amount up to \$39,025,000 in the manner, upon the

10 terms, and with the effect prescribed by Minnesota Statutes,

11 Sections 16A.63 to 16A.67, and by the Constitution, Article XI,

12 Sections 4 to 7.

13 Sec. 10. [EFFECTIVE DATE.]

14 This act is effective the day following final enactment.

1982 PRELIMINARY PLANNING GRANT PROJECTS

February 1, 1983

BLOOMINGTON

\$20,000

The City of Bloomington is proposing a 115 MW hot water district heating system. The proposed system would serve customers in an industrial development district just south the Twin Cities International Airport.

The Phase I study has been complete and the City received \$80,000 from DOE's Urban Consortium to continue work. Five options including the NSP Black Dog plant and a solid waste facility are being examined. More detailed cost estimates for each option are being developed before a decision is made about which technology to use.

DULUTH

\$20,000

The Duluth Steam Cooperative Association presently operates a steam district heating system for 282 co-op members in the downtown section of the city. The steam Co-op is considering extending their services by piping 250° hot water to the Arena Auditorium complex and by expanding their steam service to 17 new customers in and around the downtown business district.

The results of this study were that transmitting steam to the arena/auditorium complex would be considerably less costly than hot water. However, in the case of both the arena and the other customers it was found that customer interest in conversion were lacking at the present time due to lower costs of alternate fuels in the Duluth area. The city will return the remaining funds.

ELY

\$20,000

The City of Ely has available to it an energy resource in the form of warm water trapped in a labyrinth of abandoned mines. The feasibility of extracting heat to supply a district heating system is being investigated. The proposed system would serve the hospital, Vermillion Community College, schools, churches, apartments and the downtown businesses.

Phase I study determined that they will likely use heat pumps to extract warm mine water from abandoned iron ore mines. To date, interest in this project has been high. The U.S. Department of Energy, the Minnesota Geological Survey and VIAK, a Swedish Engineering firm have all contributed time, money and expertise. Additional funds are needed to develop more detailed plans.

FAIRMONT

\$19,980

The Fairmont Public Utilities Commission presently operates a coal fired district heating system which provides service to 229 customers in its downtown business district. The proposed project would extend service to 6 major industrial facilities located outside the present downtown steam service zone and one near the downtown zone by installing a new industrial steam main. These industrial facilities include United Foods, Armour Co., 3M, Fairmont Refrigerated Services Co., Peerless Cleaners, and 2 grain elevators.

The industrial steam main looks very good economically. Informational meetings have been held with potential customers. The customers are now reviewing the details of the Phase I study and more meetings will follow. In addition, the Municipal Utility has picked up several new customers for the downtown steam system.

GRAND MARAIS

\$20,000

The City of Grand Marais in conjunction with Cook County is studying the feasibility of establishing a hot water system fired by a solid waste incinerator. Based upon preliminary results, it appears that a combination solid waste/wood incinerator boiler with a district heating system is feasible. The system would serve customers in the downtown business district.

Phase I is still underway. The total project cost has been estimated at \$2.3 million.

GRAND RAPIDS

\$20,000

The City of Grand Rapids in conjunction with Itasca County proposes to determine the feasibility of a hot water district heating system using nonconventional heat sources such as chunk firewood, wood chips, aspen pellets, or municipal waste. In Phase I the heat would be distributed to the Courthouse, Jail, Fire Hall, Library, City Hall, Central School and one private industry.

The results of this Phase I study indicate that based on current conditions it does not appear that a self-supporting downtown district heating system is economically feasible at this time using either solid waste or wood wastes.

HIBBING

\$1,200

The Public Utilities Commission in Hibbing has been granted money to study the feasibility of connecting the high school, junior high, one elementary school and the school garage to its present coal-fired steam district heating system.

Funds were used to do a computer study of the utilities district heating system under peak conditions. This study indicated that under peak conditions the system was capable of maintaining pressures sufficient to provide the heating needs of the existing customers and the 4 school complexes. During the summer of 1982, Washington Elementary School and Lincoln Junior High were connected to the municipal utility system. The high school and school garage will be connected in summer 1983 or 1984.

INTERNATIONAL FALLS

\$8,800

The City of International Falls was granted money to study a district heating system fired with peat, solid waste, or wood waste. The system would serve several major public buildings downtown, as well as possible Central Business District customers in a 5-block area. The plant may be either heat-only or cogenerational, pending results of economic analysis.

Although the Phase I study is not yet complete, the project has been narrowed to a wood waste incinerator to heat 8 public buildings and an 8 block downtown area. The public buildings would be heated with low pressure steam and hot water would be used in the downtown. Preliminary cost estimates for the project are \$2.4 million.

MINNEAPOLIS

\$20,000

The City of Minneapolis received money to examine the feasibility of a hot water satellite system adjacent to downtown. This satellite system could then be connected to the major central system at a later date. The Minnegasco Energy Center currently owns and operates a coal-fired steam system which serves 50 major buildings in the downtown area.

Phase I results show that the economics of this study are very favorable. The hot water heat islands would be constructed in several areas where no development currently exists. This way all development can begin at the same time and expand at its own rate. Further studies continue.

NEW BRIGHTON

\$20,000

The City of New Brighton worked with Ramsey County to explore the feasibility of a privately owned and operated district heating system supplying thermal energy produced by modular, solid waste to energy boilers. The owner of the system is located in an industrial park being developed by the City. This industrial park is less than 1/4 mile from the downtown redevelopment area. The district heating system would serve the industrial park and the redevelopment areas.

The customers include a proposed hotel, several office buildings, a rehabilitation commercial retail area, new restaurant facilities, a new municipal liquor facility, existing city offices, and public safety buildings.

The Phase I study is complete. Economics on the project are favorable. This system as proposed will be a privately owned and operated 150 tons per day solid waste cogeneration facility. The steam generated would be sold for industrial processing heating and the electricity sold to NSP.

ROCHESTER

\$10,000

Rochester Public Utilities currently operates a coal based district heating system which provides steam heat to 95 customers in the downtown business district.

The Utility is investigating the feasibility of expanding its steam system to include two major customers, Franklin Heating Station and the American Milk Producers, Inc., as well as other smaller customers. The Franklin Heating Station serves the Mayo Clinic, Mayo Medical School, Kahler Hotel and Rochester Methodist Hospital.

Initial negotiations with American Milk Producers were not favorable and they were eliminated from the study early on. Several months were spent negotiating contracts with Franklin Heating Station. A proposal from the municipal utility was submitted to the Franklin Heating Station in December and was rejected.

WILLMAR

\$20,000

The Willmar Municipal Utilities Commission is in the process of converting the downtown portion of their existing steam system to hot water. By Fall 1982, 76 customers in the downtown area will be served with hot water.

This planning grant will be used to determine the feasibility of converting 13 customers on the perimeter of the downtown area from steam to hot water and is considered Phase II of the current project.

Data collection for Phase II has just begun. The objective is to examine conversion of the remaining steam customers, including steam processing customers and to add several customers currently using natural gas.