GRID CONNECTED INTEGRATED COMMUNITY ENERGY SYSTEM

VOLUME 5

INSTITUTIONAL AND SOCIO-ECONOMIC ASSESSMENTS

FINAL REPORT PHASE I

For Period

FEBRUARY 1, 1977 TO MAY 31, 1977

DISCLAIMER

This book was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

UNIVERSITY OF MINNESOTA PHYSICAL PLANT

319 15TH AVE. S.E.

MINNEAPOLIS, MINNESOTA 55455

612-373-4521

JUNE 1977

Prepared For

THE U.S. ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION
UNDER CONTRACT NO. EC-77-C-02-4210

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency Thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

DISCLAIMER

Portions of this document may be illegible in electronic image products. Images are produced from the best available original document.

VOLUME 5

TABLE OF CONTENTS

<u>Description</u>	<u>Page</u>
5.0 Scenario	1
5.1 Site Development Barriers and Capacity	9
5.1.1 Land Use	9
5.1.2 Development Barriers	15
5.1.2.1 City Zoning	15
5.1.2.2 University of Minnesota	20
5.1.3 Steam and Hot Water Demand	26
5.1.4 Sites Available	32
5.1.5 Underground Potential	44
5.2 Site Development Expansion and Projections	53
5.2.1 Facilities Expansion	53
5.2.2 Improvement Areas	59
5.2.2.1 Add-On Customers	61
5.2.3 Four Year Plan	82
5.2.4 10 Year Plan	87
5.3 Central Plant Limits	90
5.3.1 Central Plant Limits - Appendix	97
5.4 Health Care Projections	137
5.5 Fuel Supply Projections	142
5.5.1 Present Consumption of Primary Fuels	143
5.5.2 Present Costs of Primary Fuels	144
5.5.3 Projected Supplies of Primary Fuels	145
5.5.4 Projected Costs of Primary Fuels	148

<u>Description</u>	<u>Page</u>
5.5.5 Northern States Power Company View of Fuel	150
5.5.6 Futher Fuel Projections	160
5.6 Construction Codes	163
5.7 Community Organizations	167
5.7.1 City of Minneapolis	169
5.7.2 Southeast Minneapolis Planning and Coordinating Committee	172
5.7.3 City of Minneapolis Park and Recreation Board	177
5.7.4 Long Range Regional River Development and Acquisition Committee (LRRRDAC)	180
5.8 Regulatory Agencies	203
5.8.1 Hennepin County Department of Public Works	204
5.8.2 Metropolitan Council	229
5.8.3 Environmental Quality Council	242
5.8.4 Minnesota Pollution Control Agency	304
5.8.5 Department of Natural Resources - State of Minnesota	309
5.8.6 Department of the Army, Corps of Engineers	323
5.8.7 Miscellaneous Agencies of Interaction	330
5.9 Socio-Economics	343
5.10 Public Relations for ICES	349

The Community surrounding the ICES partners consists of a unique blend of urban character consisting of single family residential areas, higher density apartments, small "neighborhood" commercial enterprises, and light and general manufacturing.

The general stability of the east bank portion of the Community is contrasted by the dynamic face of the west bank. The residential east bank is expected to remain generally at its current density, while the residential west bank will probably double or triple in density within the next ten years.

The institutions incorporating ICES are expected to expand their facilities by over 1,500,000 gross square feet in the near term future. Present potential (1977) annual steam consumption with the 1990 expansion limit is estimated at 3 billion pounds per year including ICES partners. Building expansion and thus steam growth over the next 10 years will require an additional billion pounds of steam per year.

Fuel for ICES will come from two sources: Coal from western coal mines and solid waste from the health care industry.

In an extensive 3 year study by the University of Minnesota, it is projected that by 1980 municipal wastes will increase by 37% while health care wastes will increase by 76%. Since the BTU level of hospital wastes is higher than that of municipal wastes, the amount of combustible fuels produced by the pyrolysis unit should increase proportionately as the total generated wastes increase into 1980.

Several scenarios have been developed throughout the report. Perhaps the most significant is drawing 61 appearing at the end of this section. This scenario of fossil fuel costs indicates that if natural gas supplies are cut off, Augsburg College will experience a 114% increase in fuel costs by 1980. Projections show that St. Mary's fuel costs will increase by 63% by 1980 and will more than double by 1985. Significant is the fact that ICES will allow St. Mary's, Fairview, and Augsburg to realize the benefits of large plant operation on a lower, more reliable fossil fuel, coal.

Coal costs, the primary ICES fuel, are not expected to reach \$2 per million Btu until the 1980's. Development of "special trains" from the Western Coal fields will help to hold down these fuel costs to ICES partners.

In addition to lower fuel costs, economy of operation will be improved by one large central plant (2-combined plants) because of scale and electric generation. Utilization factor of the ICES plant will be 80% versus 50% utilization of a normal plant.

If the data in Table 1 is correct, and based upon the University's experience in electric load growth and costs per kwh (U of M cost per kwh - 1976 = 2.5¢), the ICES generator should be a significant credit producing operation after debt service is paid off. Examination of the fuel cost curves indicate an increase in fuel costs from \$1 per million BTU (Western Coal) to \$1.08 per million BTU for "Montana coal less than 15 car loads" from 1976 to 1980. This is a 7% increase in fuel costs to the ICES generator. Electric rates will increase according to the EEI from 2.43¢ to 2.85¢, an increase of 15% over the period. We would

TABLE 1

COMPOSITE PROJECTED TO 1980

7 PERCENT INFLATION IN LABOR AND MATERIALS AND

9 PERCENT COST OF Aa BONDS

	<u>1/1/75</u>	<u>1/1/80</u>	
Management Philosophy	Historical Growth	Conservation Strategy	Managed Growth
kWh growth rate	7%	2%	10%
Peak load growth	8%	4%	8%
Load factor	61%	55%	67%
Earnings/share	\$ 2.38	\$ 1.68	\$ 2.83
Common stock prices	\$19.00	\$15.31	\$26.92
Bond rating	Aa	Baa	Aaa
¢/kWh	2.43¢	2.85¢	2.81¢
Rate Increase		3.7%	3.7%
Capital Requirements			
Total (millions \$)		64,500	134,400
Internal (millions \$)		31,400	38,700
External (millions \$)		33,100	95,700
Utility Long-Term Financing,			
% of Total Capital Available	11%	4.4%	12.8%

The above table was taken from "Proceedings of the American Power Conference, 1975".

expect the cogeneration credit from NSP to increase by the same margin so that the ICES generator will have a net reduction in overall operating costs in just a short period of time. We have no reason to suspect a declining increase in electric energy costs so that the ICES generator operation appears favorable over the long term in terms of profitability.

From 1980 on, ICES will continue to draw from a good base steam load for electric generation as a by-product for year-around operation. This capacity will be insured by selective expansion of a district hot water system.

The Federal Energy Administration in its draft of National Energy Outlook took a look at future fuel prices at constant 1975 dollars. That means the price jumps shown below are what remain after inflation is factored out. We have assumed 5 percent inflation so that 1985 prices are shown in 1985 dollars (price x 1.63). They assumed that current FPC controls on interstate gas remain in effect.

	<u>1975 Price</u>	<u>1985 Price</u>	<u>% Change</u>	<u>1985 Dollars</u>
Distillate fuel oil (per gal)	\$.36	\$.53	+47	\$.86
Residual fuel oil (per gal)	.32	.42	+31	.68
Electricity (1000 kwh)	27.07	34.01	+27	44.00
Steam coal (per ton)	19.30	37.01	+92	60.32

U of M Calculated Cost per Million Btu*

	<u>1975 Price</u>	<u>1985 Dollars</u>	<u>% Increase</u>
Distillate fuel oil	\$2.61	\$6.23	+138
Residual fuel oil	2.25	4.79	+112
Steam coal	.76	2.39	+214

*Coal 12,600 Btu/lb

Oil 138,000 Btu/gal. (dist.)

Oil 142,000 Btu/gal (Res.)

Examination of calculated cost per million Btu indicates that the present cost separation will continue, but in addition the best buy for fuel will continue to be coal. This indeed favors ICES.

Electricity will increase from 2.7¢/kwh in 1975 to 4.4¢/kwh in 1985. The credit for cogeneration would be expected to increase by as much. Cost of capital could improve profitability of the ICES generator, but this is hard to determine because of conservation policy. What the utilities do in the late 1970's will affect their borrowing rates. If utilities cut back upon their borrowing rate and use conservation techniques to offset demand capital for plants this will decrease utility load factor, causing declining earnings. At any rate, we feel utilities will choose the other road - accelerate electrical growth, and minimize rate increases by increased kwh growth. If the electric utility stays healthy, the prediction is that ICES will stay healthy.

Probably the largest impact will be partial deregulation of new natural gas, new taxes on crude oil at the well head and mandatory conversion from natural gas to coal by 1990 for large users. ICES can show the best way to accommodate these factors that will continue the price spiral of primary fuels. And at what price ICES? From a socio-economic point of view there should only be improvements.

The pyrolysis unit will provide to the health care industry a long term solution to their solid waste disposal problems at an established economical disposal cost.

The Southeast Steam Plant will operate within environmental standards, and the building and surrounding property will be improved to benefit the aesthetics of the riverfront.

UNIVERSITY
OF
MINNESOTA

GRID-ICES
PRIMARY FUEL COSTS
TO ICES USERS

BY A.E.A.	BUILDING	SCALE NONE	SHEET
CHECKED D.W.	DATE 5/16/77	REVISED	DRAWING 61

N O R T H E R N S T A T E S P O W E R C O M P A N Y

MINNEAPOLIS DIVISION
MINNEAPOLIS, MINNESOTA 55401

October 27, 1976

Mr. Warren D. Soderberg
Director, Physical Plant
Physical Plant Maintenance and Operations
University of Minnesota
200 Shops Building
Minneapolis, Minnesota 55455

Dear Warren:

Re: Questions asked at the recent officer visit

It was nice to meet with you and Mr. Brinkerhoff. We enjoyed the conversation and the questions you raised. Mr. Comstock has discussed the questions, and our company reply is as follows:

1. Natural Gas Cut-off -- Our Gas Department has revised the original cut-off date, and we are presently looking at 1980 for our very large users. Lesser customers will be curtailed or cut by 1980 or slightly later.
2. Coal Price Projections -- Our Fuel Department presently projects coal to increase at a 5½% to 6% annual rate. This price includes coal and freight, and freight is the higher of the two.
3. Energy Price Forecast -- Our Conservation and Load Management Department projects the energy price increase to follow the consumer index. The past five years have shown a 5% to 5½% annual increase and we anticipate that this will continue.

If you have questions concerning any facet of the energy or service policies, please contact me at any time.

Sincerely,

T. L. Meagher
Community Affairs Administrator
Minneapolis Division

TIM/mo

cc: R. W. Comstock

Albert L. Pooler
Vice President-Regulatory Affairs

December 1, 1976

Dear Sir

We advised you by letter dated October 1, 1976 that Minnegasco's interruptible rates would increase \$.1143 per Mcf for gas consumed after October 27, 1976 to offset a Federal Power Commission approved Northern Natural Gas Company increase.

Subsequent to that letter the FPC clarified the intent of their order concerning which gas produced would qualify for the new higher national rate and deferred the effective date of the pipeline company's rates to recover these higher gas producer prices. Northern reduced their rates by \$.0412 per Mcf to recognize these FPC actions and Minnegasco implemented only the \$.0731 per Mcf increase in our interruptible rates for gas consumed after October 27, 1976.

*1.057
- .0731

1.1301*

On December 27, 1976 Northern will implement an additional \$.1610 per Mcf increase in wholesale rates for gas sold to Minnegasco under terms of their FPC approved tariff. This automatic adjustment of wholesale rates results from changes in Northern's gas purchase costs.

As provided in our rate schedules, Minnegasco's Class D interruptible rates will increase \$.1610 per Mcf from \$1.1301 per Mcf to \$1.2911 per Mcf for gas consumed after December 27, 1976 to offset these supplier increases.

Our Industrial/Commercial Services Department (545-0231) will assist you on any questions you may have about this new rate.

Yours truly

/11

5.1

SITE DEVELOPMENT BARRIERS AND CAPACITY

5.1.1

LAND USE

The Demonstration Community is dominated by educational and hospital institutions and single family residential areas. In recent years there has been construction of several high rise apartments (particularly on the west bank) and other multi-family units.

Central small commercial business districts exist in the "Dinkytown" and "Stadium Village" areas on the east bank of the Mississippi and the Cedar-Riverside area on the west bank. In general, these are "community" oriented enterprises.

Open space exists along the river and in several neighborhood parks. Light and general manufacturing can be found scattered throughout the area.

The following schematic of "City Land Use" gives a broad understanding of the community land use. "Campus Land Use" displays land use by the University on both the East and West Bank Campuses, in this map, "Support Services" involves those activities or uses that are supportive of the daily operations of the campuses, such as heating plant, shop facilities, storage areas, and maintenance facilities. "University Related" uses are those areas which have functions that are related to the University through research, fraternities, or buildings which are owned by the University but are leased to non-academic organizations.

The remaining schematics show present land uses within the Fairview-St. Mary's Hospital complex and the Augsburg College Campus.

Development of ICES will not hinder further land use development, but in fact may promulgate its use because of lower energy costs. In any

instance the present land uses of the Community will not change the depicted characteristics.

como research
and service

east bank

west bank

city land use

- institutional
- low density housing
- high density housing
- industrial
- open space
- commercial

details of sources from which this map was compiled are
available on request.
this map is prepared for planning purposes and should not be
used where accurate measurements are required.

university of minnesota
minneapolis campus

campus land use

details of sources from which this map was compiled are available on request. base data January 1974.

this map is prepared for planning purposes and should not be used where accurate measurements are required.

**university of minnesota
minneapolis campus**

1. ST. MARY'S EXTENDED CARE CENTER
2. ST. MARY'S JUNIOR COLLEGE
3. ST. MARY'S HOSPITAL
4. ST. MARY'S BOILER AND LAUNDRY
5. ST. MARY'S-FAIRVIEW PARKING FACILITY
6. DOCTORS OFFICE BUILDING
7. FAIRVIEW HOSPITAL

university of minnesota
minneapolis

200 0 400 800

1

march, 1979

UNIVERSITY
OF
MINNESOTA

AUGSBURG COLLEGE CAMPUS

BY	BUILDING	SCALE	SHEET
GDM	DATE	REVISED	DRAWING
CHECKED JO	3-20-77		

5.1.2

DEVELOPMENT BARRIERS

5.1.2.1

CITY ZONING

As reflected by land use patterns, the zoning restrictions in the Community vary widely from R-1 (single family detached) to M-3 (general manufacturing). Classifications of "general residential" and "small commercial" dominate the area. Allowed within the residential classifications are educational, cultural and religious institutions.

Zoning maps of the Demonstration Community area are included. Plate 15, which shows zoning boundaries for the East Bank area in 1964 is virtually identical to the same area of "City Zoning" which shows zoning boundaries 9 year later. This is a good reflection of the relative stability of the area. Plate 21, which displays the West Bank area in 1964 shows many zone changes from those in the 1973 map. These changes were made primarily to accommodate the construction of a freeway and several high rise apartments.

Plate 14 gives the 1964 zoning boundaries for the area just west of the Southeast Steam Plant, which is being planned by the LRRRDAC¹ for major revitalization.

Primary importance can be placed upon the Central Plant location. This area was recently designated a power production area by LRRRDAC. Detailed discussion is contained in Section 5.7.3 and 5.8.

¹Long Range Regional River Development and Acquisition Committee (see Section 5.7.3).

RESIDENTIAL DISTRICTS

- R1
- R1A
- R2
- R2A
- R2B
- R2C
- R2D
- R2E
- R2F
- R2G
- R2H
- R2I
- R2J
- R2K
- R2L
- R2M
- R2N
- R2O
- R2P
- R2Q
- R2R
- R2S
- R2T
- R2U
- R2V
- R2W
- R2X
- R2Y
- R2Z
- R3
- R3A
- R3B
- R3C
- R3D
- R3E
- R3F
- R3G
- R3H
- R3I
- R3J
- R3K
- R3L
- R3M
- R3N
- R3O
- R3P
- R3Q
- R3R
- R3S
- R3T
- R3U
- R3V
- R3W
- R3X
- R3Y
- R3Z
- R4
- R4A
- R4B
- R4C
- R4D
- R4E
- R4F
- R4G
- R4H
- R4I
- R4J
- R4K
- R4L
- R4M
- R4N
- R4O
- R4P
- R4Q
- R4R
- R4S
- R4T
- R4U
- R4V
- R4W
- R4X
- R4Y
- R4Z
- R5
- R5A
- R5B
- R5C
- R5D
- R5E
- R5F
- R5G
- R5H
- R5I
- R5J
- R5K
- R5L
- R5M
- R5N
- R5O
- R5P
- R5Q
- R5R
- R5S
- R5T
- R5U
- R5V
- R5W
- R5X
- R5Y
- R5Z
- R6
- R6A
- R6B
- R6C
- R6D
- R6E
- R6F
- R6G
- R6H
- R6I
- R6J
- R6K
- R6L
- R6M
- R6N
- R6O
- R6P
- R6Q
- R6R
- R6S
- R6T
- R6U
- R6V
- R6W
- R6X
- R6Y
- R6Z
- R7
- R7A
- R7B
- R7C
- R7D
- R7E
- R7F
- R7G
- R7H
- R7I
- R7J
- R7K
- R7L
- R7M
- R7N
- R7O
- R7P
- R7Q
- R7R
- R7S
- R7T
- R7U
- R7V
- R7W
- R7X
- R7Y
- R7Z
- R8
- R8A
- R8B
- R8C
- R8D
- R8E
- R8F
- R8G
- R8H
- R8I
- R8J
- R8K
- R8L
- R8M
- R8N
- R8O
- R8P
- R8Q
- R8R
- R8S
- R8T
- R8U
- R8V
- R8W
- R8X
- R8Y
- R8Z
- R9
- R9A
- R9B
- R9C
- R9D
- R9E
- R9F
- R9G
- R9H
- R9I
- R9J
- R9K
- R9L
- R9M
- R9N
- R9O
- R9P
- R9Q
- R9R
- R9S
- R9T
- R9U
- R9V
- R9W
- R9X
- R9Y
- R9Z
- R10
- R10A
- R10B
- R10C
- R10D
- R10E
- R10F
- R10G
- R10H
- R10I
- R10J
- R10K
- R10L
- R10M
- R10N
- R10O
- R10P
- R10Q
- R10R
- R10S
- R10T
- R10U
- R10V
- R10W
- R10X
- R10Y
- R10Z
- R11
- R11A
- R11B
- R11C
- R11D
- R11E
- R11F
- R11G
- R11H
- R11I
- R11J
- R11K
- R11L
- R11M
- R11N
- R11O
- R11P
- R11Q
- R11R
- R11S
- R11T
- R11U
- R11V
- R11W
- R11X
- R11Y
- R11Z
- R12
- R12A
- R12B
- R12C
- R12D
- R12E
- R12F
- R12G
- R12H
- R12I
- R12J
- R12K
- R12L
- R12M
- R12N
- R12O
- R12P
- R12Q
- R12R
- R12S
- R12T
- R12U
- R12V
- R12W
- R12X
- R12Y
- R12Z
- R13
- R13A
- R13B
- R13C
- R13D
- R13E
- R13F
- R13G
- R13H
- R13I
- R13J
- R13K
- R13L
- R13M
- R13N
- R13O
- R13P
- R13Q
- R13R
- R13S
- R13T
- R13U
- R13V
- R13W
- R13X
- R13Y
- R13Z
- R14
- R14A
- R14B
- R14C
- R14D
- R14E
- R14F
- R14G
- R14H
- R14I
- R14J
- R14K
- R14L
- R14M
- R14N
- R14O
- R14P
- R14Q
- R14R
- R14S
- R14T
- R14U
- R14V
- R14W
- R14X
- R14Y
- R14Z
- R15
- R15A
- R15B
- R15C
- R15D
- R15E
- R15F
- R15G
- R15H
- R15I
- R15J
- R15K
- R15L
- R15M
- R15N
- R15O
- R15P
- R15Q
- R15R
- R15S
- R15T
- R15U
- R15V
- R15W
- R15X
- R15Y
- R15Z
- R16
- R16A
- R16B
- R16C
- R16D
- R16E
- R16F
- R16G
- R16H
- R16I
- R16J
- R16K
- R16L
- R16M
- R16N
- R16O
- R16P
- R16Q
- R16R
- R16S
- R16T
- R16U
- R16V
- R16W
- R16X
- R16Y
- R16Z
- R17
- R17A
- R17B
- R17C
- R17D
- R17E
- R17F
- R17G
- R17H
- R17I
- R17J
- R17K
- R17L
- R17M
- R17N
- R17O
- R17P
- R17Q
- R17R
- R17S
- R17T
- R17U
- R17V
- R17W
- R17X
- R17Y
- R17Z
- R18
- R18A
- R18B
- R18C
- R18D
- R18E
- R18F
- R18G
- R18H
- R18I
- R18J
- R18K
- R18L
- R18M
- R18N
- R18O
- R18P
- R18Q
- R18R
- R18S
- R18T
- R18U
- R18V
- R18W
- R18X
- R18Y
- R18Z
- R19
- R19A
- R19B
- R19C
- R19D
- R19E
- R19F
- R19G
- R19H
- R19I
- R19J
- R19K
- R19L
- R19M
- R19N
- R19O
- R19P
- R19Q
- R19R
- R19S
- R19T
- R19U
- R19V
- R19W
- R19X
- R19Y
- R19Z
- R20
- R20A
- R20B
- R20C
- R20D
- R20E
- R20F
- R20G
- R20H
- R20I
- R20J
- R20K
- R20L
- R20M
- R20N
- R20O
- R20P
- R20Q
- R20R
- R20S
- R20T
- R20U
- R20V
- R20W
- R20X
- R20Y
- R20Z
- R21
- R21A
- R21B
- R21C
- R21D
- R21E
- R21F
- R21G
- R21H
- R21I
- R21J
- R21K
- R21L
- R21M
- R21N
- R21O
- R21P
- R21Q
- R21R
- R21S
- R21T
- R21U
- R21V
- R21W
- R21X
- R21Y
- R21Z
- R22
- R22A
- R22B
- R22C
- R22D
- R22E
- R22F
- R22G
- R22H
- R22I
- R22J
- R22K
- R22L
- R22M
- R22N
- R22O
- R22P
- R22Q
- R22R
- R22S
- R22T
- R22U
- R22V
- R22W
- R22X
- R22Y
- R22Z
- R23
- R23A
- R23B
- R23C
- R23D
- R23E
- R23F
- R23G
- R23H
- R23I
- R23J
- R23K
- R23L
- R23M
- R23N
- R23O
- R23P
- R23Q
- R23R
- R23S
- R23T
- R23U
- R23V
- R23W
- R23X
- R23Y
- R23Z
- R24
- R24A
- R24B
- R24C
- R24D
- R24E
- R24F
- R24G
- R24H
- R24I
- R24J
- R24K
- R24L
- R24M
- R24N
- R24O
- R24P
- R24Q
- R24R
- R24S
- R24T
- R24U
- R24V
- R24W
- R24X
- R24Y
- R24Z
- R25
- R25A
- R25B
- R25C
- R25D
- R25E
- R25F
- R25G
- R25H
- R25I
- R25J
- R25K
- R25L
- R25M
- R25N
- R25O
- R25P
- R25Q
- R25R
- R25S
- R25T
- R25U
- R25V
- R25W
- R25X
- R25Y
- R25Z
- R26
- R26A
- R26B
- R26C
- R26D
- R26E
- R26F
- R26G
- R26H
- R26I
- R26J
- R26K
- R26L
- R26M
- R26N
- R26O
- R26P
- R26Q
- R26R
- R26S
- R26T
- R26U
- R26V
- R26W
- R26X
- R26Y
- R26Z
- R27
- R27A
- R27B
- R27C
- R27D
- R27E
- R27F
- R27G
- R27H
- R27I
- R27J
- R27K
- R27L
- R27M
- R27N
- R27O
- R27P
- R27Q
- R27R
- R27S
- R27T
- R27U
- R27V
- R27W
- R27X
- R27Y
- R27Z
- R28
- R28A
- R28B
- R28C
- R28D
- R28E
- R28F
- R28G
- R28H
- R28I
- R28J
- R28K
- R28L
- R28M
- R28N
- R28O
- R28P
- R28Q
- R28R
- R28S
- R28T
- R28U
- R28V
- R28W
- R28X
- R28Y
- R28Z
- R29
- R29A
- R29B
- R29C
- R29D
- R29E
- R29F
- R29G
- R29H
- R29I
- R29J
- R29K
- R29L
- R29M
- R29N
- R29O
- R29P
- R29Q
- R29R
- R29S
- R29T
- R29U
- R29V
- R29W
- R29X
- R29Y
- R29Z
- R30
- R30A
- R30B
- R30C
- R30D
- R30E
- R30F
- R30G
- R30H
- R30I
- R30J
- R30K
- R30L
- R30M
- R30N
- R30O
- R30P
- R30Q
- R30R
- R30S
- R30T
- R30U
- R30V
- R30W
- R30X
- R30Y
- R30Z
- R31
- R31A
- R31B
- R31C
- R31D
- R31E
- R31F
- R31G
- R31H
- R31I
- R31J
- R31K
- R31L
- R31M
- R31N
- R31O
- R31P
- R31Q
- R31R
- R31S
- R31T
- R31U
- R31V
- R31W
- R31X
- R31Y
- R31Z
- R32
- R32A
- R32B
- R32C
- R32D
- R32E
- R32F
- R32G
- R32H
- R32I
- R32J
- R32K
- R32L
- R32M
- R32N
- R32O
- R32P
- R32Q
- R32R
- R32S
- R32T
- R32U
- R32V
- R32W
- R32X
- R32Y
- R32Z
- R33
- R33A
- R33B
- R33C
- R33D
- R33E
- R33F
- R33G
- R33H
- R33I
- R33J
- R33K
- R33L
- R33M
- R33N
- R33O
- R33P
- R33Q
- R33R
- R33S
- R33T
- R33U
- R33V
- R33W
- R33X
- R33Y
- R33Z
- R34
- R34A
- R34B
- R34C
- R34D
- R34E
- R34F
- R34G
- R34H
- R34I
- R34J
- R34K
- R34L
- R34M
- R34N
- R34O
- R34P
- R34Q
- R34R
- R34S
- R34T
- R34U
- R34V
- R34W
- R34X
- R34Y
- R34Z
- R35
- R35A
- R35B
- R35C
- R35D
- R35E
- R35F
- R35G
- R35H
- R35I
- R35J
- R35K
- R35L
- R35M
- R35N
- R35O
- R35P
- R35Q
- R35R
- R35S
- R35T
- R35U
- R35V
- R35W
- R35X
- R35Y
- R35Z
- R36
- R36A
- R36B
- R36C
- R36D
- R36E
- R36F
- R36G
- R36H
- R36I
- R36J
- R36K
- R36L
- R36M
- R36N
- R36O
- R36P
- R36Q
- R36R
- R36S
- R36T
- R36U
- R36V
- R36W
- R36X
- R36Y
- R36Z
- R37
- R37A
- R37B
- R37C
- R37D
- R37E
- R37F
- R37G
- R37H
- R37I
- R37J
- R37K
- R37L
- R37M
- R37N
- R37O
- R37P
- R37Q
- R37R
- R37S
- R37T
- R37U
- R37V
- R37W
- R37X
- R37Y
- R37Z
- R38
- R38A
- R38B
- R38C
- R38D
- R38E
- R38F
- R38G
- R38H
- R38I
- R38J
- R38K
- R38L
- R38M
- R38N
- R38O
- R38P
- R38Q
- R38R
- R38S
- R38T
- R38U
- R38V
- R38W
- R38X
- R38Y
- R38Z
- R39
- R39A
- R39B
- R39C
- R39D
- R39E
- R39F
- R39G
- R39H
- R39I
- R39J
- R39K
- R39L
- R39M
- R39N
- R39O
- R39P
- R39Q
- R39R
- R39S
- R39T
- R39U
- R39V
- R39W
- R39X
- R39Y
- R39Z
- R40
- R40A
- R40B
- R40C
- R40D
- R40E
- R40F
- R40G
- R40H
- R40I
- R40J
- R40K
- R40L
- R40M
- R40N
- R40O
- R40P
- R40Q
- R40R
- R40S
- R40T
- R40U
- R40V
- R40W
- R40X
- R40Y
- R40Z
- R41
- R41A
- R41B
- R41C
- R41D
- R41E
- R41F
- R41G
- R41H
- R41I
- R41J
- R41K
- R41L
- R41M
- R41N
- R41O
- R41P
- R41Q
- R41R
- R41S
- R41T
- R41U
- R41V
- R41W
- R41X
- R41Y
- R41Z
- R42
- R42A
- R42B
- R42C
- R42D
- R42E
- R42F
- R42G
- R42H
- R42I
- R42J
- R42K
- R42L
- R42M
- R42N
- R42O
- R42P
- R42Q
- R42R
- R42S
- R42T
- R42U
- R42V
- R42W
- R42X
- R42Y
- R42Z
- R43
- R43A
- R43B
- R43C
- R43D
- R43E
- R43F
- R43G
- R43H
- R43I
- R43J
- R43K
- R43L
- R43M
- R43N
- R43O
- R43P
- R43Q
- R43R
- R43S
- R43T
- R43U
- R43V
- R43W
- R43X
- R43Y
- R43Z
- R44
- R44A
- R44B
- R44C
- R44D
- R44E
- R44F
- R44G
- R44H
- R44I
- R44J
- R44K
- R44L
- R44M
- R44N
- R44O
- R44P
- R44Q
- R44R
- R44S
- R44T
- R44U
- R44V
- R44W
- R44X
- R44Y
- R44Z
- R45
- R45A
- R45B
- R45C
- R45D
- R45E
- R45F
- R45G
- R45H
- R45I
- R45J
- R45K
- R45L
- R45M
- R45N
- R45O
- R45P
- R45Q
- R45R
- R45S
- R45T
- R45U
- R45V
- R45W
- R45X
- R45Y
- R45Z
- R46
- R46A
- R46B
- R46C
- R46D
- R46E
- R46F
- R46G
- R46H
- R46I
- R46J
- R46K
- R46L
- R46M
- R46N
- R46O
- R46P
- R46Q
- R46R
- R46S
- R46T
- R46U
- R46V
- R46W
- R46X
- R46Y
- R46Z
- R47
- R47A
- R47B
- R47C
- R47D
- R47E
- R47F
- R47G
- R47H
- R47I
- R47J
- R47K
- R47L
- R47M
- R47N
- R47O
- R47P
- R47Q
- R47R
- R47S
- R47T
- R47U
- R47V
- R47W
- R47X
- R47Y
- R47Z
- R48
- R48A
- R48B
- R48C
- R48D
- R48E
- R48F
- R48G
- R48H
- R48I
- R48J
- R48K
- R48L
- R48M
- R48N
- R48O
- R48P
- R48Q
- R48R
- R48S
- R48T
- R48U
- R48V
- R48W
- R48X
- R48Y
- R48Z
- R49
- R49A
- R49B
- R49C
- R49D
- R49E
- R49F
- R49G
- R49H
- R49I
- R49J
- R49K
- R49L
- R49M
- R49N
- R49O
- R49P
- R49Q
- R49R
- R49S
- R49T
- R49U
- R49V
- R49W
- R49X
- R49Y
- R49Z
- R50
- R50A
- R50B
- R50C
- R50D
- R50E
- R50F
- R50G
- R50H
- R50I
- R50J
- R50K
- R50L
- R50M
- R50N
- R50O
- R50P
- R50Q

The University's autonomy as a self governing body allows the University to be exempt from zoning regulations that currently exist. However, proposed projects by the University, and in particular ICES, take into consideration adjacent land uses in order to reduce conflicts within the Community.

However, while zoning restrictions pose no problem, the Minneapolis campus is surrounded by a variety of conditions which strongly limit physical expansion in virtually all directions. These barriers consist of either strongly defined and contiguous residential neighborhoods or involve such physical barriers as freeways or railroad classification yards. The existence and relative permanence of these barriers help to define potential expansion limits if future growth demands become a factor. The "Development Barriers" are depicted in the following schematic.

These barriers roughly form the University "Influence Area" which were set up in 1967. The intention was to limit land acquisition programs to within a defined border. While some land was purchased outside these boundaries only two years after they were formed, they still are considered valid. The purpose of the boundaries are to be thought of not as a limit to land purchases, but as a "line beyond which the contiguous campuses will not expand."

These barriers have an influence upon central plant service demands. The University, as well as partners to ICES will always be able to firmly predict steam and hot water demands because of the barriers.

- major barriers
- minor barriers

developmental barriers

details of sources from which this map was compiled are available on request.
this map is prepared for planning purposes and should not be used where accurate measurements are required.

**university of minnesota
minneapolis campus**

**CAMPUS
INFLUENCE
AREA**

franklin ave

university influence
rental property

West Bank

Physically, the west bank area contains many developmental barriers. Bordering the area on the south and west are two freeways. To the north is the river and to the east is Riverside Park. Therefore, any extension of the institutions will have to be accomplished within the area.

About seven years ago the Cedar-Riverside (West Bank) area was chosen as one of seven H.U.D. new communities in the nation. After the completion of the initial phase of high rises the private contractor, Cedar Riverside Associates, ran into financial problems, putting the entire project into a limbo.

H.U.D. has announced its intentions to "acquire" the new town projects, however, no plans for the area after acquisition have been finalized.

So while the residential and commercial aspects of the area remain uncertain, the institutional boundaries for development seem to have been set.

West Bank/Cedar Riverside Community

Practically all the property on the West Bank is owned by four parties: University of Minnesota, St. Mary's-Fairview, Augsburg College and the Housing and Redevelopment Authority.

Among these property holdings are some 18 square blocks of residential and small commercial structures, the fate of which is highly indeterminable.

According to a fact sheet distributed by the Cedar Riverside Project Area Committee in 1975 an architect with extensive experience in residential rehabilitation surveyed the West Bank area. He found 23% of the houses in "good" condition (rehabilitation feasible), 52% in "fair" condition (further study needed to determine if rehabilitative) and 25% in "poor" condition (economic feasibility of rehabilitation questionable).

5.1.3

STEAM AND HOT WATER DEMAND

1976 steam demand and average demand density for the ICES partners is accurately known:

<u>Institution</u>	<u>Gross Square Feet</u>	<u>Steam Demand 10⁶ lbs/yr</u>	<u>Demand Density lbs/ft²-yr</u>
University Minn. Campus	11,000,000	1,830	160
West Bank Medical Complex	1,200,000	198	165
Augsburg	500,000	68	136

Higher steam rates at the West Bank medical complex and the University are due primarily to higher requirements for hospital steam process use and University adsorption cooling.

The heating and cooling demand of the remainder of the Demonstration Community can be estimated. In a report prepared by the Minnesota Energy Agency, space heating and cooling and domestic hot water demands for residential and commercial structures in this area were calculated.

In the commercial model the formulas used were based upon an engineering design approach to building energy use, and were implemented through computer simulation.

In that work, the Agency identified the important variables affecting space heating in commercial buildings. The variables that relate to ICES are:

1. Sensible heat gain from people..... 1.5 BTU/hr-ft²
2. Sensible heat gain from equipment..... 1.0 BTU/hr-ft²
3. Illumination intensity..... 1.5 BTU/hr-ft²
4. Solar gain through glass.....70.0 BTU/hr-ft²

5. U-factor of the walls..... 0.25 BTU/hr-ft²-°F
6. U-factor of the roof..... 0.15 BTU/hr-ft²-°F
7. U-factor of the glass..... 1.00 BTU/hr-ft²-°F
8. Wall-floor area ratio..... 0.35
9. Glass-floor area ratio..... 0.15
10. Average number of building floors..... 1.50
11. Building ventilation rate..... 0.15 cfm/ft²
12. Building infiltration rate..... 0.05 cfm/ft²
13. Thermostat setting..... 70.00 °F

The first step in determining space heating demand is to calculate an overall heat transfer coefficient per hour for a square foot of commercial floor space.

$$HTC = U\text{-roof}/NBF + (U\text{-glass}) (GFR) + 1.08 (BIR + BVR)$$

Where:

NBF is the average number of building floors
 GFR is the glass of floor area ratio
 1.08 is an air flow conversion constant (BTU/hr-ft²)
 BIR & BVR are building infiltration and ventilation rates

$$HTC = 0.15/1.5 + (1.00) (0.15) + 1.08 (0.05 + 0.15)$$

$$HTC = 0.47 \text{ BTU/hr-ft}^2 - ^\circ\text{F}$$

The building energy intensiveness is then calculated:

$$EI = \left[\sum_{I=30}^{TS-1} I (NHT) \right] HTC$$

Where:

TS is the thermostat setting
 NHT is the number of hours temperature I occurs during the year
 HTC is the heat transfer coefficient

$$EI = \left[\sum_{I = -30}^{70} I \text{ (NHT)} \right] 0.47$$

$$EI = 163,500 \text{ BTU/ft}^2\text{-yr}$$

During open hours, heat which is produced by people, machines and lighting must then be accounted for:

$$SHG = SHGP + SHGM + SHGL$$

Where:

SHGP - SHGM - SHGL are sensible heat gains from people machines and lighting

$$SHG = 1.5 + 1.0 + 1.5$$

$$SHG = 4.0 \text{ BTU/hr-ft}^2$$

Finally an overall space heating intensity can be calculated:

$$SHI = EI - (SHG) (OH)$$

Where:

EI is the energy intensiveness

SHG is the sensible heat gain

OH is the number of open hours during the heating season

$$SHI = 163,500 - (4.0) (2500)$$

$$SHI = 153,500 \text{ BTU/ft}^2\text{-yr}$$

Water heating energy intensiveness in commercial buildings is highly uncertain. However, in their commercial energy use report, Project Independence estimated that in the midwest about 9,500 BTU/ft²-yr were consumed for domestic tap water. This contributes to the total heating demand of 183,000 BTU/ft²-yr for commercial buildings.

Among the commercial buildings in the ICES region, but not including the partners, are a high school and grade school, a library, various

retail establishments, restaurants, theaters, and offices.

We have estimated that these commercial structures total about 775,000 gross square feet of floor space on the east bank with a potential steam demand of 125 million lbs/yr @ 1000 BTU/lb.

We have further estimated there is 100,000 gross square feet of commercial floor space on the west bank with a potential steam demand of 15 million lbs/yr.

The residencies in the ICES region include low and high density apartments, duplexes, and large and small single family housing units.

The amount of energy required to heat a housing unit depends on a number of factors, including climate, housing unit type and size, heat loss characteristics of building construction, and the lifestyle of the occupants.

In determining energy needs to heat this State's homes, the Minnesota Energy Agency made extensive use of a study which was conducted by Northern Natural Gas Company. In this study, which was conducted in 1969, Northern Natural separately metered the furnaces of ten single family dwelling houses of various sizes.

A regression was performed on that information, and the following formula was arrived at:

$$BTUU = ((8.8 * AREA) + 3540) * DD * UTEF$$

Due to ventilation requirements, newer apartment units need a separate calculation:

$$BTUU = (8.0 * AREA * DD) + 5,600,000$$

Where:

8.0 is an apartment air flow constant (BTU/day-ft²-°F)
8.8 is an air flow constant for all but apartments (BTU/day-ft²-°F)
3540 is a constant heating flow independent of unit size (BTU/day-°F)
5,600,000 is the heating requirement due to forced air flow (BTU)
AREA is the gross floor area of the average unit
BTUU is the total annual heating requirement
DD is the annual heating degree days (8159 °F-days/yr)
UTEF is the heating efficiency of the housing units relative to
single family dwellings:

Single family	1.0
Townhouses	0.8
Duplex - fourplex	0.9
Mobile home	1.0
Older Apartments	0.9

We have estimated there is 1,000 newer apartment units on the east bank campus with an average floor area of 850 sq ft*, and an annual space heating steam requirement of 55 million lbs/yr. In addition, there are approximately 2,300 older apartments, with an average area of 1000 sq ft*, 400 duplexes with an average floor area of 4,000 sq ft, and 650 single family residencies with an average floor area of 2,750 sq ft. These different residencies combine for a total east bank residential space heating demand of 435 million lbs/yr.

There are slightly over 1,500 newer apartments, 1,750 older apartments, 150 duplexes and 175 single family residences on the west bank. These housing units represent a total annual steam demand for space heating of 275 million pounds.

Although no study known to us has been conducted, it is generally assumed that domestic hot water usage is about 20% that of space heating in the average residence.

*Includes lobby and outer hallway space which must be heated.

<u>Area</u>	<u>*Steam Demand Millions lbs/yr</u>	<u>Average Steam Rate lb/Hr</u>
University East & West Banks	1,830	208,900
West Bank Medical Complex	200	23,000
Augsburg College	70	8,000
Commercial West Bank	15	1,700
Commercial East Bank	125	14,300
Apartment West Bank	265	30,250
Apartment East Bank	255	29,000
Residential West Bank**	85	9,700
Residential East Bank**	<u>250</u>	<u>28,500</u>
Total	3,095	353,350

*Includes steam adsorption air conditioning for ICES partners only.
Does not include manufacturing loads.

**Includes single family, duplex - fourplex, townhouses, boarding rooms, etc.

The Demonstration Community is in a medium density urban environment and virtually every parcel of land within that environment is being utilized. All open space which does exist is either being used for recreation, parking or is considered to be presently aesthetically desirable.

Changes in utilization of land, therefore, will have to come about through changes in already built-up areas.

For example, the trend toward higher density housing can only continue through the razing of lower density houses and small commercial enterprises.

The investigation of available development sites, therefore, is really an investigation of existing structures, their importance to the community and their availability for change. It is best, therefore, to conduct the investigation on a neighborhood by neighborhood basis. The division of neighborhoods can be found in the following schematic.

Como Community

The Como Community lies within some 18,100,000 gross sq ft of land. While somewhat removed from the area of direct campus influence and immediate ICES involvement, the Como Community is nevertheless the home of a number of University students and employees. The University owned Como Research and Service Center is also found in this neighborhood. The area consists mainly of single family residencies with some warehouse and light manufacturing and industrial activity on its southern and eastern perimeters.

These neighborhoods are not expected to undergo major changes in the near future.

University District Improvement Area

The U.D.I.A. occupies 11,700,000 GSF of land. While in the past, this residential area has tended more and more to higher density housing, there is an effort underway to "down-zone" the area and thereby preserve its single family housing stock.

Large areas of student, faculty and staff housing exist in the area in the form of houses, apartments, fraternities and sororities. The Dinkytown commercial area is located in the southeast section of this community.

These neighborhoods are not expected to undergo major changes in the near future.

Motley

Part of this 13,500,000 GSF of land overlaps into the Regents Boundaries. The western portion of this area runs adjacent to the University. The majority of this area is residential.

University East and West Bank Campuses

The University owns some 7,700,000 GSF of land space on the East Bank Campus and 1,700,000 GSF additional space on the West Bank.

Of this, there are some 1,760,000 ft² of land available for development (without necessitating major demolition) of the East Bank and 600,000 ft² of land of the West Bank.

The great bulk of this available land is in the form of surface interim parking and University owned single and multiple family dwellings as depicted in the following schematics.

Through this new development, and also through renovation, infill and redevelopment the University has the potential to increase its

gross floor space by 32%. This could be accomplished within the Regents Boundaries and without disturbing any major open space other than parking lots.

- university of minnesota
- neighborhoods
- renewal areas

neighborhoods

details of sources from which this map was compiled are available on request.
this map is prepared for planning purposes and should not be used where accurate measurements are required.

university of minnesota
minneapolis campus

UNIVERSITY & COMMUNITY COMPONENTS

- neighborhoods
- regents boundary
- university property
- long range development

- rental properties
- parkboard/minneapolis
- institutional areas

land ownership

details of sources from which this map was compiled are available on request.
this map is prepared for planning purposes and should not be used where accurate measurements are required.

university of minnesota
minneapolis campus

Academic Space: Potential Development Capacity

ACADEMIC PRECINCT	SITE NO.	AREA		DEVELOPMENT DENSITY RESTRICTIONS		BUILDING EFFICIENCY FACTOR	DEVELOPMENT CAPACITY	
		SQ. FT.	ACRE	SITE COV.	BLDG. HGT.		FORMULA	N.A.S.F.
WEST BANK:NORTH	7	96,000	2.2	2.5	5	.75	sf. x 2.5 x .75	180,000
	8	32,000	.7	2.5	5	.75	sf. x 2.5 x .75	60,000
	total	<u>128,000</u>	<u>2.9</u>					<u>240,000</u>
WEST BANK:SOUTH	10	32,500	0.7		2	.50	sf. x 2.0 x .50	32,500
	11	157,600	3.6	2.5	5	.75	sf. x 2.5 x .75	295,500
	12	27,500	0.6	2.0	3-4	.75	sf. x 2.0 x .75	41,250
total		<u>217,600</u>	<u>4.9</u>					<u>369,250</u>
west bank total		345,600	7.8					609,250
MAIN EAST BANK	19	28,000	0.6	2.0	3-4	.50	sf. x 2.0 x .50	28,000
	20	4,800	0.1		5	.50	sf. x 5.0 x .50	12,000
	21	7,000	0.2		5	.50	sf. x 5.0 x .50	17,500
	23	4,500	0.1		3-4	.50	sf. x 5.0 x .50	11,250
	24	29,700	add two floors to existing structure					19,000
	25	45,000	1.0	2.5	5	.75	sf. x 2.5 x .75	84,375
	35	32,400	0.7	2.5	5	.75	sf. x 2.5 x .75	60,750
	38	25,000	0.6	2.5	5	.50	sf. x 5.0 x .50	62,500
	39	4,800	0.1		5	.75	sf. x 5.0 x .75	18,000
	41	4,600	0.1		5	.75	sf. x 5.0 x .75	17,250
	42	33,000	0.8		5	.75	sf. x 5.0 x .75	123,750
	43	4,800	0.1		5	.75	sf. x 5.0 x .75	18,000
	44	4,200	0.1		5	.75	sf. x 5.0 x .75	15,750
	22	4,800	0.1		5	.75	sf. x 5.0 x .75	18,000
total		<u>234,200</u>	<u>5.3</u>					<u>506,125</u>
HEALTH SCIENCES	45	29,400	0.7		3 below grd.	.75	sf. x 3.0 x .75	66,150
	58	16,500	0.4	2.0	3-4	.75	sf. x 2.0 x .75	24,750
total		<u>45,900</u>	<u>1.1</u>					<u>90,900</u>
STADIUM-ATHLETIC	33	82,800	1.9	2.0	3-4	.75	sf. x 2.0 x .75	124,200
	35	28,000	0.6	2.0	5	.75	sf. x 2.0 x .75	42,000
	50	23,800	0.5	2.0	3-4	.75	sf. x 2.0 x .75	35,700
	51	reduction within existing to upgrade and develop new facilities						100,000
total		<u>132,600</u>	<u>3.0</u>					<u>301,900</u>
BIERMAN ATHLETIC	28	16,800		1.5	2-3	.75	sf. x 1.5 x .75	18,900
east bank total		429,500	9.8					917,825
GRAND TOTAL: EAST AND WEST BANK		<u>715,100</u>	<u>17.6</u>					<u>1,527,075</u>

An even greater potential of land availability exists underground. In the University Planning Framework Report, the construction of underground space is particularly appropriate on the Minneapolis Campus for four major reasons:

1. Underground space will save a significant amount of energy used for space heating and cooling.
2. Land space above the building can be preserved as open space.
3. The geology of the Minneapolis Campus is particularly suited to underground construction (and thermal storage of heat).
4. The experience and technology needed for underground construction exists in the area.

The following schematics show areas of East and West Bank underground construction potential.

- existing space
- heating tunnel
- sanitary sewer
- storm sewer
- water main
- gas main
- electric line
- telephone line

underground space use in soil

Details of sources from which this map was compiled are available on request. Base data obtained from 500' grid aerial topography map. This map is prepared for planning purposes and should not be used where accurate measurements are required.

university of minnesota
minneapolis campus east bank

underground space use in soil

details of sources from which this map was compiled are available on request. base data january 1974.

this map is prepared for planning purposes and should not be used where accurate measurements are required.

university of minnesota
minneapolis campus

- existing space
- heating tunnel
- sanitary sewer
- storm sewer
- water main
- gas main
- electric line
- telephone line

- infill sites
- expansion sites
- major corridors
- special existing sites
- programmed space
- proposed space

site map / underground space in soil

details of sources from which this map was compiled are available on request. base data obtained from 500 grid aerial topography map. this map is prepared for planning purposes and should not be used where accurate measurements are required.

university of minnesota
minneapolis campus east bank

- infill sites
- - - expansion sites
- · · major corridors
- programmed space
- proposed space

site map / underground space in soil

details of sources from which this map was compiled are available on request. base data obtained from 500' grid aerial topography map.
this map is prepared for planning purposes and should not be used where accurate measurements are required.

university of minnesota
minneapolis campus west bank

- heating tunnel
- - - sanitary sewer tunnel
- ... storm sewer tunnel

underground space use in bedrock

details of sources from which this map was compiled are available on request. base data obtained from 500' grid aerial topography map.
this map is prepared for planning purposes and should not be used where accurate measurements are required.

university of minnesota
minneapolis campus east bank

underground space use in bedrock

details of sources from which this map was compiled are available on request. base data obtained from 500' grid aerial topography map.
this map is prepared for planning purposes and should not be used where accurate measurements are required.

- heating tunnel
- - - sanitary sewer tunnel
- ... storm sewer tunnel

university of minnesota
minneapolis campus west bank

- edge of limestone
- heating tunnel
- - - sanitary sewer tunnel
- . - storm sewer tunnel
- proposed space

site map / underground space in bedrock

details of sources from which this map was compiled are available on request. base data obtained from 500 grid aerial topography map. this map is prepared for planning purposes and should not be used where accurate measurements are required.

university of minnesota
minneapolis campus

site map / underground space in bedrock

details of sources from which this map was compiled are available on request. base data obtained from 500 grid aerial topography map.
this map is prepared for planning purposes and should not be used where accurate measurements are required.

- edge of limestone
- heating tunnel
- sanitary sewer tunnel
- storm sewer tunnel
- proposed space

university of minnesota
minneapolis campus west bank

5.2

SITE DEVELOPMENT EXPANSION AND PROJECTIONS

5.2.1

FACILITIES EXPANSION

University

As can be seen in the diagram entitled "Facilities Expansion, Current Activity," there are several new and proposed facilities on the Minneapolis Campuses for which either construction has begun, Legislative funds have been appropriated or a commitment to solicit funds has been given. This new construction will add over 1,500,000 gross square feet to the University's East and West Bank Campuses. A list of this construction can be found in Section 5.2.3.

This and future facilities expansion at the University will follow a plan of dominant land use suitabilities as shown in the following diagram.

St. Mary's-Fairview-Augsburg

The only new construction with which these institutions are committed is a Music Education-Performing Arts Building to be located along Riverside Avenue on the Augsburg College Campus.

In Augsburg College's Master Plan and Implementation Guidelines Book the following priorities for facility development were listed.

1. Functional restoration of the existing college academic core and development of the central land area.
2. Development of the north campus area.
3. The majority of this area is made up of single family dwellings mostly owned by Augsburg. Due to the desirability to maintain a neighborhood feeling as much as possible on the campus, this zone assumes a low priority position.

4. Again the majority of this area is made up of residential and small commercial buildings which are desirable to retain as long as possible.

- existing
- planned
- marginal
- obsolete
- historical

buildings

details of sources from which this map was compiled are available on request. Base data January 1974.

this map is prepared for planning purposes and should not be used where accurate measurements are required.

university of minnesota
minneapolis campus

() denotes proposed

AUGSBURG COLLEGE

- 1 old main
- 2 academic core
- 3 college center
- 4 high rise student housing
- (5) surface parking
- (6) parking structure
- (7) academic facility
- (8) ecumenical center
- (9) learning resource center
- (10) music education - performing arts
- (11) swimming facility
- 12 little theatre
- 13 athletic facility
- (14) multi-purpose athletic
- (15) tennis courts
- 16 athletic field

FAIRVIEW HOSPITAL

- 17 fairview hospital
- 18 medical office building & parking ramp
- (19) medical office building
- (20) low level ramp
- 21 bus stop
- (22) elevated walkway
- 23 surface parking
- (24) multi-level ramp
- (25) future expansion

ST. MARY'S HOSPITAL

- 27 st. mary's hospital
- 28 west bank radiation center
- 29 extended care facility
- 30 power plant-maintenance
- (31) emergency & outpatient facility
- (32) future expansion
- (33) multi-level ramp

ST. MARY'S JUNIOR COLLEGE

- 34 st. mary's junior college

UNIVERSITY OF MINNESOTA

- 36 middlebrook hall
- 37 rarig center
- 38 wilson library
- (39) academic facilities
- 40 surface parking

- 41 river bluff trail
- 42 murphy park

institutional land use plan

East Bank

As in all residential areas in Minneapolis there is a campaign for home rehabilitation. Low interest loans and tax credits have been made available to stimulate this rehabilitation program.

No major urban renewal projects exist for this area.

University East and West Bank Campuses

In its Planning Framework Report - 1975, the University states that "Just as certain areas preclude new development in order to preserve certain intrinsic characteristics, there are also areas that should be improved by virtue of the fact that their existing condition is detrimental to the overall quality of the campus environment." These planned improvement areas are shown in the following schematics.

West Bank

Due to the financial collapse of Cedar-Riverside Associates, the future improvement of this area has become quite uncertain, however, one way or another, this area will certainly be undergoing a major face lift, if not total renewal.

One organization, called the Cedar-Riverside Community Development Corporation, has proposed the construction of a 75-100 unit housing development. The concept of these units and location can be found on the following pages.

CDC has indicated to the University its interest as being an add-on customer to ICES.

St. Mary's - Fairview

The "backyard" of the St. Mary's - Fairview complex is formed by Mississippi River bluffs, located directly across from the East Bank University Campus. At the present time the bluffs are virtually inaccessible to either hospital employees or area residents.

The hospitals have proposed, therefore, to open up this area as part of a general development of open space and landscaping. Development would include a small park overlooking the river and connecting the River Bluff Trail System.

5.2.2.1

ADD-ON CUSTOMERS

The following inserts were prepared by the West Bank CDC, Incorporated, they are being included here not only to provide information on their proposed housing development as a possible add-on to ICES, but also as a valid description of the present development situation for the West Bank, Cedar-Riverside area.

West Bank CDC, Inc.

2000 South Fifth Street

Minneapolis, MN 55454

Phone: 376-1092

January 20, 1977

Mr. Warren E. Soderberg, Director
Physical Plant Administration
200 Shops B
University of Minnesota
Minneapolis, Minnesota 55455

Dear Mr. Soderberg:

The West Bank CDC is in the process of planning a new housing development in the Cedar-Riverside area. The site is located just east of the Cedar North high-rise and just south of the Burlington Railroad bridge on the bluff top. Our plan will include 74 to 98 units of one to four bedrooms contained in two structures: a three story walk-up and a six to nine story mid-rise elevator building.

A major element of our design/planning process has been to explore all types of alternative energy systems. We understand that the University's coal-fired heating and power plant produces excess heat and would be very interested in exploring with you the possibility of utilizing some of the excess in our housing development. With rising costs for gas and oil, this appears to be a logical and beneficial way to provide some economies to our housing operations and, at the same time, avoid wasting ever-scarcer energy sources.

A member of our staff will be contacting you by phone in a few days to discuss this matter. If you would like to get in touch with us, our phone number is 376-1092.

Sincerely,

Ann Waterhouse

Ann Waterhouse
CDC Staff Coordinator

Enclosure: CDC information pamphlet

West Bank CDC, Inc.

2000 South Fifth Street
Minneapolis, MN 55454

Phone: 376-1092

The West Bank CDC, Inc. (community development corporation) is a non-profit organization designed to be controlled by the people it serves. Any resident of the Cedar-Riverside Urban Renewal Area, 14 years of age or older, may become a member. A 15-member Board of Directors is elected at an annual membership meeting, held in February each year. The Board makes policy decisions according to directions and priorities established at the annual meeting. forms committees and hires staff and technical assistance.

The following goals and objectives were established by the incorporating Board of Directors in March 1975:

- Establishment of cooperative management, maintenance, and re-habilitation of homes and having the option of resident ownership.
- Generation of essential services for residents.
- Support of collectively owned and managed businesses.
- Ending speculative development in the Cedar-Riverside area and insisting on the write-down of land values by government agencies to keep housing as low cost as possible.
- Making collective decisions on all physical aspects of the community such as open space and energy type and use.
- Insistence on low cost, high quality construction whenever new building is necessary.
- Encourage community based arts and media.

Copies of the Articles and Bylaws for the CDC are available to all members by calling or stopping by the office at the above address in the People's Center. Office hours are 9 - 4:30 p.m.

Please consider carefully the information in this packet as well as the attached membership form. We need your support.

Why Join the CDC? BECAUSE WE CAN'T WIN WITHOUT YOU.

This community exists today because we've been able to organize ourselves to oppose its destruction. When the federal Department of Housing and Urban Development and Cedar Riverside Associates, Inc. made plans to bulldoze the West Bank and build high-rises, the CEDAR RIVERSIDE ENVIRONMENTAL DEFENSE FUND was formed. A suit was filed in Federal Court contesting the environmental impact statement that would have allowed the destruction of our community. We won, and as of now, high density construction is stopped on the West Bank.

In 1974 CRA decided to eliminate the opposition by raising rents on all the older housing in our community. Increases averaging 35%, some as much as 100%, were announced. This would have forced most of us out of the neighborhood. Our response was to form the WEST BANK TENANTS UNION and withhold rent from CRA. We won by forcing them to negotiate with us collectively. Everyone on the West Bank enjoys lower rent and better maintenance because of the Union. CRA was not able to price us out of our homes.

The CEDAR RIVERSIDE PROJECT AREA COMMITTEE used to be a rubber stamp for the developer. Because of our determination to have a voice in the future of our community, control has shifted to residents. The PAC sponsored workshops which put together a picture of what resident controlled development would look like. It includes major rehabilitation of existing units, infill housing where buildings are beyond saving, and no high rises.

In order to realize these plans, full resident participation in a community controlled development entity is required. Our ideas on design and ownership must be organized and put into effect. The WEST BANK CDC, INC. has been formed to be a vehicle for resident control over the housing process, and to coordinate housing with provision of services. By joining the CDC and participating in your neighborhood committee, you can assure the survival of the community.

Neighborhood Committees

The Department of Housing and Urban Development (HUD) has announced its intention to "acquire" the Cedar-Riverside New Town project and has retained consultants to investigate legal and financial implications of redeveloping the area. With this decision, the future of the West Bank again hangs in the balance. HUD's options include dropping the project altogether and turning it over to the city as a redevelopment project, continuing the New Town project (perhaps on a much smaller scale), or turning it over to yet another private developer.

With these changes taking place, it is imperative that residents of the community become involved in a planning effort to insure that their concerns are heard. Any future redevelopment of the West Bank must implement the ideas, energy, and enthusiasm of the residents. There is support for community based developers, and the CDC is in a position to assume this role. In other words, with extensive organizing and planning on the part of the residents of this community, we can gain control of the decisions affecting redevelopment of our neighborhood.

We must evolve a community-based, democratically derived, people oriented plan. To realize this goal, the CDC is forming the Neighborhood Committee. This group will begin working on the plan with which we will realize community control. This plan will include not only physical design, but ownership policy, financial considerations, social and cultural services, and other aspects of community life as well. All residents of Cedar East and Riverside Park who are interested in grassroots community control, who wish to

exercise control of their environment, who wish to participate in the decision-making process affecting the future of the West Bank are invited and urged to participate in the Neighborhood Committee.

Community control can be ours if the community residents are willing to take up the challenge. Join the Neighborhood Committee today. People wishing to participate should give their names to the person delivering this brochure or stop in or call the CDC office in the Peoples Center, 336-1092.

WHAT IS THE CDC DOING?

Since getting organized in March, 1975, the West Bank CDC has been or is becoming involved in four major activities within our community: local business development, new housing, rehabilitation, and cooperative housing management. Resources to hire staff and carry out activities come from two sources: Community Development Block Grant monies from the City and special funding for CDCs from the Minnesota Department of Economic Development.

Local Business Development - the West Bank CDC has worked for over a year with the West Bank Cooperative in their efforts to establish the full-service coop grocery store in the old Thrifty Market space on Cedar Avenue. After a seemingly endless series of hassles with CRA, the City, HRA, and HUD, the store is nearly ready to open. Besides helping the co-op work through some of these hassles, the CDC has made a \$30,000 venture capital grant to the store for inventory and equipment as well as providing help to sell shares of co-op stock.

Rehabilitation - The Rehabilitation Task Force of the CDC is presently doing a physical and financial analysis of rehabilitation in the older neighborhood. Working with the PAC development committee and architect Stan Fishman, the task force has studied a sample block in Cedar East to get an idea of what kind of costs might be anticipated in a full-scale rehab program. Methods are being studied to determine how new infill housing construction can be accomplished along with the rehab to keep resulting housing affordable to present residents. A major CDC objective, in addition to reasonable rents, is retention of the maximum number of existing structures. Neighborhood Committees are being organized by the CDC to insure that people living there will have a major voice in all planning and decision-making for the older neighborhood.

New Housing - Besides exploring the probable need for new infill housing in the older neighborhood, the CDC has been doing some preliminary work to develop new housing in the area north of Washington Avenue. New construction there means that tax increment funds will be generated which can be used to accomplish rehabilitation in the older neighborhood and keep rents down. The first site being studied is along the "riverbluff," south of the railroad bridge. CDC's major concerns are to make any new construction compatible with the results of the CREDF environmental lawsuit, consistent with the housing needs of our community, and affordable to a wide range of incomes. The New Housing Task Force of the CDC has been working with architects from Close Associates and is consulting with Roy Mann an internationally recognized authority on development in river areas, to insure environmentally sound results. Members of the Task Force have met with Dr. Tom Bligh from the University of Minnesota concerning energy considerations for the riverbluff development.

Cooperative Housing Management - Since it looks like CRA will soon become a past landlord of our neighborhood, the problem of management for their properties in Riverside Park and Cedar East has become a concern of the West Bank Tenants' Union and the CDC. Presently, the West Bank Tenants' Union is negotiating a collective bargaining agreement with CRA. Representatives of the CDC have been monitoring this process and are preparing to help establish a cooperative management organization to assure resident control over the operations of housing in the older neighborhood. 66

**Cedar Riverside Project Area Committee
Position on Solution
To the New Community
Development Crisis**

**Excerpts from a report submitted by the
PAC to the New Communities Board
November 16, 1976**

A. Process

It is essential that people to be affected by planning decisions be intimately involved in the planning process. HUD's citizen participation policies as detailed in the Urban Renewal Program & Workable Program Handbooks (federal documents), recognized that 1) Involvement of those affected leads to a more informed and responsive planning process; and 2) In many cases (and this is definitely one of them) it is very difficult, if not impossible, to carry out a redevelopment plan which has involved the active opposition of area residents. We are committed to a planning process which best meets the needs of those most affected--that is, the people whose communities will be dramatically altered by redevelopment; the people who will ultimately live in the new community developed. Public officials need to recognize that, increasingly throughout the country, and definitely in this case, that is the only type of planning process which will be tolerated by the citizens.

B. People

1. Development should reflect housing needs of the metropolitan area by unit size and cost. This implies an economically integrated community serving a wide variety of household types. It also means that development must respond to the area's most pressing housing needs in a realistic way.

2. Development must respond to the special housing needs of the University Community; it must especially accomodate people associated with the area's institutions.

3. Development must respond to the above two requirements in a way which results in an attractive and stable residential community.

In short, development should meet the main objectives of the University Community as developed so far in the Comprehensive Municipal Planning process: To provide a safe and pleasant place for those who choose, and who must, live in the University community; provide, thus, for a variety of life styles and residential preferences; and encourage a stable, responsible and long-term population.

C. Development Goals: Housing

1. Affordable Housing Rapidly escalating housing costs is the major housing problem in the metropolitan area, and one which is especially in the central cities. Low and moderate income households are in the most critical housing situations and their needs are paramount. (See, for instance, Metropolitan Council Development Guide; City Council Rental Housing Task Force's The Crisis in Rental Housing). This means that housing must be developed as cost-efficiently as possible; housing must be as energy efficient as possible; maximum use should be made of existing housing resources through rehabilitation to the extent that this results in significantly less costly housing; adequate subsidies must be provided and housing should be developed in such a way as to make these subsidies serve as many households as possible.

2. Housing design must be congruent with the occupants' lifestyle (especially important in the case of households with children) and should be such as to foster population stability, community responsibility, and proprietary attitudes on the part of residents. (See CREDF comments on Draft EIS) The design process will make maximum use of existing research on people and housing and we will carry out a continuous user-feedback study program. Such a process is essential if liveable multi-family housing is to be developed on a meaningful scale.

3. Resident control and, where practical, the financial benefits of ownership accruing to residents, should be central features of all housing developed. This goal arises from two considerations. First, tenants pay virtually all the costs of building and maintaining housing, yet in the ordinary landlord/tenant relationship, have virtually no control over their own living environment. (In the case of Cedar Square West, for instance, over the life of the four Stage I Land Co. mortgages, about \$157,000,000 would be paid to construct and maintain the buildings. Investors will have provided about 2% of this in the form of equity contributions, taxpayers about 15% in the form of mortgage subsidies, and the residents about 83%. These figures are based on operating costs projected on the original Forms 2013 and are thus con-

servative; allowing for inflation would reduce the investors contribution to virtually nothing. Yet Cedar Riverside Associates (CRA) has consistently refused to negotiate with CSW tenants over issues of maintenance, rent levels and operating policies which vitally affect the resident's living conditions) This situation is obviously fundamentally unfair and exploitive.

Second, the extensive experience of FHA (Federal Housing Administration) with cooperatives indicates clearly that the situation is unnecessary. Ownership forms which put the tenant in control clearly lead to better housing environments. Such ownership forms are also better managed and on a more sound economic footing than absentee owned housing. Coops have the lowest default rate of any FHA insurance program, including the single family home programs. The attached FHA memorandum from Asst. Sec. Gullledge. (Attachment #11, not contained in this excerpt). Our fundamental concern for housing which encourages population stability and resident responsibility thus dictates resident controlled ownership forms.

D. Support Facilities

1. Commercial development should be aimed primarily at meeting residents needs.

2. Commercial construction and rehabilitation should be done in a way which will preserve the present ambience of the Cedar Avenue commercial district. Rehabilitation and new construction should generally preserve the mixed commercial/residential building type which predominates. Most of the structures facing on Cedar Avenue should be rehabilitated

3. We propose that about 50,000 square feet of existing commercial space be rehabilitated and 120,000 square feet of additional commercial space be constructed. About 60% of this new construction would occur in the 7-Corners area; 30% facing Cedar Ave. in Cedar East and about 10% scattered.

4. Adequate parking, recreation, community facilities, and cultural facilities should be provided in conjunction with residential and commercial development.

DEVELOPMENT PARAMETERS

A. Building types

1. Large scale new construction--areas 1,2 and 7. Types of buildings contemplated include: midrise elevator buildings for households without children; 3-story walkups arranged around stairwells serving 6 units rather than corridors, for all types of households; townhouses and 3-story buildings combining 2-story townhouses and single story flat type units, primarily for households with children. These buildings to generally be in a cluster configuration around central courts. The design of the latter units, particularly, should proximate single family housing in a more dense context and be aimed at relatively stable families. The variety of unit types will accomodate a much wider variety of household types while still emphasizing family housing.

Based on raw construction cost projections of \$18 pr/sq.ft for walkups; \$19 for the "piggyback" townhouse/flat combinations; and about \$25 for townhouses and mid-rise buildings, rents for a typical 2-BR unit would run about \$250, \$260, and \$310 respectively. At these rents, a relatively high proportion of the units will need to be subsidized with Sec. 8. The best likelihood for marketing non-subsidized units would probably be 3 and 4 BR units to groups of singles, although certainly a reasonable percentage of family units could also be marketed given the design particularly for families and the locational advantages.

2. Rehabilitation with infill new construction--areas 10,11 and 14.

a. Rehabilitation feasibility: In the summer of 1975, Stanley Fishman an architect with extensive experience with residential rehabilitation surveyed the residential buildings in Cedar East and Riverside Park. He found 23% in "good" condition (rehabilitation certainly feasible); 52% in "fair" condition (marginal condition--more detailed evaluation required); and 25% in "poor" condition (economic feasibility of rehabilitation questionable)

In the summer of 1976, Ron Soderberg, a contractor with extensive experience evaluated several units in each category and estimated costs

to rehabilitate. Average costs were: Houses in a "good" category--\$5,900, "fair"--\$8850; "poor"--\$21,200. Assuming that these buildings can be acquired for the usual price in urban renewal areas (market value of land plus 20%) and that the area is downzoned somewhat as part of a new Urban Renewal Plan, these costs translate into rents of about \$180, \$200, and \$310 for 2-BR units. The first two fall within the usual range for subsidized Sec. 236 units and thus would well serve moderate income households without additional subsidy.

These costs are based on rehabilitating the units to the standards usual in the case of a 312 Loan--all code items are met; but costly cosmetic items are not necessarily done. For instance, walls, floors, and ceilings are brought into code standard condition, but not necessarily an "as new" condition. The latter might add an additional \$6,000 or more. Even then, the cost of a good unit rehabilitated to "as new" condition is significantly less than that of an equivalent new unit.

Rehabilitating "poor" units, however, is clearly at least as costly as building a new unit. Demolishing such units and rebuilding allows the opportunity to increase the total number of units on the site and later the unit size mix on the site. Such advantages would be weighed against possible disadvantages of losing a building that is unique in one way or another.

A compelling rationale for rehabilitating many of the "good" and "fair" units is that sound units are produced at relatively low cost (compared to new construction); this reduces the total amount of housing subsidy needed for lower income households; makes real economically integrated housing easily possible since non-subsidized rents are realistic (as opposed to rents on newly constructed units); makes the area most attractive to families who are economically in a position to pick and choose, since the rehabilitated units are far more likely to appeal than newer townhouses because the rehab units will generally be closer to the single family ideal and will have features (like space and woodwork) not possible in new construction.

A rehab/infill scheme thus offers the best possibility for housing a variety of households within the context of a stable, economically integrated family neighborhood.

b. Infill housing: Typically, small walk-ups, piggyback units (apartment units which have two floors) and townhouses, designed to blend in with the rehabilitated units, would replace demolished units in a way which increases the total number of units available substantially. If done in one mortgage package, the low costs of rehab can even be used to "subsidize" the higher costs of new construction producing a broad range of rents for both new and rehabbed units--the majority affordable without subsidy in the form of Sec.8 payments.

c. In the typical plan illustrated, the block has the following unit distributions before and after redevelopment:

<u>BRS</u>	<u>#Before development</u>	<u>Rehab</u>	<u>Walkup</u>	<u>Townhouse</u>	<u>Piggyback</u>	<u>TOTAL</u>
0	4 (7%)	3				3(4%)
1	22 (40%)	14	6			20(25%)
2	23 (42%)	14	6	7	10	37(46%)
3	5 (9%)	4		7	10	21(26%)
4	1 (2%)					0
Total	55	35(64%)	12	14	20	81

Increase in number of units is 47%.

This plan requires closing streets and arranging parking on the vacated streets. Average rents: rehab--\$186; walkup--\$228; piggyback--\$290; townhouse--\$362; average wholeproject--\$257. This provides a reasonable range, with some of the units (probably 20-30%) requiring Sec.8 subsidy.

3. Commercial/Residential--New & Rehab

This type of development would occur in areas 3,8, and 9. Residents would be largely households without children. A relatively small percentage would have children. Costs have not been explored very extensively but it is expected that they would not differ too substantially from construction or rehab costs in the other areas; some subsidization of

residential costs by commercial rents is expected.

4. Energy concerns. With energy costs the most rapidly rising of all operating costs, and with the problem likely to become more critical in the near future, a major objective of housing design will be to develop units as close as possible to the goal of energy self sufficiency. Maximum use will be made of alternative energy sources (such as solar energy) with minimizing federal aid a second major objective.

B. How DEVELOPMENT WILL BE IMPLEMENTED

The focus is on resident directed redevelopment agencies which possess the expertise and resources to accomplish the job quickly and efficiently. This will, at least in the initial stages, involve a partnership between community based developers, such as the West Bank Community Development Corporation (CDC), and MHRA, which has the legal ability to act in this capacity. The first new construction stages would be done as limited dividend partnerships--with the CDC/MHRA partnership syndicating equity.

The rehabilitation/infill would be planned by present residents on a cooperative basis--the actual development entity might be either a partnership involving MHRA and limited partners, or a coop. Eventually, new construction would also be planned as pre-sold coops.

It should be pointed out that such a joint venture is probably the only way to carry on development in this neighborhood without undue delays. It is certainly the best way, in any neighborhood, to provide housing which best meets peoples' needs.

C. AREA-BY-AREA DEVELOPMENT PLANS (SEE MAP FOR AREAS CORRESPONDING TO NUMBERS)

1. Moderate density, low-and mid-rise cluster housing; 55 du/acre (55 units per acre), mixture of singles and households with children.
2. Mid-rise, 70 du/acre, emphasis on households without children.
- 3., 8., 9. Commercial residential/new and rehab. Emphasis on households without children.
7. 100 units, about 65% for households with children; low-rise cluster housing.

10. Rehabilitation of about 1/2 of the existing units and infill new construction to bring density up from present 14 du/acre to just over 20 du/acre.

11. Rehabilitation of housing fronting on 20th and Butler Place. Non-subsidized units equally distributed between households with and without children.

14. Rehabilitation of 75% of existing units and infill new construction to produce density of 20 du/acre.

D. The attached tables summarize this development framework and compare this development to regional housing demand and to that initially proposed in the new community. Note that this development scheme is far more balanced, more closely matches regional demand, and provides for a far broader range of household types than the initial proposal. It goes much farther toward meeting the area's most pressing housing need - that of lower income families.

If redevelopment in the Cedar Riverside area is to provide a reasonable amount of housing for families with children (and the primary reasons for doing so are to provide for a focus of community stability and to meet the area's most pressing housing needs); is to do so in environments most appropriate for households with children (and these can still be at relatively high densities) and uses existing resources most efficiently so as to produce sound housing at the lowest possible cost; then a development scheme very similar to this one is the only logical alternative.

Bedrooms

New & Rehab Units (%)	<u>0-1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>T</u>
Low income	15%	8%	6%	1%	30%
Moderate*	15	10	7	2	34
Middle*	5	9	12	4	30
Upper	<u>2</u>	<u>2</u>	<u>2</u>	<u>-</u>	<u>6</u>
TOTAL	37%	29%	27%	7%	

Regional Demand(%)					
Low	13%	8%	6%	3%	30%
Moderate*	4	3	4	1	12
Middle*	11	16	10	3	40
Upper	<u>7</u>	<u>7</u>	<u>4</u>	<u>1</u>	<u>19</u>

Cedar Riverside Associates

Low	7	7		
Moderate*	15	11	3	
Middle*	20	10	3	
Upper	<u>8</u>	<u>11</u>	<u>2</u>	<u>1</u>
	49	37	8	1

* NOTE: Regional Demand (Metro Council Development Guide) and Cedar Riverside Associates used Sec. 236 limits to derive "moderate"; we have used Sec. 8 limits which are much broader. Therefore, significant percentages of our "moderate" correspond to "middle" in the other tables.

Note: Also "low to moderate income" does not correspond to "subsidized"; many non-subsidized rehab units are within "moderate" income range.

CEDAR-RIVERSIDE RENEWAL AREA

West Bank CDC, Inc.

2000 South Fifth Street

Minneapolis, MN 55454

Phone: 376-1092

March 15, 1977

Mr. Jim O'Gara
319 - 15th Avenue S. E.
Room 110 Shops
University of Minnesota
Minneapolis, Minnesota 55455

Dear Jim:

Enclosed is the copy of the Riverbluff site plan that you requested on the telephone yesterday. The plan is subject to change, but this will give you at least a preliminary idea of what we are thinking about so far. There would be between 75 and 100 units, about half of which would be larger units for families.

If you have any questions do not hesitate to contact me. Otherwise I will see you at the meeting in your office at 3:00 p.m. on Wednesday, March 23. Tom Eligh, our energy consultant from the University of Minnesota, is planning on being there too.

Sincerely,

Ann Waterhouse

Ann Waterhouse
CDC Staff Coordinator

Encl.

UNIVERSITY
OF
MINNESOTA

PRELIMINARY SITE PLAN
CDC HOUSING

BY A.E.A.	BUILDING	SCALE AS DRAWN	SHEET
CHECKED J.O.	DATE 3/18/77	REVISED	DRAWING 39

Four years of planning, remodeling, and construction will alter the Community's gross square feet of building space, but should not alter the general character.

Any new additions between 1977 and 1981 would be investigated for connection to ICES.

All of the projections of steam service demand and hot water service demand were based upon the following data.

We are providing by letter a rough estimate of St. Mary's and Fairview Hospitals growth for the next 5 year period.

Total peak load growth by 1981 is then approximately:

Heating

University	112,100 lb/hr
St. Mary's - Fairview	<u>35,000 lb/hr</u>
	147,100 lb/hr Peak Steam

Cooling

University	53,172 lb/hr
St. Mary's Fairview	<u>6,372 lb/hr</u>
	59,544 lb/hr

EXISTING PLANT CAPACITY FACTOR = 51%

Heating Load Addition - Winter = 75,021 lb/hr

- Summer = 30,367 lb/hr

STEAM LOAD ADDITIONS

UNDER CONSTRUCTION

<u>University of Minnesota</u>	<u>St. Mary's Consortium</u>	<u>Year</u>	<u>Gross Square Feet</u>	<u>Lbs. Steam/ Hr.</u>
Bookstore Adm. & Records	-	1976/77	83,480	4,200
-	Junior College	1976/77		9,000
-	Heat Loop	1976/77		- 9,000
Unit B-C Health Sciences	-	1977/78	574,000	57,400
Law Building	-	1977/78	245,000	15,300

PLANNED

Unit F, Pharmacy & Nursing	-	1979/80	156,837	15,600
Electrical Engr. Addition	-	1979/80	151,000	9,400
Zoology Addition	-	1979/80	110,000	6,900
Music	-	1979/80	272,000	17,000
Architecture, Third Floor	-	1979/80	25,000	1,600

ESTIMATED LOADING DATA

Health Related	10 GSF/lb. steam
Underground Space	20 GSF/lb. steam
Office-Classroom	16 GSF/lb. steam

STEAM ADSORPTION AIR CONDITIONING ADDITIONS

FUNDED OR PLANNED SPACE BY 1980

		<u>Capacity</u>	<u>Steam Rate</u> ¹
³ Law	Classroom	400	7,200
^{2,3} Unit B-C	Health Sciences	2,000	36,000
Music	Music Education	200	3,600
³ St. Mary's	Hospital	<u>354</u>	<u>6,372</u>
Sub-Totals		2,954 tons	53,172 lb/hr
<u>TOTALS - 1980 - EXISTING AND PROPOSED</u>		<u>15,639 tons</u>	<u>281,502 lb/hr</u>

¹Based on 18 lb/hr/ton of Steam Usage at Full Adsorber Loading.

²Unit F, a major Health Science facility, will get chilled water from Unit A system. All projections for steam include this additional loading on Unit A A/C.

³Under construction

ST. MARY'S Hospital

2414 SOUTH SEVENTH STREET, MINNEAPOLIS, MINNESOTA 55454

EXECUTIVE OFFICES

March 11, 1977

Mr. Jim O'Gara
Principal Plant Engineer
Department of Physical Plant
University of Minnesota
200 Shops Building
319 15th Avenue
Minneapolis, Minnesota 55455

Dear Mr. O'Gara:

This letter is to give you a rough forecast of Fairview/St. Mary's additional steam needs in the next five year period.

I met with Mr. Vern Knutson, Director of Facilities and Planning, Fairview Hospital, and they project an increased annual usage of approximately 25% due to new construction. Fairview Hospital's average annual steam usage is currently around 60,000,000 pounds. Therefore, they would require an additional 15,000,000 pounds annually. Fairview has retained a consultant to study their space needs. They anticipate receiving the consultant's recommendation within 30 days. At that time, they will be better able to more definitively project their steam needs for the next five years.

We don't anticipate the annual steam needs of the St. Mary's Hospital Complex to increase more than a total of 20,000,000 pounds over the next five years.

The combined total increase projected is then 35,000,000 pounds of steam annually.

Sincerely yours,

Marlyn K. Ervasti
Vice President

MKE/se

cc: Mr. Vern Knutson
Mr. Bruce Haskin

5.2.4

10 YEAR PLAN

The projected 10 year central plant service area expansion is outlined on the map entitled "Central Plant Expansion - 1990" found in Section 5.3. University expected expansion by that same year is shown here.

The table found below compares present steam load capacity of buildings within the 1990 ICES boundaries to those projected loads ten years from today.

<u>Building Type</u>	<u>1977 Steam Load Demand (10⁶ lbs/yr)</u>	<u>1990 Steam Load Demand (10⁶ lbs/yr)</u>	<u>% Increase</u>
University	1,830	2,100	15
West Bank Medical	200	250	25
Augsburg College	70	105	50
Commercial-West Bank	15	25	65
Commercial-East Bank	125	140	10
Apartment-West Bank	265	Min. 265 Max. 1,000 Med. 800	0 275 200
Apartment East Bank	255	300	20
Single Family-Duplex West Bank	85	40	-50
Single Family-Duplex East Bank	<u>250</u>	<u>225</u>	<u>-10</u>
TOTAL	3,095	3,985	35

Our 1990 ICES steam load calculation is verified by a study conducted by the Minnesota Energy Agency. In that study a heat load density for downtown Minneapolis buildings was calculated. The Agency found the total steam demand for the downtown area to be approximately 8.5×10^{12} BTU/yr.

They further estimated the building volume to be 850 million ft^3 . The heat load is then $(8.5 \times 10^{12} \text{ BTU/yr}) / (850 \times 10^6 \text{ ft}^3) = 10^4 \text{ BTU/yr-ft}^3$.

For the 1990 projected ICES limit (see photograph in the next Section) there will be approximately 22 million gross square feet. Assuming a general construction level of 40 ft in the expansion limit the steam required for heating is:

$$(22 \times 10^6 \text{ ft}^2) (20 \text{ ft}) (10^4 \text{ BTU/yr-ft}^3) (\text{lb of steam}/10^3 \text{ BTU}) = 4400 \times 10^6 \text{ lb/yr}$$

This figure correlates with our previous calculation.

CENTRAL PLANT LIMITS

The following discussion will involve the suitability of the central plants of ICES to meet the projected 1990 service demands, and the costs of central plant facilities and distribution to meet the demand. At the present time (1977), a group of Swedish consultants in cooperation with the Minnesota Energy Agency and ERDA have begun a study of the Twin City metropolitan area to determine the feasibility of district heating for large urban areas. We will make some comments upon suitability of the ICES central plants for an urban plan of this size.

The estimated retrofitted capacity of the central plants of ICES have a total steam production capability of 1,087,000 lb/Hr. This capability is for all coal - oil - gas fired units. The actual breakdown is as follows:

Southeast Steam Plant:

Coal	260,000 lb/Hr.
Oil	160,000
Recovery	<u>43,500</u>
Total	463,500 lb/Hr.

University Heating Plant:

Coal	417,000 lb/Hr.
Oil	<u>200,000</u>
Total	617,000 lb/Hr.

Since ICES is a combined plant operation, we can determine plant reliable capacity on coal and waste heat recovery.

Southeast Steam Plant:

Coal (Western)	260,000 lb/hr
Recovery	43,500

University Heating Plant:

Coal (Western)	<u>417,000 lb/hr</u>
Reliable Capacity	720,500 lb/hr

In 1977, the estimated peak steam demand will be 500,000 pph. By 1980, the estimated demand will be 560,000 pph. This is shown on the enclosed duration profile of current projections of service demand for ICES. Some reserve capacity may be generated by addition of thermal storage and operation of a district hot water distribution system. If this takes place, we can expect a 1 to 2 percent reduction in service demand. In 1980 the net demand will be 554,400 pph. This will leave a reliable reserve capacity for ICES of:

$$727,000 - 554,400 \text{ pph} = 172,600 \text{ pph}$$

We have estimated that the 1990 projected annual load to all add-on customers (shown on the photo) to be 3985 million lbs steam annually. This is equivalent to an average load of:

$$3985 (10^6) \div 8760 = 454,909 \text{ lb/hr}$$

There exists no formulas or definite pattern by which to calculate peak hourly steam demand from an average hourly demand rate. However, as can be seen in the table below, the peak hourly demand would seem to be about twice that of the average hourly demand.

<u>Heat Plant</u>	<u>1976 Steam Usage (10⁶ lbs/yr)</u>	<u>Avg. Steam Usage (10³ lbs/hr)</u>	<u>Peak Steam Demand (10³ lbs/hr)</u>
University	1,830	209	410
Fairview-St. Mary's	198	23	48
Augsburg College	68	8	12.5

We estimate, therefore, the peak 1990 ICES demand to be about:
 $454,909 \times 2 = 909,818$ lbs/hr. We assume this to be a minimum amount since neither an industrial nor a steam adsorption load have been added into our Community (i.e., not including the University, St. Mary's-Fairview or Augsburg) steam demand calculations. We would expect, therefore, the 1990 ICES peak steam demand to be well over 1,000,000 lbs/hr.

We have shown the central plants to have a 1980 reliable capacity of 720,500 lbs/hr or some: $1,000,000 - 720,500 = 279,500$ lbs/hr short of the 1990 minimum load. Installation of this additional load could be easily accomplished within the central plants of ICES.

Removal of No. 2 boiler at Southeast Steam would leave space for at least a 300,000 pph boiler. At the University Plant we would probably remove the No. 12 boiler (built in 1937) and modify the No. 1 boiler. This would provide a minimum of 250,000 pph of additional capacity. These additions would easily accommodate even the most liberal projections of 1990 steam capacity.

Based upon 1977 boiler costs (installed) at \$40 per pound, an additional \$15 million of investment would be required.

Distribution costs for downtown Minneapolis were calculated by the Minnesota Energy Agency to be about 10 million dollars per year for 30 years amortization. The 1990 expansion approximates (in sq ft) the size of downtown Minneapolis, we feel the Agency's calculations can be used for first approximations. However, due to the lower building density of the area, piping size and pumping requirements should be significantly lower than downtown requirements.

We are reasonably sure that this limit could be expanded if hot water is distributed rather than steam. Expansion based upon hot water

would take place primarily to the south of ICES and to the north. The downtown area of Minneapolis would be served by one of NSP's power plants called Riverside. Expansion to the east is not as probable because of the Minneapolis-St. Paul City limits approximately one mile away. A large paper plant in this area, Hoerner-Waldorf, may serve that area.

If this expansion did take place, the amount of turbine-generation could be significantly increased at Southeast Steam.

$$\text{KW Projected} = \frac{500,000 \text{ lb/hr}}{3413} (1379.74 - 1298) = 11,975$$

Plant heat would be utilized as steam at 1186 BTU/lb. The by-product power rate would approach $40 \frac{\text{KWh}}{\text{BTU}}$ if hot water was used.

$$\begin{aligned} \text{KWh}_{\text{Annual}} &= \frac{40 \times 1186 (10^6) \times 8760}{10^6} \\ &= \underline{\underline{415.6 (10^6) \text{ KWh}}} \end{aligned}$$

[illegible]

ST. MARY'S, FAIRVIEW, AUGSBURG

570.+	
560.+*	
550.+*	PROJECTED EQUIVALENT HOURLY ENERGY DURATION
540.+**	COMBINED EAST BANK, WEST BANK,
530.+.*	ST. MARY'S, FAIRVIEW, AUGSBURG
520.+.*	
510.+..	
500.+/.*	
490.+/X*	
480.+//*	
470.+//.*	
460.+//.*	
450.+//X.*	
440.+////.*	
430.+////..*	
420.+/////.*	
410.+/////.*	
400.+/////.*	
390.+/////.*	
380.+/////.*	
370.+/////X.*	
360.+/////.*	
350.+/////.*	
340.+/////.*	
330.+/////.*	
320.+/////.*	
310.+/////.*	
300.+/////.*	
290.+/////.*	
280.+/////X.*	
270.+/////.*	
260.+/////.*	
250.+/////.*	
240.+/////.*	
230.+/////.*	
220.+/////.*	
210.+/////.*	
200.+/////.*	
190.+/////.*	
180.+/////.*	
170.+/////.*	
160.+/////.*	
150.+/////.*	
140.+/////.*	
130.+/////.*	
120.+/////.*	
110.+/////.*	

+	+	+	+	+	+
C	1757.	3514.	5270.	7027.	8784.
	HOURS OF OPERATION				

95

*	1979 ADDITIONAL ENERGY DEMAND TO 1978 ENERGY DEMAND
.	1978 ADDITIONAL ENERGY DEMAND TO 1977 ENERGY DEMAND
X	1977 ADDITIONAL ENERGY DEMAND TO 1976 ENERGY DEMAND
/	1976 ENERGY DEMAND

GRID CONNECTED INTEGRATED
COMMUNITY ENERGY SYSTEM

Approximate Gross Square Footages of Major Land Areas
From Central Plant Expansion Limits Photograph

University District Improvement Area	11,700,000 GSF
Como Community	18,100,000 GSF
U of M East Bank	7,700,000 GSF
Motley/Prospect Park Community	13,500,000 GSF
U of M West Bank	1,700,000 GSF
West Bank Medical Complex	800,000 GSF
High Density Housing (total)	1,300,000 GSF
Cedar-Riverside Community Centrum	800,000 GSF
Elderly Housing	400,000 GSF
Augsburg College	1,000,000 GSF
TOTAL FOOTAGE OF ENTIRE AREA	57,000,000 GSF

PHYSICAL PLANT PHASE I EXPANSION LIMITS - 1990 (includes East Bank, West Bank, West Bank Medical Complex, Augsburg and one-half of University District Improvement Area)	30,000,000 GSF
--	----------------

5.3.1

CENTRAL PLANT LIMITS - APPENDIX

The following information was used to correlate and verify reasonableness of the University's findings during Phase I for projected loadings up through 1990.

MINNESOTA ENERGY AGENCY

TABLE OF CONTENTS

INFORMATION REQUIRED ON THE STUDY AREA

	<u>PAGE</u>
I. Heat Sources	1
1. Description of the power plants in the study area (including existing and planned)	1
1.1 Plant types, locations and description of fuel	1
1.2 Measure of thermal heat rates -- (efficiency)	2
1.3 Steam turbine data	2
1.4 Cooling data and water source	3
1.5 Electric system load duration curves	3
1.6 Cost data for existing plants and estimates for future plants	4
1.7 Timing of future plants including options	8
2. Inventory of waste heat from industry, incineration plants and other sources	8
3. Environmental data and restrictions	8
II. Heat Loads	10
4. General Information	10
4.1 Projection of population over 20-year period	10
4.2 Maps of present and planned built-up areas and types of buildings. Planned urban renewal including time schedule and options	10
4.3 Description of existing energy networks -- steam, gas, electric, and chilled water. Also location and capacity information on the production and sub-station facilities	10
4.4 Inventory of present buildings with central heating systems	13
4.5 Federal or state decisions about not using some energy sources or other restrictions	13
5. Technical Data	13
5.1 Degree days and other climatic data	13
5.2 Annual energy heat demands for old and modern buildings of different kinds. Estimate the effect of improved insulation of standards. Distinguish between domestic hot water and the space heating load. Also describe seasonal and daily variations.	13

5.2.1	Seasonal and daily variations of space heating demand for central core buildings is not presently available. However, these buildings can be represented quite closely by residential users.	14
5.2.2	The MEA estimates that overall heating demand could be reduced by as much as 25%. Improved insulation would account for 15-20% of this reduction.	15
5.3	Description of ground conditions (for construction of pipeline network)	15

TABLES

1	Power Plant Facility Data
2	Water Use in Steam Electric Facilities in the 7-County Metropolitan Area, 1974
3	Economy of Scale for Various Sized Generating Plants
3B	Costs for Combined System
4	Projected Populations

FIGURES

1	Twin Cities Metropolitan Area - Political Boundaries, 1975
2A	Daily NSP Load Profile Data - Base Load Patterns - 1972 thru 1974 Averages
2B	Average Load Duration Curve for Month - July
2C	Average Load Duration Curve for Month - August
2D	Average Load Duration Curve for Month - December
2E	Average Annual Load Duration Curve (Calendar-Year)
3	Minneapolis Zoning Map
4	St. Paul Zoning Map
5	Usable Vacant Residential Land
6	Existing Distribution System Northern States Power
7	Distribution Line Map for IDS Properties
8A	Existing and Proposed ICES Steam Distribution Lines - 1976
8B	Buildings with Hot Water Heating Systems for Future Turbine Condenser Loop

FIGURES (cont)

- 9A Source Market Research
- 9B Source Market Research
- 9C Source Market Research
- 9D Source Market Research
- 9E Source Market Research

HEAT SOURCES

1. Description of the power plants in the study area (existing and planned)

1.1 Information on power plants including size, type, location, and fuel used is summarized in Table 1 and Figure 1.

The Riverside plant is located on 85 acres next to the Mississippi River among a mixture of heavy industrial, commercial, and residential developments. No new construction or additional construction of buildings may occur on this section of the river whose processes in any way involve the dumping of effluents into the river. Special permission would have to be granted before this plant could be expanded or altered.

The High Bridge plant, located on 69 acres near the heart of downtown St. Paul is in a heavily developed industrial area. It borders the river and is surrounded by petroleum storage facilities, drum and barrel manufacturing, automobile salvage, and warehousing. It is located very close to the existing steam plant facility and therefore to the existing pipeline system.

The Black Dog plant is located on 1422 acres of Minnesota River flood plain. The area around this plant is not highly developed.

The King plant is located on 187 acres in an industrially oriented area next to the St. Croix River between Stillwater and Bayport.

The Monticello plant is located on 1325 acres in an agricultural area next to the Mississippi River 35 miles north of the Twin Cities.

The Prairie Island Plant is located on 560 acres in an

agricultural area next to the Mississippi River 32 miles south of the Twin Cities.

The Sherburne County plant will consist of four large coal fired turbines. The first came on-line this year. The second will come on-line in 1977. The third and fourth turbines are planned to come on line in the 1981-85 time frame. The plant is surrounded by agricultural land, but NSP has created a large industrial park area around the plant.

1.2 Thermal heat rates for each plant may be found in Table 1.

1.3 In response to questions asked them, the electric utility sent the following information on their turbines:

High Bridge turbines #3 and #4 are identical 50,000 kilowatt, 3,600 rpm, tandem compound double flow turbines. Steam conditions are 850 psig and 900 degrees F and 1.5 inches Hg absolute back pressure.

High Bridge #5 is a 100,000 kilowatt, 3,600 rpm, single reheat tandem compound double flow turbine. Steam conditions for this turbine are 1800 psig at 1000 degrees F and 1000 degrees F reheat with 3.5 inches Hg absolute back pressure.

High Bridge Unit #6 is 156,250 kilowatt, 3,600 rpm, reheat tandem compound, double flow turbine. Steam conditions for this turbine are 1800 psig at 1000 degrees F and 1000 degrees F reheat with 3.5 inches Hg absolute back pressure.

Black Dog Unit #1 is a 56,000 kilowatt, 3,600 rpm, tandem compound double flow turbine. Steam conditions are 900 psig and 950 degrees F with 3.5 inches Hg absolute back pressure.

Black Dog #2 is a 90,000 kilowatt, 3,600 rpm, tandem compound double flow turbine. Steam conditions are 1450 psig and 1000

degrees F with 1.5 inches Hg absolute back pressure.

Black Dog #3 is a 100,000 kilowatt, 3,600 rpm, reheat, tandem compound double flow turbine. Steam conditions are 1450 psig at 100 degrees F with 1000 degrees F reheat and 1.5 inches Hg absolute back pressure.

Black Dog #4 is a 156,250 kilowatt, 3,600 rpm, reheat, tandem compound double flow turbine. Steam conditions are 1800 psig at 1000 degrees F with 1000 degrees F reheat and 3.5 inches Hg absolute back pressure.

The King turbine is a 550,000 kilowatt, 3,600 rpm, reheat, tandem compound four flow turbine. Steam conditions are 3500 psig at 1000 degrees F with 1000 degrees F reheat and 3.5 inches Hg absolute back pressure.

Riverside Units #1 and #2 are identical 35,000 kilowatt, 1800 rpm, tandem compound, single flow turbines. Steam conditions are 375 psig at 725 degrees F with 1.0 inches Hg absolute back pressure.

Riverside #8 is a 216,000 kilowatt, 3,600 rpm, tandem compound reheat double flow turbine. Steam conditions are 2400 psig at 1000 degrees F with 1000 degrees F reheat and 1.5 inches Hg absolute back pressure.

1.4 Information on water source, use and methods of cooling for each plant may be found in Table 2.

1.5 The NSP electric system load duration curves which are available to us are shown in Figures 2A-2E

The summer representative months of July and August is given along with the winter month of December. Calendar load for 1974 is also shown.

1.6 Cost data for existing plants and estimated for future plants is given below.

Coal Plants

Construction costs of the older Riverside and High Bridge plants were about \$150/kW. The king plant which came on line in 1966 cost \$146/kW. Sherco 1 and 2 which are coming on line now cost \$265/kW.

Fuel plus marginal operating costs are between 0.8¢ - 1.0¢/kWh for these plants. Presently, coal prices are about \$1.00/MMBTU.

Sherco 3 and 4 which will come on line in 1981-83 will cost about \$575/kW (1975 dollars). The cost of proposed coal fired plants which are to come on line in 1985 have been estimated by NSP and given in Table 3A. These figures are in 1985 dollars.

Two Swedish consultants who were hired by this agency estimated the costs for construction and operation of a combined coal fired electric generating and hot water district heating system. These calculations are given in Table 3 in 1976 dollars.

Nuclear

Construction costs of the Monticello Nuclear Plant built in 1971 were \$208/kW and for the Prairie Island Plant built in 1973 they were \$377/kW.

Fuel plus marginal operation costs are 0.3¢/kWh.

The capital investment needed for the development of a hot water district heating system up to the year 1986 can be estimated in rough figures as indicated below in 1976 dollars. Capital investments include all costs for generation and distribution of district heat to the substations in the buildings, which are assumed to be installed and paid for by the consumers.

The production and total costs for the proposed hot water district heating systems for 1986 may be calculated as follows:

Assumptions

Yearly overall boiler efficiencies are based on gross heat value

Coal fired hot water boilers	83%
Coal fired generating unit boilers	83%
Small oil fired boilers	65%
Hot water distribution net efficiency	94%
Coal price at the boiler plant	\$1.1/MMBtu
Gross heating value for coal	9000 Btu/lb

Distribution of heat delivered from turbines or hot water boilers in 1986.

	<u>Minneapolis</u>	<u>St. Paul</u>
Heat from turbines	GWh _t /yr	GWh _t /yr
4760 hr/yr. x 400 MW _t	1910	- -
4250 hr/yr. x 300 MW _t	--	1280
Heat from hot water boilers	340	120
Total	2250	1400

The production of hot water district heat from the turbines' extractions gives a considerable heat saving as only 1/5 of the heat extracted needs to be fed into the turbine in the form of admission steam. This appears in the turbine schematics in Staff Exhibit 34.

Coal Consumption in 1986 for hot water district heating.

	<u>Minneapolis</u>	<u>St. Paul</u>
	GWh _t /yr.	GWh _t /yr
In generating Units 1/5 x 1/0.83 x 1910 GWh _t /hr. (resp 1280 GWh _t /yr.)	460	308
In hot water boiler plants 1/0.83 x 340 GWh _t /yr. (resp 120 GWh _t /yr.)	<u>410</u>	<u>145</u>
Total	870	453
Corresponding cost for coal @ \$1.10/MMBTU = \$3754/GWh _t million \$/yr.	3.3	1.7

COST SUMMARY

	<u>Minneapolis</u> million \$/yr.	<u>St. Paul</u> million \$/y
<u>Capital Costs</u>		
Interest @ 8%/yr.		
... distribution network 30 year amortization	9.5	5.0
.. hot water boiler plants, 20 year amortization	<u>7.6</u>	<u>4.4</u>
Total capital costs	17.1	9.4
<u>Operating Costs</u>		
Fuel costs (coal)	3.3	1.7
Maintenance		
.. distribution net (0.5%/yr.)	0.52	0.28
.. hot water boiler plants for standby and peak load (1.0%/yr.)	0.76	0.44
Personnel (6p/1000MW _t @ \$20,000/p-yr.)	0.89	0.55
Electricity for hot water pumping 0.015 kw _t /kwh _t @ 1¢/kwh	0.34	0.21
Make-up water 3.5 million ft ³ /yr. @ 30¢/ft ³	0.10	0.10
Contingencies	<u>0.60</u>	<u>0.40</u>
Total operating costs	6.51	3.68
Total costs	23.61	13.08
PRICE FOR DELIVERED HEAT TO THE CUSTOMERS - (2250 resp 1400 GWH _t /yr. \$/GWH _t \$/MMBTU	10,000 3.1	9,340 2.7

1.7 NSP and the State of Minnesota are presently conducting public hearings to determine the needs for additional electrical generation for 1985. NSP is asking for permission to construct 1600 MW of additional power for that year.

The present hearing will decide what portion of those 1600 MW NSP will construct, and a second hearing sometime in 1977 will then determine the type and location of the plant/s to be built.

Among the options being looked into are combined coal-fired electric generation-district heating plants. Also being looked into is the possibility of using solid waste and other biomass materials as a partial substitute to coal in amounts up to 30%.

The use of wind energy as a supplement to baseload generation and the designing of the coal facilities to incorporate possible future use of a topping cycle will also become aspects of the hearings.

Is there an available inventory of waste heat from industry, incineration plants and other sources?

2. An inventory of waste heat from industry, incineration plants and other sources is not presently available.

3. Air quality standards for Minnesota state that SO₂ site violations occur when a 24-hour average SO₂ level greater than 100 parts per billion occurs more than once a year. There were two localized site violations in Minnesota in 1975. Once such violation was at an oil refinery in Pine Bend, about 18 miles southeast of St. Paul.

Particulate matter violations occur when particulate counts exceed 75 parts per billion. Every site measured in the Twin Cities

area exceeded this amount at least several times last year. This is due primarily to large amounts of dust which blow in from the Dakotas.

HEAT LOADS

4. General Information

4.1 The projected populations for the state and the 5-county metropolitan area are given in Table 4.

4.2 Zoning maps of present built-up areas of Minneapolis and St. Paul are shown in Figures 3 and 4. New and planned urban renewal is limited in both cities to a few projects.

St. Paul

Three major construction projects are currently underway in downtown St. Paul. They all involve commercial or commercial-residential structures.

There are no planned large scale urban redevelopment areas in St. Paul. This is due, in part, to a lack of available land and also a lack of capital investment. There will, however, be large scale redevelopment projects of commercial and residential structures.

One residential area which is to undergo large scale rehabilitation is shown in Figure 5.

A map depicting present zoning in St. Paul is shown in Figure 4.

Minneapolis

Land has been cleared and some construction begun on two major urban renewal projects near downtown Minneapolis.

The Loring Park area is on the southwestern fringe of downtown. Two square blocks have been cleared for development. The construction of a commercial-apartment complex began this year.

Two square blocks have also been cleared in the Nicollet-Lake area located 15 blocks south of downtown. This area will be

developed mostly commercial with some apartments.

In both areas there is more land cleared than developers. The further development of both areas, therefore, will depend on the availability of capital.

Another area of possible development is at the soon-to-be abandoned Burlington railroad depot. The area is located on the northwest fringe of downtown.

A map depicting present zoning in Minneapolis is shown in Figure 3.

4.3 A description of existing energy networks along with the locations and capacities of plants and sub-station facilities is given below.

St. Paul

The St. Paul Steam Plant is located in downtown St. Paul. It is owned and operated by Northern States Power (NSP). It has a total generating capacity of 500,000 #/hr of steam.

The plant consists of four active and two abandoned in place boilers. Of the four active boilers, boiler 1 is a gas-only boiler and is presently inactive due to natural gas curtailments. The other three boilers fire coal, and are equipped to burn natural gas when it is available.

The gas-only fired boiler is rated at 50,000 #/hr., and the three dual-fired boilers are rated at 150,000 #/hr. each.

The plant is presently operating at a peak load demand of 220,000 #/hr. (or about 25% of the steam used in downtown St. Paul¹).

The pipeline routes and pipe sizes and the buildings served by the NSP St. Paul steam plant are shown in Figure 6. About half of these pipes run through some 4 miles of tunnels.

The tunnels are 3-4 feet wide and 7 feet high. The remaining piping runs through the right of ways beneath the city streets. The remaining 5 miles of tunnels is used for electric distribution.

Additional electric distribution lines and natural gas mains are located beneath the city streets and sidewalks.

Minneapolis

The Minneapolis plant is located in downtown Minneapolis. It is owned and operated by Minnegasco and Investors Diversified Service (IDS). It has a total generating capacity of 400,000 #/hr.

The plant consists of two-200,000 #/hr. steam boilers. The entire system is on interruptible natural gas. The back up fuel is No. 6 oil.

The plant supplies both steam and chilled water to the 50 story IDS Tower as well as 22 other downtown buildings.

Steam and chilled water mains running from the Minnegasco Energy Center are located primarily beneath the sidewalks in downtown Minneapolis (see Figure 7). They run side by side with the electric and gas main.

University of Minnesota

The University of Minnesota Steam Plant is located on the east bank campus of the University of Minnesota, three miles east of downtown Minneapolis. The plant has a peak capacity of 540,000 #/hr.

The plant consists of seven coal boilers. It is presently operating at a present peak load of 400,000 #/hr.

The plant serves over 12 million sq. ft. (gross) of Univer-

sity floor space, and one State of Minnesota office and laboratory building.

Steam mains running from the University plants are located in tunnels running throughout both the Minneapolis and St. Paul campuses. Detailed graphics of the University systems are shown in figures 8A and 8B.

4.4 While a complete inventory of present buildings with central heating systems has not been taken, this Agency did conduct a partial inventory of heat load demand of selected buildings in downtown St. Paul and Minneapolis.

It was determined from this study that the average annual heat demand in the Twin Cities is about $10 \text{ MBtu/ft}^3 \text{ yr}$.

The present volumes of those buildings with central heating systems in the Twin Cities core areas are estimated to be:

Minneapolis $24 \times 10^6 \text{ m}^3 = 850 \text{ million ft}^3$

St. Paul $18 \times 10^6 \text{ m}^3 = 650 \text{ million ft}^3$

The annual heat demand is:

Minneapolis

$10 \text{ MBtu/ft}^3 \text{ yr} \times 850 \times 10^6 \text{ ft}^3 = 8.5 \text{ trillion Btu/year}$

St. Paul

$10 \text{ MBtu/ft}^3 \text{ yr} \times 650 \times 10^6 \text{ ft}^3 = 6.5 \text{ trillion Btu/year}$

The heating load densities are 2.4 billion Btu/acre-year and 2.3 billion Btu/acre-year for the Minneapolis and St. Paul core areas respectively.

4.5 There are no federal or state decisions or restrictions concerning the use of some energy sources over others.

5. Technical Data

5.1 Climatic data may be found in Table 5.

5.2 Data on specific energy demand for buildings is not available, however a survey was taken for annual heating demand of selected buildings (Figures are for 1973 (7313 heating degree days--545 cooling degree days)).

Construction Date	Bldg. Vol million ft ³	Glass/wall	Annual heating requirement millions BTU	Heating density MBTU/ft ³ yr	Annual cooling requirement billions BTU	Cooling density MBTU/ft ³ yr
1901	4.7	0.20	36.3	7.7	27.5	5.8*
1910	4.6	0.25	17.0	3.7	7.6	1.7*
1914	3.0	0.33	11.9	4.0	9.2	3.1*
1924	1.5	0.36	20.0	13.4	20.4	13.7*
1926	2.5	0.25	13.6	5.4	141.2	56.3
1939	5.1	0.40	30.1	5.9	47.7	9.3*
1957	4.0	0.60	30.5	7.6	490.4	121.4
1958	8.4	0.47	71.2	8.5	4.0	0.5*
1963	28.5	0.25	26.8	9.4	2.6	0.9*
1964	2.8	0.30	14.0	5.1	11.1	4.0*
1965	7.8	0.50	40.5	5.2	23.1	3.0*
1965	4.3	0.02	51.3	11.8	7.3	1.7*
1967	4.0	0.25	25.2	6.4	228.7	57.7
1970	18.4	0.02	109.0	5.9	13.4	0.73*
1971	0.5	0.10	2.0	4.1	1.6	3.4*
1972	26.2	0.60	125.0	4.8	1134.5	43.2
Mean				8.3		

*partial A.C. only

It is not known which of the previous figures include domestic hot water. Tap hot water represents about 20% of the total annual heating needs.

5.2 .1 Seasonal and daily variations of space heating demand for central core buildings is not presently available. However, these buildings can be represented quite closely by residential users.

Northern Natural Gas Company conducted a study entitled,

"Residential Appliance Gas Consumption Phase II: Minneapolis Minnesota." As part of the study they calculated daily natural gas used for representative furnaces and air conditioners in this area.

The results are shown in Figures 9A-9E.

5.2.2 The MEA estimates that overall heating demand could be reduced by as much as 25%. Improved insulation would account for 15-20% of this reduction.

5.3 Generally the Twin Cities area geological formations consist of top soils, followed by a limestone cap, followed by sandstone and a dolomite base. In various locations there is also a layer of shale on top of the limestone.

Hydrologically, there are several buried rivers running through the limestone and sandstone layers.

In downtown St. Paul, the sandstone layer begins at the 80 ft. level.

By tunneling through the sandstone and using the limestone as roofing, excellent tunneling conditions can be achieved. Care need only be taken in the areas of the buried rivers.

The Minnesota Geological Society is presently completing a detailed mapping of both the geological formations and the underground hydrology of the Twin Cities area. This information will be available within the year.

TABLE 1

POWER PLANT FACILITY DATA

FACILITY	PLANT TYPE	FUEL USED	AVERAGE SULFUR CONTENT %	TURBINE RATINGS MW		HEAT RATES	DISTANCES FROM DOWNTOWNS*
				SUMMER	WINTER		
High Bridge	Fossil	Western Coal	0.7	60 53 107 168 388	50 50 100 163 363	29.22	On the edge of St. Paul
River-side	Fossil	Western Coal	0.7	42 41 67 228 378	23 21 63 227 334	30.69	3 miles north of Minneapol
Black Dog	Fossil	Western coal	0.7	75 100 115 173 463	70 81 85 171 407	31.22	11 miles south of Minneapo 13 miles southwest of St.
King	Fossil	Western Coal	0.7	560	574	35.38	17 miles east of St. Paul
Monticello	Nuclear	Nuclear		536	557	32.71	35 miles northwst of Minneapolis
Prairie Island	Nuclear	Nuclear		520 520	520 520	27.34	32 miles south east if St. Paul
Sherburne Co 1 & 2	Fossil	Western Bituminous	0.7	680 680	680 680		42 miles northwest of Minneapolis
Sherburne Co. 3 & 4	Fossil	Western Bituminous	0.7	800 800	800 800		42 miles northwest of Minneapolis (On line early 1980's)

*Refer to map (Figure 1) Sources: MARCA, April 1, 1975; Sulfur Content Book, MEA 1975; MEA Database (Heat rates)

TABLE 2

Water Use in Steam Electric Facilities
In the 7-County Metropolitan Area, 1974

FACILITY	WITH DRAWAL	CONSUMP- TION	CONSUMP- TION AS A % OF WITHDRAWAL	PEAK WITH- DRAWAL	COOLING TYPE*	WATER SOURCE
	MGD			MGD		
Black Dog	190.6	2.7	1.4%	417.0	OT,CP	Minnesota River
High Bridge	295.8	1.8	0.6%	326.0	OT	Mississippi River
King	198.7	3.7	1.9%	403.0	OT,WT	St. Croix River
River-Side	428.7	2.7	0.6%	436.0	OT	Mississippi River
Monticello	296.1	5.5		- -	OT,WT	Mississippi River
Prairie Island	129.4	32.4			WT	Mississippi River
Sherburne					OT,WT	Mississippi River

* OT = Once Through
CP = Cooling Pond
WT = Wet Tower

Sources: Northern States Power Company
Federal Power Commission
Minnesota Department of Natural Resources

TABLE 3

ECONOMY OF SCALE FOR VARIOUS SIZED GENERATING PLANTS

Unit Size & Number of Plant Sites	Installed Cost/Kw (\$/Kw)	Total Installed Cost (\$ X 10 ⁶)	Increase in Cost Compared to 2-800 MW Units at a Single Site (\$ X 10 ⁶)	Miles of Additional Pipeline for Equip Installed Cost w/Base Case (1)
2-800 MW, 1 site (Base Case)	756	1209.6	--	--
2-800 MW, 2 sites (Option Cases)	861	1377.6	168	58 (2)
4-400 MW, 1 site	889	1422.4	212.8	73 (2)
4-400 MW, 2 sites	959	1534.4	324.8	112 (2)
4-400 MW, 4 sites	1090	1744.0	534.4	184 (2)
2-800 MW, 2 sites (Base Case)	861	1377.6	--	--
4-400 MW, 1 site (Option Cases)	889	1422.4	44.8	11 (3)
4-400 MW, 2 sites	959	1534.4	156.8	40 (3)
4-400 MW, 4 sites	1090	1744.0	366.4	94 (3)

(1) Miles of additional pipeline that could be installed w/base case plant to have same installed cost as the option case.

(2) Installed pipeline costs for 30 inch supply and return of \$2.9 million per mile for a new site.

(3) Installed pipeline costs of two 22 inch supply and return systems of \$3.9 million per mile for a new site.

TABLE 3B

Costs for Combined System

<u>Stage 1-2 for 1976-1986</u>	<u>Minneapolis</u> <u>million \$</u>	<u>St. Paul</u> <u>million \$</u>
Coal fired hot water boiler plants \$100,000/MW _t x 400 MW _t (resp 200 MW _t)	40	20
Oil fired hot water boiler plants \$40,000/MW _t x 350 MW _t (resp 250 MW _t)	14	10
Distribution network \$100,000/MW _t x 740 MW _t (resp 460 MW _t)	74	46
Connection pipes for a transmission load of 800 MW _t between Riverside power station and Mpls., consisting of one two-pipeline system with a diameter of 50 inches, and a dis- tance of 3.7 miles @ \$4 x 10 ⁶ /mi.	15	--
Sub Total	143	76
Contingencies	14	8
Interest during construction	14	8
Total	171	92

Stage 3 for 1981-1985

	Minneapolis Million \$	St. Paul Million \$
Increase in boiler capacity for the 400 MW _e power boilers needed for the extraction of district heat. The increase is estimated @ 8% (resp 6%)	5	4
Heat exchangers for the turbine extractions 400 MW _t (resp 300 MW _e) for the 400 MW _e turbines. Heating surface 130,000 ft ² (resp 100,000) ft ²) @ \$18/ft ²	2.4	1.8
Connecting hot water pipes	<u>0.5</u>	<u>0.4</u>
Sub Total	7.9	6.2
Contingencies	1.3	1.2
Interest during construction	<u>0.8</u>	<u>0.6</u>
Total	10.0	8.0
Grand Total	<u>181.0</u>	<u>100.0</u>

281

Remark: If existing boiler plants for oil and coal can be used for district heating the capital investment for the hot water boiler plants will be reduced considerably.

TABLE 4

Projected Populations

	1975	1980	1985	1990	1995	2000
5-County Area	1,927,600	2,027,700	2,121,500	2,222,500	2,300,500	2,355,700
State	3,923,000	4,076,800	4,076,800	4,421,500	4,555,700	4,652,800

Source: Minnesota Data Book

TABLE 5

Climatic Data for Minneapolis - St. Paul

	Jan.	Feb.	March	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
Mean Temperature	11.8	16.2	28.0	44.6	56.5	66.2	71.2	69.4	59.1	49.2	31.9	18.2	43.5
Heating deg days*	1649	1366	1147	612	286	75	14	26	195	496	993	1451	8159
Cooling deg days*	0	0	0	0	23	111	206	163	18	6	0	0	527
Precipitation	0.73	0.84	1.68	2.04	3.37	3.94	3.69	3.05	2.73	1.78	1.20	0.89	25.94

* referenced at 65°F

1 Coal
 2 Hydro
 3 Gas turbine
 4 Diesel

TWIN CITIES METROPOLITAN AREA Political Boundaries, 1975

1 SPRING PARK	8 VICTORIA	17 FALCON HEIGHTS	25 CUM LAUDE
2 DORADO	10 BURNINGDALE	18 HENDOTA	26 BAYVIEW
3 MINNETONKA BEACH	11 SPRING LAKE PARK	19 LUTHERDALE	27 WILSON
4 TONKA BAY	12 W. A. COVE	20 CRYSTAL LAKE	28 BAYVIEW
5 EXCELSIOR	13 MILLTOP	21 LAKESIDE	29 WILSON
6 GREENWOOD	14 COLUMBIA HEIGHTS	22 DELLYWOOD	30 CUM LAUDE
7 WOODLAND	15 ST. ANTHONY	23 FINE SPRINGS	31 LAKESIDE
8 MEDICINE LAKE	16 SAUNDERSDALE	24 MANTON	32 ST. MARTIN

ANOKA — County Boundary
 BOUND — Municipal Boundary
 TOWNSHIP — Township Boundary

FIGURE 2A

DAILY NSP LOAD PROFILE DATA
BASE LOAD PATTERNS — 1972 THRU 1974 AVERAGES

JUL

DATE OF PLOT: 10/28/76

DAILY LOAD FACTORS : W-81.7 % S-84.5 % S-83.1 % P-79.9 %

561

מסמך

47 6K

AVERAGE LOAD DURATION CURVE FOR MONTH - AUG 1975

Figure 2C

PK 0 40 80 120 160 200 240 280 320 360 400 440 480 520 560 600 640 680 720 760 80

HOURS

Figure 2D

197- AVERAGE LOAD DURATION CURVE FOR MONTH - DEC

HOURS 0 40 80 120 160 200 240 280 320 360 400 440 480 520 560 600 640 680 720 760

USABLE VACANT RESIDENTIAL LAND
(1/2 BLOCK MINIMUM)

1974

Note: The large shaded area which includes the Summit-University and Thomas-Dale Redevelopment Districts were not included in this survey.

FIGURE 6

Source: St. Paul Steam Plant

Figure 8A

Figure 8B

DRWG # 11

131

university of minnesota
minneapolis

BUILDINGS WITH HOT WATER
HEATING SYSTEMS FOR FUTURE
TURBINE CONDENSER LOOP

Figure 9B

Figure 9C

Figure 9D

MINNEAPOLIS
MINNESOTA

SOURCE: MARKET RESEARCH
NORTHERN NATURAL GAS CO.

59

AIR CONDITIONER
AVERAGE HALF-HOURLY CONSUMPTION IN CUBIC FEET

15.0
13.5
12.0
10.5
9.0
7.5
6.0
4.5
3.0
1.5
0.0

ENTIRE YEAR

HALF HOUR TIME INTERVALS

12:00 AM 3:00 AM 6:00 AM 9:00 AM NOON 3:00 PM 6:00 PM 9:00 PM

In order to estimate the compatibility of the pyrolysis components selected, with the steam generation rates from the waste heat boiler, and the solid waste input from the health care industry, a discussion of trends in the generation of solid waste from this industry is presented.

Future Projections for Quantity and Characteristics

Both the quantity and characteristics of health care solid waste have changed in the past and are expected to continue changing in the future. Several studies have attempted to establish trends in these changing parameters for provisions in future health care solid waste management.

The extensive 3-year study by the University of Minnesota established that the quantity of solid waste generated on a pound per patient-day basis was increasing; however, a conclusive relationship model could not be established. Previously, the American Public Health Association had suggested a linear increasing relationship for estimating future quantities. Effects due to increasing hospital size, increasing variety of facilities and services, and increasing use of disposable medical supplies, led the University researchers to conclude the linear increase in quantity generated was conservative. Other studies have also identified the following additional factors as influencing the increasing generation trend:

- decreasing hospitalization period
- increasing number of visits per patient
- increasing number of treatments per patient

The pounds per patient generation rate for health care institutions is increasing at a faster rate than the pounds per capita generation rate

for total municipal solid waste. Municipal rates projected to 1980 have been estimated to increase 37 percent while health care rates have been estimated to increase 76 percent. The comparative increase in rate projections is attributed to the increased use of single-use disposable medical supplies. According to a medical disposables marketing guide, Company Directory, the use of disposables was expected to increase from 2.7 percent of all medical supplies in dollar volume, at the rate of 24 percent annually to 11 percent in 1980. A second report supports this trend and cites reasons of economic pressures, contamination and infection control, patient safety and comfort. One consultants report attempted to estimate the upper limit for increased growth of generation rates from increasing use of disposables, by assuming a total conversion from reusable to non-reusable supplies, over the next several years. From this conversion a generation rate as high as 46.3 pounds per patient-day could be possible. It was concluded that any solid waste management system being planned for hospitals should consider future design quantities of 40 pounds per patient-day. Numerous articles on the increasing trend toward single-use medical supplies in the health care institution have been presented in the literature.

The characteristics of generated quantities are also expected to change in the future, due to the same factors indicated for quantity increases. A continual shift in composition towards the combustible portion and away from the garbage fraction has been indicated. One study determined that disposable items were typically constructed of paper and plastic, thereby increasing these components with their use.

Other investigators have concluded a decrease in solid waste density and plastic content.

The heat content for hospital solid waste has been reported to be currently about 6,500 British Thermal Units (BTU's) per pound and could be expected to increase up to 14,000 BTU's per pound in the future.

The resultant changes expected in the future in quantities and composition of health care solid waste have enhanced the possibility of utilizing this material as a heat source in a public utility.

The American Hospital Association summarized the following projected changes expected of solid waste from the health care industry:

- generation per bed per day increasing
- amount of garbage decreasing, combustibles increasing, non-combustibles decreasing
- packaging materials and single-use items increasing
- decreasing moisture content
- decreasing density
- increasing plastic content
- increasing BTU or heat content

The Andco-Torrax representatives have indicated in Section 4.10.7 the pyrolysis system will accommodate a 15 percent fluctuation in operation about the 120 metric (132.3 english) tons per day input. Therefore, the selected size gasifier, and secondary combustion chamber, will handle an operating envelope from 102 to 138 metric tons per day (112.5 to 152 english tons per day). Also, according to heat content estimates for municipal refuse, and those estimated for hospital and other health care solid waste, an operating envelope of from 2380 KCAL/KG to 3740 KCAL/KG (4284 Btu/lb to 6732 Btu/lb) was determined.

As a result, the steam generation rates could be expected to vary according to the following:

3740 KCAL/KG = 6732 Btu/# Lower Heating Value
 4131 KCAL/KG = 7435 Btu/# Higher Heating Value
 120 MTPD = 132.3 ETPD Solid Waste Input
 Steam Out 22,836 KG/H = 50,353 #/H To Waste Heat Boiler

3740 KCAL/KG = 6732 Btu/# Lower Heating Value
 4131 KCAL/KG = 7435 Btu/# Higher Heating Value
 138 MTPD = 152.15 ETPD Solid Waste Input
 Steam Out 26,264 KG/H = 57,912 #/H To Waste Heat Boiler

3740 KCAL/KG = 6732 Btu/# Lower Heating Value
 4131 KCAL/KG = 7435 Btu/# Higher Heating Value
 102 MTPD = 112.46 ETPD Solid Waste Input
 Steam Out 19,415 KG/H = 42,810 #/H To Waste Heat Boiler

2380 KCAL/KG = 4284 Btu/# Lower Heating Value
 2747 KCAL/KG = 4944.6 Btu/# Higher Heating Value
 138 MTPD = 152.15 ETPD Solid Waste Input
 Steam Out 16,232 KG/H = 35,791 #/H To Waste Heat Boiler

2380 KCAL/KG = 4284 Btu/# Lower Heating Value
 2747 KCAL/KG = 4944 Btu/# Higher Heating Value
 120 MTPD = 132.3 ETPD Solid Waste Input
 Steam Out 14,130 KG/H = 31,156 #/H To Waste Heat Boiler

2380 KCAL/KG = 4284 Btu/# Lower Heating Value
 2747 KCAL/KG = 4940 Btu/# Higher Heating Value
 102 MTPD = 112.46 ETPD Solid Waste Input
 Steam Out 12,026 KG/H = 26,517 #/H To Waste Heat Boiler

Original estimates for a waste heat boiler size were accomplished by University engineers; based upon literature sources on the Andco-Torrax process, this size was determined to be approximately 43,500 pounds per hour. From the previous table of values expected from the operating envelope produced by Andco-Torrax, Inc., the original estimate appears valid and falling within this envelope.

It is also worthy of note that steam generations could possibly be significantly higher than those used for original pyrolysis economic analysis, which could produce a more favorable operating system if experienced.

The following two sections deal with fuel supplies and costs as they relate to the State of Minnesota. Section 5.5.1 was prepared by the University using Minnesota Energy Agency statistics and its own experiences, while the second position was generated by Northern States Power Company, Section 5.5.6.

The University has extrapolated data from the N.S.P. projection for correlation.

Noteworthy is the fact that coal use in this State will increase by 25% in 1980 and 74% in 1985 based upon 1976 usage. In 1978, coal use amounted to 15% of the total energy supplies consumed in the State.

5.5.1

PRESENT CONSUMPTION OF PRIMARY FUELS

In 1976 petroleum use accounted for 43% of the state's total energy consumption. Space and water heating used 18% of this petroleum (620 million gallons or 87 trillion BTU).

In the same year natural gas accounted for 28% of the state's total energy consumption. Space and water heating used 54% of this natural gas (170 Bcf or 1970 trillion BTU).

Coal use increased a dramatic 25% from 10 million tons in 1975 to 13 million tons in 1976. Coal accounted for 21% of the states total energy consumption in 1976. Space and water heating and cooling used 15% of this coal (2 million tons or 40 trillion BTU).

TABLE 1

Minnesota Primary Fuel Consumption - 1976

<u>Fuel</u>	<u>Total Used</u>		<u>Fuel Used for Heating & Cooling</u>		
	<u>Units</u>	<u>Trillion BTU</u>	<u>Units</u>	<u>Trillion BTU</u>	<u>% of Total Used</u>
Distillate (Mil. Gal.)	1,025	144	620	87	60
Residual (Mil. Gal.)	208	31	30	5	14
All Petros (Mil. Gal.)	3,429	480	650	98	20
Nat. Gas (Bcf)	309	309	165	165	53
Coal (Mil. Tons)	13	271	2	40	15
Hydro & Nuclear	-	46	-	9	20

(All Figures are from MEA-Mn. En. Sit. 1985)

PRESENT COSTS OF PRIMARY FUELS

TABLE 2

Minnesota Primary Fuel Costs

1970 - 1976

Fuel Type	1970		1976	
	Unit Cost	\$/ MMBTU	Unit Cost	\$/ MMBTU
Distillate ¢/Gallon	16.8	1.20	38.00	2.71
Residual ¢/Gallon	-	-	25.00	1.67
Firm Nat. Gas \$/Mcf	1.0	1.00	1.92	1.92
Interruptible Nat. Gas \$/Mcf	-	-	1.29	1.29
Coal (large users) \$/Ton (Low Sulphur Western)	-	-	12.38	0.72

(Figures from Various M.E.A. Sources, Coal Prices from N.S.P.
and Interruptible Prices from Minnesgasco)

Natural Gas

Natural gas has become the most critically short fuel in the supply vs. demand gap. Gas curtailments have begun for those non-critical industries (including this University). 1976 gas supplies in the state were down some 14% from the peak level of 1973.

According to the Minnesota Energy Agency report, "The Impact of Northern Natural Gas Company's Curtailment Plan on Minnesota," "Since 1968 Northern Natural* (*Northern Natural Gas Company supplies 95% of the natural gas used in Minnesota) has experienced a reduced level of acquisitions. Its present sources are producing less and less gas each year, with a resultant decline in the overall ability of its gas sources to meet market requirements."

It is estimated in the Curtailment Report that the natural gas supply will fall 61 Bcf short of the demand by 1978, and that by 1981 the shortage will increase to 87 Bcf.

Petroleum

This state receives 43% of its energy from petroleum products. About 60% of these petroleum products are refined from Canadian crude oil. The other 40% comes from U. S. refineries using domestic oil and crude oil imported from overseas.

In the first part of 1976, Minnesota was receiving 510,000 BPD (barrels per day) of Canadian Crude. By March of this year the rate was reduced to 250,000 BPD and by 1981 these supplies will be completely curtailed.

The petroleum supply problem in this area will be compounded as more and more large natural gas users switch to oil. President Carter, in his energy message to Congress, stated that the petroleum reserves are lower:

than most people have anticipated. He further called for an increase in the use of coal as one means of dealing with the petroleum shortage.

At the present time, there are two large pipelines proposed (5 to 10 years) to bring Alaskan crude to this area to meet long-term needs as well as a smaller pipeline from Illinois (0 to 5 years) bringing southern U. S. crude to make up near-term Canadian deficits. (Fuel Supply Assumptions - N.S.P.)

The Koch Plant refinery near Pine Bend, Minnesota has proposed a doubling of its facility (5 to 10 years). This expansion would increase the Minnesota capacity by about 40% (FSA-NSP).

Since known oil reserves only slightly exceed natural gas, N.S.P. (Northern States Power Company is the electric utility in this area) is anticipating "some forms of end-use controls for specific uses, as with gas, such as new electrical generation in the 5 to 10 year period."

Coal

Coal supplies in the United States are abundant, however, to produce, reclaim and ship the coal in an economic, orderly and environmentally sound fashion produces many areas of concern. N.S.P. reports that, "Rail transportation of coal will gradually become more troublesome with long trains, passing through small communities in an increasing volume. Fortunately, the changes will be gradual and most communities should meet the increased traffic with tolerable apprehension at least during the next 10 year period. Even during this period the traffic is not expected to be any greater than the railroad heyday of the 1940's and 1950's using the comparison of train minutes per crossing as a reference."

It is hoped that beyond 10-years, coal slurry pipelines will have assumed the bulk of coal transportation.

The present administration has committed itself to coal as the fuel of the near future. It is, therefore, assumed that supplies will be available.

Uranium

In general, uranium reserves are adequate to meet the existing and proposed nuclear reactors installed through 1990 for their lifetime. By 1990 it would appear from ERDA projections that we will have committed about 300,000 megawatts of nuclear capacity. (N.S.P.)

PROJECTED COSTS OF PRIMARY FUELSNatural Gas

As deregulation of natural gas continues, prices the consumer will pay for the gas will rise sharply. An increase of 30-35 ¢/Mcf/year has been estimated for interruptible users (N.S.P.) and an increase of 25-30 ¢/Mcf/year for smaller users (M.E.A.).

Petroleum

The price of residuals is expected to rise by about 10%/year. The price of distillates will rise at the slightly lesser pace of 6%/year (M.E.A.-N.S.P.).

Coal

Coal prices are expected to rise at a steady 6%/year (N.S.P.).

TABLE 3

Projected Primary Fuel Prices* - 1980, 1985 (1976 Dollars)

<u>Fuel Type</u>	<u>1980</u>			<u>1985</u>		
	<u>Unit Cost</u>	<u>\$/ MMBTU</u>	<u>% Increase From 1976</u>	<u>Unit Cost</u>	<u>\$/ MMBTU</u>	<u>% Increase From 1976</u>
Distillate ¢/Gallon	48.0	3.42	26	64.0	4.56	68
Residual ¢/Gallon	37.0	2.47	48	59.0	3.94	136
Firm Natural Gas \$/Mcf	2.4	2.40	25	?	?	-
Interruptible Nat. Gas, \$/Mcf	2.0	2.00	90	3.7	3.70	252
Coal (large users)	-	0.90	25	-	1.25	74

*These price estimates do not include new proposed federal taxes on crude oil which are presently before Congress.

**UNIVERSITY
OF
MINNESOTA**

**GRID-ICES
PRIMARY FUEL COSTS
TO ICES USERS**

BY A.E.A.	BUILDING	SCALE NONE	SHEET
CHECKED D.W.	DATE 5/16/77	REVISED	DRAWING 61

5.5.5

NORTHERN STATES POWER COMPANY VIEW OF FUEL

The following section is reprinted wholly as received from the Utility.

N O R T H E R N S T A T E S P O W E R C O M P A N Y

March 23, 1977

Mr Warren Soderberg
Director of Physical Plant
University of Minnesota
200 Shops Building
Minneapolis MN 55455

Dear Mr Soderberg

Re: NSP's projected fuel supply and cost assumptions

With this letter I am sending you the assumptions on future fuel supply and costs as we see them. They are headed Attachment IV, pages 4 through 10.

We hope that this documentation of our investigations will be of help to you.

Sincerely

A handwritten signature in cursive script, appearing to read "John C. Pearce".

John C Pearce, Assistant to
Director Planning & Research
encs

FUEL SUPPLY ASSUMPTIONS

1. Natural Gas Supply

-- We expect that the supply of natural gas to our service area will decline slowly between now and 1982. Northern States Power (Minnesota and Wisconsin) availability is expected to be as follows. The decrease is expected to be concentrated on the Northern Natural system.

1977 - 71.5 BCF

1978 - 70.0

1979 - 69.8

1980 - 69.7

1981 - 69.5

1982 - 69.0

-- The Alaskan gas supplied by the pipeline scheduled for completion in 1983 is expected to stabilize, not increase our supply from Northern Natural. The impact of Alaskan gas, if any, on the Midwestern system is still unknown. There are no other projects in the short term that could affect our supply except the Tenneco planned importation of LNG from Algeria which could possibly affect our Midwestern supply picture.

-- We expect a volumetric base year type of curtailment plan will probably be forthcoming as a result of the current FPC curtailment hearing on the Northern Natural system. This could eliminate priority 10 end use sales.

-- We expect the issue of continued growth will arise at the upcoming Northern States Power gas rate hearing. Some regulatory opposition to growth is expected.

-- Price increased currently contemplated for the Northern Natural system are as follows: (above the current commodity price of \$1.05/MCF)

1978 - 35¢ 1981 - 30¢ 1984 - 35¢

1979 - 30¢ 1982 - 35¢ 1985 - 36¢

1980 - 30¢ 1983 - 35¢

-- Beyond 1985 the only foreseeable increase other than inflation would be the impact of coal gasification in 1989 or 1990. This would produce an abnormal increase of probably 30¢ to 35¢ in that time frame. The estimated impact of inflation is included in the numbers listed for the years 1978 through 1985.

-- We do not now contemplate new uses for natural gas.

FUEL SUPPLY ASSUMPTIONS

1. Oil Supply to the Upper Midwest.

-- At the present time the crude oil supply for Minnesota refineries comes from Canada at a rate of about 250,000 barrels per day to meet existing state refinery capacity. The refineries have been concerned about the Canadian supply since about 1970 and have been seeking new sources. At the present time there are two large pipelines proposed (5 to 10 years) to bring Alaskan crude to our area to meet long-term needs as well as a smaller pipeline from Illinois (0-5 years) bringing southern U. S. crude to make up near-term Canadian deficits. The pipelines for Alaska crude will easily meet the existing and proposed expansion in this area with their completion dates consistent with announced Canadian final withdrawal.

- The only refinery expansion (5 to 10 years) known to us at this time would be a proposed doubling of a Koch Plant (to 200,000 bbls/day) near Pine Bend which would increase the Minnesota capacity by about 40%. Local refineries now produce about 50% of the Minnesota needs with the balance made up by William Bros and Amoco product pipelines and barge delivery.
- Rail transportation is not a significant factor now and probably will not be in the future due to the ease of pipeline disbursement. We foresee no difficulty in meeting the present NSP fuel oil requirements over the next 10-year period in this area where our needs are about 2% of the area use. After this time, however, it would seem probable that products from coal, liquefaction would gradually assume a significant role in meeting liquid fuel requirements. Increased peaking capacity for NSP using liquids from coal could be considered for planning purposes at that time.
- The probable OPEC pricing strategy will continue to be one where their product is priced at a point that still encourages U.S. to continue buying but not so high as to significantly alter the present trend of our domestic exploration and production. We have estimated that fuel oil costs will increase from 30¢/gal in 1976 to approximately 70¢/gal by 1985 with gasoline prices approximately double those figures.
- Currently it remains necessary to secure permits for importation of oil but they are not difficult to obtain. There are no governmental price controls on domestic or foreign oil products presently.
- The domestic ceiling price for new crude oil is \$12.51/bbl while the

OPEC price is now about \$11.50. The new crude price is needed to encourage exploration leading toward some degree of independence. Even so, we would not be comfortable in making plans to use oil for new purposes at this time.

- Since known oil reserves only slightly exceed natural gas we would anticipate some form of end-use controls for specific uses as with gas such as new electrical generation in the 5 to 10 year period. Much of the charge in fuel burning will be caused by relative prices. The rapid increase in oil price compared to coal and electricity should discourage many new demands for oil on economics alone. In addition to the poor economics, there could well be governmental directives for industrial boilers to convert from oil or natural gas to coal or electric. By and large, however, we believe industries will do this by themselves if we let the market place operate in a relatively free stance and let pending shortages alert industry to a needed change. There is still a certain amount of brinkmanship played by industry. Potential shortages of natural gas were announced about 5 years ago. Seeing shortages coming NSP has not installed new base load gas burning boilers since 1962 and we also turned away from base load oil units (No. 6) in the early 1970's when oil was a popular new fuel with other midwest utilities.
- This years oil shortage in our area was caused by increased gas curtailment generally known beforehand requiring more oil use and lower local storages of fuel oil after several years of having too much. The oil was available in other areas but could not be transported where needed since all the transportation systems were at capacity. A study of private storage in our area could possibly

reveal that there was no shortage and that existing supplies would have met demand. We have sufficient storage at peaking plants to be completely independent during the heating season thereby not aggravating the then fully occupied transportation systems.

2. Coal Supply to the NSP Service Territory

- It is true the supply is abundant but to produce, reclaim and ship in an economic and orderly fashion produces several areas of concern. Rail transportation of coal will gradually become more troublesome with long trains passing through small communities in an increasing volume. Fortunately, the changes will be gradual and most communities should meet the increased traffic with tolerable apprehension at least during the next 10-year period. Even during this period the traffic is not expected to be any greater than the railroad heyday of the 1940's and 1950's using the comparison of train minutes per crossing as a reference. Looking beyond 10-years, coal slurry pipelines will probably appear attractive in some cases both in cost and social acceptability. Also sufficient time may have elapsed to get the railroads who are now opposed to join in the effort as an extension of their transportation service.
- Coal or rail strikes have always been a concern and we will continue to meet those hazards by maintaining adequate reserve coal storage and building flexibility and diversity into our fuel procurement program. New federal leasing regulations, while more restrictive than before, are not designed to hinder increased coal production but to exclude opportunities for speculation and irresponsible mining operations. We do not see this as a significant liability in future projections.

- Mining on Indian lands is a troublesome factor but one that can be avoided if thought to be insurmountable. With the large amounts of coal within our reach we could completely bypass Indian coal if necessary. This is not practical planning, however, since most Indians want the money from coal produced in an orderly and fair manner. While State and Federal laws on reclamation and mining permits produce a lengthy regulatory process they are little deterrent to necessary coal production providing adequate lead time and attention is allowed. The costs involved are high but they have become an accepted burden by the rate payers as their social and environmental responsibility.
- The current NSP coal price of 75¢ per million is expected to increase to about 90¢ per million by 1980 and \$1.25 per million by 1985. With the increasing change between competitive fuel prices the use of coal in industrial boilers should become more attractive. Considerable work remains to be done, however, in the design of small industrial equipment which meets air regulations.

3. Uranium.

- In general, uranium reserves are adequate to meet the existing and proposed nuclear reactors installed through 1990 for their lifetime. By 1990 it would appear from ERDA projections that we will have committed about 300,000 megawatts of nuclear capacity. Unless exploration efforts develop significant additional reserves, however, utility management should be wary of adding light water reactors to their system after 1990. Exploration activities have doubled since 1973 due to higher uranium prices and, if continued, should help extend this limiting date. NSP has supplies contracted through 1982 and will make commitments in the relatively near future for the balance of the 1980's.

- We do not see a restriction of supply by the so-called uranium cartel and we are not sure that there is a cartel. The uranium industry has been apprehensive of the utilities intentions. They would rather deal in shorter periods akin to the metal mining industry. When longer periods are requested by utilities they now insist upon market pricing at times of shipment. We have not purchased longer than eight years ahead at anytime which is consistent with the majority of uranium sales to date.
- The questions of reprocessing, plutonium and waste disposal are currently undergoing hearings in Washington, D. C. We feel that the technology is available to handle these concerns but the politics is not. For this reason we have been investigating methods of increasing spent fuel storage at our plants and offsite which will allow time for the politics to catch up. The first possible reprocessing will probably not occur until after 1983.
- When talking prices the significant indicator is the total cost of the nuclear fuel cycle instead of uranium alone which accounts for only 1/2 of the total cost. In 1976 it was 24¢/MBTU. We expect it to increase to 35¢ by 1980 and 60¢ by 1985. As with coal, the regulatory process and satisfying public concern takes time and this must be allowed. Once a plant is in operation and there is no new construction or change in manner of operation required, we foresee little interference from the regulatory or public sectors.
- The following are the magazines, periodicals and reports that we routinely receive which add to our knowledge in all fuel areas:

Oil

Oil and Gas Journal

Oil Pipeline

Western Oil Report

Chase Manhattan Energy Reports

Petroleum Information - Rock Mountain

Wall Street Journal

NW Petroleum Association Reports

Coal

Coal News

Coal Mining & Processing

Black Diamond

Combustion

USBM Bulletins

Waterways Journal

Railroad Age

Montana Coal Council Reports

Keystone Coal Manual

Uranium and Nuclear Fuel Cycle

ERDA Reports

U. S. Bureau of Mines

Uranium Week

Nucleonics

AIF Reports

NUEXCO and NAC Reports

Nuclear Fuel Magazine

5.5.6

FUTHER FUEL PROJECTIONS

The following data obtained from the consumer and regulatory divisions of the Demonstration Community's electric and natural gas utilities is provided for additional evidence attesting to rising energy costs.

Albert L. Pooler
Vice President-Regulatory Affairs

733 marquette avenue, minneapolis, minnesota 55402

June 1, 1976

Dear Sir

On March 25, 1976, Northern Natural Gas Company, our pipeline supplier, filed with the Federal Power Commission for an increase in rates to recover from its utility customers increased costs of gas it buys from gas producers.

The increased costs result from a FPC order raising the national rate for old flowing gas sold by producers to interstate pipelines. The order raised the maximum national rate effective January 1, 1976, and provided for a further increase effective July 1, 1976. This increased price of old flowing gas is only 1/3 the FEA "old oil" price..

The FPC order permitted interstate pipelines to recover these increased gas purchased costs. Northern has filed for a single rate adjustment of 10.10 cents per thousand cubic feet on the commodity portion of all jurisdictional rates to become effective July 1, 1976.

As provided in our rate schedules, Minnegasco's Class D interruptible rates will increase \$.1010 per 1,000 cubic feet of gas (Mcf) from its present price of \$.956 per Mcf to \$1.057 per Mcf for gas consumed after July 1, 1976, to offset these pipeline supplier increases.

Our Industrial/Commercial Services Department (545-0231) will assist you on any questions you may have about this new rate.

Yours truly

A handwritten signature in cursive script, appearing to read "A. L. Pooler". The signature is written in dark ink and is positioned below the "Yours truly" text.

N O R T H E R N S T A T E S P O W E R C O M P A N Y

MINNEAPOLIS DIVISION
MINNEAPOLIS, MINNESOTA 55401

October 27, 1976

Mr. Warren D. Soderberg
Director, Physical Plant
Physical Plant Maintenance and Operations
University of Minnesota
200 Shops Building
Minneapolis, Minnesota 55455

Dear Warren:

Re: Questions asked at the recent officer visit

It was nice to meet with you and Mr. Brinkerhoff. We enjoyed the conversation and the questions you raised. Mr. Comstock has discussed the questions, and our company reply is as follows:

1. Natural Gas Cut-off -- Our Gas Department has revised the original cut-off date, and we are presently looking at 1980 for our very large users. Lesser customers will be curtailed or cut by 1980 or slightly later.
2. Coal Price Projections -- Our Fuel Department presently projects coal to increase at a 5½% to 6% annual rate. This price includes coal and freight, and freight is the higher of the two.
3. Energy Price Forecast -- Our Conservation and Load Management Department projects the energy price increase to follow the consumer index. The past five years have shown a 5% to 5½% annual increase and we anticipate that this will continue.

If you have questions concerning any facet of the energy or service policies, please contact me at any time.

Sincerely,

T. L. Meagher
Community Affairs Administrator
Minneapolis Division

TLM/no

cc: R. W. Comstock

CONSTRUCTION CODES

All partners to this proposal comply with local, state and national laws, regulations, codes and ordinances. All existing occupancy and the central plants are built or will be retrofitted according to the most recent codes applicable to the construction, to the site, and to the environment. Any remodeling to existing facilities will be in strict accordance with applicable governing codes, ordinances, regulations and laws.

A Grid-Connected ICES in the State of Minnesota, County of Hennepin, City of Minneapolis is not at variance with any local, state or national codes. The majority of the ICES system is in place.

Expedition of construction of the Demonstration Community would be significant because of the following:

The University is an agent of the State of Minnesota interpreting, issuing, enforcing, and inspecting for all construction activities. Under state auspices it issues its own building permits for electrical, mechanical and general construction. Fees are then paid to the state based on the dollar amount of the construction. All pressure vessels and turbines will be insured and must pass annual insurability inspection.

Some environmental impacts will take place during construction due to noise, dust and traffic inconveniences. However, the impacts will be only temporary, will be ameliorated, and all Minnesota Pollution Control Agency (MPCA) and Occupational Safety and Health Act (OSHA) rules and regulations will be complied with. Construction scars will be minimal and will be repaired.

All contractors will be required to secure and maintain liability insurance and will not be allowed to commence work until he has obtained all insurance and filed the certificate of insurance with the University.

All contractors will conform to equal employment provisions of the federal and state governments.

All requests for bids for construction of ICES will be published well in advance of actual request date.

The University will be required to obtain excavation and utility permits for certain portions of ICES. They are shown here.

BE SURE TO CHECK FOR
UNDERGROUND CONDUITS AND
STREET LIGHTING CABLE IN
STREET AND BOULEVARD

CITY ENGINEER'S OFFICE

No

COPY

City Engineer

Minneapolis, _____, 19____

PERMISSION IS HEREBY GRANTED, _____

to make the necessary openings in _____

for the purpose of making a connection with the City _____

of the following location, to-wit: _____

after depositing in the City Treasury the sum of _____ Dollars
being the estimated cost of re-paving and inspection required in making said repairs, in ac-
cordance with the requirements of the "Ordinance Relating to the Tapping of Water Mains
and Sewers."

**SIDEWALK CUTS
TO BE REPAIRED
BY PLUMBER**

Estimated cost of re-paving _____

Pav. Deposit \$ _____

Estimated cost of inspection _____

Insp. Fee-Eng. \$ _____

Total estimated cost - - - - - \$ _____

Accuracy of Measurements Not Guaranteed

CLAYTON A. SORENSON

Director of Public Works

HAND EXCAVATE

OFFICE OF CITY TREASURER

THIS IS TO CERTIFY, That _____ has deposited
with me the sum of _____ Dollars, being the amount required
to cover the estimated cost of inspection and repaving for the above described connection.

Minneapolis, _____, 19____

City Treasurer.

I HEREBY CERTIFY, That the above has been made and completed in a satisfactory man-
ner, and that the whole cost for inspection and re-paving is _____ hours, \$ _____
the whole cost for re-paving is _____ sq. yds. _____ per yd. \$ _____

Total Cost. - - - \$ _____

Inspector.

Minneapolis, _____, 19____

This certificate is not in any manner intended to relieve the Plumber from duties required by the Ordinance
under which this permit is given.

MINNESOTA DEPARTMENT OF HIGHWAYS

APPLICATION FOR PERMIT FOR INSTALLATION OF UTILITIES
OR FOR PLACING OF OBSTRUCTIONS ON TRUNK HIGHWAY

T.H. _____	Control Section _____
Dist. _____	Permit _____

- Name of Applicant _____ Address _____
- Name of Party or Organization Performing Work _____
1. Nature of Work _____ Type of Surface to Be Disturbed: _____
(Check Type) Gravel Bituminous Concrete
- If Surface Is Not Disturbed, Is Shoulder to Be Disturbed? _____
2. Location: Trunk Highway _____ County _____
Municipality _____ Street or Avenue _____
Intersecting T. H. at _____ Give ties to land or street lines.
If parallel to T. H. give ties by stations, or land lines if rural _____
3. Size and Kind of Pipe _____ Depth from Surface _____
Number and Size of Excavations _____
4. Method of Installation or Construction _____
5. Work to start on or after _____
(Dates)
6. Approximate time necessary to complete work _____
7. Will detouring of traffic be necessary? _____ If necessary to detour traffic, describe rerouting _____

I, We, the undersigned, herewith accept the terms and conditions of the regulations of the Commissioner of Highways and agree to fully comply therewith to the satisfaction of the Minnesota Highway Department.

Dated _____ Applicant's
Signature _____

Prepare in Triplicate. Forward or deliver all copies to proper District Maintenance Office.

SEE REVERSE SIDE
FOR REGULATIONS

AUTHORIZATION OF PERMIT
(PERMIT NOT VALID UNLESS BEARING SIGNATURE AND NUMBER)

Permit No. _____

his
In consideration of their agreement to comply in all respects with the regulations of the Commissioner of Highways covering such operations, permission is hereby granted for the work to be done as described in the above application, said work to be done in accordance with special precautions required as hereby stated:

It is expressly understood that this permit is conditioned upon replacement or restoration of the trunk highway to its original or to a satisfactory condition. It is further understood that this permit is issued subject to the approval of local city, village or borough authorities having joint supervision over said street or highway.

MINNESOTA HIGHWAY DEPARTMENT

Dated _____ Authorized by _____
Area Maintenance Engineer

The date when work is completed must be reported to District Maintenance Engineer

Copies to be distributed as follows: White copy to Applicant; Green to Central Office; Pink to Area Maintenance Engineer

For District Use Only

No Deposit Required _____
Deposit in Amount of \$ _____ Required and Attached Hereto.
Cashier's Check No. _____ Or Certified Check No. _____
This Deposit Made by — Applicant _____

Or
Party Doing Work _____ Name _____ Address _____
166
Name _____ Address _____

COMMUNITY ORGANIZATIONS

The following data contains specific information of community organizations that can impact upon ICES.

Following is a photographic presentation of "Design Communities" that impact upon ICES. Their impact has primarily been concerned with the environmental quality associated with the central plants, the use of property between the plants for parks, and development of a pedestrian corridor along the river, including through Southeast Steam Plant.

The University developed these proposals which were in general well accepted by the Community. Support for the ICES concept was very good.

5.7.1

CITY OF MINNEAPOLIS

As a result of two meetings with several city councilmen, the city council and Mayor Charles Stenvig, a resolution was passed and approved supporting ICES. That resolution is included here.

minneapolis

JUN 23 1 39 PM '77

city of lakes
POLICE PLANT

THOMAS L. JOHNSON
ALDERMAN SECOND WARD

June 20, 1977

Mr. Warren Soderberg
200 Shops Building
University of Minnesota
Minneapolis, MN 55455

Dear Mr. Soderberg:

Attached is a copy of the official action of the
City Council endorsing the University's application
to ERDA for funding of a GRID-ICES project.

We look forward to working with you on this project.

Sincerely,

Tom Johnson
Second Ward Alderman

TJ:cg
Attachment

RESOLUTION 77R-145
By Aldermen Johnson,
DeMars and Rockenstein

Supporting the University of Minnesota's Application to the Energy Research and Development Administration for a Grid-Integrated Community Energy System (GRID-ICES) Demonstration Grant.

Whereas, the University of Minnesota was awarded a limited contract for a feasibility study of a proposed community energy system (GRID-ICES); and

Whereas, the University's feasibility study recommends the redevelopment of the Southeast steam plant to produce steam for heating University and community buildings, and to produce electricity as a by-product of steam generation; and

Whereas, community energy facilities are consistent with the City's energy conservation policy; and

Whereas, the University's conceptual plan offers the potential for preserving the historic Southeast steam plant in a manner consistent with overall riverfront restoration; and

Whereas, the University has agreed to cooperate fully with the community, the City and other appropriate bodies in the design of the facility so as to develop the facility as a compatible and enhancing element in the Mississippi River Corridor;

Now, Therefore, Be It Resolved by the City Council of the City of Minneapolis:

That the City reaffirms its support for community energy systems, and upon review of the preliminary design concept, strongly supports the University's application to the Energy Research and Development Administration for funding a GRID-ICES project.

Passed May 27, 1977. Louis G. DeMars, President of Council.

Approved June 2, 1977. Charles Stenvig, Mayor.

Attest: Lyall A. Schwarzkopf, City Clerk.

SOUTHEAST MINNEAPOLIS PLANNING
AND COORDINATING COMMITTEE

The Southeast Minneapolis Planning and Coordinating Committee (SEMPAC) is a neighborhood group that involves itself with area planning and environmental issues.

The University presented ICES to the committee on April 4, 1977. No negative support was noted. They did support the concept in-so-far as conservation of energy. At their request, the University left three copies of the proposal with them for review.

The next meeting with SEMPAC is scheduled for May 16, 1977. They will be forwarding a list of questions for the University to address. The results of this meeting will be presented in Washington at the oral and included in the final report to ERDA.

SEMPAC is the primary organization for all committees shown on the "Design Communities Photo."

As a result of the May 16, 1977 meeting SEMPAC formally supported the ICES. A letter received May 31, 1977 follows.

S E M P A C C
SOUTHEAST MINNEAPOLIS PLANNING
AND COORDINATING COMMITTEE

414 7th Avenue Southeast #A201

MINNEAPOLIS, MINNESOTA

55414

May 31, 1977

President C. Peter Magrath
University of Minnesota
202 Morrill Hall
Minneapolis, Minnesota 55455

Dear President Magrath:

A committee appointed by the Southeast Minneapolis Planning and Coordinating Committee (SEMPACC) has reviewed your proposal for a grid-connected integrated community energy system, which would combine the existing Minneapolis campus heating plant with Northern State Power's Southeast steam plant.

SEMPACC appreciates the several meetings between the community and Director of Physical Plant Warren Soderberg and his staff concerning the development of this project. This serves as an important step in the improving relationship between the University and the community which will continue in future projects. Although the community was not involved in this proposal until the project development was well underway, we will participate willingly in other stages of the project at earlier development points. In light of the University's statements to the Energy Research and Development Administration, SEMPACC is anxious to serve as the residential community's input into this project.

The University of Minnesota, as a highly-respected center of inquiry and service, should take the leadership to demonstrate innovative solutions to present and future problems. The SEMPACC committee feels that the present proposal is a noteworthy beginning to solving some problems but we encourage the University to look beyond this proposal in respect to solid waste disposal and pollution control. It is incumbent upon the University to demonstrate that efficient use of energy is compatible with maintaining and improving environmental quality in an urban setting.

We urge the University to expand the proposal to include a grant for emission control demonstration equipment for the coal burning facility. The SEMPACC committee feels it is necessary for a state-of-the-art demonstration project in pollution control for the facility to be pursued, particularly in respect to sulphur dioxide and heavy metals. While we have been assured that the emissions from the plant are well within present standards, it is our understanding that this projection is based upon an assumption of the availability of low-sulphur coal. Pollution in the metropolitan area often violates air quality standards and, even without the ICES, there is apprehension about future air quality in light of anticipated increases in conversion to coal-burning facilities and other developments in the local area.

SEMPACC

southeast minneapolis planning
and coordinating committee

President C. Peter Magrath
May 31, 1977
Page 2

The pyrolysis process has a great deal of potential for the disposal of solid wastes. The University is encouraged to explore ways of expanding this phase of the project to include all nonrecoverable, nonhazardous solid wastes, rather than confining the plant to hospital wastes. A successful development of this process would replace a malfunctioning incinerator which has negatively impacted the Southeast community for a number of years.

SEMPACC has reservations about approving a part of the proposal which has not yet been finalized, the means of transporting coal into the facility. We are concerned about potential noise, dust and visual impact of the facility. The proposed automated large unloading and conveyor system would have a negative visual impact and could potentially deprive the community of the recreational use of the riverfront it has been seeking to develop. However, the proposed railroad coal hauling plan also has numerous problems; a considerable noise problem may be more than just a nuisance to surrounding residents. We have been told verbally by Mr. Soderberg that the railroad option would leave the riverbank open and have the least negative impact on the environment. Whatever system is developed should reduce the amount of truck traffic in the area, but presently all proposed plans do have adverse effects on the community. We intend to comment further on this aspect of the project as plans progress.

We understand an environmental impact statement will be prepared in the course of this project. SEMPACC expects to review and comment on that EIS.

In reviewing this project, the committee was encouraged that the University is taking steps to solve technical problems related to its own energy needs while demonstrating innovative systems for more efficient end use. We hope that the residential communities, so affected by the University's presence, will, in the future, also benefit from such innovative and conserving projects.

Recognizing SEMPACC's desire to comment further on the project and participate in its on-going developments, we support the proposed ICES facility with the previously stated concerns. We look forward to working with University officials on the ideas proposed and the facility to be planned.

Thank you for your interest in our involvement.

Sincerely yours,

Gail Gendler
President

S E M P A C C
southeast minneapolis planning
and coordinating committee

President C. Peter Magrath
May 31, 1977
Page 3

cc: Donald Brown
Warren Soderberg
Laszlo Fulop
Tom Johnson
Phyllis Kahn
Allan Spear
SEMPACC committee-
Rod Loper
Merlin Berg
Larry Conroy
Don Ekstrom
Charles Huver
Bill Huntzicker

UNIVERSITY OF MINNESOTA
TWIN CITIES

Office of the Director

Physical Planning
503 Morrill Hall
Minneapolis, Minnesota 55455
(612) 373-5758

March 8, 1977

Ms. Gail Gendler
President, SEMPACC
414 - 7th Avenue Southeast
Minneapolis, MN. 55414

Dear Gail:

The University of Minnesota is currently in the process of acquiring the Southeast NSP Generating Plant (four-stacker) for use in converting it into a coal burning, steam generating facility. This facility would then be tied into an Integrated Energy Grid System for the Southeast area.

Warren Soderberg of the University's Plant Services Department would be prepared to present to the SEMPACC organization the University's intentions for this facility and to discuss the steps which are to be taken to insure that the Southeast Plant will be compatible with future development of the Southeast Community and river development projects. It is important that such a meeting occur as soon as possible so that community input can be included while this project is still in the early stages of development.

Please inform this office as to a time and place for such a meeting. If you have any questions please do not hesitate to call.

Sincerely,

Laszlo G. Fulop
Director of Physical Planning

LGF:sbw

cc: E. Bernat
D. Brown
C. Hewitt
G. Kittelsen
~~W. Soderberg~~
K. Stebbins

CITY OF MINNEAPOLIS
PARK AND RECREATION BOARD

The concept of ICES was well received by the City of Minneapolis Park and Recreation Board. The ICES concept involves development of a pathway or alternative overhead multipurpose enclosure to allow flow of pedestrians by the Central Heating Plants of ICES. The elevated enclosure is shown schematically in Section 3.2. The architects rendition of the Southeast Steam Plant Site and the plant all allude to the development of a continuous lighted pathway for the public. The engineering concept of the Southeast Plant site, Section 3.1, also allows for development of restroom facilities for the public.

Mentioned in the Park Board's letter was the educational nature of the central plant sites. This is a consideration that is worthy of future development. Perhaps windows with a view of the turbine room and poster boards explaining operation of ICES is one approach.

The Park Board is a member of the Long Range Regional River Development and Acquisition Committee. Prior to this printing, the University had made arrangements for a May 19, 1977 meeting with the LRRRDAC. Information regarding this meeting will be contained in the final report.

Enclosed with this section is a photo of a portion of a proposed community park to be developed with ICES.

GRID-ICES
PORTION OF
PROPOSED COMMUNITY PARK

NSP HYDRO

April 29, 1977

RECEIVED

MAY 2 11 37 AM '77

UNIV. OF MINN.
PHYSICAL PLANT

Mr. Warren E. Soderberg
Director, Physical Plant Maintenance
and Operations
200 Shops Building
University of Minnesota
Minneapolis, Minnesota 55455

Dear Mr. Soderberg:

I would like to thank you for your presentation regarding the University of Minnesota Southeast Steam Plant GRID ICES.

As I understand from the presentation, the facilities would provide for pedestrian movement through the area between the actual plant and the water's edge connecting the River corridor pedestrian movement system into the Hennepin Bluffs park area upstream and that this would be done in such a way as would allow the public the opportunity to observe and understand the operation of the steam plant and its positive environmental nature and best use of our limited national energy resources. This is fully consistent with the objectives and recommendations of the Board's Long Range Regional River Development and Acquisition Committee.

I enclose for your use a copy of the final report of the Long Range Regional River Development and Acquisition Committee in its pre-graphics printing and will forward to you copies of the final report. No wording changes will occur in the final printing. I refer you particularly to page two in the list of objectives to be achieved; the first of which states, "Establish a continuous public corridor on both banks parallel with and wherever possible adjacent to the river ..." and page three in the summary of concepts where the committee stated, "The diverse and powerful character of the river should be experienced by the public." You will also find direct references to the particular site in the appropriate portions of the report dealing with the various sections of the river.

Again thank you for the presentation which I believe well illustrates the consistency of the proposal with the citizens' hopes for the River as a regional resource.

Sincerely,

Gordon L. Morrison
Coordinator - Environmental Education

President: Dale W. Gilbert Superintendent: Robert W. Ruhe Secretary: Del Green
Commissioners: Nancy Anderson Patricia Hillmeyer William Holbrook
Leonard Neiman Orvin L. Olson Alden C. Smith Jeff Spartz G. Rolf Svendsen

LONG RANGE REGIONAL RIVER
DEVELOPMENT AND ACQUISITION COMMITTEE
LRRRDAC

As a result of a meeting May 19, 1977, and a subsequent meeting to answer additional questions May 24, 1977, the LRRRDAC sent a letter of formal support endorsing ICES. That letter is included here.

The Committee is charged with redevelopment plans of land use along the Mississippi River. Plans include major renovation of buildings in the Southeast area. The University's plans for ICES, especially at Southeast Steam Plant wherein the historic value of the plant structure and some of the old equipment would be maintained for public view was well received. This area has all of the potential to become a national showplace, of which ICES can be a major contribution.

FINAL REPORT
OF THE
LONG RANGE REGIONAL RIVER DEVELOPMENT AND ACQUISITION COMMITTEE
TO THE
MINNEAPOLIS PARK AND RECREATION BOARD

(pre-graphics printing)

pre-graphics printing

FINAL REPORT

of the

LONG RANGE REGIONAL RIVER DEVELOPMENT AND ACQUISITION COMMITTEE

to the

MINNEAPOLIS PARK AND RECREATION BOARD

DELIVERED TO THE BOARD

March 23, 1977

by

Committee Chairperson

Daniel K. Peterson

CONTENTS

	<u>Page</u>
I. GENERAL RECOMMENDATIONS	2
II. SUMMARY OF CONCEPTS	3
Interrelated and Varied Uses	
Corridor	
Nodes	
III. BODY	
Section Concepts and Outlines	6
Location Maps	
Priority Criteria	18
Ranking	
IV. COMMITTEE BACKGROUND	20
Response to Charge	
Approach	
Membership	

MINNEAPOLIS, MINNESOTA

MARCH, 1977

GENERAL RECOMMENDATIONS

Recognizing compatible and complementary industrial, commercial and residential usages, a program of acquisition and development is proposed along the entire Mississippi River frontage in Minneapolis to provide optimum recreational opportunities for the citizens it serves.

THE OBJECTIVES TO BE ACHIEVED INCLUDE:

Establish a continuous public corridor on both banks parallel with and wherever possible adjacent to the River through acquisition or easements.

Acquire and develop land areas at locations to provide lateral entries, special activity centers and intermediate destinations.

Develop water oriented facilities and services to encourage recreational use for the total public.

Integrate the River corridor into the existing and planned trails and open space networks in the city, county, metropolitan and state park and open space systems.

Establish means such as design districts and development guidelines to serve the public interest on the River corridor.

Preserve historic sites and structures, protect and re-establish natural features of the River corridor.

SUMMARY OF CONCEPTS

The Committee's recommendations for the development of the River through Minneapolis encompass three important concepts: the interrelated multiplicity of use, a continuous linear corridor on both banks and points of particular importance.

I. INTERRELATED AND VARIED USES

Innumerable activities occur along and upon the River. The River has continuity with particularity.

It contributes to:

- Ecology and the Environment
- Power Generation
- Navigation and Transportation
- Industry and Commerce
- History and Culture
- Recreation

Each of these is of considerable economic and social importance to the city and the metropolitan area. The quality of life in Minneapolis has dependence on the continued ability of the River to support these facets.

The diverse and powerful character of the River should be experienced by the public. To experience and appreciate the full range of this resource is recreative. The varied commercial and industrial uses along the banks, power generation at the falls and dams, and transportation through the locks and at barge terminals present as valuable and as interesting recreational opportunities as do the more commonly accepted leisure uses of the River - paths, picnic areas, and water related activities. All should be provided in a mutually safe manner. Provision for public access should not disrupt the commercial functions. Public use at the very least should enhance the environment and setting for other uses.

II. CORRIDOR

A complete, continuous corridor along which the public may move is the paramount and essential concept of the report. Only through this means may the public experience the singular, basic feature of the River - its inevitable linear character.

A corridor for public recreation should be developed along the full length of the River through the city on both sides in ways that will be compatible with and supportive of the industrial, commercial and transportation uses which require access to the River.

The corridor should:

- a. include pedestrian and bicycle paths running parallel with the River on both sides. The paths should be routed and designed to go around, over, under or through the other facilities that require access to the River's edge. The design of the paths should take full advantage of the numerous fascinating industrial, commercial and transportation activities as well as the natural and aesthetic features safely without disruption of the activities themselves.
- b. include motor routes along the corridor. In sections the motorway may be some distance from the River's edge making use of public streets in ways compatible with the other uses of those streets. In other sections the motorway should be part of the parkway system.
- c. be primarily public property and as near the water's edge as topography permits. Some stretches will necessarily be easements across properties or facilities owned by others.
- d. connect with the overall regional system of corridors developed now or in the future along the River by neighboring authorities. These connections will be facilitated by joint planning with concerned governmental units.

III. NODES

Points of particular interest should be developed along the River. These points, called nodes, serve a variety of purposes. Some nodes will be public parklands while others may be operated by public agencies not primarily concerned with parks and open space. Some nodes will be privately owned and operated. Most of the nodes can function independently. Some are of relatively narrow significance. Together the nodes provide a major element of the River system essential to its use as a public leisure resource.

The nodes should provide:

- a. entries from the neighborhoods into the River corridor. Called "Windows to the River," these lateral entry nodes serve as attractive routing for the public, particularly the nearer neighborhoods, into the River corridor.
- b. junctures with other recreational corridor systems. These include points where the River corridor is crossed or met by the parkway Grand Rounds, local and regional trail systems, creeks and other linear open spaces.
- c. interesting destinations along the way. These destination nodes afford the public with focal points along the corridor to begin or end their leisure movement along the River. These include locations of private commercial attractions such as restaurants and shops, sites of fascinating

transportation or industrial activity; points of particular interest; public facilities such as museums, performing arts centers, plazas and other open spaces as well as traditional parks.

A number of nodes will be multi-purpose. Some are identified by the Committee as major nodes; others, with more limited purpose, as minor nodes. A third type is the special feature node, developed at a particular point of interest such as a natural phenomenon, a historic building or a site which lends itself uniquely to a particular use.

Major nodes include North Mississippi Park; Nicollet Island, and Minnehaha Falls Park. Minor nodes are relatively numerous and include the Ironhorse Industrial Development area, Marshall Terrace Park, East River Flats, and the Prairie Picnic Site near West River Parkway and East 36th Street. Special feature nodes include the mouth of Bassett Creek, the observation deck at Lock and Dam Number One, the cave beneath West River Parkway, Bridal Veil Falls, and a river interpretive center in the Central Section.

THE CENTRAL RIVER

The falls are the central section's focus and point of drama. An exciting vista from the northwestern point of Hennepin Island is key to future park development.

Contrast is the main theme of recreational use; modern Downtown Minneapolis in contrast to historic Main Street, green open space on Nicollet Island in contrast to intensity and drama of Hennepin Islands.

Downtown and the Southeast Community should both be opened to the River at several locations.

Connection by path and/or trolley should be made between the two banks in the area of the islands.

The corridor on both sides should provide access to Downtown and Main Street from the northern and southern sections of the city maintaining the River's continuity as the focus.

CENTRAL RIVER OUTLINE

I. CONCEPTS FOR CENTRAL RIVER

1) LINEAR CORRIDOR

- a) Establish continuous paths, bikeways and motorways on both sides linking to north and gorge portions
- b) Keep plan flexible so that continuity is maintained by going over, under, or around other appropriate River uses when necessary

2) NODES

- a) Provide points for lateral entry from surrounding areas
- b) Highlight points of interest and junctures with other systems, e.g. Nicollet Mall

3) CIRCULAR MOVEMENT

- a) Connect downtown and Main Street; provide within corridor a dramatic contrast between modern downtown and historic Main Street

4) RIVER VIEWING

- a) Provide interesting public access to River corridor throughout central area

5) INTERPRETIVE FACILITIES

- a) Explain power generation, hydraulic research, commercial transportation, geology and city history in both a unified center and locational markings and programs
- b) Provide historic interpretation through tours and the use of historic buildings as museums

II. ISLANDS AND BLUFFS - NICOLLET ISLAND, HENNEPIN ISLAND, AND FATHER HENNEPIN BLUFF

1) NICOLLET ISLAND

- a) Use all land downstream from Hennepin Avenue for public open space and historic preservation
- b) Acquire and preserve the entire periphery of the island as green open space
- c) Retain DeLaSalle as long as it is a viable school but should it ever close or move, acquire site for public open space

- d) Acquire and restore bona fide historic buildings and permit uses which will preserve and protect them
- e) Acquire over the years the entire island for public use

2) HENNEPIN ISLAND AND FATHER HENNEPIN BLUFF

- a) Integrate public use of the area with a comprehensive concept of the natural beauty and commercial uses of flowing water: natural water falls and rapids; electric power generation and distribution; flour milling; logging and lumber milling; hydraulic research
- b) Provide safe public access throughout the area, especially at the best vantage points for experiencing the falls, the bluffs, and the quiet islands
- c) Plan for eventual use of entire area by public, in ways compatible with power generation

III. LEFT BANK PROCEEDING DOWNSTREAM - NORTH EAST AND SOUTH EAST COMMUNITIES

1) BOOM ISLAND

- a) Acquire for active River-related park development
- b) Explore feasibility of reopening channel
- c) Provide facilities to encourage recreational angling

2) FORMER B. F. NELSON SITE

- a) Acquire as a lateral entry node
- b) Build roadway to define perimeter of parkland
- c) Develop motorway on top of bank, not terraced into the slope

3) MAIN STREET

- a) Use as parkway until it becomes appropriate to move automotive traffic to a different level (such as 2nd Street S.E.) and then reserve Main Street for pedestrians, bicycles, and or trolley

4) FATHER HENNEPIN BLUFFS TO THE U OF M MINERAL RESOURCES RESEARCH CENTER

- a) Develop a safe path for pedestrians to move along parallel to the shoreline
- b) Connect motorway and bikeway behind Sanford Hall bridging the railway to the Mineral Resources Research Center

- c) Develop long range corridor through south-east along the railway from the east

5) DAM FLATS

- a) Develop pedestrian route through area compatible with University uses
- b) Provide safe fishing dock
- c) Secure for parkland if River-dependent industrial/transportation uses are phased out

IV. RIGHT BANK PROCEEDING DOWNSTREAM - AMTRAK AREA, DOWNTOWN FRONTAGE, LOCKS AREA, CEDAR-RIVERSIDE FRONTAGES

1) BASSETT'S CREEK/PLYMOUTH BRIDGE AREA

- a) Acquire and develop as a node at the creek mouth
- b) Develop consistent with its natural character
- c) Anticipate eventual opening of the creek upstream to serve as lateral entry route for the community to the River corridor

2) BASSETT'S CREEK TO 3rd AVENUE/CENTRAL AVENUE BRIDGE AREA

- a) Route basic corridor along shore with narrow waterfront corridor to accommodate other appropriate uses
- b) Develop public viewing overlook at Post Office - perhaps use top floor of the parking ramp
- c) Acquire wide corridor on land upstream from present Amtrak station

3) BETWEEN THE LOCKS AREA (roughly from Portland to Washington)

- a) Develop the motorway and paths by the shore along the present access roads used by the Corps of Engineers and the sand and gravel operations
- b) Acquire the sand and gravel storage area for parkland
- c) Establish the upper lock interpretation and visitor center as a node

4) COAL DOCKS (Cedar-Riverside frontage, former coal docks, existing oil terminal)

- a) Continue the basic corridor motorway and paths through the lower level to connect into Riverside Parkway
- b) Seek better ways to deal with dredge materials but, for the short term, screen dredge material storage with landscaping
- c) Route motorway at some point to high level for overlook

THE LOWER RIVER

Preservation of the natural character of the gorge is essential. Greater public access throughout should be accomplished without over use of any area.

The present low density residential use along the rim is appropriate.

Balance among recreational uses must be achieved through both development and programs which encourage varied compatible activities.

LOWER RIVER OUTLINE

I. CONCEPTS FOR GORGE

1) BLUFFS

- a) Preserve natural character
- b) Make use of existing shelves for pathways
- c) Provide frequent vertical access for pedestrians (hikers, skiers)
- d) Cut selectively located vistas for pedestrians

2) SHORELINE

- a) Preserve bank vegetation to encourage wildlife - beaver, deer, birds
- b) Prohibit deposit of dredge materials
- c) Encourage safe movement along the shore

3) PATHS

- a) Establish continuous bicycle and pedestrian paths on both rims consistent with Citizen Parkway Committee recommendation
- b) Develop pathways in which the design does not unnecessarily disrupt the natural environment
- c) Establish continuous pathways along shore and ledge, maintaining continuity by interconnection of paths where obstacles intervene
- d) Facilitate movement from bicycle and pedestrian paths to and across bridges
- e) Separate bicycle and pedestrian paths as soon as possible
- f) Ensure general public safety while using paths

4) RECREATIONAL USES OF THE WATER

- a) Encourage improvement of water quality to permit swimming in safe (no current) sites
- b) Provide for recreational angling via access points, small piers
- c) Provide for quiet, low speed recreational boating, including canoeing, rowing, kayaking, fishing and touring boats
- d) Discourage high speed boating, seek official "No Wake Zone" designation for Pool One
- e) Permit limited number of rowing boat houses to be built and maintained at no cost to the public within specific Park Board control and criteria for aesthetics, service to the public and balance with other River and Riverbank uses; limit sites to East River Flats and Lake Street, preferably tunneling into bluff

5) MOTORWAY AND PARKING AREAS

- a) Keep motorway as far back from rim as feasible
- b) Parking should be unobtrusive to both River uses and adjacent residents
- c) Parking should be in proportion to intensity of use in each area and studied at the time of each nodal development to determine the needed amount, if any, and best location
- d) Seek cooperation for shared parking with other public facilities and institutions along corridor, especially on evenings, weekends, summer

6) CROSSINGS

- a) Provide pedestrian and bicycle crossings on railway bridge with provisions for safety

II. LEFT BANK PROCEEDING DOWNSTREAM

1) EAST RIVER FLATS

- a) Preserve unstructured open meadow
- b) Continue to provide for performing arts - Showboat, Peppermint Tent, neighborhood amphitheatre berm
- c) Provide for trail system to run through
- d) Provide parking for park users in a way that avoids it being consumed by commuters to the exclusion of park users, keep parking area to minimum in order to maximize park land
- e) Provide for recreational boating storage, launching and use within criteria described above under I, Item 4

2) BRIDAL VEIL FALLS

- a) Develop special feature node
- b) Cross the creek at bottom without affecting view of the falls from across the River
- c) Repair and improve appearance of outfall

3) EAST SAND FLATS

- a) Preserve basic beach and natural character and provide interpretive signs and programs to interpret wildlife
- b) Provide for total community use with picnic tables, paths negotiable by elderly and handicapped, facilities to encourage family use including comfort station
- c) Provide police and maintenance vehicle access ramp down to flats and along base of bluff

4) CONNECT WITH ST. PAUL

- a) Connect the two systems, plan jointly

III. RIGHT BANK PROCEEDING DOWNSTREAM

- 1) COAL/OIL TERMINAL
 - a) Secure connection for motorway, paths through this area to existing West River Parkway
 - b) Develop terminal area ultimately as park node
- 2) RIVERSIDE PARK
 - a) Rebuild railing to provide visibility
- 3) WEST SAND FLATS
 - a) Develop outdoor recreation chalet for skiers, hikers, canoeists and the public
- 4) HAJDUK SPRINGS
 - a) Preserve natural character, provide signs
- 5) WEST RIVER CAVE
 - a) Open for interpretive, guided use with controlled entry
- 6) PRAIRIE/PICNIC AREA
 - a) Preserve prairie ecology
 - b) Improve picnic facilities
 - c) Provide interpretive signs about the prairie ecology and the River and its geological history
- 7) 44TH STREET OVERLOOK
 - a) Keep vista clear, provide parking
- 8) LOCK AND DAM NO. 1
 - a) Provide interpretive signs, work cooperatively with Corps to enhance use
- 9) SOUTH MINNEHAHA ADDITION/FORT SNELLING CONNECTION
 - a) Develop nature center for natural history, geology, aesthetic and historic interpretation
 - b) Provide an elevated viewing deck located to afford long view up the River
 - c) Connect the systems, plan jointly
 - d) Develop interesting transportation systems between Minnehaha Park and Fort Snelling (eg. horseback, carriage, trolley)

BACKGROUND

The Long-Range Regional River Development and Acquisition Committee was appointed by the Minneapolis Park and Recreation Board and convened in February, 1976. The Committee was charged to advise the Board of appropriate positions and actions regarding the Mississippi River, including a schedule of priorities for acquisition and development.

- Response To The Charge -

The Committee was asked to read and evaluate the recent report of the Park and Recreation Board River Concept Team. The report is primarily compatible with the Committee's own concepts and recommendations.

The charge to the Committee further directed that it "become as thoroughly acquainted as possible with the River, including its environmental character, special features, uses, and its potential as a regionally significant resource" and "consider the role of the River in the maintenance and enhancement of the environment."

The Committee has:

- studied the River by foot, bus, powered craft and canoe
- heard reports from the Metropolitan Parks and Open Space Commission and the Hennepin County Park Reserve District
- received information from the Park Board's Coordinator of Environmental Education on all aspects of the River environment

The charge recommended that the Committee "analyze and evaluate the effects and implications of plans and proposals of citizen groups and public agencies" and "consider the directions of adjacent municipalities along the River."

The Committee has:

- had presentations from the Minneapolis Bi-Centennial Commission staff, the Industrial Development Commission staff, and the St. Paul Park Department staff
- received reports from the Citizens League River Committee, Southeast River Advisory Committee, Camden Area Concerned Citizens Council, and the Board's own concept team
- become aware of and considered the position of at least twenty-six groups and agencies with responsibilities in the Minneapolis section of the Mississippi
- kept in view the joint powers operation in the central River under the Riverfront Development Coordination Board (which includes the City of Minneapolis, the Minneapolis Housing and Redevelopment Authority, and the Park and Recreation Board)
- received regular information from the Park and Recreation professional staff

Finally, and perhaps most importantly, the Committee was charged to "consider both the immediate and long-range needs of the residents of Minneapolis for open space, recreational facilities, and programming using the potential of the River as one of a number of regionally significant resources within the city."

The Committee has:

- developed a concept that offers lateral connections for adjacent neighborhoods, lineal connection to connecting municipalities, and junctions with the existing Grand Rounds system
- found that the diversity of development which does and should exist along the banks of the River enables an equal diversity of recreational opportunity for the total public
- recommended that the diversity and richness which is unique to the River environment be emphasized and maintained in development

- Approach -

The Committee considered the River both as a whole and as a system of distinct sections. The Committee studied the three sections using the Plymouth and Washington Avenue bridges as boundaries between north, central and lower sections. Each section has combinations of features which lend unique character to the recreational experience.

The importance of developing a system which can expand and maintain relevance to the needs and growth of the city over the years is recognized by Committee members. Therefore, several areas have been identified as significant although timing their final development is flexible. Establishment of the system as a whole is the ultimate aim.

While outlining a complete and ideal system, the goal must be approached incrementally. For this reason the Committee has divided the major segments of the River into subsections and dealt with each individually. Each step, each parcel acquired and developed is considered valuable in and of itself while functioning as an integral part of the total regional system. This approach allows for action to be taken which is of immediate significance yet has relevance within the long range plan.

The criteria for ranking projects and the sequence for acquisition and development reflect the intention of this approach. The Committee ranked its recommendations in order of priority for the entire length of the River within the city.

The following persons served on the Committee through its year of work:

Merlin Berg
Merrill Blaskey
Walter Carpenter
Pat Davies
Penny Durenberger
Richard Erdall
Laszlo Fulop
Tana Havunaki
Thomas Kelley
J. Robert Lindahl
Robert Morgan
Charles Murphy
Elaine Nissen
Jack N. Omvedt
Douglas Platt
James D. Rivers
Howard Seiple
Br. Robert Thomas
Milo Thompson
Ann Waterhouse
John Wirka
and the Chairman, Daniel K. Peterson

Others were appointed but were unable to continue participation through the year.

ADDENDUM

The following articles of dissent relate to three specifically identified areas. They are included for the Park Board's information and as a courtesy to the authors, whose contributions to the total body of the report are valued by the Committee.

Dissent from recommendation on cave in Gorge section: (Lower River Outline, Item III, 5)

Our report mentions development of the cave under the West River Road as a wise use of the limited resources of the Minneapolis Park Board. We disagree.

To make the cave safe for groups of children, no matter how well supervised, is unreasonably expensive. The cave has no point of access readily subject to development. The cave itself is not geologically interesting; it is simply a smooth sided cavern in sandstone, partially filled with loose sand. It is not an excursion-type facility.

To suggest it will be used only with interpretive guides and controlled entry is to imply staffing and parking not presently available anywhere near the site. The legality of keeping the cave closed to the wide public once park funds are spent on it seems questionable, yet should it be forced to be open, the problems inherent in creating another spot on the West River Road attracting hundreds of party goers and their cars become obvious.

In terms of natural or historic interest, safety, cost, staffing, parking, and policing this is an unwise recommendation and ought not to be implemented.

- Pat Davies, Howard Seiple

Dissent from recommendation on Dam Flats: (Central Section, Item III, 5)

Committee members involved with the Southeast Riverfront Action Committee (SERAC) report differ with the Committee recommendation regarding the extent of recreational use at the Dam Flats.

The SERAC report recommends that the "University's dock for unloading barged coal ... may have less utility in the future, and if ultimately abandoned, it would be an admirable site for small boat and canoe launching." SERAC also recommends that "the area does possess rustic characteristics which suggest development as an 'In-town Arboretum' where the flora typical of the River environment could be displayed."

The Board is referred to the Southeast Minneapolis Riverfront Plan published in May, 1976 for the complete context in which these recommendations are made.

CENTRAL RIVER

The following overview of agencies provides the agency impact upon ICES, some time frames, and their authority. The University has contacted each agency and presented ICES. Support from all was good.

HENNEPIN COUNTY
DEPARTMENT OF PUBLIC WORKS

Agency Responsibility: The interaction of Hennepin County is established in the collection and disposal of solid waste within the county. Each metropolitan county is charged with the responsibility to develop solid waste management plans, which must be approved by the Metropolitan Council. This plan must insure the availability of adequate solid waste disposal facilities as determined by the Council.

Hennepin County has established Ordinance Number Two, Solid and Hazardous Waste Disposal Ordinance, which established standards for and regulating solid and hazardous waste disposal, and the operation of waste facilities and resource recovery facilities in the County; requiring a license for the establishment and operation of a waste or resource recovery facility; establishing requirements for certain facilities on a disposal site and for fire protection; providing for application and license fees, performance bonds and penalties for lack of compliance with these provisions; promoting the health, welfare and safety of the public pursuant to Minnesota Statutes.

Authority for Agency Responsibility: Authority for developing solid waste management plans is defined by Minnesota Statute 473-D. Chapter 473-D also gives metropolitan counties several solid waste management implementation tools. These tools include the power to regulate solid waste processing and disposal sites, the authority to designate collection vehicle haul routes, authority for bonding and condemnation for solid waste facilities, and facility operational authority.

Overview of Agency: Solid waste management is implemented for Hennepin County by the Department of Public Works, Environmental Division. This Division provides engineering, technical and planning assistance to the Department on several environmental areas including Lake Management, Plant and Soil Management, along with Solid Waste Management.

Programs are supervised by the Division Chief, and directed by the Director

of Public Works. Policy direction and guidance is given by a seven-member board of commissioners.

Interaction of Agency with ICES: The interaction of Hennepin County with the ICES will specifically be due to the collection and disposal of solid waste. A portion of the waste will be collected from facilities in Hennepin County, and the disposal system will be located in the County. Therefore, the ICES will be required to be in accordance with the County's master solid waste management plan, and consistent with their responsibility to the State Statutes.

Submission for License: In accordance with Ordinance Number Two, Solid and Hazardous Waste Disposal, adopted by the Hennepin County Board of Commissioners, 27 July, 1976, Minnesota Statute, Section 375.51, and Minnesota Statute Section 473.811, the ICES shall be submitted for license during Phase III of the project.

Potential Problem Areas: The only potential problem area recognized at this time is in the interaction of the solid waste management plan with the on-going planning of the Counties. Hennepin County has also in the past, researched the possibility of a specialized system for hospital and health care solid waste management. Other Counties are also involved in planning of this material, and it will be necessary to maintain compatibility among the different programs to utilize the waste.

HENNEPIN COUNTY

30 March 1977

Mr. Warren Soderberg
Director of Physical Plant
University of Minnesota
Room 200 Shops Building
Minneapolis, Minnesota 55455

Dear Mr. Soderberg:

Hennepin County supports the University of Minnesota's application to the Energy Research and Development Administration to demonstrate a small regional pyrolysis plant to dispose of the region's health care waste and similar special wastes from the University hospital and research facilities.

The pyrolysis system as described in your application (RFP No. E (11-1) P-76-806) is desirable because the region's hospital and health care wastes could be disposed of with a minimum of handling and processing. In addition, the pyrolysis temperatures are adequate for proper disposal and energy can be recovered from the wastes.

As your application states, a pyrolysis system could also demonstrate the energy recovery from biomass fuels. We are particularly interested in the utilization of wood wastes, especially from the region's Dutch elm disease epidemic. In 1977, Hennepin County alone will open burn or landfill 28,000 tons of tree wastes. Certainly a system such as your proposed pyrolysis facility that could recover energy from these wood wastes would be more preferable than present disposal methods.

Thank you for reviewing your proposal with me and members of my staff. I hope you are successful in your ICES demonstration project.

Sincerely,

A. J. Lee, P.E.
Director of Public Works and
County Engineer

AJL/LDN:lp
cc: L. D. Nelson

Hennepin County

ORDINANCE NUMBER TWO

SOLID AND HAZARDOUS WASTE DISPOSAL ORDINANCE

FOR

HENNEPIN COUNTY

DEPARTMENT OF PUBLIC WORKS

ENVIRONMENTAL DIVISION

ADOPTED BY THE

HENNEPIN COUNTY BOARD OF COMMISSIONERS
OF HENNEPIN COUNTY, MINNESOTA
ON JULY 27, 1976

IN ACCORDANCE WITH
MINNESOTA STATUTES, SECTION 375.51,
AND MINNESOTA STATUTES,
SECTION 473.811

ORDINANCE NUMBER TWO
SOLID AND HAZARDOUS WASTE DISPOSAL ORDINANCE
FOR HENNEPIN COUNTY

TABLE OF CONTENTS

<u>SECTION NO.</u>	<u>TITLE</u>	<u>PAGE NO.</u>
I	Definitions	1
II	General Provisions	5
III	Solid Waste Disposal by Sanitary Landfill <i>omitted</i>	8
IV	Incineration	16
V	Transfer Stations <i>omitted</i>	17
VI	Solid Waste Disposal by Demolition Landfill <i>omitted</i>	22
VII	Hazardous Waste Disposal by Landfill	23
VIII	Resource Recovery Facilities 6	25
IX	Variances	28
X	Additional Requirements	28
XI	Enforcement and Inspection <i>Omitted</i>	29
XII	Violations and Penalties <i>Omitted</i>	31
XIII	Separability	36
XIV	Provisions are Accumulative	36
XV	No Consent	36
XVI	Effective Date	36
XVII	Repealer	36

ORDINANCE NUMBER TWO
SOLID AND HAZARDOUS WASTE DISPOSAL ORDINANCE
FOR
HENNEPIN COUNTY

An ordinance establishing standards for and regulating solid and hazardous waste disposal, and the operation of waste facilities and resource recovery facilities in Hennepin County, Minnesota; requiring a license for the establishment and operation of a waste or resource recovery facility; establishing requirements for certain facilities on a disposal site and for fire protection; providing for application and license fees, performance bonds and penalties for lack of compliance with these provisions; promoting the health, welfare and safety of the public pursuant to Minnesota Statutes, Chapter 473.

The County Board of Hennepin County, Minnesota, does ordain:

SECTION 1 DEFINITIONS. The following words and phrases, when used in this ordinance, unless the context clearly indicates otherwise, shall have the meanings ascribed to them in this section.

Subsection 1 "Agency" means the Minnesota Pollution Control Agency, its agents or representatives.

Subsection 2 "Collection", when referring to solid or hazardous waste, means the aggregation of solid or hazardous waste from the place at which it is generated and includes all activities up to the time the waste is delivered to a waste facility.

Subsection 3 "County Board" is defined as the Hennepin County Board of Commissioners.

Subsection 4 "Cover Material" is soil that can be compacted to provide a tight seal, does not crack when dry and is free of putrescible materials.

Subsection 5 "Demolition Landfill" is defined as an area of land used for the disposal of demolition waste without creating nuisances or hazards to the environment, public health and safety, and is operated in compliance with the provisions of this ordinance.

Subsection 6 "Demolition Waste" is defined as material normally found in buildings to be demolished, such as, but not necessarily limited to, bricks, stone facing, concrete, cement blocks, stucco, plaster, wall boards, glass, pipe, wire, metal, plastic, asbestos,

SECTION II GENERAL PROVISIONS

Subsection 1 A person shall be in violation of this ordinance if he does not make an intermediate or final disposal of any solid or hazardous waste only at a waste facility for which a license has been issued by the County Board. A person shall be in violation of this ordinance if he allows property or land under his control to be used for intermediate or final disposal of any solid or hazardous waste unless a license for such purpose has been granted by the County Board. A license shall not be required for any site used for the disposal of solid waste from only a single family or household, a member of which is the owner, occupant or lessee of the property, under this ordinance, but such site shall be operated and maintained in a nuisance-free and aesthetic manner consistent with the intent of this ordinance.

Subsection 2 Any facility to be used for any method of waste processing not otherwise specifically provided for in this ordinance must be licensed by the County Board before operation may commence. The license application shall include two sets of complete plans, specifications, design data, ultimate land use plan if applicable, proposed operating procedures and such other information as may be required by the County Board, all as prepared by a registered professional engineer of Minnesota. An application fee of \$150.00, refundable at the discretion of the County Board, shall accompany the application. The license fee, if any, shall be determined by the County Board.

Subsection 3 After receiving an application for the operation of a facility, the County Board shall have 90 days to either grant or deny the license. If an applicant is not granted a license, he shall be notified in writing for the reasons therefore by the County Board. A denial shall be without prejudice to the applicant's right to an appearance before the County Board or for filing a further application after revisions are made to meet objections specified as reasons for the denial.

Subsection 4 Unless otherwise provided by the County Board, issuance of any licence pursuant to the provisions of this ordinance shall be contingent upon the applicant

furnishing to the County a bond in an amount to be set by the Board and naming the County as obligee with sufficient sureties duly licensed and authorized to transact corporate surety business in the State of Minnesota as sureties. The condition of such bond shall be that if the principal fails to obey any of the requirements or do any of the acts required by this ordinance in the operation of the waste facility, or if, for any reason, ceases to operate or abandons the waste facility, and the County is required to expend any monies or expend any labor or material to restore the facility to the condition and requirements as provided by the ordinance, the obligor and the sureties on its bond shall reimburse the County for any and all expenses incurred to remedy the failure of the principal to comply with the terms of the ordinance, and that the obligor and its sureties will indemnify and save the County harmless from all losses, costs and charges that may occur to the County because of any default of the obligor under the terms of his license to operate and the ordinances of the County. The performance bond shall be subject to cancellation by the surety at any time only upon giving 120 days prior written notice of cancellation to the Department of Public Works.

In addition to the bond to be furnished, the licensee shall furnish to the County, certificates of insurance issued by insurers duly licensed within the State of Minnesota covering public liability insurance, including general liability, automobile liability, loading and unloading, completed operations liability, explosion and collapse of underground operations, bodily injury liability in an amount of at least \$250,000.00 for injury or death of any one person in any one occurrence and bodily injury liability in an amount of at least \$750,000.00 for injuries or death arising out of any one occurrence. Property damage liability shall be furnished in the amount of at least \$500,000.00 for any one occurrence and in the unencumbered aggregate amount of at least \$500,000.00.

Subsection 5 Unless otherwise provided by the County Board, each license granted pursuant to the provisions of this ordinance shall expire at the end of the day on June 30 of each year unless sooner revoked. Application for license renewal shall be made in writing to the County Board by April 30 each year. An application fee for license renewal is not required. Application for renewal shall contain a statement of

any changes in the information submitted in the last approved license application. Failure to submit such information shall result in grounds for revocation or for not granting renewal of the license by the County Board. If there are no changes, it shall be so stated in the renewal application. If a renewal applicant is not granted a license, he shall be notified in writing of the reasons therefor by the County Board.

The license fee, required insurance and appropriate bond shall be submitted to Hennepin County by June 15 of the renewal license year. Failure to apply for a license renewal by April 30 of each license year shall serve as intent not to renew the license and intent to terminate the facility at the end of the current license year. The Department of Public Works shall mail an annual license renewal notice to all licensees by March 31 of each year.

Subsection 6 Any license obtained under this ordinance may be transferred subject to the approval of the County Board. In the case of a transfer of ownership, the licensee shall notify the Public Works Department sixty (60) days in advance of the date of effective transfer of ownership.

SECTION IV INCINERATION. This section applies only to existing and new incinerators having a capacity greater than three (3) tons per hour and those for the incineration of hazardous wastes. This section does not apply to a single hospital which operates an incinerator with a capacity less than three (3) tons per hour. All incinerators shall be designed and operated in a manner to conform to emission limitations of state and local air pollution control regulations.

Subsection 1 It is a violation of this ordinance for any person to construct, establish, maintain or operate an incinerator without first acquiring a license from the County Board. It shall not be necessary to have more than one license per incinerator for purposes of this ordinance. The County Board may, at its discretion, issue a license for the operation of an incinerator when an application, with information as required in Agency Regulation SW 7, prepared by a registered professional engineer of Minnesota, is submitted to the County Board for consideration, with an application fee of \$200. A license fee will be collected each year by Hennepin County. The license fee shall be set by the County Board prior to June 15 of each year prior to the renewal year except that when a license fee is not set, then the license fee of the immediate past year will be in effect.

The information submitted in a license application and operating procedures shall conform to Agency Regulation SW 7, or amendments thereto, and SW 7 is hereby adopted by reference and made part of this ordinance.

SECTION VIII RESOURCE RECOVERY FACILITIES.

Any resource recovery facility shall be constructed, established, maintained, and operated in accordance with the following provisions provided that upon written application, the County Board may waive the application of any of the following provisions where such waiver will not endanger the health, safety, and welfare of the public:

Subsection 1 It is a violation of the ordinance for any person to establish, operate and maintain a resource recovery facility without first being licensed to do so by the County Board. The County Board may, at its discretion, issue a license for the operation of a resource recovery facility when the following materials prepared by a registered professional engineer of Minnesota are submitted to the County Board for consideration. An application fee of \$150.00 shall accompany the application. The following information shall be submitted as a part of the application:

- A) A current map or aerial photograph of the area showing land use and zoning within 1/4 mile of the resource recovery facility. A location insert map shall be included.
- B) A plot plan including the legal description of the site or facility; a description of the immediate adjacent area showing dimensions, present and planned pertinent features, including but not limited to roads, buildings, fencing, and other applicable details; and the general topography. The scale of the plot plan should not be greater than 200 feet per inch.
- C) A report shall accompany the plans indicating:
 - 1) Population and areas expected to be served by the proposed facility.
 - 2) Anticipated type, quantity and source of material to be disposed at the resource recovery facility.
 - 3) If requested by the Department of Public Works, geological formations and groundwater elevations to a depth of at least ten (10) feet below proposed excavation and lowest elevation of the site, including the high water table. Such data shall be obtained by soil borings or other appropriate means.

- 4) Type and amount of equipment to be provided for operations of the resource recovery facility.
 - 5) Area of site in acres.
 - 6) Owner of the site and proposed licensee.
 - 7) Individuals responsible for actual operation and maintenance of the resource recovery facility and intended operating procedures.
 - 8) Sanitary landfill or other waste facility where any debris will be transferred, the owner, hours of operation, and Pollution Control Agency permit number.
- D) A detailed description of any processes to be used in the facility.
 - E) A listing of markets identified for recovered materials, products, or energy.
 - F) Written proof that the local applicable municipal government has considered the establishment of the facility and the results of that consideration.
 - G) Other information as required by the County Board or the Department of Public Works.

Subsection 2 License fees shall be collected each year by Hennepin County. The license fees shall be set by the County Board prior to June 15 of each year prior to the renewal year except that when a license fee is not set then the license fee equal to the license fee of the immediate past year will be in effect.

Subsection 3 The following shall be established and maintained at the resource recovery site:

- A) A sign, subject to the approval of the Department of Public Works, shall be posted on the premises indicating the facility name, the schedule of days and hours it is open to the public, and prices for use.
- B) Records approved by the Department of Public Works shall be maintained indicating the type and quantity of solid waste passing through the resource recovery facility.
- C) The resource recovery facility shall be so situated, equipped, operated, and maintained as to minimize interference with other activities in the area.

Subsection 4 A resource recovery facility licensee shall comply with the following regulations and shall be in violation of this ordinance if the regulations are not followed.

- A) The premises, entrances and exits shall be maintained in a clean, neat and orderly manner at all times.
- B) All incoming and outgoing traffic shall be controlled by the licensee in such a manner as to provide orderly and safe ingress and egress.
- C) All unloading of solid waste from contributing vehicles shall be conducted in such a manner as to eliminate odor and litter outside the station.
- D) Such other regulations as may be established by the County Board in order to protect the health, safety, and welfare of the public.

SECTION IX VARIANCES

Upon written application by the applicant or operator, the County Board may grant variances from the requirements of the regulations and standards prescribed by this ordinance in order to promote the effective and reasonable application and enforcement of the provisions of this ordinance.

SECTION X ADDITIONAL REQUIREMENTS.

For purposes of protecting and providing for public health, safety and welfare, the County Board may impose additional requirements consistent with the intent of this ordinance for the operation of waste facilities.

Passed by the Board of County Commissioners of Hennepin

County this 27th day of July, 1976.

COUNTY OF HENNEPIN,
STATE OF MINNESOTA

Upon proper execution,
this Agreement will be
legally valid and binding
and upon date of approval
is in compliance with all
laws relating to the subject
matter hereto.

John St. Marie

Assistant County Attorney

Date: 7-27-76

BY:

[Signature]
Chairman of its County Board

And:

[Signature]
Deputy County Administrator

ATTEST:

[Signature]
Deputy County Auditor

APPROVED AS TO EXECUTION:

John St. Marie

Assistant County Attorney

STATE OF MINNESOTA
1976 SOLID WASTE LAW

"A bill for an act relating to metropolitan government; regulating waste; providing for a levy; amending Minnesota Statutes 1974, Chapter 473, by adding sections; and Minnesota Statutes, 1975 Supplement, Sections 473.121, Subdivisions 27, 29, 31, and by adding subdivisions; 473.149, Subdivision 1; and by adding subdivisions; 473.249, Subdivision 1; 473.801, Subdivision 2, and by adding a subdivision; 473.802; 473.803; 473.811; and 473.823; repealing Minnesota Statutes, 1975 Supplement, Sections 473.121, Subdivision 30; 473.149, Subdivision 2; 473.815; and 473.821."

Section 1. Minnesota Statutes, 1975 Supplement, Section 473.121, Subdivision 27, is amended to read:

Subd. 27. "Solid waste" means garbage, refuse and other discarded solid materials, including solid waste materials and waste sludges resulting from industrial, commercial and agricultural operations, and from community activities, but does not include hazardous waste, animal waste used as fertilizer, earthen fill, boulders, broken rock, solids or dissolved material in domestic sewage or other significant pollutants in water resources, such as silt, dissolved or suspended solids in industrial waste water effluents, dissolved materials in irrigation return flows or other common water pollutants. Nothing in this definition shall be construed so as to exclude hazardous waste from the definition of solid waste for the purposes of Chapter 116 or 116F.

(1975 Laws) Subd. 28. "Hazardous waste" means any refuse or discarded material or combinations of refuse or discarded materials in solid, semi-solid, liquid, or gaseous form which cannot be handled by routine waste management techniques because they pose a substantial present or potential hazard to human health or other living organisms because of their chemical, biological, or physical properties. Categories of hazardous waste materials include, but are not limited to, explosives, flammables, oxidizers, poisons, irritants, and corrosives.

Sec. 2. Minnesota Statutes, 1975 Supplement, Section 473.121, Subdivision 29, is amended to read:

Subd. 29. "Waste facility" means all property, real or personal, including negative and positive easements and water and air rights, which is or may be needed or useful for the processing of solid or hazardous waste, except property for the collection of the waste and facilities used primarily for the manufacture of scrap metal or paper. Waste facility includes but is not limited to transfer stations, disposal sites and facilities, and resource recovery sites and facilities.

Sec. 3. Minnesota Statutes, 1975 Supplement, Section 473.121, Subdivision 31, is amended to read:

Subd. 31. "Transfer station" means an intermediate waste facility in which solid or hazardous waste collected from any source is temporarily deposited to await transportation to the final disposal site or facility.

Sec. 4. Minnesota Statutes, 1975 Supplement, Section 473.121, is amended by adding a subdivision to read:

Subd. 31a. "Collection" when referring to solid or hazardous waste means the aggregation of solid or hazardous waste from the place at which it is generated and includes all activities up to the time the waste is delivered to a waste facility.

Sec. 5. Minnesota Statutes, 1975 Supplement, Section 473.121, is amended by adding a subdivision to read:

Subd. 31b. "Processing" when referring to solid or hazardous waste means the treatment of solid or hazardous waste after collection, and includes all activities after the time the waste is delivered to a waste facility. Processing includes but is not limited to disposal storage, containment, separation, exchange, resource recovery, physical or chemical modification, and transfer from one waste facility to another.

Sec. 6. Minnesota Statutes, 1975 Supplement, Section 473.121, is amended by adding a subdivision to read:

Subd. 31c. "Resource recovery" means the reclamation for sale or reuse of materials, substances, energy, or other products contained within or derived from solid or hazardous waste.

Sec. 7. Minnesota Statutes, 1975 Supplement, Section 473.149, Subdivision 1, is amended to read:

473.149 (SOLID AND HAZARDOUS WASTE POLICY PLAN.)

Subd. 1. By July 1, 1978, the Metropolitan Council shall prepare and by resolution adopt as part of its development guide a long range policy plan for the collection and processing of solid and hazardous waste in the metropolitan area. When adopted, the plan shall be followed in the metropolitan area. The plan shall substantially conform to all policy statements, purposes, goals, standards, maps and plans in development guide sections and plans adopted by the council. The plan shall include goals and policies for the collection and processing of solid and hazardous waste in the metropolitan area and, to the extent appropriate, statements and information similar to that required under section 473.146, subdivision 1. The plan shall include criteria and standards for waste facilities and waste facility sites respecting the following matters; general location; capacity; operation; processing techniques; environmental impact; effect on existing, planned, or proposed collection services and waste facilities; and economic viability. For waste facilities owned or operated by public agencies or supported primarily by public funds or obligations, the plan shall include additional criteria and standards respecting financial self-sufficiency based upon competitive rates and charges. In developing the plan the council shall consider the orderly and economic development, public and private, of the metropolitan area; the preservation and best and most economical use of land and water resources in the metropolitan area; the protection and enhancement of environmental quality; the conservation and reuse of resources and energy; the preservation and promotion of conditions conducive to efficient, low cost, competitive, and adaptable systems of waste collection and processing; and the orderly resolution of questions concerning changes in systems of waste collection and processing. Criteria and standards for solid and hazardous waste facilities shall be consistent with regulations adopted by the Pollution Control Agency pursuant to chapter 116 and section 473.823. The hazardous waste portion of the policy plan shall be approved by the Pollution Control Agency in accordance with its standards and regulations prior to adoption by the council.

Sec. 8. Minnesota Statutes, 1975 Supplement, Section 473.149, is amended by adding a subdivision to read:

Subd. 2. The policy plan shall be prepared, adopted, and amended in accordance with section 473.146, subdivision 2, provided that the procedural duties and responsibilities established therein for the affected Metropolitan Commission shall extend to the metropolitan counties and the Pollution Control Agency. In addition to the requirements of section 473.146, subdivision 2, the council shall send notice of any hearing to the Pollution Control Agency and the governing body of each metropolitan county and each local governmental unit, as defined in section 473.801, wherein a waste facility is or may be located in accordance with the plan. Any comprehensive solid and hazardous waste plan adopted by the council prior to the effective date of this act shall remain in force and effect until a policy plan is prepared in accordance with subdivision 1 and adopted by the council. By October 1, 1976, the council shall adopt either interim policies or amendments to the existing comprehensive plan establishing standards and criteria for the review under section 473.823 of permit applications for waste facilities used primarily for resource recovery. For permit applications received by the council prior to October 1, 1976, the council may extend the time period provided for review under section 473.823 until 60 days after the adoption of the interim policies or amendments. No metropolitan county, local government unit, commission, or person shall acquire, construct, improve or operate any waste facility in the metropolitan area except in accordance with the council's plan and section 473.823, provided that no waste facility in use when a plan is adopted shall be discontinued solely because it is not located in an area designated in the plan as acceptable for the location of such facilities.

Sec. 9. Minnesota Statutes, 1975 Supplement, Section 473.149, is amended by adding a subdivision to read:

Subd. 3. The council shall establish an advisory committee to aid in the preparation of the policy plan and the review of county master plans and reports and applications for permits for waste facilities, under sections 473.801 to 473.823, and section 18 of this act, and other duties determined by the council. The committee shall consist of one-third citizen representatives, one-third representatives from metropolitan counties and municipalities, and one-third representatives from private waste management firms. A representative from the Pollution Control Agency and one from the Minnesota Health Department shall serve as ex officio members of the committee.

Sec. 10. Minnesota Statutes 1974, Chapter 473, is amended by adding a section to read:

473.516 (HAZARDOUS WASTE FACILITIES.)

Without limiting the grant or enumeration of any of the powers conferred on the council or commission under sections 473.501 to 473.549, the commission shall have the specific power to acquire by purchase, lease, condemnation, gift or grant any real or personal property including positive and negative easements and water and air rights, and it may construct, enlarge, improve, replace, repair, maintain and operate hazardous waste facilities in the metropolitan area deemed to be necessary or convenient in connection with the processing of hazardous waste, and the commission may contract for the maintenance and operation of such waste facilities, subject to the bidding requirements of section 473.523. The commission may accept for processing hazardous waste derived from outside the metropolitan area in the state, as well as hazardous waste derived from within the metropolitan area, and may fix and collect fees and charges for the acceptance of hazardous waste as the commission determines to be reasonable. With respect to its activities under this section, the commission shall be subject to and comply with the applicable provisions of chapter 473. Property acquired by the commission under this section shall be subject to the provisions of section 473.545. Any site or facility owned or operated for or by the commission shall conform to the policy

plan adopted by the council under section 473.149 and shall be authorized in accordance with the commission's development program and capital budget approved by the council.

Sec. 11. Minnesota Statutes, 1975 Supplement, Section 473.801, Subdivision 2, is amended to read:

Subd. 2. "Local government unit" means any municipal corporation or governmental subdivision other than a metropolitan county located in whole or part in the metropolitan area, authorized by law to provide for the processing of solid waste.

Sec. 12. Minnesota Statutes, 1975 Supplement, Section 473.801, is amended by adding a subdivision to read:

Subd. 3. "Agency" means the Minnesota Pollution Control Agency.

Sec. 13. Minnesota Statutes, 1975 Supplement, Section 473.802, is amended to read:

473.802 (LEGISLATIVE PURPOSE AND POLICY.)

The legislature determines that for the protection of the public health, safety, and welfare of the people of the metropolitan area, for the prevention, control and abatement of pollution of air and waters of the state in the metropolitan area, and for the efficient and economic collection and processing of solid and hazardous waste in the metropolitan area, it is necessary to authorize the agency to regulate the handling of hazardous waste and the location and operation of waste facilities in the area; to authorize the Metropolitan Council to carry on a continuous, long range program of planning with respect to solid and hazardous waste collection and processing and to establish criteria and standards and approve permits for waste facilities in the area; and to authorize the metropolitan counties if necessary to acquire, construct, operate and maintain solid waste facilities, to plan for and regulate waste collection services and facilities, to collect data on solid and hazardous waste collection and processing systems and procedures, and to regulate the handling of hazardous waste.

The legislature declares that a public purpose is served by the recovery and utilization of resources from solid waste and hazardous waste where economically viable and compatible with source reduction. The plans criteria, standards and regulations of the agency, council and metropolitan counties shall, to the extent practicable, encourage ownership and operation of solid waste facilities by private industry.

Sec. 14. Minnesota Statutes, 1975 Supplement, Section 473.803, is amended to read:

473.803 (METROPOLITAN COUNTIES; PLANS AND REPORTS.)

Subdivision 1. (COUNTY MASTER PLANS.)

Each metropolitan county, following adoption or revision of the council's solid and hazardous waste policy plan and in accordance with the dates specified therein, and after consultation with all affected municipalities, shall prepare and submit to the council for its approval, a county solid and hazardous waste master plan to implement the policy plan. The master plan shall describe county solid and hazardous waste activities, functions, and facilities; the existing system of solid and hazardous waste generation, collection, and processing within the county; existing and proposed county and municipal ordinances and license and permit requirements relating to waste facilities and hazardous and solid waste generation, collection, and processing; existing or proposed municipal, county, or private waste facilities and collection services within the county together with schedules of existing rates and charges to users and statements as to the extent to which such facilities and services will or may be used to implement the policy plan; and any solid waste facility which the county owns or plans to acquire,

construct, or improve together with statements as to the planned method, estimated cost and time of acquisition, proposed procedures for operation and maintenance of each facility; an estimate of the annual cost of operation and maintenance of each facility; an estimate of the annual gross revenues which will be received from the operation of each facility; and a proposal for the use of each facility after it is no longer needed or useable as a waste facility. The master plan shall, to the extent practicable, encourage ownership and operation of solid waste facilities by private industry. For waste facilities owned or operated by public agencies or supported primarily by public funds or obligations, the master plan shall contain policies to ensure financial self sufficiency based upon competitive rates and charges.

Subdivision 2. (COUNCIL REVIEW.)

The council shall review each master plan or revision thereof to determine whether it is consistent with the council's policy plan. If it is not consistent, the council shall return the plan with its comments to the county for revision and resubmittal. Any county solid or hazardous waste plan or report approved by the council prior to the effective date of this act shall remain in effect until a new master plan is submitted to and approved by the council in accordance with this section.

Subdivision 3. (ANNUAL REPORT.)

Each metropolitan county shall prepare and submit annually to the council a report containing information, as the council may prescribe in its policy plan, concerning solid and hazardous waste generation, collection, and processing within the county. The report shall include a schedule of rates and charges in effect or proposed for the use of any waste facility owned or operated by or on its behalf, together with a statement of the basis for such charges.

Sec. 15. Minnesota Statutes, 1975 Supplement, Section 473.811, is amended to read:

473.811 (METROPOLITAN COUNTIES; FACILITIES; ORDINANCES; ENFORCEMENT.)

Subdivision 1. (ACQUISITION.)

To accomplish the purpose specified in section 473.803, each metropolitan county may acquire by purchase, lease, gift or condemnation as provided by law, upon such terms and conditions as it shall determine, including contracts for deed and conditional sales contracts, solid waste facilities or properties for solid waste facilities which are in accordance with regulations adopted by the agency, the policy plan adopted by the council and the county master plan as approved by the council, and may improve or construct improvements on any property or facility so acquired. No metropolitan city, county or town shall own or operate a hazardous waste facility. Each metropolitan county is authorized to levy a tax in anticipation of need for expenditure for the acquisition and betterment of solid waste facilities. If such a tax is levied in anticipation of need, the purpose must be specified in a resolution of the county directing that the levy and the proceeds of the tax may be used only for that purpose. Until so used, the proceeds shall be retained in a separate fund or invested in the same manner as surplus in a sinking fund may be invested under section 475.66. The right of condemnation shall be exercised in accordance with chapter 117. A metropolitan county may acquire property for and operate a solid waste facility within the boundaries of any city or town in the metropolitan area, without complying with the provisions of any zoning ordinance adopted after April 15, 1969.

Subdivision 2. (FINANCING.)

Each metropolitan county may by resolution authorize the issuance of bonds to provide funds for the acquisition or betterment of solid waste facilities or property or property rights for a solid waste facility, or for refunding any outstanding bonds issued for any such purpose, and may pledge to the payment of the bonds and the interest thereon, its full faith, credit and taxing powers, or the proceeds of any designated tax review, or the gross or net revenues or charges to be derived from any facility operated by or for the county, or any combination thereof. Taxes levied for the payment of the bonds and interest shall not reduce the amounts of other taxes which the county is authorized by law to levy. No election shall be required to authorize the issuance of the bonds. Except as otherwise provided, the bonds shall be issued and sold in accordance with the provisions of chapter 475.

Subdivision 3. (OPERATION.)

Each metropolitan county may operate and maintain solid waste facilities, and for this purpose may employ all necessary personnel, may adopt regulations governing operation, and may establish and collect reasonable, non-discriminatory rates and charges for the use of the facilities by any local government unit or person, estimated to be sufficient, with any other moneys appropriated for the purpose, to pay all costs of acquisition, operation and maintenance. Each metropolitan county may use itself or sell all or any part of materials or energy recovered from solid waste to private interests or public agencies for consumption or reuse by them. Section 471.345 and Laws 1951, Chapter 556, as amended shall not apply to the sale of the materials or energy provided that the dealings of each county shall be on a competitive basis so as not to create an unfair or unreasonable advantage or restraint of trade on the part of the county.

Subdivision 4. (CONTRACTS.)

Each metropolitan county may contract for the use of existing public or private waste facilities or with any person for the operation and maintenance of any solid waste facility owned by the county. The contract shall provide for the operation and maintenance of the facility in accordance with any regulations, criteria, and standards of the agency, the Metropolitan Council and the county relating thereto.

Subdivision 5. (ORDINANCES.)

Each metropolitan county may adopt ordinances governing the collection of solid waste. The ordinances shall not prevent the hauling of solid waste from one county to another. Each municipality and town within the metropolitan area shall adopt an ordinance governing the collection of solid waste within its boundaries. If the county within which it is located has adopted an ordinance, the municipality or town shall adopt either the county ordinance by reference or a more strict ordinance. A hauler who qualified under the ordinance of the municipality where he is making pickups may transport solid waste on streets and highways in other municipalities within the county without conforming to their ordinances.

Each metropolitan county shall by ordinance establish and from time to time revise rules, regulations, and standards for waste facilities within the county, relating to location, sanitary operation, periodic inspection and monitoring, maintenance, termination and abandonment, and other pertinent matters. The ordinance shall require permits or licenses for waste facilities and shall require that such facilities be registered with a county office.

Each metropolitan county shall by ordinance establish and revise rules, regulations, and standards for hazardous waste management relating to (a) the identification of

hazardous waste, (b) the labeling and classification of hazardous waste, (c) the handling, collection, transportation and storage of hazardous waste, (d) the ultimate disposal site of hazardous waste, and (e) other matters necessary for the public health, welfare and safety. The county shall require permits or licenses for the generation, collection, and processing of hazardous waste and shall require registration with a county office.

Any ordinance enacted under this subdivision shall embody regulations, standards, and requirements adopted by the agency and goals, policies, criteria, and standards adopted by the council and shall be consistent with the county master plan approved by the council. County ordinances adopted pursuant to this subdivision shall not apply to the location or operation of any hazardous waste facility owned or operated by the Waste Control Commission under section 10. Issuing, denying, modifying, imposing conditions upon, or revoking hazardous waste permits or licenses, and county hazardous waste regulations, shall be subject to review, denial, suspension, and reversal by the agency. The agency shall after written notification have 15 days to review, suspend, modify, or reverse the action of the county. After this period, the action of the county board shall be final subject to appeal to the district court in the manner provided in section 115.05. Any ordinance enacted shall be published in accordance with the provisions of section 375.51.

Subdivision 5a. (ENFORCEMENT.)

Each metropolitan county shall be responsible for insuring that waste facilities, solid waste collection operations licensed or regulated by the county and hazardous waste generation collection, and processing operations are brought into conformance with, or terminated and abandoned in accordance with, applicable county ordinances; rules, regulations and requirements of the agency; and goals, policies, criteria, and standards of the council. Counties may provide by ordinance that operators or owners or both of such facilities or operations shall be responsible to the county for satisfactorily performing the procedures required. If operators or owners or both fail to perform, the county may recover the costs incurred by the county in completing the procedures in a civil action in any court of competent jurisdiction or, in the discretion of the board, the costs may be certified to the county auditor as a special tax against the land. The ordinances may be enforced by action in district court. The county may prescribe a criminal penalty for the violation of any ordinance enacted under this section not exceeding the maximum which may be specified for a misdemeanor.

Subdivision 6. (GRANTS AND LOANS.)

Each metropolitan county may accept gifts, may apply for and accept grants or loans of money or other property from the United States, the state, the Metropolitan Council, any local government unit, or any person to accomplish the purposes specified in sections 473.801 to 473.823 and section 18 of this act, may enter into any agreement required in connection therewith, and may hold, use, and dispose of the money or property in accordance with the terms of the gift, grant, loan or agreement relating thereto.

Subdivision 7. (JOINT ACTION.)

Each metropolitan county and local government unit may act under the provisions of section 471.59 or any other appropriate law providing for joint or cooperative action between government units, to accomplish any purpose specified in sections 473.801 to 473.823 and section 18 of this act.

Subdivision 8 (SALE OR LEASE.)

Each metropolitan county may sell or lease any facilities or property or property

rights previously used or acquired to accomplish the purposes specified by sections 473.801 to 473.823 and section 18 of this act. Such property may be sold in the manner provided by section 458.196. Each metropolitan county may convey to or permit the use of any such property by a local government unit, with or without compensation, without submitting the matter to the voters of the county. No real property or property rights, acquired pursuant to this section, may be disposed of in any manner unless and until the county shall have submitted to the agency and the Metropolitan Council for review and comment the terms on and the use for which the property will be disposed of. The agency and the council shall review and comment on the proposed disposition within 60 days after each has received the data relating thereto from the county.

Subdivision 9. (SOLID AND HAZARDOUS WASTE FUND.)

All moneys received by any metropolitan county from any source specified in sections 473.801 to 473.823 and section 18 of this act shall be paid into the county treasury, placed in a special fund designated as the county solid and hazardous waste fund, and used only for the purposes authorized in those sections, as appropriated by the county board, subject to any lawful restrictions, conditions, or pledges applicable thereto.

Sec. 16. Minnesota Statutes 1974, Chapter 473, is amended by adding a section to read:

473.813 (CITIES, COUNTIES, TOWNS; SOLID WASTE CONTRACTS.)

Subd. 1. Notwithstanding any contrary provision of law or charter, and in addition to the powers or authority granted by any other law or charter, a city, county, or town in the metropolitan area may directly negotiate and enter into contracts, for a term not to exceed 30 years, for the delivery of solid waste to a waste facility and the processing of solid waste. Contracts made by direct negotiations shall be approved by resolution adopted by the governing body of the city, county, or town.

Subd. 2. Before a city, county, or town may enter into any contract pursuant to subdivision 1, which contract is for a period of more than five years, the city, county, or town shall submit the proposed contract and a description of the proposed activities under the contract to the council for review and approval. The council shall approve the proposed contract if it determines that the contract will not adversely affect collection rates and charges during the term of the contract and that the contract is consistent with the council's plan, permits issued under section 473.823, and county reports or master plans approved by the council. The council may consolidate its review of contracts submitted under this section with its review of related permit applications submitted under section 473.823 and for this purpose may delay the review required by this section.

Sec. 17. Minnesota Statutes, 1975 Supplement, Section 473.823, is amended to read:

473.823 (POLLUTION CONTROL AGENCY; REGULATIONS AND PERMITS.)

Subd. 1 By April 1, 1977, the agency, to abate or prevent pollution of air and waters of the state in the metropolitan area, shall adopt regulations relating to the location and operation of facilities in the metropolitan area and regulations having the force of law for the identification, labeling, classification, storage, collection, treatment, and disposal of hazardous waste. In adopting the regulations the agency shall consider applicable air and water pollution standards, land and water use, soil conditions, geography, topography, ground water pollution, natural drainage, prevailing weather conditions, the costs of acquisition and operation, and any other factors it may deem relevant. The regulations shall be adopted in accordance with chapter 15. The regulations, to the extent practicable, shall encourage resource recovery and attempt to reduce the metropolitan area's reliance on direct disposal and landfill.

Subd. 2. In the metropolitan area, no metropolitan county or commission, local government unit or person shall commence or continue operation of any facility, unless a permit for the operation thereof has been issued by the agency, or unless the facility is approved for temporary operation by the agency prior to the issuance of a permit.

Subd. 3. The agency may prescribe permit and permit application forms, and may request applicants to submit in writing all information deemed relevant by the agency. The agency shall request applicants to submit all information deemed relevant by the council to its review, including without limitation information relating to the geographic areas and population served, the need, the effect on existing facilities and services, the anticipated public cost and benefit, the anticipated rates and charges, the manner of financing, the effect on metropolitan plans and development programs, the supply of waste, anticipated markets for any product, and alternative means of disposal or energy production. The agency, or any employee or agent thereof, when authorized by it, may examine any books, papers, records or memoranda of the applicant pertaining to its waste facility, and may enter on any property, public or private, for the purpose of obtaining information, conducting surveys or making investigations relative to the location or operation of a waste facility. The agency may issue permits for the operation of facilities by any metropolitan county or commission, local government unit or person where the operation thereof is consistent with applicable regulations adopted by the agency pursuant to subdivision 1, provided that no permit may be issued for the operation of a facility in the metropolitan area which is not in accordance with the Metropolitan Council's solid and hazardous waste policy plan. The Metropolitan Council shall determine whether a permit is in accordance with the goals, policies, standards, and criteria in its policy plan. In making its determination, the council shall consider the areawide need and benefit of the applicant facility and may consider, without limitation, the effect of the applicant facility on existing and planned waste facilities described in a waste control commission development program or county report or master plan. If the council determines that a permit is in accordance with its policy plan, the council shall approve the permit. If the council determines that a permit is not in accordance with its policy plan, it shall disapprove the permit. The council's approval of permits may be subject to conditions necessary to satisfy criteria and standards in its policy plan, including conditions respecting the type, character, and quantities of waste to be processed at a waste facility used primarily for resource recovery and restrictions on the geographic territory from which a waste facility used primarily for resource recovery may draw its waste. For the purpose of this review and approval by the council, the agency shall send a copy of each permit application and any supporting information furnished by the applicant to the Metropolitan Council within 15 days after receipt of the application and all other information requested from the applicant. Within 60 days after the application and supporting information are received by the council, unless a time extension is authorized by the agency, the council shall issue to the agency in writing its determination whether the permit is disapproved, approved or approved with conditions. If the council does not issue its determination to the agency within the 60 day period, unless a time extension is authorized by the agency, the permit shall be deemed to be in accordance with the council's policy plan. No permit may be issued in the metropolitan area for a waste facility used primarily for resource recovery, if the facility or site is owned and operated by a public agency or if the acquisition or betterment of the facility or site is secured by obligations pledging the full faith and credit or taxing powers of a city, county or town, unless the council finds that adequate markets exist for the products recovered without substantially reducing the supply of solid waste available for existing resource recovery operations and that all costs of operation, administration, maintenance and debt service will be covered by reasonable rates and charges for the use of the facility.

Subd. 4. Regulations adopted pursuant to subdivision 1 may be enforced by the agency in the manner provided in section 115.071.

Sec. 18. Minnesota Statutes 1974, Chapter 473, is amended by adding a section to read:

473.825 (DISCLOSURE.)

For the purpose of the regulations, plans, and reports required or authorized by section 473.149, section 10 of this act, and sections 473.801 to 473.823 and this section, each generator of hazardous waste and each owner or operator of a collection service or waste facility annually shall make the following information available to the agency, council, and metropolitan counties: a schedule of rates and charges in effect or proposed for a collection service or the processing of waste delivered to a waste facility and a description, in aggregate amounts indicating the general character of the solid and hazardous waste collection and processing system, of the types and the quantity, by types of waste generated, collected, or processed. The county, council, and agency shall act in accordance with the provisions of section 116.075, subdivision 2, with respect to information for which confidentiality is claimed.

Sec. 19. Minnesota Statutes, 1975 Supplement, section 473.249, Subdivision 1, amended to read:

Subd. 1. The Metropolitan Council may levy a tax on all taxable property in the counties named in section 473.121 to provide funds for the purposes of sections 473.121 to 473.249 and for the purpose of carrying out other responsibilities of the council as provided by law. The tax shall not exceed eight-thirtieths of one mill on each dollar of assessed valuation of all such taxable property, and shall be levied and collected in the manner provided by section 473.08.

Sec. 20. Minnesota Statutes, 1975 Supplement, Sections 473.121, Subdivision 30; 473.149, Subdivision 2; 473.815, and 473.821, are repealed.

Sec. 21. This act applies in the counties of Anoka, Carver, Dakota, Hennepin, Ramsey, Scott and Washington.

Sec. 22. This act is effective on the day following final enactment.

Responsibility of Agency

The Metropolitan Council was created in 1967 by the Minnesota State Legislature to coordinate planning and development in the Twin Cities Metropolitan Area. The Council prepared Metropolitan Development Guides, and Regional Plans, including policy plans for several regional commissions. It also reviews capital budgets, capital improvement programs, and development programs of several regional commissions, and comprehensive plans of local governments. The Council reviews proposed projects for "metropolitan significance" impact.

The Council's basic job is to coordinate planning and development in the Metropolitan area. The Council carries out this job by:

- Preparing an over-all long range plan for the Region, which the Council calls its "Metropolitan Development Guide;"
- Reviewing different kinds of proposals and projects submitted by local governmental units, metropolitan agencies, and various public and private organizations;
- Studying problems that are regional in nature;
- Offering direct help to both communities and citizens through technical assistance and service programs.

Authority for Responsibility

The Metropolitan Council was created by the State Legislature in 1967 out of recognition by the legislature that, first, there were a number of urgent, region-wide problems needing solutions and, second, that no existing governmental unit had a broad enough perspective or capability to forge a reasonably valid consensus of what ought to be done to provide these answers.

The powers and duties for the Council were prescribed in Statutes 1971, Chapter 473A, and have been expanded in subdivisions thereafter. This act provides for orderly growth and economic development in the metropolitan area according to a coordinated framework of proposals, projects, improvements, programs, expenditures, and plans which directly and substantially affect the development of the metropolitan area.

Overview of the Agency

The Council coordinates the planning and development of the Twin Cities Metropolitan Area, and maintains jurisdiction in the seven counties of Anoka, Carver, Dakota, Hennepin, Ramsey, Scott and Washington. Seventeen members to the Council are appointed by the Governor. One chairman (indefinite term) and sixteen representatives (four year terms) are appointed.

An authorized staff, of about 158 is maintained, complement the Council. Three standing committees are provided in the areas of Personnel and Work Programs; Human Resources; and Physical Development. Advisory committees are maintained on the following:

Advisory Committee on Aging; Criminal Justice Advisory Committee; Metropolitan Housing and Redevelopment Authority Advisory Committee; Communications Advisory Committee; Transportation Advisory Board; Metropolitan Parks and Open Space Commission; Metropolitan Land Use Advisory Committee; Modest-Cost Private Housing Committee; Solid Waste Advisory Committee.

The staff of the Council is organized into four major departments:

1. Department of Administration
2. Department of Physical Resources Planning
3. Department of Human Resources Planning
4. Department of Community Services and Public Information

Interaction of Agency with ICES

The main level of interaction should be in the area of solid and hazardous waste management. Through the Metropolitan Solid Waste Act - 1976

the Council is required to maintain policies of materials and energy recovery in its comprehensive planning. The Council is required to adopt by July 1, 1978, as part of its Development Guide, a long range plan for the collection and processing of solid and hazardous waste, to include criteria and standards for waste facilities and waste facility sites. The ICES solid waste management system will be required to be consistent with this Council responsibility including: general location; capacity; operation; processing technique; environmental impact; effect on existing, planned or proposed collection services and waste facilities; and economic viability.

Submission for Approval

The Council has been introduced to ICES at its inception and will be continually involved in its execution with respect to feedback and guidance. Formal approval by the council will be input when the program is submitted to MPCA for permitting in Phase III.

Potential Problem Areas

The areas previously described are areas of potential problems and will be addressed in detail to prevent their development. These areas are: general location; capacity; operation and processing techniques; environmental impact; effects on existing, planned or proposed collection service and waste facilities; and economic viability.

Metropolitan Council
300 Metro Square Building
Seventh Street and Robert Street
Saint Paul, Minnesota 55101

Telephone (612) 291-6453

Office of the Chairman

March 16, 1977

Mr. W. E. Soderberg
Director, Physical Plant
200 Shops Building
University of Minnesota
Minneapolis, Minnesota 55455

RE: Grid-Connected ICES

Dear Mr. Soderberg:

The Metropolitan Council appreciates your writing to us seeking the Council's review of the "Grid-Connected Integrated Community Energy System," and the continued involvement of Council staff with respect to the utilization of solid or hazardous waste within the Twin Cities Metropolitan Area.

Council staff has reviewed the energy-system documents which were previously submitted to this office. In reviewing these documents and noting that the project effort is separated into six distinct phases, we would suggest that the Council formally review the project after Phase I is completed. Appraising the Council after Phase I would offer the input of more specific and meaningful information. Prior to review by the Council, we would submit the project to the Council's "Solid and Hazardous Waste Management Advisory Committee" for their review and input. The Council's "official" action in accordance with Minnesota Statutes Section 473, would be taken after a solid or hazardous waste permit application is sought from the Minnesota Pollution Control Agency.

The intended potential disposal/utilization of hospital and health care waste generated in the Metropolitan Area is noteworthy, particularly since such a plan would help solve part of the need for effective and safe hazardous waste disposal.

Enclosed are several documents which should assist in your "Task II - Preliminary Institutional Assessment." Enclosed are:

- State legislation on solid and hazardous waste management, with summary. This legislation governs the activities and assigns responsibilities to the Minnesota Pollution Control Agency, the Metropolitan Council, and the Metropolitan Counties in solid and hazardous waste management.

Mr. W. E. Soderberg
March 16, 1977
Page Two

- Map of existing solid waste disposal facilities in the Metropolitan Area
- Map of existing hospitals and other health care facilities in the Metropolitan Area
- Council policies on resource recovery facilities - amendments to the Metropolitan Development Guide on Solid Waste Management

If you have any immediate questions, please call Raymond W. Thron (291-6409) of my staff. Thank you for seeking early input from the Council; this allows the Council to benefit from your technical studies, which can assist in the development of future solid and hazardous waste management policies.

Congratulations on your award from the U.S. Energy Research and Development Administration for undertaking the energy system studies.

Sincerely,

John Boland,
Chairman

cc: Messrs. R. A. Reid
J. O'Gara ✓
S. Kegler
R. Silvagni
J. Shipman
L. Nelson

Enclosures

JB/cjd

UNIVERSITY OF MINNESOTA
TWIN CITIES

Physical Plant Maintenance and Operations
200 Shops Building
Minneapolis, Minnesota 55455

February 3, 1977

Mr. John E. Boland, Director
Metropolitan Council
Metro Square Building
7th and Robert
St. Paul, Minnesota 55101

Re: Formal investigation of Grid-
Connected ICES.

Dear Mr. Boland:

The University of Minnesota has been awarded a contract by the United States Energy Research and Development Administration for a preliminary feasibility study of construction and demonstration of a "Grid-Connected Integrated Community Energy System." This is Phase I of a six-phase program. We are formally asking that the Council initiate action to review this proposal.

The purpose of the preliminary feasibility study is established in ERDA's outline of the University's scope of work and tasks, which I have attached. The University's period of performance for this contract is February 1, 1977 to May 21, 1977. Because of delays in negotiations between ERDA and the University, we will be requesting a one-month extension.

Much more important to us time-wise is ERDA's review of contract work the last of March, 1977, and their expectations of complete answers to Tasks I and II of the outline at this time. I am confident that your review of these will indicate the Council's involvement in these Tasks. Any action taken by the Metropolitan Council to speedily handle our request will be deeply appreciated.

We have submitted two copies outlining the University's proposal to Mr. Ray Thron of your office.

If you or members of your staff have further inquiries, please direct them to myself at 373-4521 or Mr. James O'Gara, 376-3455. Thank you for your assistance in this matter.

Yours very truly,

W. E. Soderberg
Director, Physical Plant

WES:VP
Encs.

cc: J. C. Pearce, NSP
D. P. Brown
C. L. Carlson
L. Fulop
R. A. Reid
✓ J. O'Gara
J. Roback
R. Lewis

100 Church Street

December 8, 1976

TO: Clint Hewitt
FROM: Laszlo Fulop
RE: Environmental Use Applications -
Proposed Rules (State Register, November 8, 1976, pp. 730-738)

The proposed rules appear to be procedural only in relation to "The Environmental Coordination Procedure Act". The apparent reason behind these Rules is the Agency's endeavor to try to simplify permit application for those who must obtain more than one State permit, before undertaking (or operating) projects which would use the State's air, land or water resources. The simplified procedure would be facilitated thru a "Master Application", and with the assistance of the E.Q.C. - "The Coordination Unit". The use of the procedure is optional, but certainly seems (in its presented form) desirable since application for the various permits has normally been a very time consuming course. The University may be affected as well as other agencies when proposing projects which require the obtainment of several permits. (Projects which come to mind immediately are: major construction projects, major development, power plant major modifications or construction, etc.)

LCF:rjr

cc: Greg Kittelsen

METROPOLITAN COUNCIL
Suite 300 Metro Square Building, Saint Paul, Minnesota 55101
291-6359

METROPOLITAN SOLID WASTE ACT SUMMARY

The Metropolitan Solid Waste Act amends the existing Metropolitan Solid Waste Disposal Act through broadening solid waste management activities to include the recovery of materials and energy from solid waste. Provisions of the act apply to the Minnesota Pollution Control Agency (MPCA), the seven metropolitan counties, municipal governments, the Metropolitan Waste Control Commission (MWCC), and the Metropolitan Council.

Legislative Purpose and Policy

The legislature declares that a public purpose is served by the recovery and utilization of resources from solid waste and hazardous waste where economically viable and compatible with source reduction. The ownership and operation of solid waste facilities by private industry is encouraged.

The MPA is authorized to regulate the handling of hazardous waste and the location and operation of waste facilities. The Council is authorized to carry on a continuous long range program of planning with respect to solid and hazardous waste collection and processing and to establish criteria and standards and approve permits for waste facilities in the Metropolitan Area. The Metropolitan counties are authorized to (1) if necessary, acquire, construct, operate, and maintain solid waste facilities; (2) plan for and regulate waste collection services and facilities; (3) collect data on solid and hazardous waste collection and processing systems and procedures; and (4) regulate the handling of hazardous waste.

Solid and Hazardous Waste Policy Plan

1. Requires the Council to adopt by July 1, 1978 as part of its Development Guide, a long range policy plan for the collection and processing of solid and hazardous waste in the Metropolitan Area.
2. The policy plan is to include:
 - (a) Criteria and Standards for waste facilities and waste facility sites respecting the following matters: general location, capacity, operation, processing techniques, environmental impact, effect on existing, planned or proposed collection

services and waste facilities, and economic viability. Criteria and standards shall be consistent with regulations adopted by the MPCA.

- (b) Additional Criteria and Standards respecting financial self-sufficiency based upon competitive rates and charges when waste facilities are owned or operated by public agencies or supported primarily by public funds or obligations.
- (c) A consideration of the following in development of the Policy Plan:
 - (1) Orderly and economic development, public and private, of the Metropolitan Area.
 - (2) Preservation and best and most economical use of land and water in the Metropolitan Area.
 - (3) Protection and enhancement of environmental quality.
 - (4) Conservation and reuse of resources and energy.
 - (5) Preservation and promotion of conditions conducive to efficient, low cost, competitive, and adaptable systems of waste collection and processing.
 - (6) Orderly resolution of questions concerning changes in systems of waste collection and processing.
- 3. The hazardous waste portion of the policy plan must be approved by the MPCA in accordance with its standards and regulations prior to adoption by the Council.

Timetable

- 1. By July 1, 1978 the Council must adopt its final Solid and Hazardous Waste policy plan.
- 2. By October 1, 1976, the Council must adopt either interim policies or amendments to the existing comprehensive plan establishing standards and criteria. These policies would be used for reviewing permit applications for waste facilities used primarily for resource recovery. For permit applications received prior to October 1, 1976, the Council may extend the review period until 60 days after the adoption of interim policies or amendments.

Advisory Committee

The Council must establish an advisory committee which would have the following duties:

1. Aid in the preparation of the Policy Plan.
2. Aid in the review of County Master Plans and Reports.
3. Aid in the review of permit applications.
4. Other duties determined by the Council membership on the advisory committee shall consist of:
 1. One-third citizen representatives.
 2. One-third representatives from metropolitan counties and municipalities.
 3. One-third representatives from private waste management firms.
 4. A representative from the MPCA and one from the Minnesota Health Department would serve as ex-officio members.

Hazardous Waste Facilities

The MWCC is authorized to construct and operate waste facilities in connection with the processing and disposal of hazardous waste consistent with the Council's policy plan for solid and hazardous waste and in accordance with the MWCC's development program and capital budget as approved by the Council. The MWCC may accept hazardous waste from outside the Metropolitan Area within the State, as well as hazardous waste generated within the Metropolitan Area. The MWCC may fix and collect fees and charges for accepting hazardous waste, as may be reasonable.

Metropolitan Counties: Plans and Reports

1. Each metropolitan county is required to prepare and submit to the Council, for approval, a solid and hazardous waste master plan to implement the Council's policy plan.
2. Each county master plan shall describe
 - (a) County solid and hazardous waste activities, functions, and facilities.

- (b) Existing system of solid and hazardous waste generation, collection, and processing within the county.
 - (c) Existing and proposed county and municipal ordinances, and license and permit requirements relating to waste facilities, hazardous and solid waste generation, collection, and processing.
 - (d) Existing or proposed municipal, county, or private waste facilities and collection services within the county together with schedules of existing rates and charges to users and statements as to the extent to which such facilities and services will or may be used to implement the policy plan.
 - (e) Any solid waste facility which the county owns or plans to acquire, construct, or improve together with statements as to the planned method, estimated cost and time of acquisition, proposed procedures for operation and maintenance of each facility, an estimate of the annual cost of operation and maintenance, estimate of annual gross revenues, and a proposal for the use of the facility after it is no longer needed or usable as a waste facility.
3. Annually, each metropolitan county must submit a report to the Council containing information on generation, collection, and processing, schedules of rates and charges and the basis for such charges.

Metropolitan Counties: Facilities, Ordinances, Enforcement

- 1. Counties may acquire solid waste facilities.
- 2. No city, county or town shall own or operate a hazardous waste facility (the authority to own and operate is given to the MWCC).
- 3. Counties may authorize issuance of bonds for the acquisition or betterment of solid waste facilities.
- 4. Counties may contract for the use, operation and maintenance of existing public or private waste facilities.
- 5. Counties shall adopt ordinances governing waste facilities and may adopt ordinances governing the collection of solid waste. Municipalities and towns are required to adopt ordinances governing the collection of solid waste within its boundaries.
- 6. Counties shall adopt key ordinance rules, regulations and standards for hazardous waste management relating to (a) identification,

(b) labeling and classification, (c) handling, collection, transportation and storage, (d) ultimate disposal sites, and (e) other matters for public health, welfare and safety.

7. Counties are given enforcement authority.
8. Counties may act jointly with others to accomplish its solid and hazardous waste management objectives.

Cities, Counties, Towns: Solid Waste Contracts

Cities, counties and towns in the Metropolitan Area may directly negotiate and enter into contracts for terms up to 30 years for the delivery of solid waste to a waste facility and for the processing of solid waste. All contracts for a period of more than five years must be reviewed and approved by the Council.

Pollution Control Agency: Regulations and Permits

1. By April 1, 1977 the MPCA must adopt regulations relating to the location and operation of waste facilities and on the identification, labeling, classification, storage, collection, treatment, and disposal of hazardous waste. The regulations are to encourage resource recovery.
2. The MPCA shall request applicants for waste facilities to submit information necessary for the Council to conduct its review, relating to, without limitation, (a) geographic areas and population served, (b) the need, (c) the effect on existing facilities and services, (d) the anticipated public cost and benefit, (e) the anticipated rates and charges, (f) the manner of financing, (g) the effect on metropolitan plans and development programs, (h) the supply of waste, (i) anticipated markets for any product, and (j) alternative means of disposal or energy production.

Metropolitan Council Approval of Permits

Permit applications submitted to the MPCA must be approved by the Council. The Council's approval of permits may be subject to conditions necessary to satisfy criteria and standards in the Council's policy plan, including conditions respecting the type, character, and quantities of waste to be processed at a waste facility used primarily for resource recovery and restrictions on the geographic territory from which a waste facility used primarily for resource recovery may draw its waste.

For facilities to be owned and operated by a public agency, the Council must find that adequate markets exist for products recovered from resource recovery facilities, without substantially reducing the supply of solid waste available for existing resource recovery operations. The Council must also find that all costs of operation, administration, maintenance and debt service will be covered by reasonable rates and charges for the use of the facility.

Disclosures of Information

Each generator of hazardous waste and each owner or operator of a collection service or waste facility shall annually make the following information available to the MPCA, the Council and the metropolitan counties:

- (1) A schedule of rates and charges in effect or proposed for a collective service or the processing of waste delivered to a waste facility.
- (2) A description, in aggregate amounts, of the types and quantities (by types) of wastes generated, collected, or processed.

/mb

Agency Responsibility: As an overall objective, the EQC is charged with the responsibility to promote and insure cooperation and coordination among agencies on matters significantly affecting the environment, and enabling agencies to jointly review issues and resolve conflicts. The EQC is to determine which environmental problems of interdepartmental concerns it should deal with, and may initiate studies by interagency or citizen task forces on important issues.

Although the EQC may initiate the study of environmental problems, it also reviews major actions, programs and legislation through its Environmental Review Process. In addition to this review process, the EQC administers the critical areas and power plant siting programs.

Authority of Agency Responsibility: The authority for the EQC is through the Environmental Policy Act, Chapter 412 - Section 2 (116D.02), Declaration of State Environmental Policy, Subdivision 1

Overview of Agency: The EQC was established by separate statute in 1973 to provide a forum for state agencies to resolve physical and material problems. It is made up of the heads of the following state agencies: Agriculture, Energy, Health, Transportation, Natural Resources, Planning and Pollution Control; other members include a representative of the Governor's office and four citizens appointed by the Governor. In addition to administering the environmental review process the EQC administers the critical areas and the power plant siting programs.

Interaction of Agency with ICES: The interaction will occur as a result of the environmental review process.

The first step of the environmental review process is the completion of an environmental assessment worksheet (EAW). An EAW is a brief document, in worksheet format, that helps local governments and state agencies decide whether a proposed action is a major action with the potential for significant environmental effect and, in the case of a private action, whether it is of more than local significance. If the action meets these criteria an environmental impact statement (EIS)

should be prepared.

The potential impact of the following environmental factors are assessed in an EAW:

1. Ecological effects (topography, wetlands, water systems, wild-life, vegetation)
2. Environmental hazards (toxic materials, floor plains, steep slopes, geologic hazards)
3. Water quality and quantity (surface and ground water impacts)
4. Resource conservation, energy, and use (agricultural or forest lands, minerals, energy sources and use)
5. Planning, land use, community services (compatibility with plans, regional impacts, population, employment, housing, utilities, transportation)
6. Open space, parks and recreation
7. Historic resources (landmarks, historic sites, archaeologic sites, paleontologic sites)
8. Air quality (pollutants)
9. Noise (vibration and sound)

In most instances an EIS is not required, and the environmental review process is completed when the EAW is cleared. An EIS is normally prepared only if an evaluation of an EAW indicates probable adverse environmental effects of a major proposed project. However, when the magnitude of a project's impact on the environment is obvious, an EIS may be prepared without first preparing an EAW.

Submission for Approval: The Environmental Review Program Rules provide for a 30-day review period following completion of an EAW and publication of its conclusions in the EQC Monitor. Preliminary review of the Grid ICES indicates that a mandatory Environmental Assessment Worksheet (EAW) is not required, however, due to the nature of the project, a EAW will be submitted during execution of Phase III. The attached letter from the EQC staff representatives supports this conclusion.

Potential Problem Areas: Several potential problem areas will be encountered

in dealing with solid waste from hospitals and other health care facilities. Specifically Volume 4 discusses these categories. It is anticipated that two separate pathways (general/special) will be utilized in receiving these materials into the ICES. General solid waste will be collected and processed similar to municipal solid waste. Special will be uncompacted and processed separately with necessary coding and encapsulation until introduced into the system.

Air quality will be potentially affected from release of odors from the solid waste receiving area, discharge of combustion products from pyrolysis of solid waste, and from coal. Odor control will be accomplished through proper ventilation barriers, and maintaining negative pressure within the receiving pit. Pollution control equipment for control of combustion products will be utilized.

STATE OF MINNESOTA

ENVIRONMENTAL QUALITY COUNCIL
CAPITOL SQUARE BUILDING
550 CEDAR STREET
ST. PAUL, 55101

February 18, 1977

James O'Gara
Principal Plant Engineer
Physical Plant Maintenance and Operations
110 Shops Building
University of Minnesota
Minneapolis, MN 55455

RE: University of Minnesota Grid-Connected Integrated Community
Energy System (ICES)

Dear Mr. O'Gara:

From the information contained in the Demonstration Proposal of the above project and from our discussion on February 2, 1977, it does not appear that any mandatory Environmental Assessment Worksheet (EAW) categories are involved in this project.

However, if you feel it appropriate, an Environmental Assessment Worksheet may still be prepared on the project and distributed for review in accord with the Minnesota Environmental Quality Council's (EQC) Rules on the Environmental Review Program. Minn. Reg. 24(B)(2) states that "(a)n EAW may be prepared on any proposed action to determine if the action is a major action with the potential for significant environmental effects..."

You may want to follow this course of action, for the reasons we discussed at our meeting on February 2, 1977.

The Environmental Review Program Rules provide for a 30 day review period following completion of an EAW and publication of its conclusions in the EQC Monitor. The Rules also provide that no final decisions to commence or approve the action can be made during this period. (If an Environmental Impact Statement is prepared, no final decisions can be made until after the Final EIS has been accepted by the EQC.) If you choose to prepare an EAW, no final decisions would be made on the project through the EQC's Critical Areas program until the end of this period.

This project is within the Mississippi River Critical Area. Because of that and the fact that this will be a governmental development, it requires an EQC review of the project before final approvals can be given by the necessary permitting bodies (Minneapolis, the University of Minnesota, Corps of Engineers, DNR, or whoever may be involved). The formal Critical Area review process will not

start until the end of the Environmental Review process; however, the required Critical Area review could probably be nearly completed before the end of the Environmental Review process. The delay should then be less than 30 days and more likely about 15 days following final review of the Environmental Assessment Worksheet or Environmental Impact Statement.

One final comment is necessary. You mentioned at one point that this project may not be ready for construction for quite some time. By that date, Minneapolis and the University may have completed its required Critical Area Planning. In this case, the EQC would no longer be reviewing governmental actions within the Critical Area. The review authority would solely be vested with the local (Minneapolis) or the University building officials and any other permitting bodies. In the Environmental Review program, the Rules provide that the EAW is prepared as early as possible in the development of the action; this generally is after the project has started the permit application or other approval process.

We hope this letter has clarified the review process. If any unanswered questions remain, please feel free to contact this office.

Sincerely,

Nancy I. Onkka
Environmental Planner

Clifton J. Aichinger
Critical Areas Coordinator

NIO/CIA/dh

2/8/77

MINNESOTA ENVIRONMENTAL QUALITY COUNCIL
ENVIRONMENTAL ASSESSMENT WORKSHEET (EAW)
AND NOTICE OF FINDINGS

DO NOT WRITE IN THIS SPACE

E.R. # _____

NOTE: The purpose of the Environmental Assessment Worksheet (EAW) is to provide information on a project so that one can assess rapidly whether or not the project requires an Environmental Impact Statement. Attach additional pages, charts, maps, etc, as needed to answer these questions. Your answers should be as specific as possible. Indicate which answers are estimated.

SUMMARY

A. ACTIVITY FINDING BY RESPONSIBLE AGENCY (PERSON)

☐ Negative Declaration (No EIS) ☐ EIS Preparation Notice (EIS Required)

B. ACTIVITY IDENTIFICATION

1. Project name or title _____

2. Project proposer(s) _____

Address _____

Telephone Number and Area Code () _____

3. Responsible Agency or Person _____

Address _____

Person in Responsible Agency (Person) to contact for further information
on this EAW: _____ Telephone _____

4. This EAW and other supporting documentation are available for public inspection and/or copying at: Location _____

Telephone _____ Hours _____

5. Reason for EAW Preparation

☐ Mandatory Category -cite
MEQC Rule number(s) _____ ☐ Petition ☐ Other

C. ACTIVITY DESCRIPTION SUMMARY

1. Project location

County _____ City/Township name _____

Township number _____ (North), Range Number _____ East or West (circle one),

Section number(s) _____ Street address (if in city) or legal description:

- | Unit of Government
(federal, state,
regional, local) | Name or Type of Permit/Approval
or Federal Funding | Status |
|--|---|--------|
| | | |

II. ACTIVITY DESCRIPTION

- 2 -
248

3. List names and sizes of lakes, rivers and streams on or near the site, particularly lakes within 1,000 feet and rivers and streams within 300 feet.

C. Activity Description

1. Describe the proposed activity, including staging of development (if any), operational characteristics, and major types of equipment and/or processes to be used. Include data that would indicate the magnitude of the proposed activity (e.g. rate of production, number of customers, tons of raw materials, etc).

2. Fill in the following where applicable:

a. Total project area _____ acres	g. Size of marina and access channel (water area) _____ sq. ft.
or	
Length _____ miles	h. Vehicular traffic trips generated per day _____ ADT
b. Number of housing or recreational units _____	i. Number of employees _____
c. Height of structures _____ ft.	j. Water supply needed _____ gal/da
	Source: _____
d. Number of parking spaces _____	k. Solid waste requiring disposal _____ tons/yr
e. Amount of dredging _____ cu. yd.	l. Commercial, retail or industrial floor space _____ sq. ft.
f. Liquid wastes requiring treatment _____ gal/da	

III. ASSESSMENT OF POTENTIAL ENVIRONMENTAL IMPACT

A. SOILS AND TOPOGRAPHY

1. Will the project be built in an area with slopes currently exceeding 12%? _____ No _____ Yes
2. Are there other geologically unstable areas involved in the project, such as fault zones, shrink-swell soils, peatlands, or sinkholes? _____ NO _____ YES
3. If yes on 1 or 2, describe slope conditions or unstable area and any measures to be used to reduce potential adverse impacts.

4. Indicate suitability of site soils for foundations, individual septic systems, and ditching, if these are included in the project.
5. Estimate the total amount of grading and filling which will be done:
 _____ cu. yd. grading _____ cu. yd. filling
 What percent of the site will be so altered? _____ %
6. What will be the maximum finished slopes? _____ %
7. What steps will be taken to minimize soil erosion during and after construction?

B. VEGETATION

1. Approximately what percent of the site is in each of the following vegetative types:

Woodland	_____ %	Cropland/	_____ %
		Pasture	
Brush or shrubs	_____ %	Marsh	_____ %
Grass or herbaceous	_____ %	Other	_____ %
		(Specify)	

2. How many acres of forest or woodland will be cleared, if any? _____ acres
3. Are there any rare or endangered plant species or areas of unique botanical or biological significance on the site? (See DNR publication The Uncommon Ones.) _____ NO _____ YES
 If yes, list the species or area and indicate any measures to be used to reduce potential adverse impact.

C. FISH AND WILDLIFE

1. Are there any designated federal, state or local wildlife or fish management areas or sanctuaries near or adjacent to the site? _____ NO _____ YES
2. Are there any known rare or endangered species of fish and wildlife on or near the site? (See DNR publication The Uncommon Ones.) _____ NO _____ YES
3. Will the project alter or eliminate wildlife or fish habitat? _____ NO _____ YES
4. If yes on any of questions 1-3, list the area, species or habitat, and indicate any measures to be used to reduce potential adverse impact on them.

D. HYDROLOGY

1. Will the project include any of the following:
If yes, describe type of work and mitigative measures to reduce adverse impacts.
 - a. Drainage or alteration of any lake, pond, marsh, lowland or groundwater supply NO YES
 - b. Shore protection works, dams, or dikes
 - c. Dredging or filling operations
 - d. Channel modifications or diversions
 - e. Appropriation of ground and/or surface water
 - f. Other changes in the course, current or cross-section of water bodies on or near the site
2. What percent of the area will be converted to new impervious surface? %
3. What measures will be taken to reduce the volume of surface water run-off and/or treat it to reduce pollutants (sediment, oil, gas, etc.)?
4. Will there be encroachment into the regional (100 year) floodplain by new fill or structures? NO YES
If yes, does it conform to the local floodplain ordinance? NO YES
5. What is the approximate minimum depth to groundwater on the site? feet

E. WATER QUALITY

1. Will there be a discharge of process or cooling water, sanitary sewage or other waste waters to any water body or to groundwater? NO YES
If yes, specify the volume, the concentration of pollutants and the water body receiving the effluent.
2. If discharge of waste water to the municipal treatment system is planned, identify any toxic, corrosive or unusual pollutants in the wastewater.
3. Will any sludges be generated by the proposed project? NO YES
If yes, specify the expected volume, chemical composition and method of disposal.

4. What measures will be used to minimize the volumes or impacts identified in questions 1-3?

5. If the project is or includes a landfill, attach information on soil profile, depth to water table, and proposed depth of disposal.

F. AIR QUALITY AND NOISE

1. Will the activity cause the emission of any gases and/or particulates into the atmosphere? ☐ NO ☐ YES
If yes, specify the type and origin of these emissions, indicate any emission control devices or measures to be used, and specify the approximate amounts for each emission (at the source) both with and without the emission control measures or devices.
2. Will noise or vibration be generated by construction and/or operation of the project? ☐ NO ☐ YES
If yes, describe the noise source(s); specify decibel levels [dB(A)], and duration (hrs/da) for each and any mitigative measures to reduce the noise/vibration.
3. If yes on 1 or 2, specify whether any areas sensitive to noise or reduced air quality-(hospitals, elderly housing, wilderness, wildlife areas, residential developments, etc.) are in the affected area and give distance from source.

G. LAND RESOURCE CONSERVATION, ENERGY

1. Is any of the site suitable for agricultural or forestry production or currently in such use? ☐ NO ☐ YES
If yes, specify the acreage involved, type and volume of marketable crop or wood produced and the quality of the land for such use.
2. Are there any known mineral or peat deposits on the site? ☐ NO ☐ YES
If yes, specify the type of deposit and the acreage.

3. Will the project result in an increased energy demand? _____ NO _____ YES
Complete the following as applicable:

a. Energy requirements (oil, electricity, gas, coal, solar, etc.)

Type	Estimated Annual Requirement	Peak Demand (Hourly or Daily)		Anticipated Supplier	Firm Contract or Interruptible Basis?
		Summer	Winter		

b. Estimate the capacity of all proposed on-site fuel storage.

c. Estimate annual energy distribution for:

space heating _____ % lighting _____ %
air conditioning _____ % processing _____ %
ventilation _____ %

d. Specify any major energy conservation systems and/or equipment incorporated into this project.

e. What secondary energy use effects may result from this project (e.g. more or longer car trips, induced housing or businesses, etc)?

H. OPEN SPACE/RECREATION

- Are there any designated federal, state, county or local recreation or open space areas near the site (including wild and scenic rivers, trails, lake accesses)? _____ NO _____ YES
If yes, list areas by name and explain how each may be affected by the project. Indicate any measures to be used to reduce adverse impacts.

H. TRANSPORTATION

1. Will the project affect any existing or proposed transportation systems (highway, railroad, water, airport, etc)? ☐ NO ☐ YES
If yes, specify which part(s) of the system(s) will be affected. For these, specify existing use and capacities, average traffic speed and percentage of truck traffic (if highway); and indicate how they will be affected by the project (e.g. congestion, percentage of truck traffic, safety, increased traffic (ADT), access requirements).
2. Is mass transit available to the site? ☐ NO ☐ YES
3. What measures, including transit and paratransit services, are planned to reduce adverse impacts?

J. PLANNING, LAND USE, COMMUNITY SERVICES

1. Is the project consistent with local and/or regional comprehensive plans? ☐ NO ☐ YES
If not, explain:

If a zoning change or special use permit is necessary, indicate existing zoning and change requested.

2. Will the type or height of the project conflict with the character of the existing neighborhood? ☐ NO ☐ YES
If yes, explain and describe any measures to be used to reduce conflicts.

3. How many employees will move into the area to be near the project? _____
How much new housing will be needed? _____

4. Will the project induce development nearby--either support services or similar developments?
If yes, explain type of development and specify any other counties and municipalities affected.

5. Is there sufficient capacity in the following public services to handle the project and any associated growth?

Public Service	Amount required for project	Sufficient capacity?
water	gal/da	
wastewater treatment	gal/da	
sewer	feet	
schools	pupils	
solid waste disposal	ton/mo	
streets	miles	
other (police, fire, etc)		

If current major public facilities are not adequate, do existing local plans call for expansion, or is expansion necessary strictly for this one project and its associated impacts?

6. Is the project within a proposed or designated Critical Area or part of a Related Actions EIS or other environmentally sensitive plan or program reviewed by the EQC? _____ NO _____ YES
If yes, specify which area or plan.

7. Will the project involve the use, transportation, storage, release or disposal of potentially hazardous or toxic liquids, solids or gaseous substances such as pesticides, radioactive wastes, poisons, etc? _____ NO _____ YES
If yes, please specify the substance and rate of usage and any measures to be taken to minimize adverse environmental impacts from accidents.

8. When the project has served its useful life, will retirement of the facility require special measures or plans? ☐ NO ☐ YES
If yes, specify:

K. HISTORIC RESOURCES

1. Are there any structures on the site older than 50 years or on federal or state historical registers? ☐ NO ☐ YES
2. Have any arrowheads, pottery or other evidence of prehistoric or early settlement been found on the site? ☐ NO ☐ YES
Might any known archaeological or paleontological sites be affected by the activity? ☐ NO ☐ YES
3. List any site or structure identified in 1 and 2 and explain any impact on them.

L. OTHER ENVIRONMENTAL CONCERNS

Describe any other major environmental effects which may not have been identified in the previous sections.

III. OTHER MITIGATIVE MEASURES

Briefly describe mitigative measures proposed to reduce or eliminate potential adverse impacts that have not been described before.

V. FINDINGS

The project is a private () governmental () action. The Responsible Agency (Person), after consideration of the information in this EAW, and the factors in Minn. Reg. MEQC 25, makes the following findings.

1. The project is () is not () a major action.
State reasons:

2. _____ EIS PREPARATION NOTICE

An EIS will be prepared on this project because the project is a major action and has the potential for significant environmental effects. For private actions, the project is also of more than local significance.

3. (For private actions only.) The project is () is not () of more than local significance.
State Reasons:

IV. CONCLUSIONS AND CERTIFICATION

NOTE: A Negative Declaration or EIS Preparation Notice is not officially filed until the date of publication of the notice in the EQC Monitor section of the Minnesota State Register. Submittal of the EAW to the EQC constitutes a request for publication of notice in the EQC Monitor.

- A. I, the undersigned, am either the authorized representative of the Responsible Agency or the Responsible Person identified below. Based on the above findings, the Responsible Agency (Person) makes the following conclusions. (Complete either 1 or 2).

1. _____ NEGATIVE DECLARATION NOTICE

No EIS is needed on this project, because the project is not a major action and/or does not have the potential for significant environmental effects and/or, for private actions only, the project is not of more than local significance.

2. _____ EIS PREPARATION NOTICE

An EIS will be prepared on this project because the project is a major action and has the potential for significant environmental effects. For private actions, the project is also of more than local significance.

- a. The MEQC Rules provide that physical construction or operation of the project must stop when an EIS is required. In special circumstances, the MEQC can specifically authorize limited construction to begin or continue. If you feel there are special circumstances in this project, specify the extent of progress recommended and the reasons.

- b. Date Draft EIS will be submitted: _____
(month) (day) (year)

(MEQC Rules require that the Draft EIS be submitted within 120 days of publication of the EIS Preparation Notice in the EQC Monitor. If special circumstances prevent compliance with this time limit, a written request for extension explaining the reasons for the request must be submitted to the EQC Chairman.)

- c. The Draft EIS will be prepared by (list Responsible Agency(s) or Person(s)):

Signature

Title

Date

- B. Attach an affidavit certifying the date that copies of this EAW were mailed to all points on the official EQC distribution list, to the city and county directly impacted, and to adjacent counties or municipalities likely to be directly impacted by the proposed action (refer to question III.J.4 on page 9 of the EAW). The affidavit need be attached only to the copy of the EAW which is sent to the EQC.

- C. Billing procedures for EQC Monitor Publication

State agency Attach to the EAW sent to the EQC a completed OSR 100
ONLY: form (State Register General Order Form--available at Central
Stores). For instructions, please contact your Agency's
Liaison Officer to the State Register or the Office of the
State Register--(612) 296-8239.

5 November 1976

(These Rules have been adopted by the Minnesota Environmental Quality Council. They will not be in effect until they have been approved by the Attorney General and filed with the Secretary of State.)

*Mandatory
California
p.8*

MINNESOTA ENVIRONMENTAL QUALITY COUNCIL
ENVIRONMENTAL IMPACT STATEMENT RULES

CHAPTER ELEVEN

AUTHORITY, PURPOSE, DEFINITIONS, GENERAL PROVISIONS

MEQC 21 AUTHORITY AND PURPOSE

A. Authority. The Rules contained herein are prescribed by the Minnesota Environmental Quality Council to implement the Environmental Impact Statement provisions pursuant to authority granted in Minnesota Statutes, Section 116D.04, subdivision 2 (1974), and shall be followed by all persons in implementation of the Minnesota Environmental Policy Act of 1973. The procedures specified in these Rules are in addition to the other procedures and substantive responsibilities of public agencies and private persons contained in the Act, and do not limit the authority of the Council to review, study, or resolve any matter of environmental concern authorized by law.

B. Purpose of Environmental Impact Statement. The purpose of an Environmental Impact Statement is to provide information for agencies and private persons to evaluate proposed actions which have the potential for significant environmental effects, to consider alternatives to the proposed actions, and to institute methods for reducing adverse environmental effects. An Environmental Impact Statement is not a document to justify an action, nor shall indications of adverse environmental effects necessarily require that an action be disapproved. It is to be utilized as a guide in issuing, amending, and denying permits and carrying out the other responsibilities of public agencies to avoid or minimize adverse environmental effects and to restore or enhance environmental quality consistent with the Act.

MEQC 22 DEFINITIONS

The following terms have the meanings ascribed to them in these Rules.

A. "Act" means the Minnesota Environmental Policy Act of 1973, as amended, Minn. Stat. § 116D.01 et seq. (1974).

B. "Action" means the whole of a project which will cause physical manipulation of the environment, directly or indirectly. The determination of whether an action requires environmental documents shall be made by reference to the physical activity to be undertaken and not to the governmental process of approving the activity.

"Action" does not include the following:

1. Proposals and enactments of the Legislature.
2. The rules, orders, or recommendations of public agencies.
3. Executive Orders of the Governor, or their implementation by public agencies.
4. Judicial orders, except orders establishing judicial ditches pursuant to Minn. Stat. Chapter 106 (1974).
5. Submissions of proposals to a vote of the people of the State.

C. "Approval" means the issuance of a governmental permit, or any review of a proposed action required by state or federal law or regulations.

D. "Council" means the Minnesota Environmental Quality Council (MEQC).

E. "Days." In computing any period of time prescribed or allowed in these Rules, the day of the act or the event from which the designated period of time begins to run shall not be included. The last day of the period so computed shall be included, unless it is a Saturday, Sunday, or a legal holiday, in which event the period runs until the end of the next day which is not a Saturday, a Sunday, or a legal holiday. When the period of time prescribed or allowed is 15 days or less, intermediate Saturdays, Sundays, and legal holidays shall be excluded in the computation.

F. "Environmental Impact Statement (EIS)" is defined by Minn. Stat. § 116D.04, subdivision 1 (1974) and these Rules.

G. "EIS Preparation Notice" means a written statement by the Responsible Agency or Responsible Person which requires an EIS to be prepared.

H. "Environment" means the physical conditions existing in the area which

will be affected by the proposed action, including land, air, water, minerals, flora, fauna, ambient noise, energy resources available to the area, and man-made objects or natural features of historic, geologic or aesthetic significance.

I. "Environmental Assessment Worksheet (EAW)" means a worksheet provided by the Council to determine whether an EIS is required.

J. "Environmental Documents" means EAWs, Draft EISs, Final EISs, Negative Declaration Notices, and EIS Preparation Notices.

K. "EQC Monitor" means an early notice bulletin containing all notices of impending actions that may have significant environmental effects.

L. "Governmental Action" means an action proposed to be undertaken by a public agency directly or an action supported or licensed, in whole or in part, by a governmental permit issued by a public agency.

M. "Governmental Permit" means a lease, permit, license, certificate, variance, or other entitlement of use, or the commitment to issue or the issuance of a discretionary contract, grant, subsidy, loan, or other form of financial assistance, by a public agency to another public agency or to a private person.

N. "Inadequate EIS" means an EIS that fails sufficiently to examine potential environmental effects, alternatives, or desirable modifications, or an EIS not prepared in compliance with the Act and these Rules.

O. "Local Agency" means any general or special purpose unit of government of the state with less than state-wide jurisdiction, including but not limited to regional development commissions, counties, municipalities, townships, port authorities, housing authorities, and all agencies, committees, and boards thereof.

P. "Negative Declaration Notice" means a written statement by the Responsible Agency or Responsible Person that a proposed action does not require the preparation of an EIS.

Q. "Other Approving Agencies" means all public agencies other than the Responsible Agency that must approve a project for which environmental documents are prepared.

- R. "Person" means a human being, unincorporated association, partnership, trust, corporation, or public agency.
- S. "Petition" means a document that contains at least 500 signatures and requests the preparation of an EIS.
- T. "Private Action" means an action proposed to be undertaken by a private person that does not require a governmental permit.
- U. "Proposer" means the private person or public agency that will undertake an action or that will direct or authorize others to undertake the action.
- V. "Public Agency" means a federal, state, regional or local agency, board, commission, or other special purpose unit of government. "Public Agency" includes all public educational institutions but does not include the courts of this State.
- W. "Regional Development Commission" means any regional development commission created pursuant to Minn. Stat. §§ 462.381-395 (1974) inclusive and the Metropolitan Council established by Minn. Stat. Chapter 473 (Supp. 1975).
- X. "Responsible Agency" means that public agency which has the principal responsibility for preparing the environmental documents required by the Act and these Rules.
- Y. "Responsible Person" means the person who proposes to undertake an action and who is responsible for the preparation of the environmental documents required by the Act and these Rules.
- Z. "Reviewing Agencies" means all public agencies which have either jurisdiction by law or special expertise with regard to the environmental effects of an action for which an EIS is prepared. All agencies that are members of the Council shall be considered reviewing agencies.

MEQC 23 GENERAL RESPONSIBILITIES

A. Environmental Quality Council.

1. The Council's duties and responsibilities include the following:
 - a. Coordinate the EIS program as set forth in these Rules.
 - b. Coordinate among public agencies, when appropriate, review of EISs prepared pursuant to the National Environmental Policy Act. The coordination may include requests to the preparer or to a public agency to undertake additional environmental analysis, to hold informational meetings, or to conduct any other review consistent with the Act and these Rules.
 - c. Provide a manual of procedure to guide public agencies, Responsible Agencies, and Responsible Persons in the implementation of this Act and these Rules; and assist on request in determining whether the specific action requires an EIS.
2. In addition, the Council may, where it deems necessary:
 - a. Require revision of any EIS that it finds inadequate.
 - b. Require preparation of alternative or additional environmental review before allowing commencement of any action or approval of any action by a public agency.
 - c. Provide technical assistance on request of a public agency, Responsible Agency or Responsible Person.
 - d. Review any rules, guidelines, procedures, or local ordinances adopted to implement the Act and these Rules.
 - e. Hold hearings or informational meetings to facilitate implementation of the Act and these Rules.

B. Public Agencies.

1. All public agencies are responsible for complying with the requirements of the Act and these Rules. Public agencies shall inform a proposer, and a representative of the petitioners when a petition is involved, of the operating procedures that they will follow in implementing the Act and these Rules for each EAW they prepare. Such operating procedures shall also be available to the public at the offices of the Responsible Agency. Whether a public agency prepares environmental documents itself or contracts with private experts for the preparation, the public agency is solely responsible for the adequacy and objectivity of the environmental documents. Nothing in these Rules shall limit existing authority of public agencies to charge proposers reasonable fees for document preparation.
2. All public agencies shall retain their existing statutory authority subject to the policies of the Act and the authority of the Council to reverse or modify decisions or proposals or to require preparation of environmental documents.
3. Under the Act, these Rules shall not affect the specific statutory obligations of any public agency to perform the following:
 - a. To comply with criteria or standards of environmental quality regardless of whether an EIS is required for an action.
 - b. To coordinate or consult with any federal or state agency.
 - c. To act or refrain from acting contingent upon the recommendations or certification of any public agency or federal agency.
4. A public agency, at the request of a Responsible Agency, shall provide any unprivileged data or information to which it has reasonable access concerning a particular action and shall assist in the preparation of environmental documents on any action for which it has special expertise or access to information.
5. A public agency shall prepare the environmental documents on an action which is the subject of a petition upon the direction of the Council.

6. When environmental documents are prepared on an action by a Responsible Agency, every public agency which has jurisdiction to approve the action shall consider the environmental documents prepared on that action before approving the action.

7. Public agencies shall provide one free reproducible copy of all environmental documents to each location on the official NEQC distribution list, except as otherwise provided herein. These will be available for internal agency distribution and for public copying.

C. Private Persons. When environmental documents are required on an action that is subject to a governmental permit, the proposer shall supply in the prescribed manner any unprivileged data or information reasonably requested by the Responsible Agency that that person has in his possession or to which he has reasonable access.

CHAPTER TWELVE
SUBSTANTIVE REQUIREMENTS

MEQC 24 ACTIONS REQUIRING ENVIRONMENTAL ASSESSMENT WORKSHEETS

A. General. The purpose of an EAW is to assess rapidly, in a worksheet format, whether a proposed action is a major action with the potential for significant environmental effects and additionally in the case of a private action, whether it is of more than local significance.

B. EAW Required.

1. An EAW shall be prepared on any action which is not exempted by MEQC 26 and which falls within one of the following categories. The Responsible Agency is shown in parentheses for each category except that when a proposer of an action is a public agency that agency shall be the Responsible Agency. The Council may specify a different Responsible Agency for good cause.

- a. Construction of a new industrial park of over 320 acres in size -- (Local);
- b. Construction of a facility or integral group of facilities with at least 250,000 square feet of commercial or retail floor space or at least 175,000 square feet of industrial floor space, or a mixture of commercial, industrial and retail floor space totaling at least 250,000 square feet, unless located in an industrial park for which an EIS has already been prepared -- (Local);
- c. Any industrial, commercial or residential development of 40 or more acres, any part of which is within a floodplain area, as defined by the "Statewide Standards and Criteria for Management of Floodplain Areas of Minnesota" -- (Local);
- d. Construction of a commercial or industrial development, any part of which is within a shoreland area (as defined by Minn. Stat. § 105.465 (1974)), covering 20,000 or more square feet of ground space, not including access roads or

parking areas, and located on a parcel of land having 1,500 feet or more of shoreline frontage -- (Local);

e. Construction of a facility that generates more than a maximum of 2,500 vehicle trips per hour or a maximum of 12,500 vehicle trips per eight-hour period -- (Local);

f. Construction of a new oil refinery, or an expansion of an existing refinery that shall increase capacity by 10,000 barrels per day or more -- (PCA);

g. Construction of a pipeline greater than six inches in diameter and 50 miles in length -- (DNR);

h. Construction of facilities on a single site that are designed for, or capable of, storing a total of one million or more gallons of liquid natural gas, liquid petroleum gas, or other liquid fuels -- (PCA);

i. Construction of an underground storage facility for gases and liquids that requires a permit, pursuant to Minn. Stat. § 84.57 (1974) -- (DNR);

j. Construction of a new mineral or fuel processing or refining facility, including, but not limited to, smelting and hydrometallurgical operations -- (PCA or DNR);

k. Construction of a facility if the cumulative emissions of particulate matter and sulfur oxides exceed 50 tons per day -- (PCA);

l. Main roadway grading construction of a four-or-more lane, divided highway with at least partial control of access of ten route miles or more in length and carrying 10,000 vehicles ADT (Average Daily Traffic) -- (Hwys);

m. Construction of a new airport that is within the key system, pursuant to Minn. Stat § 360.305, subdivision 3 (1974) -- (Aeronautics);

- n. Construction or opening of a new facility for mining metallic minerals -- (DNR);
- o. Construction or opening of a facility for mining gravel, other non-metallic minerals, and fuels involving more than 320 acres -- (Local, except DNR with respect to peat fuels).
- p. A new appropriation for commercial or industrial purposes of either surface water or ground water averaging 30 million gallons per month, or exceeding 2 million gallons in any day during the period of use; or a new appropriation of either ground water or surface water for irrigation of 640 acres or more in one continuous parcel from one source of water -- (DNR);
- q. Any new or additional impoundment of water creating a water surface in excess of 200 acres -- (DNR);
- r. An action that will eliminate or significantly alter a wetland of Type 3, 4, or 5 (as defined in U.S. Department of Interior, Fish and Wildlife Service, Circular 39, "Wetlands of the U.S., 1956") of five or more acres in the seven-county metropolitan area, or of 50 or more acres outside the seven-county metropolitan area, either singly or in a complex of two or more wetlands -- (Local);
- s. Any marina and harbor project of more than 20,000 square feet of water surface area -- (Local);
- t. Construction of a new or additional residential development that includes 100 or more units in an unsewered area or 500 or more units in a sewer area -- (Local);
- u. Construction of a residential development consisting of 50 or more residential units, any part of which is

within a shoreland area (as defined by Minn. Stat.

§ 105.485 (1974)) -- (Local);

v. Construction of a development consisting of "condominium-type" campgrounds, mobile home parks, or other semi-permanent residential and/or recreational facilities, any part of which is within a shoreland area (as defined by Minn. Stat. § 105.485 (1974)) or floodplain (as defined by the "Statewide Standards and Criteria for Management of Floodplain Areas of Minnesota") exceeding a total of 50 units or, if located in areas other than the above, exceeding a total of 100 units -- (Local);

w. Construction of a sanitary landfill for an excess of 100,000 cubic yards per year of waste fill, or any sanitary landfill located in an area characterized by soluble bedrock, where leachates may significantly change groundwater quality -- (PCA);

x. Construction of a new paper and pulp processing mill -- (PCA);

y. The application of restricted use pesticides over more than 1,500 contiguous acres -- (Agriculture);

z. Harvesting of timber within the Boundary Waters Canoe Area Portal Zone or in a State Park or Historical Area, that is not included in an annual timber management plan filed with the Council -- (DNR);

a₁ Permanent removal of 640 or more contiguous acres of forest cover -- (DNR);

b₁ Conversion of 40 or more contiguous acres of forest cover to a different land use -- (Local);

c₁ Construction of electric generating plants at a single site designed for, or capable of,

operation at a capacity of 200 or more megawatts (electrical) -- (PCA);

d₁ Construction of electric transmission lines and associated facilities designed for, or capable of, operation at a nominal voltage of 200 kilovolts AC or more, or operation at a nominal voltage of $\pm$ 200 kilovolts DC or more, and are 50 miles or more in length -- (EQC);

e₁ Construction of nuclear material processing plants and facilities -- (PCA).

2. An EAW may be prepared on any proposed action to determine if the action is a major action with the potential for significant environmental effects and for a private action if the action is of more than local significance.

C. Waiver of EAW. In cases where the magnitude and environmental impact of a project allow a Responsible Agency or Responsible Person to determine that an EIS is necessary without preparation of an EAW, or if a federal agency is preparing a state EIS pursuant to MEQC 25 F.4, an EAW need not be prepared. Publication of the EIS Preparation Notice shall be required. In cases where the Responsible Agency is not the proposer, if the project proposer does not concur in the determination of need for an EIS without the preparation of an EAW, the agency shall prepare an EAW.

MEQC 25 ACTIONS REQUIRING ENVIRONMENTAL IMPACT STATEMENTS

A. General Criteria. An EIS shall be required whenever it is determined that an action is major and has the potential for significant environmental effects. In making this determination, material effects on the environmental variables specified in MEQC 30 A.3 will indicate that an EIS should be prepared. In the case of a private action, it must also be determined that the action is of more than local significance.

B. Major Action. In determining whether an action is major, the following factors shall be considered:

1. Type of action;

2. Scope of action, including size and cost;
 3. Location and nature of surrounding area;
 4. The totality of cumulative related actions, as defined by NEQC 25 E;
 5. Relation of the action to anticipated growth and development; and
 6. Permit(s) and approval(s) required in addition to those of one primary, local agency.
- C. Local Significance. In determining whether a major private action is of more than local significance, the following factors shall be considered:
1. Location of the action; and
 2. Area affected by the action.
- D. Potential for Significant Environmental Effects. In determining whether an action has the potential for significant environmental effects, the following factors shall be considered:
1. Type, extent, and reversibility of environmental effects;
 2. Cumulative potential effects of related or anticipated future actions, as defined by NEQC 25 E;
 3. The extent to which the environmental effects are subject to mitigation by ongoing public regulatory authority; and
 4. The extent to which environmental effects can be anticipated and controlled as a result of other environmental studies undertaken by public agencies or the project proposer, or of EISs previously prepared on similar actions.
- E. Related Actions.
1. When two or more actions are related, they shall be considered as a single action and their cumulative potential effects on the environment shall be considered in determining whether an EIS is required. Actions are related if:
 - a. They are of a similar type, and are planned or will occur at the same time, and will affect the same geographic area; or

b. They are interdependent and not independently viable stages or segments of development of the same project and would not be undertaken if subsequent stages or segments would not also occur; or

c. It can be determined, based on a comprehensive plan or on the precedent that would be established by a public agency's undertaking or approving an action, that one of the actions will induce other actions of the same type or affecting the same geographic area.

2. A comprehensive plan for a geographic area or other public agency overall program or plan document may be considered as a Related Actions EIS.

a. The geographic area must contain possible actions each with the potential for significant environmental effects or actions whose cumulative potential environmental effect is significant.

b. For an individual action in the geographic area, the need for an individual action EIS or a modification of the Related Actions EIS shall be judged by the guidelines for a Subsequent EIS.

3. A Related Actions EIS shall meet the content requirement of NEQC 30 D; however, the data may be more generalized and not as exhaustive as an individual action EIS. Additionally, the alternatives may be more in the nature of prototypes or alternate scenarios.

F. Miscellaneous.

1. Subsequent EIS. When an EIS has been prepared on an action, no additional EIS need be prepared on the action unless changes in the action are proposed which will involve new and potentially significant environmental effects not considered in the previous EIS.

2. Single EIS. When an action is to be carried out or approved by more than one public agency, only one EIS shall be prepared

pursuant to the Act.

3. Expansions or Modifications. The expansion or modification of an ongoing action which requires new or modified governmental permits shall be subject to the same requirements in the Act and these Rules for the preparation of environmental documents as a new action.

4. Federal EIS. When these Rules require the preparation of a state EIS on an action, and a federal EIS is required for the same action, pursuant to the requirements of the National Environmental Policy Act (NEPA) and the implementing regulations thereto, all or any part of the federal EIS may be submitted in lieu of all or any part of a state EIS. However, when the federal EIS is used, the elements of the EIS that are required by the Act and these Rules, but are not required by NEPA, shall be added to the federal EIS, including alternatives and modifications which can be implemented by state and local agencies. When a federal EIS is prepared in lieu of a state EIS, the state Responsible Agency shall independently review the federal EIS and ascertain that the conclusions and recommendations are those that the state agency would reach. Insofar as practicable, the Responsible Agency shall consult with the federal agency and coordinate all environmental reviews to the end that the requirements of state law are met by a single Draft EIS, single Final EIS, and a single hearing process, in which the state agency actively participates and adds supplementary material as necessary. In such circumstances, an EAW shall not be required; however, an EIS Preparation Notice shall be published in the EQC Monitor.

6. Environmental Review of Proposed Large Electric Power Generating Plants and High Voltage Transmission Lines.

1. Other provisions of these Rules to the contrary notwithstanding, this subsection provides for the environmental review of large electric power generating plants (LEPGP) and high voltage transmission lines (HVTL) under the Minnesota Environmental Policy Act. Certificates of Need (Minn. Stat. § 116H.07), and Certificates of Corridor Compatibility and Site Competibility (Minn. Stat. § 116C.57, subdivision 1) may be issued before preparation and filing of an EIS. One purpose of this process is to insure that the environmental review of LEPGP and HVTL is consistent with the sequential permitting for energy facilities as provided in Minnesota Power Plant Siting Act, Minn. Stat. § 116C.51 to 116C.69 and the Minnesota Energy Agency Act, Minn. Stat. § 116H.01 to 116H.15. The environmental review of LEPGP and HVTL shall be separated into the following five phases:

- a. Environmental Report on Certificates of Need
- b. Environmental Report on Sites for LEPGP
- c. Environmental Report on Corridors for HVTL
- d. HVTL Route EIS
- e. LEPGP EIS

2. This environmental review process provides for the consideration of the potential environmental effects of a proposed action early in the decision making process at the phase where they are most appropriately considered. The intent of the process set out in this subsection is to eliminate duplication by reducing repeated consideration of identical issues in the various phases of this sequential process. The limitation on the environmental issues considered at each phase of the environmental review process is based on the preemption of the need, siting, corridor, and routing decisions as provided in Minn. Stat. § 116H.05 and § 116C.61.

- a. Environmental Report on Certificates of Need
 - (1) Preparation. The Minnesota Energy Agency shall prepare an Environmental Report when it receives an application for a Certificate of Need for a proposed LEPGP or HVTL.

(2) Content. The Environmental Report on the Certificate of Need shall include; but not be limited to:

- (a) A summary of the information provided in the application;
- (b) A brief analysis of alternatives to the proposed facility, which analysis shall include: a discussion of the economic and environmental feasibility of each alternative including the alternative of a different sized facility, an estimate of the time it would take to implement each alternative, the projected availability of each alternative, and the estimated reliability of each alternative;
- (c) An evaluation of the environmental and economic impact of the proposed facility, each reasonable alternative thereto, and the alternative of no facility;
- (d) An evaluation of:
 - (i) the environmental impact of the proposed action, including any pollution, impairment, or destruction of the air, water, land, or other natural resources located within the state;
 - (ii) any direct or indirect adverse environmental, economic, and employment effects that cannot be avoided should the proposal be implemented;
 - (iii) alternatives to the proposed action;
 - (iv) the relationship between local short term uses of the environment and the maintenance and enhancement of long term productivity, including the environmental impact of predictable increased future development of an area because of the existence of a proposal, if approved;
 - (v) any irreversible and irretrievable commitment of resources which would be involved in the proposed action should it be implemented;

- (vi) the impact on state government of any federal controls associated with proposed actions; and
- (vii) the multi-state responsibilities associated with proposed actions.

- (3) The report shall not be as exhaustive or detailed as an EIS, since an exhaustive and lengthy discussion of site-differentiating factors and detailed design information would be inappropriate and is not available at the Certificate of Need stage.
 - (4) Review and Comment. The Environmental Report on the Certificate of Need shall be distributed in accord with the NEQC distribution list at least 20 days before the commencement of the Energy Agency's Certificate of Need hearing on the Application. The availability of the report and notice of the hearing shall be published in the EQC Monitor as specified in NEQC 35. Comments on the Environmental Report shall be submitted at the Certificate of Need public hearing. The preparation and review of the Environmental Report shall be completed within the statutory time limit provided for the Energy Agency's final decision on an application for a Certificate of Need.
 - (5) Council Review. The Energy Agency shall submit its findings of fact and decision to the Council. Failure by the Council to request review of the Energy Agency's final decision within 10 days of the decision shall constitute Council acceptance of that decision and the issues determined by the Energy Agency in issuing or denying the Certificate of Need. Such issues shall not be considered in the Environmental Reports and environmental documents prepared at the subsequent siting, corridor, routing or licensing phases.
- b. Environmental Report on Sites for Large Electric Power Generating Plants
- (1) Preparation. The Council shall prepare a Site Environmental Report when it receives a site application for a LEIS.

(2) Site Env. Report. In the Site Environmental Report the Council shall include an evaluation of the exclusion criteria, avoidance areas and site selection criteria as required by the regulations adopted under the Power Plant Siting Act for the designation of a site and also NEQC 30 D. of these Rules. The Report shall provide an evaluation of each site that is considered for designation at the siting public hearings. The Site Environmental Report shall not consider the need for the LEPCP or information not related to site differentiating impacts. It shall not be as exhaustive or detailed as an EIS.

(3) Review and Comment. The Site Environmental Report shall be distributed in accord with the NEQC distribution list and made available for review and public comment at least 30 days prior to the conclusion of the public hearing held on the site application. The Council shall respond to substantive comments received on the Environmental Report. The preparation and review of the Site Environmental Report shall be completed within the statutory time limits for the issuance of a Certificate of Site Compatibility.

(4) Final Decision on Certificate of Site Compatibility. The Council shall consider the Site Environmental Report before its final decision on the issuance of a Certificate of Site Compatibility for a LEPCP. Such issuance by the Council shall constitute a final determination of the issues that were considered in the designation of the site.

C. EIS on Large Electric Power Generating Plant

(1) Preparation. After designating a site, the Council shall determine whether an EIS shall be required on the LEPCP. If the Council or Responsible Agency determines that an EIS is required, the Minnesota Pollution Control Agency shall be the Responsible Agency, unless NEQC 27 A.3 applies.

(2) Content of EIS. The content of the EIS shall contain the information required by MEQC 30 D of these Rules. Alternative sites, the need for the facility, and any other issues previously determined by the Minnesota Energy Agency or the Council shall not be considered in the EIS. The Environmental Reports prepared at the siting and need phases and the issues previously determined shall be referenced and summarized in the EIS.

d. Environmental Report on Corridors for High Voltage Transmission Line

(1) Preparation and Content. The Council shall prepare a Corridor Environmental Report upon the receipt of an application for a corridor for a HVIL. The Corridor Environmental Report shall include the evaluation of exclusion criteria, avoidance areas and selection criteria as required in accordance with the regulations adopted under the Power Plant Siting Act and also MEQC 30 D of these Rules, for each alternative corridor considered for designation by the Council. The Report shall not be as exhaustive or detailed as an EIS.

(2) Review and Comment on Environmental Report. The Corridor Environmental Report shall be distributed in accord with the MEQC distribution list and made available for review and public comment at least 20 days prior to the conclusion of the public hearing held on the corridor application. The Council shall respond to the substantive comments received on the Environmental Report.

(3) Final Decision on Certificate of Corridor Compatibility. The Council shall consider the Corridor Environmental Report before issuing a Certificate of Corridor Compatibility. Such issuance by the Council shall constitute a final determination of the issues that were considered in the designation of the corridor. The preparation and review of the Corridor Environmental Report shall be completed within the statutory time limits for the issuance of a Certificate of Corridor Compatibility.

c. High Voltage Transmission Line Route EIS

(1) Preparation. After designating a corridor, the Council shall determine whether an EIS shall be required on the route for the HVTL in accord with these Rules. If it determines that an EIS is required, it shall prepare the EIS.

(2) Content. The Route EIS shall include the information required by the Power Plant Siting Act and the Rules adopted thereunder for High Voltage Transmission Lines (HVTL) and also NEQC 30'd of these Rules. All alternative routes designated for study by the Council shall be discussed in the EIS. The Environmental Reports prepared at the need and corridor phases and the issues previously determined shall be referenced and summarized in the EIS. The EIS shall not consider the need for the facility, routes outside the designated corridor or any routes not designated for study by the Council.

(3) Procedures. The Draft EIS shall be made available to all NEQC distribution points and to the extent practical to interested persons and shall be submitted at the public hearing on the route application. The Final EIS shall be submitted to the Council before it designates a specific route.

(4) Final Decision on Designation of Route. The Council shall consider the Final EIS in designating a route for the HVTL. The preparation and review of the Route EIS shall be completed within the statutory time limits for the Council's designation of a route.

MEQC 26 ACTIONS NOT REQUIRING ENVIRONMENTAL DOCUMENTS

A. General Exemptions. The preparation of environmental documents shall not be required:

1. When a substantial portion of the action has been completed or implemented and an EIS on the action would not be able to influence remaining implementation or construction of the action to minimize adverse environmental consequences.
2. When there has been adequate environmental review of an action within the jurisdiction of the Council pursuant to Minn. Stat. § 116G.01 et seq. (1974) (the Critical Areas Act of 1973), or Minn. Stat. § 116C.04(2)(b) (1974) (the Environmental Quality Council Act of 1973).
3. When, and so long as, a public agency denies a governmental approval required for the action.
4. When an imminent and substantial danger to the public health, safety or welfare makes it necessary to undertake a major action that has the potential for significant environmental effects and application of these Rules would be impracticable. In such cases, the proposer shall consult with the Chairman of the Council to arrange an alternative means of environmental review before taking the action.

B. State agencies developing procedural guidelines may develop EAM and EIS exemption categories. Such categories shall be submitted for Council review and approval and shall be subject to Minn. Stat., Chapter 15 [1974] Rule making procedures.

C. EAM Exemptions. Unless an action is included under MEQC 24 B.1, the following items are categories for which an EAM shall not be required. This listing may be used as a guideline for developing other state agency exemption categories under MEQC 26 B. The following listing is not intended to imply that EAMs must be prepared on actions not included in this listing. In cases where EAMs are neither exempt nor mandatory, the public agency should prepare EAMs only where it is probable that the actions will cause significant environmental effects and an EAM is needed to guide the decision on whether an EIS is required.

1. Operation, maintenance, or repair work involving no substantial change in existing structures, land uses, or water quality.
2. Construction or alteration of a single or multiple residence with four dwelling units or less and accessory appurtenant structures and utilities, when not in conjunction with the construction or alteration of two or more such residences.
3. Construction or alteration of a store, office, or restaurant designed for an occupancy of 20 persons or less, if not in conjunction with the construction or alteration of two or more stores, offices, or restaurants accumulating an occupancy load of more than 30 persons, unless designated to be an historical structure.
4. Restoration or reconstruction of a structure in whole or in part being increased or expanded by less than 25 percent of its original size, square footage, or capacity, and aggregating less than 5,000 square feet, provided that such structure has not been designated to be of historical, cultural, archeological, or recreational value by a public agency.
5. Repaving or reconstruction of existing highways not involving the addition of new travel lanes or acquisition of additional right-of-way.
6. Installation of traffic control devices on existing streets, roads, and highways other than installation of multiple fixtures or extended stretches of highway.
7. Licensing or permitting decisions relating to individual persons or activities directly connected with an individual's household, livelihood, transportation, recreation, health, safety, and welfare, such as motor vehicle licensing, hunting licenses, professional licenses, and individual park entrance permits.
8. Purchase of operating equipment, maintenance equipment, or operating supplies.

9. Sales or lease of surplus governmental property other than land, radioactive material, pesticides, or buildings.
10. Loan, mortgage, guarantee, or insurance transactions in connection with new or existing structures or uses as defined in subparagraphs HRC 26 C.2, 3 or 4.
11. Borrowing for purposes other than capital construction or land purchase.
12. Maintenance of existing landscaping, native growth, and water supply reservoirs, excluding the use of pesticides.
13. Utility extensions as follows: water service mains of 500 feet or less and one and a half inches diameter or less; sewer lines of 500 feet or less and eight inch diameter or less; electrical service lines of 500 feet or less and 240 volts or less; gas service mains of 500 feet or less and one inch diameter or less; and telephone service lines of 500 feet or less.
14. Construction of accessory appurtenant structures including garages, carports, patios, swimming pools, fences, barns, or other similar agricultural structures, excluding feedlots; or other similar buildings not changing land use or density.
15. Grading or filling of 750 cubic yards or less.
16. Local bus stops and bus shelters or transit signs, which do not require accessory parking facilities.
17. Minor temporary uses of land having negligible or no permanent effect on the environment, including such things as carnivals and sales of Christmas trees.
18. Filling of earth into previously excavated land with materials compatible with the natural material on the site.
19. Individual land use variances including minor lot line adjustments and side yard and setback variances, not resulting in the creation of a new subdivided parcel of land or any change

in land use character or density.

20. Basic data collection, training programs, research, experimental management, and resource evaluation projects which do not result in an extensive or permanent disturbance to an environmental resource, and do not constitute a substantial commitment to a further course of action having potential for significant environmental effects.

21. Accessory signs appurtenant to any commercial, industrial, or institutional facility not regulated by an agency of the State.

CHAPTER THIRTEEN
PROCEDURAL REQUIREMENTS

MEQC 27 SELECTION OF PREPARERS, PREPARATION OF EAM, AND NOTICE OF EAM CONCLUSIONS

A. Selection of Preparers. The following procedures will be followed to determine the Responsible Agency or Responsible Person for the preparation of an EAM.

1. When a private person proposes to carry out an action which does not require any governmental permits, that person shall be the Responsible Person.
2. For any action in MEQC 24 B.1 the agency designated in parentheses shall be the Responsible Agency.
3. For any action not included in MEQC 24 B.1 or which falls into more than one category of MEQC 24 B.1, the Responsible Agency shall be determined as follows:
 - a. When a single public agency proposes to carry out or has jurisdiction to approve an action, it shall be the Responsible Agency.
 - b. When two or more public agencies propose to carry out or approve an action, the Responsible Agency shall be the public agency with the greatest responsibility for supervising or approving the action as a whole. Where two or more public agencies have an equal claim to be Responsible Agency, the public agencies shall either:
 - (1) By agreement, designate which agency shall be the Responsible Agency; or
 - (2) Submit the question to the Council, which shall designate the Responsible Agency based on consideration of the above principles.

- c. To assist local governmental units in determining which public agency is the Responsible Agency, proposers of actions which are included in MEQC 24 B.1 shall provide a list of the other state and local permits known at the time to be required on the action.
4. When a private person proposes to carry out an action which in whole or in part requires a governmental permit, that person may prepare an EAM to be submitted to the appropriate Responsible Agency for its consideration and conclusion.
- a. For any action in MEQC 24 B.1, a private person may voluntarily submit an EAM to the Responsible Agency. The agency will then have 30 days to add supplementary material if necessary and to prepare an EIS Preparation Notice or issue a Negative Declaration Notice and to submit the document to the Council with appropriate notices for publication in the EQC Monitor.
- b. For any action which is not included in MEQC 24 B.1, a private person may voluntarily submit an EAM to the agency which appears to have the most approval authority on the project. If the agency and the proposer cannot agree on an appropriate Responsible Agency, the question shall be submitted to the Council for resolution. The agency will then have 30 days to add supplementary material if necessary and to prepare an EIS Preparation Notice or issue a Negative Declaration Notice and to submit the document to the Council with appropriate notices for publication in the EQC Monitor.
- c. If an EAM determines an EIS is needed, the agency filing the EIS Preparation Notice shall be the Responsible Agency for preparation of the EIS.
5. Notwithstanding subparagraphs 1-4 above, for any action the Council may designate a Responsible Agency or Responsible

Person for preparation of environmental documents.

B. Preparation of EAM.

1. The EAM shall be prepared as early as practicable in the development of the action. Early in the preparation of the EAM, the Responsible Agency shall consult with all other public agencies which have the jurisdiction to approve the action or a part of the action. When a local agency is the Responsible Agency, it shall consult with local agencies which so request and local agencies likely to be directly impacted by the proposed action. The Responsible Agency or Responsible Person may consult with appropriate reviewing agencies and other interested persons.

2. The format of an EAM shall be a worksheet and checklist in a form to be provided by the MEQC. The EAM shall include, as a minimum, the information outlined in MEQC 30 A.

C. Notice of EAM Conclusions.

1. After an EAM is prepared, the Responsible Agency or Responsible Person shall file with the Council either an EIS Preparation Notice or a Negative Declaration Notice, with a copy of the EAM attached. A Negative Declaration Notice shall not be filed before official public review of the proposed action commences.

2. The Notices shall contain the information listed in MEQC 30 B and C.

3. The Notices filed shall not be published until the Council has determined that a copy of the EAM has been mailed to all points on the official MEQC distribution list and to the city and county directly impacted by the proposed action.

4. When an EAM has been waived pursuant to MEQC 24 C, an EIS Preparation Notice shall still be required.

NEQC 28 REVIEW OF EIS PREPARATION NOTICES AND NEGATIVE DECLARATION NOTICES

A. Review of EIS Preparation Notices.

1. When an EIS Preparation Notice is published, an EIS shall be required on an action unless within 30 days of EQC Monitor publication of the Notice, a member agency of the NEQC, a public agency with the jurisdiction to approve the action, or the proposer filed objections with the Responsible Agency, the proposer of the action, and the Council.

2. The Council, at its first meeting held more than 30 days after the filing of an objection, shall determine whether an EIS shall be prepared. This time limit shall be waived if a hearing is ordered pursuant to NEQC 28 A.3.

3. The Council may hold a public hearing or informational meeting to assist it in its determination. When a hearing is held, it shall follow the following procedures:

a. The hearing shall be held as expeditiously as practicable in a county to be affected by the proposed action. Notice of the hearing shall be given at least 30 days in advance of the hearing to the proposer of the action, to all public agencies with jurisdiction over the action, and to the representative of the petitioners, if any. The hearing shall be conducted by a hearing officer, shall be transcribed, and shall continue until all persons have had an opportunity to be heard.

b. At the first monthly meeting at least 20 days after receipt by the Council and by requesting persons of the hearing officer's findings and recommendation (which receipt shall occur within 20 days of the hearing's conclusion), the Council shall consider the recommendation and any written briefs or argument filed by interested parties to the hearing, and shall decide whether to accept, reject, or modify the recommen-

dation. Failure of the Council to act at this meeting shall be deemed acceptance of the recommendation of the hearing officer.

B. Review of Negative Declaration Notices.

1. When a Negative Declaration Notice is published, an EIS shall not be required on an action unless within 30 days of EQC Monitor publication of the notice, a member agency of the EQC, a public agency with the jurisdiction to approve the action, a representative of 500 original petitioners pursuant to MEQC 32 E.1, or a representative of 500 new petitioners pursuant to MEQC 32 E.2, files objections with the Responsible Agency or the Responsible Person, the proposer of the action, and the Council.
2. The Council, at its first meeting held more than 30 days after the filing of an objection, shall determine whether an EIS shall be prepared. This time limit shall be waived if a hearing is ordered pursuant to MEQC 28 B.3.
3. The Council may hold a public hearing or informational meeting to assist in its determination. When a hearing is held, it shall follow the procedures outlined in MEQC 28 A.3.

MEQC 29 PREPARATION AND REVIEW OF EISs

A. Preparation and Review of Draft EIS.

1. The Responsible Agency or Responsible Person shall prepare and file the Draft EIS within 120 days of the EIS Preparation Notice publication date. This time limitation may be extended by the Council only for good cause upon written request by the Responsible Agency or Responsible Person.
2. The Responsible Agency may require the proposer to submit any relevant data or information that the proposer has in its possession or to which it has reasonable access.

3. The Responsible Agency or Responsible Person may consult with and request comments of public agencies with jurisdiction by law or special expertise and the public regarding the environmental effects of an action, including the appropriate regional development commission.

4. Reviewing agencies may comment in writing to the Responsible Agency or the Responsible Person within 30 days of receiving the EIS.

5. The Draft EIS is filed when it is delivered to the Council in a form and manner acceptable to it together with evidence that copies were mailed to all appropriate Council-designated distribution points, all approving agencies, reviewing agencies, the proposer, and, to the extent practicable, requesting persons.

6. Between 30 and 45 days after the Draft EIS is filed, an informational meeting shall be held by the Responsible Agency, or by the MEQC if there is no Responsible Agency, in a county affected by the proposed action as part of the Draft EIS review process. Notice shall be given at least 20 days in advance of the meeting and shall be mailed to recipients of the Draft EIS and published in a newspaper of general circulation in the counties affected by the action. The Draft EIS meeting may be consolidated with any hearing required by law to be held before approval of the action. A typewritten or audio-recorded transcription of the meeting shall be made, and the public record shall remain open for 20 days after the last day of the hearing to allow any person to submit additional information or opinions. All written and oral statements received into the record, or summaries thereof, shall be included in the Final EIS.

B. Preparation and Review of Final EIS.

1. The Responsible Agency or Responsible Person shall have 30 days from the close of the Draft EIS record to prepare and file the Final EIS. The Council may extend

this time limitation upon written request showing good cause by the Responsible Agency or Responsible Person.

2. The Final EIS is filed when it is delivered to the Council in a form and manner acceptable to it together with evidence that copies were mailed by the preparer to all appropriate Council-designated distribution points, the proposer, all approving and reviewing agencies, and, to the extent practicable, requesting persons.

3. Council Review.

a. The Council may review any Final EIS to determine whether the procedures and policies of the Act and these Rules have been adequately complied with. Failure to review a Final EIS in the time specified in b constitutes its acceptance.

b. If the Council decides to review a Final EIS, it shall commence the review at or before its first meeting held more than 30 days following filing of the Final EIS. The Council shall determine EIS adequacy at or before its first meeting held more than 45 days after commencing review. All persons receiving the Final EIS shall be notified of the Council's decision and of the time and place of any information meetings which it may hold to aid its review.

4. If the Council determines that a Final EIS is inadequate, it shall so notify the Responsible Agency or Responsible Person and shall identify in writing within 15 days the improvements or additions necessary for Council acceptance of the Final EIS. The Responsible Agency or Responsible Person shall file a revised EIS in the manner provided in subparagraph MEQC 29 A.5 within 30 days of receipt of the Council's written comments. Reviewing agencies and other persons shall comment in writing on the revised EIS within 15 days of receipt of the revised EIS. The Final EIS

shall be submitted to the Council within 15 days after the close of the comment period in the form and manner provided in subparagraph MEQC 29 B.2. The Council may extend these time limitations upon written request and a showing of good cause by the Responsible Agency or Responsible Person.

5. The Council shall make a final decision on the adequacy of the Final EIS prior to any governmental approval of the action.

MEQC 30 CONTENT REQUIREMENTS

A. Content of an EAW. The EAW shall address at least the following major categories in the concise form provided on the worksheet:

1. SUMMARY
 - a. Finding of Negative Declaration or Positive Declaration (EIS Required);
 - b. Activity Identification (name, sponsors, Responsible Agency, EAW contact person, reason for preparation, any federal jurisdiction, governmental permits);
 - c. Activity Description Summary (location, proposal, construction schedule, estimated costs).
2. ACTIVITY DESCRIPTION
 - a. U.S.G.S. Map 1:24,000 Scale, Diagrams;
 - b. Land Use Categories Affected;
 - c. Size and Dimensions of Project.
3. ASSESSMENT OF POTENTIAL ENVIRONMENTAL IMPACT
 - a. Ecological Effects (topography, wetlands, water systems, wildlife, vegetation);
 - b. Environmental Hazards (toxic materials, floodplains, steep slopes, geologic hazards);
 - c. Water Quality and Quantity (surface and ground water impacts);
 - d. Resource Conservation, Energy, and Usage

(agricultural or forest lands, minerals, energy sources and use);

e. Planning, Land Use, Community Services (compatibility with plans, regional impacts, population, employment, housing, utilities, transportation);

f. Open Space and Recreation (parks, federal, state, local);

g. Historic Resources (landmarks (federal or state), historic sites, archeologic sites, paleontologic sites);

h. Air Quality (pollutants);

i. Noise (vibration and sound);

j. Other Environmental Concerns.

4. MITIGATION OF ADVERSE ENVIRONMENTAL EFFECTS

5. FINDINGS AND CERTIFICATION (private or governmental action, time for EIS preparation, EQC distribution certification).

B. Content of Negative Declaration Notice. Each Negative

Declaration Notice shall include:

1. A brief description of the proposed action.
2. A statement that no EIS is required because the action is not a major action with the potential for significant environmental effects, and in the case of private actions is not of more than local significance, supported by reasons.
3. Where the EAM and supporting documentation is available for public inspection and copying.

C. Content of EIS Preparation Notice. Each EIS Preparation

Notice shall include:

1. A brief description of the action requiring the EIS.
2. The Responsible Agency or Responsible Person for EIS preparation.
3. The recommended time requirements for preparation.
4. Recommendations, if applicable, as to the extent to which the action may proceed during the EIS process.

5. Where the EAM and supporting documentation is available for public inspection and copying.

D. Content of Draft EIS. A Draft EIS shall contain the following information:

1. Summary. A summary sheet which describes the action, major environmental impacts (adverse and beneficial), reasonable alternatives, and the federal, state, and local permits outstanding shall be included. Also, federal, state, or local agencies, other organizations, and private individuals consulted in the preparation of the EIS shall be identified.
2. Description. A description of the action, including type, size and location, and the environmental setting of the action. A regional and site-specific map should be included to assist in identification of the project.
3. Environmental Impact of the Proposed Action. All phases of an action shall be considered when evaluating an action: planning, acquisition, construction, implementation, development, operation, and conclusion of operation. Special consideration shall be given to pollution, impairment, or destruction of the air, water, land, or other natural resources located within the State resulting from the proposed action, without limitation by the definitions of "action" and "environment" in these Rules. This discussion shall also include a description of all resources in the area and how they will be affected by the action, with emphasis placed on resources that are rare or unique to the region or that possess important historical, cultural, natural, ecological, or aesthetic values, without limitation by the definitions of "action" and "environment" in these Rules.
4. Any direct or indirect environmental, economic, energy, and employment effects that cannot be avoided if the proposed action is implemented. This discussion shall describe the adverse and beneficial environmental, economic, energy, and employment effects that will result directly from the action, as well as the effects that may be reasonably expected to

result from the action. Mitigation measures that have been or may be incorporated into the action to reduce or minimize significant adverse environmental, economic, energy, and employment effects shall be discussed.

5. Any irreversible and irretrievable commitments of resources that would be involved in the proposed action if it is implemented. This discussion shall include the proposed use of non-renewable resources, long term or irreversible commitments of resources to a particular use and any irreversible and irretrievable damage that may result from the action.

6. The relationship between local short term uses of the environment and the maintenance and enhancement of long term productivity, including the environmental impact of predictable increased future development of an area if the action is implemented. This discussion shall include the extent that the proposed action involves trade-offs between short term environmental gains or losses versus long term gains or losses, including potential risks to health and safety, and the extent that the proposed action forecloses future options. The impact of predictable increased future development in the area that may be stimulated, directly or indirectly, by the proposed action shall be discussed.

7. Alternatives to the Proposed Action. An objective evaluation of all reasonable alternatives to the action and the environmental impact of each and the reasons for their rejection in favor of the recommended choice shall be made. Reasonable modifications of the proposed action that may avoid or reduce adverse environmental effects shall be discussed, including the expected benefits, costs, and effects on the objective of the proposed action.

8. The impact on state government of any federal controls associated with the proposed action. Federal actions pending which may affect the final outcome of the project should be discussed, including those actions which may result in the expenditure of additional state funds.

9. The multi-state responsibilities associated with the proposed action. Impacts of the proposed action upon multi-state responsibilities shall be discussed, including the environmental effects of the action upon adjacent states.

D. Content of Final EIS. The Final EIS shall consist of the Draft EIS, the comments or summaries thereof received through consultation and public comment, including public meetings or hearings held on the EIS, and the response of the Responsible Agency or Responsible Person to the significant environmental issues raised in the consultation, comment, and review process. The response of the Responsible Agency or Responsible Person to constructive comments received may take the form of a revision of the Draft EIS or may be an attachment to the Draft EIS.

NEQC 31 FINAL DECISIONS AND ACTIONS

- A. No decisions granting or denying a permit application for which notice is required to be published in NEQC 35 shall be effective until 30 days following publication of the notice.
- B. No public agency proposing an action for which notice is required to be published in NEQC 35 shall begin to implement that action until 30 days following publication of the notice.
- C. When an EAW is prepared on any action, no final decision to approve or commence the action shall be made until 30 days following publication of a Negative Declaration Notice.
- D. On any action for which an EIS Preparation Notice has been published, no final decision to approve or commence the action shall be made until the Council has completed its review of the Final EIS. Where public hearings are required by law to precede issuance of a governmental permit or other implementation of a governmental action, public hearings shall not be held until after filing of a Draft EIS, except for projects reviewed under NEQC 26S.
- E. When an EIS is required on an action, any physical construction on the action or operation of the action shall be halted from

the time the EIS Preparation Notice is published until the Final EIS is accepted by the Council, unless the Council determines that construction or operation may begin or continue. In that case, the Council shall specify the extent to which construction or operation shall be allowed, and the specific reasons for that determination. This Rule shall in no way limit the Council's statutory authority to halt actions or impose other temporary relief.

MEQC 32 PETITION FOR AN EIS

A. Petition. Any person or group of persons may file with the Council a petition that contains the signatures and addresses of 500 or more individuals and requests the Council to require an EIS on an action.

B. Content. In addition to the signatures, the petition shall include the following written information:

1. Description of the action;
2. Proposer of the action;
3. The anticipated environmental effects of the action;
4. The name and address of a representative of the petitioner for the purpose of this section;
5. Any additional information that may be used in the EAW to determine whether the proposed action is a major action with the potential for significant environmental effects, and in the case of private actions whether the action is of more than local significance.

C. Council Action.

1. The petition shall qualify for the remedies provided by these Rules and Minn. Stat. § 116D.04, subdivision 3 (1974), unless the Council determines that:

- a. The petition lacks 500 signatures; or
- b. The action is one to which these Rules do not apply, pursuant to MEQC 26; or
- c. An EIS Negative Declaration Notice has been filed in accord with these Rules and the time for objections or

appeal has passed; or

d. The petition is frivolous or clearly outside the scope of these Rules and the Council disqualifies the petition by order.

2. In all other cases, the Council shall refer the petition to a Responsible Agency for preparation of an EAW or, where appropriate, arrange for a Council review pursuant to MEQC 28 A.3.

D. Responsible Agency Duties. The Responsible Agency shall have 45 days in which to prepare the EAW referred to it by the Council pursuant to MEQC 32 C.2 and shall thereupon publish an EIS Preparation Notice or Negative Declaration Notice.

E. Challenge of Negative Declaration Notice by Petitioners.

1. If a Negative Declaration Notice is published, a representative of the original petitioners for an EIS may, within 30 days, request Council review of the decision pursuant to MEQC 28 B.

2. Any person or group of persons may request Council review of a Negative Declaration Notice on any action by submitting a new petition signed by 500 or more individuals.

a. Content: The petition shall state on each page, "NEGATIVE DECLARATION CHALLENGE-PETITION FOR A STATE EIS". The petition shall also include the items described in MEQC 32 B above.

3. Review: On all petitions received within 30 days of publication of a Negative Declaration Notice as provided in MEQC 35, the Council shall conduct a public hearing to facilitate the Council's review of whether an EIS must be prepared. The hearing shall be held as expeditiously as practicable in a county to be affected by the proposed action. The review procedure is specified in MEQC 28 B.

CHAPTER FOURTEEN
EARLY NOTICE RULES

MEQC 33 AUTHORITY AND PURPOSE

- A. To provide early notice of impending actions which may have significant environmental effects, the Council shall, pursuant to Minn. Stat. § 116D.04, subdivision 8 (1974), publish a bulletin with the name of "EQC Monitor" containing all notices as specified in MEQC 35. The Council may prescribe the form and manner in which the agencies submit any material for publication in the EQC Monitor, and the Chairman of the Council may withhold publication of any material not submitted according to the form or procedures the Council has prescribed.
- B. These Rules are intended to provide a procedure for notice to the MEQC and to the public of natural resource management and development permit applications, and impending governmental and private actions that may have significant environmental effects. The notice given through the early notice procedures is in addition to public notices otherwise required by law or regulations.

MEQC 34 EXEMPTIONS

- A. All National Pollutant Discharge Elimination System Permits granted by the Minnesota Pollution Control Agency, under the authority given it by the Environmental Protection Agency, of the United States of America, shall be exempt from these Rules unless otherwise provided by resolution of the Council.
- B. Where, in the opinion of any public agency, strict observance of MEQC 33-35 would jeopardize the public health, safety, or welfare, or would otherwise generally compromise the public interest, the agency shall comply with these Rules as far as practicable. In such cases, the agency shall carry out alternative means of public notification

and shall communicate the same to the Council Chairman.

C. Any federal permits for which review authority has been delegated to a non-federal public agency by the federal government may be exempted by resolution of the Council.

MEQC 35 EQC MONITOR PUBLICATION REQUIREMENTS

A. Public agencies are required to publish the following in the EQC Monitor except that this section constitutes a request and not a requirement with respect to federal agencies.

1. Notice of receipt of applications or government proposals for the natural resources management and development permits listed below. When an action has been noticed pursuant to MEQC 35 A.3 separate notice of individual permits required by that action need not be made unless changes in the action are proposed which will involve new and potentially significant environmental effects not considered previously.
 - a. Navigational obstructions within designated state or federal Wild and Scenic River land use districts.
 - b. Commercial and industrial wharves used for cargo transfer.
 - c. Channelization of one or more miles of designated Class I or II public water courses.
 - d. Any marina and harbor project of more than 20,000 square feet of water surface area.
 - e. Any new or additional impoundment of water creating a water surface in excess of 200 acres.
 - f. Filling of ten or more acres of public waters.
 - g. Dredging of ten or more acres of public waters.
 - h. All public hearings conducted pursuant to water resources permit applications [Minn. Stat., Chapter 105 (1974)].
 - i. A new appropriation for commercial or industrial purposes of either surface water or ground water averaging 30 million gallons per month, or exceeding two million gallons in any day during the period of use; or a new appropriation of either ground water or surface water for irrigation of 640 acres or more in one continuous parcel from one source of water.
 - j. Application for the underground storage of gas or liquids.
 - k. County, state or federal auctions for sale of publicly owned timber on any tract adjacent to a public highway.

- l. County, state or federal auctions for sale of publicly owned timber on any tract adjacent to public waters of the State.
- m. County, state or federal auctions for sale of publicly owned timber on any tract, any part of which is within one quarter (1/4) mile of an organized public, private or non-profit recreation area or camp.
- n. Notice of all public permit and lease sales for state permits and leases to prospect for and mine iron ore, copper nickel, or other minerals as required by Minn. Stat. §§ 93.16, 93.335, and 93.351 (1974) and Copper-Nickel Rules and Regulations.
- o. Permits and leases for iron ore in non-merchantable deposit areas [Minn. Stat. 93.283].
- p. New leases and permits for use of state forest lands for summer cabins, commercial recreational facilities and gravel pits.
- q. Roads through state forest lands exceeding five miles in length.
- r. Facility plans for new or expansion of industrial treatment works not covered by NPDES permits [Minn. Stat. § 115.07 subdivision 1 (1974)].
- s. Facility plans for new or expansion of liquid storage facilities equal to or exceeding 50,000 gallons [Minn. Stat. § 115.43, subdivision 3(2)(1974)].
- t. New or expansion of solid waste disposal systems handling 100 cubic yards or more of solid waste per day [Minn. Stat. § 116.07, subdivision 4A (1974)].
- u. Installation permit application for new or expansion of incinerators with capacity equal to or in excess of one ton per hour of solid waste [Minn. Stat. § 116.07, subdivision 4A (1974)].
- v. Installation permit application for new or expansion of an emission facility emitting 100 tons or more per year of any restricted air contaminant [Minn. Stat. § 116.07, subdivision 4A (1974)].
- w. New or expansion of a feedlot designed for 1,000 cattle or more equivalent animal units [Minn. Stat. § 116.07, subdivision 7 (1974)].

x. Construction of a public use airport [Minn. Stat. § 360.018, subdivision 6 (1974)].

2. Impending actions proposed by state agencies when the proposed action may have the potential for significant environmental effects.
3. EIS Preparation Notices and Negative Declaration Notices.
4. Notice of Draft EIS informational meetings or hearings to be held pursuant to MEQC 29 A.6.
5. Notice of other actions that the Council may specify by resolution.
6. Notice of the application for a Certificate of Need for a large energy facility, pursuant to Minn. Stat. § 116H.03 (1974).

B. Public agencies may publish notices of general interest or information in the EQC Monitor, including notices of consolidated state permit applications, the latter to be commenced at the discretion of the Council.

C. The MEQC is required to publish the following in the EQC Monitor:

1. Receipt of valid petitions, pursuant to MEQC 32, and assignment of a Responsible Agency therefore.
2. Receipt of Draft or Final EIS.
3. Notice of any public hearing held pursuant to Minn. Stat. § 116D.04, subdivision 9 (1974).
4. Receipt by the Council of notice of objections to a negative declaration by petitioners or a public agency, and the time and place at which the Council will review the matter, including notice of public hearings, if any.
5. The Council's decision to hold public hearings on a recommended Critical Area pursuant to Minn. Stat. § 116G.06, subdivision 1(c) (1974) (Critical Areas Act, 1973).
6. Notice of application for a Certificate of Corridor Compatibility or Site Compatibility, or a High-Voltage Transmission Line Construction Permit pursuant to Minn. Stat. § 116C.51 et seq. (Power Plant Siting Act of 1973).

NEQC 36 CONTENT OF NOTICE

A. The information to be included in the notice for natural resources management and development permit applications and other items in NEQC 35 A.1 and 2 shall be submitted by the public agency on a form approved by the Council. This information shall include but not be limited to:

1. Identification of applicant, by name and mailing address.
2. The location of the proposed project, or description of the area affected by the action by county, minor civil division, public land survey township number, range number, and section number.
3. The name of the permit applied for, or a description of the proposed project or other action to be undertaken in sufficient detail to enable other state agencies to determine whether they have jurisdiction over the proposed action.
4. A statement of whether the agency intends to hold public hearings on the proposed action, along with the time and place of the hearings if they are to be held in less than 30 days from the date of this notice.
5. The identification of the agency publishing the notice, including the manner and place at which comments on the action can be submitted and additional information can be obtained.

NEQC 37 STATEMENT OF COMPLIANCE

Each governmental permit or agency authorizing order subject to the requirements of these Rules issued or granted by a public agency shall contain a statement by the agency concerning whether these Rules have been complied with, and publication dates of the Notices, if any, concerning that permit or authorization.

NEQC 38 PUBLICATION

- A. The Council shall publish the EQC Monitor whenever it is necessary, except that material properly submitted to the Council shall not remain unpublished for more than ten working days.
- B. The EQC Monitor shall have a distinct and permanent masthead with the title "EQC Monitor" and the words "State of Minnesota" prominently displayed. All issues of the EQC Monitor shall be numbered and dated.

MEQC 39 COST AND DISTRIBUTION

- A. When an agency properly submits material to the Council for publication, the Council shall then be accountable for the publication of the same in the EQC Monitor. The Council shall require each agency which is required to publish material or requests the publication of material in the EQC Monitor, including the Council itself, to pay its proportionate cost of the EQC Monitor unless other funds are provided and are sufficient to cover the cost of the EQC Monitor.
- B. The Council may organize and distribute contents of the EQC Monitor according to such categories as will provide economic publication and distribution and will offer easy access to information by any interested party.
- C. The Council may further provide at least one copy to the Documents Division for the mailing of the EQC Monitor to any person, agency, or organization if so requested, provided that reasonable costs are borne by the requesting party. Ten copies of each issue of the EQC Monitor, however, shall be provided without cost to the legislative reference library and ten copies to the state law library, and at least one copy to designated MEQC depositories.
- D. The MEQC shall provide adequate office space, personnel, and supply necessary equipment for the operation of the EQC Monitor without cost to the agencies.

MEQC 40 GENERAL

- A. Publication duties of the EQC Monitor may be transferred to the State Register upon resolution of the Council.

MEQC 41 EFFECTIVE DATE

~~The amendments to these Rules (MEQC 21-41)~~ shall become effective upon filing with the Secretary of State. All petitions received, environmental assessments ordered or received, and EISs ordered before the effective date of the amendments shall at the request of the preparer of the document be processed and reviewed as if these amendments were not in effect. Projects previously reviewed or exempted by the MEQC are not subject to these Rules except for those actions included in MEQC 25 F.1.

Responsibility of Agency

Responsibilities of the Minnesota Pollution Control Agency are primarily directed towards Water Quality, Air Quality, and Solid Waste Management.

Within the Water Quality responsibilities the following areas are designated:

1. Educating individuals and firms to the technology available for controlling various pollution problems.
2. Studying the quality of the waters of the state.
3. Holding hearings, gathering information, setting water quality standards, writing regulations, and issuing orders necessary to discontinue disposing sanitary or industrial wastes into the waters of the state which would result in pollution in excess of the established water quality standards.
4. Reviewing and approving plans and issuing permits for construction and operation of sewage and waste disposal facilities.
5. Investigating reports of pollution.
6. Enforcing state pollution control laws and Agency rules and regulations.
7. Administering certain grant provisions of the Federal Water Pollution Control Act.
8. Cooperating with local, county, state and federal agencies concerned with water pollution problems in the state.

Within the Air Quality responsibilities the following areas are designated:

1. It educates people to pollution hazards, and educates polluters to the technology of controlling pollution emissions.
2. It conducts research to determine existing air quality.
3. It writes regulations to control pollution emissions.
4. It enforces the regulations to ensure that air pollution is controlled and high standards of air quality are maintained.

Within the Solid Waste Management responsibilities the following areas are designated:

1. To study the problem, and
2. To report to the Legislature with recommendations for solving the problem.
3. To set standards for solid waste disposal and regulate disposal facilities.

Authority for Responsibility

Originally the Minnesota Legislature created the Water Pollution Control Commission, which was composed of the administrative offices of the Department of Health, Conservation, Agriculture, and the Livestock Sanitary Board in 1945. In 1963 the Legislature enlarged the jurisdiction of the Commission, expanded its program, and increased its authority and responsibilities. In 1967, the Legislature replaced the seven-member Commission with the Minnesota Pollution Control Agency (MPCA) and expanded control to include air pollution and solid waste. In 1969 the Legislature has increased the MPCA's power in the field of solid waste and air quality and increased the membership to nine.

Regulation under the categories of Water Pollution Control and Standards, Air Pollution Control and Standards, and Solid Waste Management have been promulgated into Minnesota Statutes.

Overview of Agency

The original MPCA was composed of the offices of the Departments of Health, Conservation, Agriculture, and the Livestock Sanitary Board, and one-member-at-large appointed by the Governor, however, citizens from public life have since been appointed, and the membership number increased to nine. One member must be knowledgeable in the field of agriculture.

The MPCA essentially serves three functions. The first is one of making policy judgments concerning environmental issues. The second is one of education. The MPCA staff keeps abreast of the latest technology in pollution control and teaches individuals, industries and municipalities techniques through educational materials, seminars and news releases. A third role is one of enforcement. This role is played in enforcement hearings in court contests.

Interaction of Agency with ICES

The MPCA will be expected to interact with the ICES on all environmental areas, while primarily directing attention to the solid and hazardous waste management system, and the effect of ICES on ambient air quality of the area. Since the ICES concept does not require a waste water discharge it should equally have no impact upon surface or groundwater in the area, and should require no MPCA interaction.

The MPCA maintains provisions for approval of plans and permit insurance, according to air quality, APC 3, and solid waste management, SW 5, under Minnesota Administrative Rules and Regulations.

The ICES has been presented in oral review to all division heads for preliminary review and guidance suggestions concerning their respective areas.

Submission for Approval

The ICES should submit plans for approval, and permit application to the Solid Waste Division, and Air Quality Division, during Phase II execution.

Potential Problem Areas

The most likely problem areas are those associated with the solid waste management system integrated into ICES. In most cases the collection and disposal of health care solid waste is not well defined with respect to public health concerns, and it will be necessary to pay close attention to this area as the system develops. Odors and noise will be potential problems which will require close attention.

The internal handling of special categories of solid waste such as isolation material from hospitals will require special attention to prevent problems with respect to ICES operating personnel.

Minnesota Pollution Control Agency

612-296-7373

May 3, 1976

Mr. Warren E. Soderberg
Director, Physical Plants
University of Minnesota
200 Shops Building
Minneapolis, MN 55455

Dear Mr. Soderberg:

Pursuant to the ensuing particulate emissions stack test and visible emissions observations which are required for your steam generating facility, the Division of Air Quality requests that you complete the attached Form, Exhibit C - Steam Generating Operating Data. Complete this form at the time of testing and include as a supplementary section of the emissions test report. Please review general instructions on Page 1 carefully.

Specific questions in regard to the information that is requested herein should be directed to:

Mr. Edgar Crowley, P.E.
Division of Air Quality
(612) 296-7273

Yours very truly,

EDWARD M. WIİK, P.E.
Director
Division of Air Quality

EMW:TK:RDS/mp

DAQ File # 860

Bernard E. Gallagher, P.E., DAQ

Richard D. Starn, P.E., DAQ

Edgar I. Crowley, P.E., DAQ

308

Responsibility of Agency

The Department is charged with the responsibility through the Commissioner of Natural Resources to protect those public waters, or "waters of the state" which are considered by the Department to serve one or more "beneficial public purposes: for such things as navigation, recreation, fish and wildlife habitat, nutrient and sediment entrapment, water supply, groundwater recharge, floodwater retention and scientific and natural areas.

Authority for Responsibility

Authority for responsibility is by Minnesota State Statutes in Chapter 105, and its several sections and subdivisions.

Interaction of Agency with ICES

Since the ICES is to be located along the Mississippi River, several areas of interaction of the Agency with ICES is possible. These areas as outlined above could include: navigation; recreation; fish and wildlife habitat; nutrient and sediment entrapment; water supply; groundwater recharge; floodwater retention; and scientific and natural areas. These areas shall be addressed under the following headings:

1. General Information
2. Justification
3. Environmental Impact
4. Project Site Data
5. Construction Data

Submission for Approval

During Phase III, a completed copy of Department of Natural Resources form W-54, Application for Permit to Work in Public Waters shall be submitted to the Commissioner of Natural Resources, along with an ICES report copy.

STATE OF MINNESOTA
DEPARTMENT OF NATURAL RESOURCES
Division of Waters, Soils and Minerals

INSTRUCTIONS FOR MAKING APPLICATION FOR PERMIT TO WORK IN PUBLIC WATERS

LEGAL REQUIREMENTS

Minnesota Statutes, Chapter 105, PROHIBITS anyone from changing the course, current or cross-section of a public water body, wholly or partly within the state WITHOUT A WRITTEN PERMIT from the Commissioner of Natural Resources. Under the law, public waters are those "waters of the state" which are considered by the Department of Natural Resources to serve one or more "beneficial public purposes" for such things as navigation, recreation, fish and wildlife habitat, nutrient and sediment entrapment, water supply, groundwater recharge, floodwater retention and scientific and natural areas. The public character of a water body IS NOT determined exclusively by the ownership of the underlying or surrounding land. Also, the presence or absence of a public access on the water body or whether it is meandered or non-meandered DOES NOT conclusively determine its public character. Many non-meandered water bodies in Minnesota whose beds are privately owned are PUBLIC WATERS. Examples of the types of projects which cannot legally be constructed or placed below the ordinary high water mark of public waters or change water cross-section or levels without a permit include:

A. Placement of any fill material	J. Channel or shoreline excavation or dredging
B. Partial or complete drainage	K. Stream or channel enlargement or relocation
C. Water level control structures	L. Extensions of public water (see note below)
D. Dam construction or abandonment	M. Harbors and marinas
E. Fish or wildlife impoundments	N. Underwater sewer and water lines
F. Natural rock riprap revetments (use form W-211)	O. Navigational improvements or obstructions
G. Shore protection	P. Bridges and culverts
H. Breakwaters, wharfs, or jetties	Q. Beach sandblanket (use form W-209)
I. Boathouse and permanent dock construction or reconstruction	R. Appropriation pump stations
	S. Any other alterations of public waters

NOTE: Application for all projects which would extend the cross section of public waters, such as channels, harbors, basins or marinas extending inland from public waters must describe the entire project. Any application covering only the "connection" to the existing lake or stream bed is not complete. Applicants are advised not to start construction of any portion of such a project until a permit is received from the Commissioner of Natural Resources for the entire project.

Permits to work in public waters are granted ONLY when the alteration to the natural environment is justified and not detrimental to the overall public interest. Substantial filling or other appropriation of public water space for private purposes, such as boathouses or permanent docks, is not ordinarily permitted.

Minnesota Statutes, Section 105.44, Subdivision 10, requires that each application for a water resources permit must be accompanied by a \$15.00 filing fee to defray the costs of receiving, recording and processing the application.

Minnesota Statutes 1973, Section 105.44, Subdivision 1, requires that permit applicants supply complete copies of their applications and all supporting data to the following local governmental officials:

- A) Chief executive officer of the city or township within which the project is located.

NOTE: If your project is NOT located in a city, a complete copy and all supporting data of the application should be submitted to the Administrator of the Shoreland Management Program within the affected county in addition to the township.

- B) Secretary of the Board of Managers of the Watershed District, if any, within which the project is located or which the project may affect.

Anyone not clearly understanding whether a permit is required for a specific project should contact one of the Department of Natural Resources offices listed on Department of Natural Resources form W-44, WORK IN PUBLIC WATERS COVER.

APPLICANT

1. Applications must be submitted by the owner of the riparian land abutting the lake or stream, unless the applicant is a governmental agency authorized by law to conduct the type of project for which application is made.
2. Authorized governmental agencies submitting an application involving privately owned land should strike the words "the owner of land" from the first line of the application form and attach separate sheets labeled EXHIBIT A, EXHIBIT B, etc., setting forth the easements or other property rights acquired or to be acquired.
3. Applications for lake water level control structures are ordinarily accepted only from governmental units authorized by Minnesota Statutes 1973, Sections 378.31 and 459.20, to construct and maintain those facilities.
4. Applications submitted by a property owner on behalf of a lessee should be countersigned by the lessee in addition to the owner's signature.

APPLICATION

Application for proposed projects involving changing the course, current or cross-section of a public water body should be made on Department of Natural Resources form W-54, APPLICATION FOR PERMIT TO WORK IN PUBLIC WATERS.

1. GENERAL INFORMATION

1. The application must include the applicant's name and the location of the project described by Government Lot or quarter section(s) (SE $\frac{1}{4}$, NE $\frac{1}{4}$, SW $\frac{1}{4}$, or NW $\frac{1}{4}$), section(s), township number(s), range(s), and county(ies). The fire no., box no., or address of the project site, where applicable, should be indicated in order to assist field investigators in locating the premises. If the project is in a platted area, the lot and block number(s) and the subdivision name should be reported, in addition to the foregoing information. A copy of the plat should be included with the application.

2. If a preliminary plat involving the proposed work in public waters has been approved or considered by a local governmental unit having authority to regulate land-use in the area, copies of such preliminary plat and reports of action by the local governmental unit should accompany the application.
3. The property boundaries of all contiguous land owned by the applicant in the project area should be indicated on the plat or submitted as a separate map.

- B. JUSTIFICATION: In your own words, explain why this project is necessary. Be specific as to what the objective of the project is. Replies such as "lake improvement" or "navigation improvement" are too vague to be of any help in assessing the merits of the application. If more space is needed to fully explain or to supply other applicable information, attach extra EXHIBITS to the application containing such information.
- C. ENVIRONMENTAL IMPACT: Complete this section fully by indicating: proposed changes in land and water form, character or quality, effects that are or may be harmful but unavoidable, and any possible alternatives which could be considered to attain the proposed objective. Describe as completely as possible in the available space for minor projects. For more complex projects, a detailed evaluation, possibly by a consulting firm specializing in environmental impacts, may be necessary.
- D. PROJECT SITE DATA: In this section describe the project site and surrounding area. Detail your description enough to give a complete picture of the area as to type and amount of aquatic and upland vegetation, underwater and upland soils and subsoils, adjacent development, and water level fluctuations (include the present and highest and lowest known levels).
- E. CONSTRUCTION DATA: Data requested under Channelling should be provided if the project involves channel excavation for navigation, water supply, drainage, flood control, water diversion, land development, or other purposes. Data requested under Alterations along shore should be provided for other work in public waters.

1., 2. & 3. Self-explanatory

4. Volume of material to be removed initially (in cubic yards): Calculate by the formula:

$$\frac{(\text{distance along shore}) \times (\text{distance waterward}) \times (\text{average depth of excavation})}{27 \text{ (number of cubic feet per cubic yard)}}$$

Example: If an area 27 ft. along shore by 20 ft. waterward is to be excavated to an average depth of 5 ft. $\frac{27 \times 20 \times 5}{27} = \frac{2700}{27} = 100 \text{ cubic yards}$

- F. COMPLETE APPLICATION SUBMITTED TO: In the box on the backside of the application form (W-54) report those local governmental units and agencies upon which you have served complete copies of the application and all supporting data. Please refer to the "Instructions for the Applicant" on Department of Natural Resources form W-221, NOTIFICATION OF PERMIT APPLICATION. Compliance with Notification requirements is essential.
- G. ADDITIONAL DATA: Each application should be accompanied by sufficient sketches, scale drawings, development plans, maps, and cross sections to clearly illustrate all the work proposed and the present water depths over the project area. For extensive or complex projects, the department may request supplementary information including but not limited to the following: topographic map (one foot or lesser contour interval), water table map, soil borings, depth soundings, aerial photographs, environmental assessment, and/or engineering reports.

Date the application, sign, indicate mailing address and phone number. Submit 3 copies and all supporting data, maps, plans or other information to the Department of Natural Resources, Division of Waters, Soils and Minerals, Centennial Office Building, St. Paul, Minnesota 55155. Submit copies and all supporting data, maps, plans, and other information to the Watershed District, city, or county and township as applicable.

FEES

A \$15.00 filing fee is required for each application for a water resources permit. Therefore, include with the application a \$15.00 check, bank draft, or money order payable to the STATE TREASURER. Cash cannot be accepted. This filing fee is non-refundable whether the application is approved, denied or modified.

In addition to the filing fee, Minnesota Regulations NR 5000 (R) (1) - (5) requires that applicants must pay a minimum field inspection fee of at least \$25.00. This fee need not be submitted at the time of application. When a field inspection is made, the actual cost or \$25.00, whichever is greater, shall be charged to the applicant. The permit shall not be issued until all field inspection fees owing are paid. Field inspection fees are not refundable for any reason under the law.

IMPORTANT: All applicants must submit the filing fee of \$15.00 mentioned above at the time of application. Any state agency as defined in Minnesota Statutes 16.011 or any federal agency is exempt from these fees.

PHOTOGRAPHS

Each application must be accompanied by one or more photographs preferably depicting open water conditions at the project site. Photographs of any spoil disposal site proposed should also be supplied.

PERMIT

Placement of fill, excavation or other work in public waters may not legally be started until a permit has been issued by the Department of Natural Resources and the applicant receives the permit and a permit card to be posted at the project site. State water law provides penalties for work in public waters which has not been authorized by permit.

ADDITIONAL INFORMATION

If you have questions on the procedure for making application, please contact Department of Natural Resources offices listed on Department of Natural Resources form W-44, WORK IN PUBLIC WATERS COVER.

STATE OF MINNESOTA
DEPARTMENT of NATURAL RESOURCES
Division of Waters, Soils & Minerals

APPLICATION FOR PERMIT TO WORK IN PUBLIC WATERS

_____, the owner of land in Government lot(s) _____,
(print or type applicant's name)

quarter section(s) _____, section(s) _____, township no. (s) _____, range(s) _____,

_____, _____
(fire no., box no. or address) (lot, block & subdivision)

county(ies) _____, which is riparian to _____,
(name of lake or stream)

applies pursuant to Minnesota Statutes Chapter 105 and other applicable statutes for a permit to work in the public water(s) named above, in accordance with all data, maps, plans, and other information submitted herewith and made a part hereof.

PROPOSAL

IT IS PROPOSED TO: ☐ excavate, ☐ fill, ☐ construct, ☐ remove,
(check) ☐ install, ☐ abandon, or ☐ other(specify) _____

THE FOLLOWING: ☐ dam, ☐ shore-protection, ☐ shoreline, ☐ harbor, ☐ channel, ☐ bridge,
(check) ☐ culvert, ☐ wharf, ☐ obstruction, or ☐ other(specify) _____

JUSTIFICATION

Explain why this project is needed:

ENVIRONMENTAL IMPACT

1. Anticipated changes in water and related land resources:

2. Unavoidable but anticipated detrimental effects:

3. Alternatives to the action proposed:

PROJECT SITE DATA

1. Describe the type and amount of aquatic vegetation present:

2. Describe the nature of the material beneath the water:

3. Describe the nature of the upland area:

4. Describe type and amount of nearby shoreland development:

5. ENCLOSE SKETCH DESCRIBING WATER LEVEL FLUCTUATIONS.
(see instructions)

(continued on reverse side)

ATTACH EXTRA SHEETS IF NECESSARY

CONSTRUCTION DATA (also attach sketch or drawing)

<u>Channelling</u>	<u>Existing</u>	<u>Proposed</u>	<u>Alterations along shore</u>	<u>Proposed</u>
Total length (feet) - - - - -	_____	_____	Distance along shore (feet) - - - - -	_____
Length in lake/stream (feet) - - -	_____	_____	Distance waterward (feet) - - - - -	_____
Bottom width (feet) - - - - -	_____	_____	Thickness of fill material (feet) - - -	_____
Side slopes (ratio) - - - - -	_____	_____	Depth of excavation (feet) - - - - -	_____
Average depth (feet) - - - - -	_____	_____		
Gradient (%) - - - - -	_____	_____		

1. Describe type of excavation equipment to be used, if known:

2. Describe location (include map) and characteristics of spoil disposal site proposed:

3. Would maintenance excavation be necessary? (check) ☐ YES ☐ NO Explain:

4. Volume of material to be removed initially (cubic yards): Muck or silt _____

Sand or gravel _____ Rock or stone _____

ATTACHMENTS ☐ \$15.00 filing fee, ☐ photographs, ☐ other (specify) _____

Applicant declares that information submitted herewith and statements made herein are a true and correct representation of the facts, and that the filing of this application and information with the Commissioner of Natural Resources is prima facie evidence of the correctness thereof.

COMPLETE APPLICATION SUBMITTED TO:

(1) _____
Name of city or township

_____ street & post office

(2) _____
Name of watershed district

(3) Shoreland Management Administrator
of _____ County

Dated this _____ day of _____ 19 _____

Signed _____
(applicant)

_____ (see)

Address _____

City _____

State _____ Zip code _____

State of Minnesota)
County of _____) ss.

AFFIDAVIT

Phone _____

on this _____ day of _____, 19 _____ before me personally appeared _____

who being first duly sworn and to me known to be the person _____ who executed the foregoing application, acknowledge(s) that _____ executed the same as _____ own free act and deed and that the statements, maps, plans, documents, and other supporting data are true and correct according to _____ best knowledge and belief.

Notary Public _____ County

My commission expires _____ 19 _____

PHOTOGRAPHED
MAY 31 11 35 AM '78
UNIV. OF MINN.
PHYSICAL PLANT

PRELIMINARY ENVIRONMENTAL
DATA FOR PERMIT
APPLICATIONS

DATA REQUIRED BY THE PRIVACY ACT OF 1974

(5 U.S.C. 552a)

TITLE OF FORM

Preliminary Environmental Data for Permit Applications

PRESCRIBING DIRECTIVE

ER 1145-2-303
ER 1105-2-507

AUTHORITY

National Environmental Policy Act of 1969, PL 91-190
Federal Water Pollution Control Act Amendments of 1972, PL 92-500

2. PRINCIPAL PURPOSE(S)

To obtain information from permit applicants to aid in our preliminary environmental assessment of the impacts associated with proposed permitted projects.

3. ROUTINE USES

Send to applicant to obtain a clear description of the proposed project and of the present environmental setting in the project area.

4. MANDATORY OR VOLUNTARY DISCLOSURE AND EFFECT ON INDIVIDUAL NOT PROVIDING INFORMATION

Voluntary Disclosure - ER 1145-2-303, paragraph 9c, states that the applicant is required to furnish additional information deemed necessary to assist the District Engineer in his evaluation of the application. If the applicant elects not to provide the necessary information, the permit will not be processed.

PRELIMINARY DATA FOR PERMIT APPLICATIONS

St. Paul District, Corps of Engineers

St. Paul, Minnesota 55101

NCSFD-ER

INTRODUCTION

An important step in the permit processing procedure for any project is the review of its initial, cumulative and long-term effects on the environment. In order to expedite the analysis of the environmental effects of your permit application we are requesting information covering most natural and cultural resources which may be affected. We ask that you provide a thorough description of your proposed project and answer each question as it applies to the work and the results of that work. Complete and accurate answers will prevent unnecessary delays in processing your permit application. Space for answers has been provided; however, in some cases you may wish to write on the back of a page or attach additional pages.

GENERAL INFORMATION

Applicant's Name:

Address:

Telephone Number:

Applicant's Authorized Agent:

Name:

Address:

Telephone Number:

Date Sent to Permit Applicant: 3/8/77

Date Received in District Office:

PROJECT DESCRIPTION:

a. Provide the legal description of the land as it appears on your deed.

b. Attach drawings of the project layout, showing site plan, grades, elevations, and dimensions as applicable.

c. Provide a map showing the project location (a U.S.G.S. Quadrangle map or a county map would be excellent).

d. Submit color photographs of the site, with explanations of the views shown (prints only). Photographs help us to better understand your project. The more you provide the easier it is to understand and process your application.

e. What will your project cost to complete?

f. When do you expect to start construction? How long will it take?

g. How long do you expect the project to be usable? (Example, a boat dock may last 15 years.)

h. Carefully describe the entire project in detail to allow a thorough evaluation of its environmental effects. The method of construction, including equipment and materials to be used, must be included. Detail in your description is important. (Use the back of this page to complete your description.)

POTENTIAL IMPACTS:

To determine to what degree the proposed project will affect the quality of the human environment, its effects on natural and cultural resources must be evaluated. The following questions must be answered as completely as possible, according to the information available to you. State whether the project will affect the resources beneficially, adversely, or not at all and why it will do so. If any measures will be implemented to prevent or correct adverse effects on any of the resources, they should be explained. Again, sound and complete answers will simplify and prevent unnecessary delays in the permit processing procedure.

A. Natural Resources

a. Describe the vegetation (trees, brush, ground cover, etc.) in the project area. List both the type (maple, oak, dogwood, etc.) and approximate number of each.

What vegetation is found in the water? List the type and amount.

What effects will your work have on the vegetation? Will you have to cut down trees, dig up sod, or clear the brush?

b. What kinds of fish do you know are in the project area? List as many as you can.

How will their habitat (place where they live) be affected by your project?

c. What kinds of animals have you seen in the area? Sightings and signs (tracks, droppings, etc.) are an indication of their presence. List as many as you can and how often you have seen them.

How will their habitat be affected by your project?

d. What are the major soil types (clay, sand, silt, peat, etc.) on your property and what is the approximate percentage of each?

How will the work prevent or contribute to the problem of soil erosion?

e. What is the quality of the air in the project area, and what factors contribute to it (factories, cities, etc.)?

Will the construction or operation of your project cause the discharge or elimination of discharge of smoke, dust, exhaust, etc. into the air. If yes, please describe.

f. How will the project affect the quality, quantity and drainage patterns of the surface water (lakes, rivers, ponds, etc.) in the surrounding area?

What substances (oil, fertilizers, heated water, etc. will be discharged into the surface water?

What discharges will be prevented by the action?

g. In what way will the quality and quantity of the groundwater (below the water table) be affected by the project?

h. Will the project have an effect on the floodplain of the adjacent waterway?

Will it raise or lower the water levels during a flood?

i. Many areas have unique natural features, such as scenic areas, old trees, or geological formations, which may be of local or national interest. If there are any within the project area, describe them and explain in detail how they may be affected by your project.

j. If there are any additional natural resources which you feel may be affected, either beneficially or adversely, please describe them and how they may be affected.

B. Cultural Resources

a. Describe what the adjacent pieces of property are being used for. Also show that use on the site plan you are providing. (You may wish to provide photographs to illustrate this use.)

b. Will land use patterns be likely to change as a result of your proposed project (wild land become residential, residential land become more desirable, swamp become farmland, etc.)?

Explain how land use may change and to what extent?

c. What evidence has been found that would indicate the area has historic value? Items of interest would be arrowheads, burial mounds, old buildings, known settlements and the like.

d. How will recreation opportunities such as boating, fishing, or camping in the area be affected?

e. How will your project contribute to the economic development of the area?

Will it bring in new business, or have a negative effect on development?

Is the area rural, residential or industrial?

f. Noise levels, if contrasting greatly with those of the surrounding environment, can be a nuisance. What noise (describe the source) is expected to increase as a result of the project?

Will it be temporary (during construction) or will it be continuing (after the project is completed)?

g. What effect will the project have on navigation in the affected waterway? For example, a structure, such as a power pole, may hinder navigation; whereas a harbor could benefit navigation.

h. If there are any other cultural resources which you feel may be affected, either beneficially or adversely, please list and explain them.

ALTERNATIVES:

Discuss all the alternative sites or procedures you considered but did not select, including the possibility of doing nothing. State your reasons for preferring the proposed project to these alternatives.

POLLUTION:

What potential does your project have for pollution of the environment? Will the materials used or affected contribute to the following categories? (Answer yes or no)

1. Turbidity (Cloudiness) -
2. Water discoloration -
3. Oil or other petroleum products -
4. Organic matter (leaves, wood, peat, etc.) -
5. Foam -
6. Scum -
7. Litter or Trash -
8. Odor -
9. Nutrients (Nitrogen, Phosphorous, etc.) -

What will you do to prevent or correct the problems answered "yes" above?

DISPOSAL:

If your project requires a disposal area, such as a dredging project may have, describe it and the effects your disposal material will have on the previously mentioned natural and cultural parameters. Include a detailed description of the disposed material and its potential for pollution. Photographs of the disposal site must be provided.

Signature: _____

Title: _____

Date: _____

Responsibility of Agency

Activities requiring a Department of the Army permit include but are not limited to piers; wharfs; docks; dolphins; mooring cells; excavation; commercial sand and gravel dredging; filling; disposal of dredged material; riprap and revetments; retaining walls; groins; breakwaters; levees; wires or cables over the water; pipes, cables and tunnels under the water; fishing reefs; clearing; channel and upland canal connections; intake and outfall pipes and/or structures; navigational aids (except those established by the U. S. Coast Guard); platforms; ramps; signs; fences and the transportation of dredged material for ocean dumping. Permits are required from the U. S. Coast Guard for bridges, causeways, and overhead pipelines. Permits for discharges of other than dredged or fill material must be obtained from the appropriate water pollution control authorities. Upon request, the District Engineer will furnish applicants general information and appropriate addresses for submission of applications subject to the discharge and bridge permit programs.

Authority for Responsibility

Federal laws prohibit such activities unless the activity is authorized by a Department of the Army permit. These laws include the River and Harbor Act of 1899, the Federal Water Pollution Control Act Amendments of 1972, and the Marine Protection, Research and Sanctuaries Act of 1972. In addition, other laws are directly related to the procedures for processing permit applications. These include the Fish and Wildlife Coordination Act of 1958, The National Environmental Policy Act of 1969, and the Coastal Zone Management Act of 1972.

Interaction of Agency with ICES

The possible interaction of the Corps and ICES is through the barging, and barge unloading facility which could be an important operating component to the system. One completed copy of SNG Form 4345 shall be submitted to the District Engineer having jurisdiction over the location of the proposed activity. Also there is the possibility that the activities landward of the mean or ordinary high waterline might be influenced through physical plant modifications and might require review.

Submission for Approval

During Phase II, a completed copy of ENG Form 4345 shall be submitted to the District Engineer, accompanied by the originals and two copies of the detailed plans for the activity of ICES.

UNIVERSITY OF MINNESOTA
TWIN CITIES

Physical Plant Maintenance and Operations
200 Shops Building
Minneapolis, Minnesota 55455

March 14, 1977 -

TO: Jim O'Gara
FROM: Joseph Roback
SUBJECT: PERMITS

I contacted the Corps of Engineers the 8th of March. I talked with Mr. Frank Mazurkiewicz regarding permit requirements for any future changes at our Minneapolis Campus coal unloading facility. He informed me that any physical changes that encroach or expand into navigable waters require a permit.

In a request for a permit, drawings and details of the changes are to be sent to the Corps of Engineers. They, in turn, would review all drawings and send copies to the other agencies such as the Minnesota Department of Natural Resources and the Pollution Control Agency for their comments prior to issuing a permit.

Mr. Mazurkiewicz recommended I contact the DNR and explain our requirements to them. I have talked to Mr. Ron Harnach at the DNR explaining the reasons for calling and requested their comments. He indicated they would send forms which have not arrived at the time of this writing.

When the forms from DNR and those from the Corps of Engineers are received, they will be forwarded to you.

JJR/mt

Applications for Department of the Army Permits for Activities in Waterways

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS

SPECIAL INSTRUCTIONS
FOR
PERMIT APPLICATIONS

The following are special notes which we feel will assist you in submitting a complete and accurate application for a Department of the Army permit.

Most of the information requested is self-explanatory but you should pay particular attention to the following:

1. The application form on page B-1 should be completed in its entirety.
2. The sample drawings in Appendix D and the checklist on page C-1 should be used as guides in preparing your drawing. Your drawing should be drawn on page B-3. Please note - your drawing should preferably be on one page, 8 by 10-1/2 inches (Use page B-3). An incomplete or inadequate drawing will delay processing of your application, since we will have to request more information from you.
3. The pamphlet "Preliminary Data for Permit Applications" requests information essential to preparation of an environmental assessment of your project. You should answer as many questions as apply to your project.
4. You should provide photos of the project area. Color photographs in the four principal compass directions are desirable.
5. Your cooperation in providing adequate information will greatly expedite our evaluation of your application.
6. Send the completed application, pamphlet and photos to:

U. S. Army Corps of Engineers, St. Paul District
Attention: General Regulatory Branch
1135 U. S. Post Office and Customhouse
St. Paul, Minnesota 55101

DATA REQUIRED BY THE PRIVACY ACT OF 1974

(5 U.S.C. 552a)

TITLE OF FORM

Application for a Department of the Army Permit

PRESCRIBING DIRECTIVE

ER 1145-2-303

THORITY

Section 10 River & Harbor Act 1899, Section 103 Marine Protection, Research & Sanctuaries Act of 1972, and Section 404 Federal Water Pollution Control Act

2. PRINCIPAL PURPOSE(S)

Application form for permits authorizing structures and work in or affecting navigable waters of the United States, the discharge of dredged or fill material into navigable waters, and the transportation of dredged material for the purpose of dumping it into ocean waters.

3. ROUTINE USES

Describes the proposed activity, its purpose and intended use, including a description of the type of structures, if any, to be erected on fills, or pile or float-supported platforms, and the type, composition and quantity of materials to be discharged or dumped and means of conveyance.

The application is made at the District level and subsequently the content is made a matter of public record through issuance of a public notice.

The content of the application is made available to any requesting agency, dealing with the review of the application. The form itself is not made available; only that information which is pertinent to the evaluation of the permit request.

The form (or copies) could be kept on file at District, Division or OCE level, depending on the details surrounding the case. The information could become a part of any record of a reviewing agency with a need to know; such as U. S. Fish & Wildlife; Environmental Protection Agency; etc.

The application will become part of the record in any litigation action by the Department of Justice involving the work or activity.

4. MANDATORY OR VOLUNTARY DISCLOSURE AND EFFECT ON INDIVIDUAL NOT PROVIDING INFORMATION

The disclosure of information is VOLUNTARY. Incomplete data precludes proper evaluation of the permit application. Without the necessary data (i.e., name, address and phone number), the permit application cannot be processed or a permit subsequently issued.

DEPARTMENT OF THE ARMY
Office of the Chief of Engineers
Washington, D.C. 20314

EP 1145-2-1

DAEN-CWO-N

Pamphlet
No. 1145-2-1

1 October 1974

Civil Regulatory Functions
APPLICATIONS FOR DEPARTMENT OF THE ARMY PERMITS
FOR ACTIVITIES IN WATERWAYS

1. Purpose. This pamphlet is designed to provide guidance to the general public in applying for Department of the Army permits for activities in navigable waters, or ocean waters.
2. Applicability. This pamphlet is applicable to all field operating agencies having civil works responsibilities.
3. General. This pamphlet should be made available to the general public as may be required.

FOR THE CHIEF OF ENGINEERS:

RUSSELL J. LAMP
Colonel, Corps of Engineers
Executive

7 Appendixes

- APP A - Applicable Laws
- APP B - Application Form and
Blank Drawing
- APP C - Drawing Requirements and Checklist
- APP D - Sample Drawings
- APP F - Division and District Boundary Map
- APP G - District Engineer's Addresses

MISCELLANEOUS AGENCIES OF INTERACTIONMINNESOTA DEPARTMENT OF HEALTH (MDH)

In order for a health care facility to operate in a state, it must be appropriately licensed. Licensing is usually through the health department or similar state agency. In Minnesota the licensing agency is the Department of Health. Licensing classification and certifications, as well as a listing of licensed health care facilities are published annually by the department, in the "Directory, Licensed and Certified Health Care Facilities."

With respect to the ICES, the MDH will interact in the handling of health care solid waste within the generating facility. Guidelines issued by the MDH require certain handling procedures of special categories of waste, such as the incineration of infectious wastes. It is anticipated that some standardization of collection will be fostered by ICES, and will have to comply with these MDH requirements.

MINNESOTA DEPARTMENT OF OCCUPATIONALSAFETY AND HEALTH ACT (MOSHA)

The employees operating the ICES will be covered by MOSHA and regulations and standards published will be used to protect the safety and health of these employees. Since the University of Minnesota maintains its own OSHA inspection and compliance section, in the Department of Environmental Health and Safety it is anticipated that State participation will be one of observation and study.

HEALTH CARE PROFESSIONAL INSTITUTIONAL STANDARDS

Each facility generally participates in a voluntary accreditation program through the Joint Commission on Accreditation of Hospitals which has established universal standards for approval of the facility and by the commission. Approval confers formal evidence that a hospital meets established standards for quality of patient care.

The American Hospital Association also provides for a registration service for hospital facilities through requirements established by the association. These requirements, as those for accreditation by the Joint Commission, are universal throughout the United States.

Minnesota Hospital Association

Within the State of Minnesota, the Minnesota Hospital Association provides a professional organization to non-profit hospitals and nursing home administrators. The ICES cooperative solid waste management system will be operated in support of the high standards maintained by this organization.

Council of Community Hospitals

Similar to the Minnesota Hospital Association, the Council of Community Hospitals by a professional organization to administrators of the Twin Cities Metropolitan Region.

Twin Cities Hospital Engineers

Professional society providing a professional organization to hospital engineers of the Twin Cities Metropolitan Region. Their guidance in the management of solid waste from their institutions will be solicited.

MINNESOTA DEPARTMENT OF TRANSPORTATION (MDOT)

In providing specifications for the collection and transportation of the health care solid waste, it will be necessary to include any requirements issued by the MDOT. At this time it does not appear that special permitting will be required to transport this category material, although Department of Transportation guidelines issued under Title 49, CFR, will be used as a basis for specifications.

MINNESOTA ENERGY AGENCY (MEA)

The MEA provides certificates of Need for the storage of coal, and it is possible that the Agency will participate in review of the coal handling operations of ICES. Also since the MEA is currently researching the utilization of solid waste as an energy fuel source, ICES could provide valuable input into this MEA analysis.

OTHER AGENCIES OF POSSIBLE INTERACTION

There are numerous agencies operating in the Twin Cities Metropolitan Area, some of which could have input into the ICES planning to assure its comprehensiveness. At this time these possible agencies will only be listed as potentially having interaction.

U. S. Department of Commerce

Economic Development Administration

National Weather Service

Great Lakes Fishery Laboratory

Deputy Assistant Secretary for Environmental Affairs

U. S. Department of the Interior
 Bureau of Outdoor Recreation
 Bureau of Sport Fisheries and Wildlife
 National Park Service
 Bureau of Indian Affairs
 Office of Environmental Project Review
Environmental Protection Agency
Federal Power Commission
Internal Revenue Service
U. S. Department of Housing and Urban Development
Office of Economic Opportunity
U. S. Department of Transportation
 Federal Highway Administration
 U. S. Coast Guard
U. S. Department of Agriculture
 U. S. Forest Service
 Soil Conservation Service
U. S. Department of Health, Education and Welfare
Water Resources Council
Upper Mississippi River Basin Commission
Upper Mississippi River Conservation Commission
Minnesota-Wisconsin Boundary Area Commission
Legislative Library
Minnesota Department of Agriculture, Dairy, and Food
Minnesota Railroad and Warehouse Commission
Minnesota Water Resources Board
Minnesota Department of Economic Development
Minnesota State Planning Agency

Minnesota State Park Commission
Minnesota State Prison, Bayport
Minnesota Historical Society
Minnesota Resources Commission
Minnesota State Archaeologist
St. Paul Port Authority
Metropolitan Mosquito Control District
Metropolitan Waste Control Commission
Metropolitan Inter County Commission
Northern States Power Company, Minneapolis
Burlington Northern Railroad, St. Paul
Chicago, Milwaukee, St. Paul and Pacific Railroad, Minneapolis
The Milwaukee Road, Minneapolis
Mr. Jack Lambert, Twin Cities Bridge and Towing Co., St. Paul
Association of American Railroads
Chicago and North Western Transportation Company, Chicago
American Waterways Operators, Inc., Washington, D. C.
Minnesota Railroad Association
River and Harbor Improvement Association, Milwaukee, Wisconsin
National Association of River and Harbor Contractors, Washington, D. C.

Minneapolis Star and Tribune Company
St. Paul Pioneer Press and Dispatch
Minnesota Association of Commerce and Industry, St. Paul
League of Women Voters
 Council of Metropolitan Area Leagues
 Minneapolis Chapter
 Minnesota Chapter

Sierra Club, North Star Chapter

Minnesota Environmental Control Citizens Association, St. Paul

Minnesota Conservation Federation, St. Paul

Metropolitan Open Space Information Project, Minneapolis

National Audubon Society, North Midwest Region

Minnesota Environmental Education and Research Association, St. Paul

Minnesota Environmental Defense Council

Minnesota Federation of Women's Clubs

Environmental Science Center, Golden Valley, Minnesota

Avifaunal Club, New Brighton, Minnesota

Minneapolis Audubon Society

Minneapolis Bird Club

Minnesota Bird Club

Environmental Conservation Library, Minneapolis

Metro Clean Air Committee, Minneapolis

Environmental Concerns, Inc., Edina, Minnesota

Minnesota Public Interest Research Group, Minneapolis

Izaak Walton League of America, Minnesota Division

Upper Mississippi Waterway Association, Minneapolis

Environmental Library of Minnesota, Minneapolis

Clean Air, Clean Water-Unlimited, South St. Paul

Center for Urban Encounter, Minneapolis

Minnesota Association of Conservation Education, Minneapolis

minnesota department of health

717 s.e. delaware st. minneapolis 55440

RECEIVED
MAR 8 10 29 AM '77
UNIVERSITY OF MINN.
PHYSICAL PLANT

March 4, 1977

Mr. Warren E. Soderberg
Director of Physical Plant
University of Minnesota
319 15th Avenue S.E.
Minneapolis, Minnesota 55455

Re: Proposed High Temperature
Waste Disposal Facility

Dear Mr. Soderberg:

The Minnesota Department of Health has for several years been acutely aware of the problems connected with proper disposal of hazardous infectious waste generated in hospitals and other health care facilities. Responding to State and Federal environmental concerns the Department and the Minnesota Pollution Control Agency cooperated in establishing recent policies and regulations which require incineration of such waste.

Presently each hospital has its own incinerator. As a rule, these incinerators are inefficient and uneconomical in operation due to their age or small size thus being in marginal compliance with present PCA and Health Department criteria for health and safety standards. The above proposal intends to include several of these Metropolitan hospitals in the disposal program, and will provide a central disposal facility, properly operated, which will meet the most stringent requirements of the health regulations.

A majority of hospitals are using sanitary landfills for disposal of less hazardous infectious waste, including ordinary waste in bulk form. Although in compliance with existing policies and regulations such landfill disposal is at best an interim solution. The Department has been a long time supporter of waste reduction through incineration prior to final disposal in a landfill. Your proposal supports this concept.

The proposal represents a total solution to the waste problem in general in that it includes both waste destruction and energy conservation. The

Mr. Warren E. Soderberg
University of Minnesota
Minneapolis, Minnesota

March 4, 1977
Page 2

pyrolysis process will not only provide safe destruction and maximum reduction of all waste, including hazardous infectious hospital waste, but will also collect generated gas and heat for use by the U of M's steam generating plant. Methodology will be developed for the safe transport of wastes from several inter-city collection points to the central processing plant. As practical application of this entire concept is basically new in this county, a successful demonstration of such a system could serve as a model for other metropolitan areas. The Department has reviewed the proposal with constructive interest and wishes to express its full endorsement and support.

Sincerely yours,

Hans P. Larsen, Chief
296-5451

Engineering Services Section
Division of Health Facilities

HPL:jlb

100-1000

MAR 31 11 36

UNIVERSITY OF MINNESOTA
PHYSICAL PLANT

minnesota hospital association

serving nonprofit hospitals and nursing homes

March 29, 1977

Mr. W. E. Soderberg
Director of Physical Plant
Physical Plant Maintenance and Operations
200 Shops Building
University of Minnesota
Minneapolis, Minnesota 55455

Dear Mr. Soderberg:

Thank you for sending me information about the University of Minnesota's project entitled "Demonstration of a Grid-Connected Integrated Community Energy System." It appears that the solid waste management sub-system would be of interest to the health care industry in the Twin City area.

The Minnesota Hospital Association supports cooperative programs among health care institutions which provide economical and efficient systems which individual facilities could not establish alone. In that light, MHA would support the concept outlined in your proposal.

In order to gain participation of the health care providers, I would ~~urge you to begin informing them of the project and to seek their participation at your earliest convenience.~~

Sincerely,

Stephen Rogness
Executive Director

SR:cm

UNIVERSITY OF MINNESOTA
TWIN CITIES

Physical Plant Maintenance and Operations
200 Shops Building
Minneapolis, Minnesota 55455

March 23, 1977

Mr. Stephen Rogness
Executive Director
Minnesota Hospital Association
2333 University Avenue S.E.
Minneapolis, MN 55414

Dear Mr. Rogness:

COPY The University of Minnesota recently responded to a Federal Request for Proposal RFP No. E(11-1)-P-76-0016, entitled "Demonstration of a Grid-Connected Integrated Community Energy System (ICES). Phase I (4 months duration on a total effort of two man-years) was awarded to the University. The University was one of five communities selected for a Phase I feasibility study from a list of 22 bidders.

Phase I tasks are for the Preliminary Feasibilities Analysis of the ICES. As a sub-part integrated into the demonstration system, a solid waste management sub-system is proposed, allowing for energy recovery by and into the Grid-ICES. This sub-system will allow for the collection of solid waste from the health care industry in the Twin Cities Metropolitan Region, and its disposal at a central facility, in accordance with guidelines set forth by all regulatory Agencies carrying responsibility for the proper management of this material. The disposal system selected is a vertical-shaft, high temperature slagging pyrolysis system as manufactured by the Andco-Torrax Company.

As part of Phase I, "Institutional Assessment", I would like to request your review of the Grid-ICES health care solid waste sub-system to determine that it is consistent with objectives established by the Minnesota Hospital Association, and that its reality will be in the interest of the facilities within the region. A copy of the proposal is included for your review.

Following your review, it would be beneficial to our assessment if a letter could be directed to me indicating the Association's approval and support of the program. Also any information you may have concerning economic, political, or environmental limitations of the program would be greatly appreciated.

If I may provide additional assistance in your review of the Grid-ICES Program, please contact me at 373-4521, or Mr. Robert Reid, 373-0392, of my office.

Sincerely,

W. E. Soderberg
Director of Physical Plant

WES:LW

cc: J. C. O'Gara ✓
R. A. Reid

UNIVERSITY OF MINNESOTA
TWIN CITIES

Physical Plant Maintenance and Operations
200 Shops Building
Minneapolis, Minnesota 55455

March 8, 1977

Mr. Richard Wallin, Director
Certificate of Need Program
Minnesota Energy Agency
740 American Center Building
150 E. Kellogg Boulevard
St. Paul, Minnesota 55101

Dear Mr. Wallin:

I am writing to request your advice on the necessity of a certificate of need for the University of Minnesota's Minneapolis Campus Heating Plant.

As you know, we are presently involved with a Phase I effort with the Energy Research and Development Administration on a Grid-Connected Integrated Community Energy System.

The acquisition of NSP's Southeast Steam Plant is a part of this program. The involvement of the Southeast Plant will require the retrofitting of the boilers back to coal and the re-establishment of the Plant's coal storage facility. The re-established coal storage facility will have a capacity of approximately 12,000 tons.

If you require further information, please contact me at 373-4521.

Yours very truly,

WES:VP

W. E. Soderberg
Director, Physical Plant

cc: J. O'Gara ✓

Minnesota Department of Transportation

Transportation Building, St. Paul, MN 55155

Phone 296-7108

March 15, 1977

cc: Bob Reed

Warren E. Soderberg, Director
Physical Plant
319 - 15th Avenue S.E.
University of Minnesota
Minneapolis, MN 55455

Dear Mr. Soderberg:

In response to Mr. Bob Reed's phone conversation with Mr. Moran of the Public Service Commission staff, relative to the transportation of "Hospital Waste", please be advised of the following.

It appears that the transportation in question may be considered to be private carriage, therefore, no permit is required from the Public Service Commission for such transportation. In the event a for-hire motor carrier is used to perform the service, than such carrier must have the appropriate operating authority from the Commission.

In any event, if the goods being transported is of a hazardous or radioactive nature, the person performing the transportation service must comply with any applicable regulations of the U.S. Department of Transportation, Materials Transportation Bureau, and/or the U.S. Environmental Protection Agency, and the Minnesota Pollution Control Agency.

We trust this information will be helpful to you.

Sincerely yours,

Don Berg, Director
Office of Transportation Regulation

VM/sms

COUNCIL OF COMMUNITY HOSPITALS

SERVING THE SEVEN COUNTY METROPOLITAN AREA

RECEIVED
MAR 25 11 44 AM '77
UNIV. OF MINN.
PHYSICAL PLANT

March 23, 1977

Mr. Warren E. Soderberg
Project Manager
Director of Physical Plant, U of M
319 15th Avenue S.E.
Minneapolis, Minnesota 55455

Dear Mr. Soderberg:

The Board of Directors of the Council of Community Hospitals reviewed the Proposal for the Demonstration of a Grid-Connected Integrated Community Energy System at its meeting on March 21. Although all details of the Proposal were not completely covered, the Board voted unanimously to express its interest in the project and the desire to be kept informed as it is developed.

On behalf of the Board, I want to convey this interest and encouragement to you as well as our appreciation for the work that has been done to date. Please let me know as further details become clear and feel free to call upon me if I can be of further assistance.

Sincerely,

Douglas R. Ewald, President

DRE/rtp

A number of impacts will result in the community by conversion of Southeast Steam Plant to coal firing. Primarily, the use of coal will help ease the demand upon two diminishing resources—natural gas and oil—and will stimulate production of coal by development of "Special trains" from the Western coal fields.

There will be no adverse impact upon human health, the standards of living, or any culturally or aesthetically valuable surroundings caused by construction or operation of the Grid-Connected ICES. In fact development of parks and nature corridors along the river and restoration of a landmark, Southeast Steam, will add to the areas utility by the public.

Some additional noise and traffic will be generated by trucking for solid waste, ash and slag hauling but it will not be distinguishable from the present traffic flow noises. Existing thoroughfares will accommodate the increased traffic flow except for possible changes to the river road at Southeast Steam Plant.

The only physical changes that will be noticed by the community is a remodeled Southeast Steam Plant and 99% pollutant free steam vapors emanating from the plant stacks. The plant will be re-furbished to harmonize with existing riverfront facilities, but keep its historic facade.

There will be no displacement of wildlife or human habitat. Some environmental impacts will take place during construction due to noise, dust and traffic inconveniences. However, the impacts will be temporary, will be ameliorated, and all Minnesota Pollution Laws and city ordinances will be obeyed.

Occupational safety and health as promulgated by the Minnesota Occupational Safety and Health Act will be strictly adhered to at all times, both during construction and during operation. The University's Department of Environmental Health and Safety will provide routine inspections for compliance with these standards.

Air emissions from the Southeast Plant and total ICES will be positively monitored and controlled to existing and anticipated Minnesota Pollution Control Agency (PCA) regulations for air quality. Extensive information is available in controlling stack emissions from coal combustion and the best available technology will be employed for this purpose.

With respect to the pyrolysis process, the University and the MPCA have been holding joint meetings regarding the process, to determine the most effective monitoring and control technology for this integrated system.

There are several impacts resulting from the establishment of a centralized pyrolysis facility for health care solid waste in the TCMR. Primarily, hospital incineration systems currently in operation in the TCMR, and required by law, have been marginal in operation with respect to air emissions. A centralized facility will allow decommissioning of these individual units, and provide a speciality system that will result in less of an impact than their sum total for the region. The existing University's conventional incinerator when retrofitted for pollution control, will be utilized as the back-up incineration system during pyrolysis downtime, thereby by-passing the need for excessive capital expenditure for this purpose.

The pyrolysis process offers a very positive advantage over conventional incineration in that it is basically a simple process, offering a positive

high thermal destruction of a varying organic and moisture input. The solid waste after being subjected to elevated temperatures of approximately 600° to 800° F is then incinerated to a molten slag reaching 3000° F. The volatiles driven off initially are then combusted in a secondary combustion chamber reaching upwards of 2500° F. Therefore, there are only two exits from the system, each requiring 2500° to 3000° F combustion. Since in each case, in excess of 3-5 seconds is experienced, all organics are degraded to carbon-dioxide and water vapor. In addition to its positiveness of destruction, heat recovery can be accomplished from the secondary combustion process readily, yielding a fairly high heat recovery efficiency.

Finally, the cooperative operation of a centralized facility is expected to offer the health care industry an economics of scale, currently unavailable to those operating independent units for incineration. It will also provide a long term solution to their solid waste disposal problems, at an established stable disposal cost.

Presented are some findings by the Hennepin County Waste Disposal and Energy Advisory Committee as reported to the Hennepin County Board of Commissioners, published in October, 1976. We will comment on these findings regarding Pyrolysis. The following statements are direct quotes from those findings:

Findings of Fact

The Hennepin County Waste Disposal and Energy Advisory Committee has made the following findings of fact:

1. Sanitary landfills will always be needed, however, existing sanitary landfill capacity is diminishing. Estimates are that

existing sanitary landfills in the metropolitan area will be full during the 1980's."

COMMENT: Pyrolysis reduces waste 97% by volume, and the ICES accommodates 100 + tons per day from the TCMR.

"2. The contamination of groundwater by leachate from sanitary landfills is recognized as a serious problem that must be remedied."

COMMENT: The end result of pyrolysis waste reduction is an inert frit or sand-like material, which is non leaching.

"3. Future landfills will cost substantially more than current landfill costs because future landfills will be required to provide liners and leachate collection and treatment systems."

COMMENT: The frit would require no protective liner or treatment system.

"4. The distance to future landfill sites, in the 1980's, from the centroid of the major waste sources in the metropolitan area is expected to increase by at least ten miles."

COMMENT: Pyrolysis is compatible for installation and operation in the center of urban areas.

"5. Rail haul or truck haul of solid waste to distant sanitary landfills is a technologically-feasible long term disposal solution.

This is a relatively low capital cost solution but with high operating costs and little or no recovery of resources. Under current legislation, the political problems of acquiring distance landfill sites could be difficult."

"6. Increasing the haul distance to future landfill sites by ten miles (twenty miles round trip) is estimated to add over \$2,000,000 per year (1976 dollars) to the cost of operating and existing waste disposal system."

"7. Private industry is concerned by the extensive political/governmental process necessary to acquire new landfill sites."

COMMENT: Because of significant volume reduction by Pyrolysis, hauling costs to landfill will be reduced. Political problems will be alleviated to some degree.

"8. There are potential markets available for recovered energy and recovered materials in the Hennepin County area. We have been unable to confirm that the potential markets for energy and recovered materials are large enough to absorb the proposed supply. In addition, we have not been able to confirm that the users would pay prices adequate to support the costs of the system."

COMMENT: Pyrolysis will recover energy in the form of sensible heat recovery for steam generation. System studies at Southeast Steam Plant will aid in determining the suitability of large pyrolysis installations adjacent to large utility generation stations which would purchase the "off-gas."

"9. The evidence presented to the committee indicates there is sufficient waste available for the solid waste energy recovery system being proposed. However, much of the waste is controlled by numerous municipalities and private haulers, and agreements will be required to insure a continuous long term supply of waste for a recovery system. We offer the following reservation the County Board should more deeply research the potential impact of source reduction on a sufficient waste supply."

COMMENT: The Metropolitan Council is investigating the advisability of establishing waste districts in the metro area. Under the concept one waste collection utility could not transgress the the boundaries of another. Health Care Wastes would be an overall special district in the Metro area.

By decommissioning St. Mary's boiler facility, Augsburg College boiler facilities, turning back Southeast Steam to coal an estimated 1,000,000 gallons of equivalent oil will be turned back for consumption in other usage areas.

The development of "special coal trains" to the Twin Cities from the West will provide this area with use of a resource the present Washington administration desires--coal.

Decommissioning of St. Mary's and Augsburg boiler plants will result in less community pollution and reduce the need for additional coal storage facilities.

ICES may someday serve the entire Community within a 2 1/2 to 3 mile radius. Benefits of its lower operating costs will be felt by all area residents in terms of reduced heating costs as fuel prices increase.

The University and its partners in ICES are committed to the concept of total community involvement in ICES. Of necessity the immediate Demonstration Community requires specific attention, but we have attempted to gain input and raise attention to ICES in many ways.

During Phase I we knew, based upon experience, that a strong motivation to the success of this federally sponsored program must be generation of national support especially from the environmental community. Because of this conviction 27 mailings about ICES were sent out to the following environmental societies, organizations and news services. These include:

Radiology Today, Tomorrow; New York

Prevention Magazine; Pennsylvania

California Air Environment; California

NAC Newsletter; Washington, D. C.

Soil Conservation Society of America; Iowa

Nautilus Press; Washington, D. C.

Air-Water Pollution; Maryland

Wildlife Management Institute; Washington, D. C.

Florida Audubon Society; Florida

Environmental Health Letter; Washington, D. C.

A. I. A. Journal; Washington, D. C.

Department of Ecology, Ethology & Evolution; Illinois

Sports Afield; Virginia

Environment Monthly; New York

Journal of Environmental Health; Colorado

Sea Technology; Virginia
The Wilderness Society; Washington, D. C.
Nature Conservancy News; Virginia
Life & Health; Washington, D. C.
Environmental Science and Technology; Washington, D. C.
Ohio State University News Service; Ohio
San Diego State College;, California
Environment; Missouri
Rough Rock News; Arizona
Popular Science; New York
Minnesota Public Interest and Research Group; Minnesota

In addition 75 separate mailings were sent out regionally and nationally by the Department of University Relations. The mailings were sent to news services and individuals whose names are held in confidence by the University.

Locally, the news media was sent releases of ICES and we have been notified to appear on television and radio talk shows as ICES becomes more of a certainty. Twenty-six mailings were sent to the following members of the news media.

St. Paul Pioneer Press
St. Paul Dispatch
Minneapolis Tribune
Minneapolis Star
Associated Press
UPI
Daily American
Post Publications

Tri-County News

Washington County Bulletin

Sun Newspapers

Mankato Free Press

Metropolis

Minneapolis Magazine

Skyway News

KSMN

KSJN-FM

WWTC

WWTC-FM

WWMR

WCCO Radio

WLOL

WMOJ Radio

WCCO-TV

KMSP-TV

WTCN-TV

Community

In addition the ICES release was sent to the following which are located in or have special interest in the study area:

Department of Natural Resources

Environmental Protection Agency

Minnesota Historical Society

Minneapolis Park Board

Minnesota Energy Agency

Minnesota Pollution Control Agency

Senators Fraser and Humphrey

Vice President Mondale

Alderman T. Johnson - University Area

Environmental Quality Council

Community Hospital Association

Metropolitan Council

City of Minneapolis, Office of Coordinator

Hennepin County, Office of Director

Army Corps of Engineers

Department of Transportation

SEMPAOC - Southeast Minneapolis Planning and Coordinating Committee.

Citizen group comprised of representatives of major design districts adjacent to the Demonstration Community.

Southeast - A small community newspaper serving the residents and businesses in the Fairview - St. Mary's - Augsburg and University West Bank campus area.

Minnesota Daily - A large student run daily newspaper serving the students, faculty and staff of the University.

The Report - A monthly news sheet printed by the University serving the staff, faculty and students.

The Brief - Weekly internal bulletin serving the staff and faculty located statewide.

KUOM - Public radio station serving the University and the Twin Cities Area.

KTCA - Public T.V. station serving the University and the Twin Cities Area.

Samples of the newspaper articles which are printed in response to the news release and the release follow.

During the ensuing phases of ICES we will continue a strong public relations program.

There are five major groups to which information concerning ICES must be disseminated or reinforced. These groups are:

1. Neighborhood
 - A. Residents
 - B. Workers in local businesses
 - C. Owners of local businesses
2. University
 - A. Students
 - B. Faculty
 - C. Staff
 - D. Administration
3. Hospitals (Fairview-St. Mary's)
 - A. Staff
 - B. Administration
4. Augsburg
 - A. Students
 - B. Faculty
 - C. Staff
 - D. Administration

5. Institutional (See Institutional Assessments)

University

The Minnesota Daily is read by over 50,000 students, faculty and staff on the Twin Cities Campuses and will, therefore, be the primary

means for disseminating information to this group. At the beginning of Phase II additional feature type articles will be requested. The features will stress the innovative technology to be used, the environmental and socio-economics of ICES. Response to this article would hopefully be both in the form of direct contact and letters to the editor. Regular news releases will also be sent to The Daily, The Report, The Brief and WMMR and KUOM radio.

Hospitals

News-type releases will be sent regularly to Fairview and St. Mary's Hospitals for publication in their internal reports and magazines. A more pictorial description of ICES will be handed out to familiarize key personnel with ICES.

Augsburg

News-type releases will be sent regularly to the Augsburg College Newspaper. A display outlining the different aspects of ICES will be placed in the lobby of the student center at the college.

Neighborhood

Unlike the Colleges and hospitals, there is no major single publication or area of congregation with which it is possible to reach a large percentage of this group. Therefore, several diverse measures will be taken.

Community Organizations:

Identify and contact community organizations. Include these groups in all mailing lists. Give oral presentations and/or discussions when appropriate.

Public Libraries, Schools, Meeting Places:

Set up displays outlining the different aspects of ICES paying particular attention to the effects on the neighborhood the display is in.

Community Newspapers:

Keep in regular touch with newspapers in the form of press releases. Identify paper deadlines in order that information is current.

All Groups

Send press releases when appropriate to all major newspapers, radio and television stations in the Twin Cities area. Set up displays, when possible, at large public gatherings. For example, the Minnesota State Fair, held at the end of August, is attended by close to 1,000,000 people annually from around the state and the nation.

Each display and each news release will include the names, telephone numbers and/or addresses of persons at the University who can be contacted for questions and comments. This feedback will be encouraged throughout the ICES program.

GRID ICES
INFORMATION FLOW SHEET

by GDM	building	scale	sheet
checked J.O.	date 5-9-77	revised	drawing 58

CROOKSTON--Assistant Provosts Donald Sargeant and Anthony Kuznik are working on an academic calendar that will reflect UMC's concern for energy conservation.

Bob Olson, composer-in-residence, has completed work on a rock opera. Inaugural performances will be May 5 and 6 at UMC.

Marilyn Grave, director of the Children's Center, reported to the Administrative Council that 120 preschoolers have been enrolled at the center so far this year.

A film and commentary by Robert Hertz on the Canadian Arctic Yukon will be March 15 at 8 p.m. in Kiehle auditorium. Free and open to the public.

DULUTH--"State of the Campus" meeting and reception for Provost Heller originally scheduled for March 11 have been postponed until April 1.

Presentations on the Native American Counselor Training Project and on Staff Training for Group Counseling Skills, both UMD College of Education projects, will be part of the American Personnel and Guidance Association national convention in Dallas this week.

MORRIS--Civil service winter quarter meeting will be March 16 at 2:30 p.m. in Food Service Center. Agenda items include committee reports and information on the Mary Martelle award.

Faculty members Ellen Ordway, Robinson Abbott, and James Van Alstine will head a group of 21 students leaving March 16 on a field trip to study the desert environment of Arizona and New Mexico. The group will return March 28.

Sheila Roth of the Human Resources Development Division will hold a 1-day workshop on business procedures March 21 in Edson Hall. Travel, purchasing, and bookkeeping procedures will be covered. To sign up, contact Lois Norby in the Business Office.

Courses on defensive driving (8 a.m.-noon) and first aid (1-4 p.m.) will be held March 21-25. To sign up, call Peter Orr, x'292.

TWIN CITIES--Eleven candidates are on the ballot March 9 in the primary election for TC campus student body president. Two top vote-getters will face each other in a general election for student government officers April 21 and 22.

The U is among 5 finalists for ERDA funding for a proposal to enlarge its heating plant. Under the proposal, enough heat would be generated to replace the current heating plants for St. Mary's and Fairview Hospitals and possibly Augsburg College. Major fuel would be coal. Community response is now being solicited.

Robert L. Jones has announced plans to retire as director of the School of Journalism and Mass Communication in June 1978. He will return to teaching after 20 years as director.

The U has been designated as the 5th depository of the Archive for the History of Quantum Physics. Documents include private correspondence and other unpublished scientific manuscripts of Niels Bohr and other contributors to the evolution of quantum mechanics. Archive will be housed in the Physics Library. For information contact Roger Stuewer.

International Awareness Program March 10 in the Great Hall of Coffman will begin at 11 a.m. with Irish music. Panel discussions on international disputes will be from noon to 4 p.m., with the Arab-Israeli issue at noon, Northern Ireland at 1:30 p.m., Pakistan at 3 p.m.

Coming up on "Public Affairs Forum" with host Arthur Naftalin: "The Court and Its Problems" March 9 (Chief Justice of the Minnesota Supreme Court Robert J. Sheran as guest) and "The Legislature: The Minority's View" March 16 (Senate Minority Leader Robert Ashbach and House Minority Leader Henry Savelkoul as guests). Channel 2, 7 p.m.

WASECA--Faculty workshop on the instructor-counselor concept at UMW will be March 16 at Owatonna.

UNIVERSITY OF MINNESOTA
TWIN CITIES

Physical Plant Maintenance and Operations
200 Shops Building
Minneapolis, Minnesota 55455

March 9, 1977

To: Dr. P. Blackshear
Professor R. G. Bond
Dr. R. Deroos
M. Ervasti
L. Fulop
P. Kopietz
R. Lewis
Professor G. Michaelson
✓ J. O'Gara
J. Pearce
T. Potami
R. Reid
J. Roback
Dr. K. Whitby

From: W. E. Soderberg

I am attaching a copy of the University of Minnesota News Release pertaining to the Grid-Ices as released on March 7, 1977.

For those of you off-Campus, I am also attaching a copy of today's Daily, which carries a story pertaining to the Grid-Ices.

WES:VP
Encs.

W. E. Soderberg

cc: Dr. James Carter, MEA
Burt Fosse, Augsburg
Eugene Ecklund, Augsburg
A. Rawlings, St. Mary's
Vern Knutson, Fairview

UNIVERSITY OF MINNESOTA
NEWS SERVICE, S-68 MORRILL HALL
100 CHURCH ST. SE.
MINNEAPOLIS, MINNESOTA 55455
MARCH 7, 1977

NEWS PEOPLE: For further information
contact BILL HUNTZICKER, 373-7516

**'U' SEEKING COMMUNITY INPUT
ON PROPOSED HEATING PLANT CHANGE**

(FOR IMMEDIATE RELEASE)

The University of Minnesota is seeking neighborhood responses to a proposal to enlarge its heating plant, which, officials say, would improve heating efficiency for the community and generate additional electricity.

The University is one of five finalists in a federal Energy Research and Development Administration (ERDA) program for the study of a Grid-Connected Integrated Community Energy System (ICES).

The University is studying the feasibility of such a system under a \$49,223 ERDA grant, and community responses to the plan must be submitted this spring along with the feasibility study, according to Warren E. Soderberg, director of the University physical plant.

If the University is successful, ERDA would help fund expansion of the University's heating facility to incorporate an ICES demonstration system, Soderberg said.

The larger ERDA grant would allow the University to expand the use of the Southeast steam plant that it plans to acquire from the Northern States Power (NSP) Company to complement its heating plant in Minneapolis, he said.

The proposed ICES would generate enough heat to replace the current heating plants for St. Mary's and Fairview Hospitals and possibly Augsburg College and still put electricity back into NSP's power system (grid), Soderberg said.

In addition, he said, the system would replace the incinerators on the University's Twin Cities campus and at the hospitals by burning currently incinerated waste through a pyrolysis process.

(MORE)

The pyrolysis process involves heating the waste, mostly paper, to 3,000 degrees F. and using the gas produced for additional energy in the heating plant, said James C. O'Gara, principal engineer for the physical plant.

O'Gara said the hot gas would be used to generate steam, and the waste produced would have a sand-like texture and could be hauled away in trucks. The volume would be only about 7 per cent of the present incinerator waste, Soderberg said.

The major fuel for the power plant would be coal. The efficiency would be greater than having the separate heating plants for each of the institutions convert to coal, O'Gara said.

"The grant would allow the University to expand the plant to encompass some of the large community users now limited to gas and oil," Soderberg said. "It would remove 1.5 million gallons of critical oil from use at the St. Mary's Hospital plant alone."

The plant would also generate by-product electricity, which means that normally unused energy would be used to generate electricity to be fed into the NSP system, Soderberg said.

"The plant would aid in the disposal of critical solid wastes and involve some energy recovery from the wastes," he said. Hot water that would normally be thermal pollution will be recycled through the system.

The proposed plant would also involve a review of the present University steam-distribution system, with replacement of steam with hot water wherever possible for more efficiency, he said.

The hot-water system would allow the University to store heat that could be generated overnight for use during peak hours, reducing the total capacity required by the system, O'Gara said.

Soderberg said the grant would also allow the University to improve coal unloading and handling both economically and environmentally by moving from trucking to an automated conveyor system.

(MORE)

"This is really a state-of-the-art demonstration to see if the community can generate by-product electricity and feed it into a utility company's grid and be cost effective," Soderberg said. "We know it is energy effective."

O'Gara said the proposed plant is a step in the evolution of more efficient use of energy. "What the grid-connected system would do is utilize more of the plant's capacity over a period of a year," he said.

Soderberg said pollution by the University would not change once the "bag houses" are installed to reduce the pollution from the stacks on the Minneapolis heating plant.

"Once these bag houses are installed," he said, "the University will be well within present air-quality standards."

He listed possible impacts of the system on the neighborhood as more efficient use of energy, conversion to coal in one plant instead of several, more coal storage through the use of the Southeast steam plant facility and less hauling of coal.

People who wish to raise questions about the system may call Soderberg at 373-4521 or O'Gara at 376-3455. Both men said negative or positive feedback would be welcome.

-UNS-

(A0,1,18;B1,2;C0,1;D0,1;E18)

U may get grant for joint community heating project

By RICK MASON

The University may soon receive federal funds to turn its heating plant into a community energy system that would increase energy efficiency and generate a surplus of electrical power throughout the community. The expanded and improved facility would serve as a demonstration unit of a Grid-Connected Integrated Community Energy System (ICES). The study will determine if electricity generated by a community steam plant system, fed back to a utility company, is economical.

Five prospective demonstration units, including the University's heating plant, currently are undergoing preliminary feasibility studies. The federal Energy Research and Development Administration (ERDA) eventually will select one or two of the units and provide money for construction.

The system will centralize heat generation for buildings near the plant. The University's ICES would provide heat for the East and West Bank campuses, St. Mary's and Fairview Hospitals, and possibly Augsburg College and housing units on the West Bank, according to Jim O'Gara, the University physical plant's chief engineer.

This would be advantageous in terms of energy conservation and pollution control, O'Gara pointed out. It would reduce by as much as 3 million gallons the amount of oil and natural gas the community currently uses. In addition, one large coal-fired steam plant is more efficient and economical than several smaller units.

"The larger the steam plant can be made, the more efficient it is and the more steam you get out of the coal as far as cost efficiency," O'Gara said.

There also would be only one facility for coal unloading, fuel storage and waste removal, minimizing the chances of environmental damage, he added.

The theory behind ICES is different from that of the standard electrical

utility, O'Gara pointed out. Thermal needs of the community are the predominant concern, rather than its electrical requirements. In addition, its efficiency is much higher—70 to 80 percent for the ICES as compared to 30 to 40 percent efficiency for the standard electrical utility.

The system has been used in European countries for several years, especially in Sweden. But it has only recently become cost-effective in the United States because of rising energy costs, O'Gara said.

In addition to reducing pollution possibilities and making the most efficient use of the coal, the ICES's major advantages are that it is a closed system and plant emissions will be reduced significantly below pollution standards. Little waste is generated that is not reintroduced into the energy production.

Another advantage of the ICES is that it will be able to eliminate solid waste from the plant and critical wastes from University and other metropolitan-area hospitals through pyrolysis.

Pyrolysis uses temperatures approaching 3,000 degrees Fahrenheit to turn the wastes into an inert, sand-like material. O'Gara said the ICES pyrolysis unit would be able to handle 130 tons of waste a day and would reduce the amount of wastes disposed of in landfills by 93 percent. He pointed out that most existing incineration systems at metro health care facilities are inefficient and marginal as far as meeting air quality standards.

The ICES's coal-fired boiler will produce steam that will be used for hot water and space heating and cooling in buildings connected to the system. Since it is more economical to generate steam at high temperatures, there is some excess energy that utilities usually discharge as thermal pollution.

The ICES, however, uses a turbine to take some of the energy out of the steam to generate electricity. The Uni-

Photo by Larry Falk

versity proposes to use some of this by-product electricity in its plant and to give the rest back to Northern States Power in return for credit. Standard thermal discharge would be eliminated. To complete the new system, the University would obtain NSP's old Southeast generating plant on the Mississippi River near the 35W bridge. The University might have to purchase the facility, O'Gara said, but there is a possibility NSP will donate it to the University.

The buildings linked into the ICES will be connected by deep tunnels. The University's East and West

Banks already are connected by lines across the railroad and Washington Av. bridges. The tunnels would join the West Bank campus with St. Mary's Hospital, and St. Mary's with Augsburg College if it was economically possible.

O'Gara said the University will go to Washington, D.C. to present the results of its preliminary study to ERDA in mid-May. If ERDA approves of the University's plan, the second phase of the proposal—including development of some working drawings and obtaining some of the required permits—will begin.

If the University survives that stage, final working drawings will be completed and construction bids sent out. O'Gara expects to begin taking bids in January 1979. Construction of the facility is expected to take 18 to 24 months. After the plant is operating, both ERDA and the University will analyze the system to see if it can be used elsewhere.

Warren Soderberg, director of the University physical plant, is enthusiastic about the project.

Heat grant to 18

Heat grant from 1

"I think it's a good program for the community," Soderberg said in an interview Tuesday. "We're going to do our technical work and if we can get community support I think we'll be the ones to go on to phase two."

Before the program gets to that point, however, the University must obtain community reaction to the project. Soderberg is concerned that local interests will be more critical of the plan now than before this winter because of the increased use of coal and the pollution problems associated with it that developed recently.

"I think we've been a poorer neighbor this year than we've ever been," Soderberg said. "We burned more coal (this winter) than we ever burned before."

Air pollution from the increased coal burning and contamination of the Mississippi River from coal dust and a coal-ash solution from the heating plant's ovens caused pollution problems earlier this winter. The water problems resulted from acci-

dental discharges, and the University has baghouse filters on order to alleviate the air pollution.

"It's extremely important to get the community's view," said Soderberg. "That's why we're willing to respond to both positive and negative questions."

Evaluating the environmental and social impact of the system will be important in determining its success.

O'Gara said he has a list of about 30 state and federal agencies that the University might have to obtain permits from to go ahead with the project. Although an environmental impact statement might not be required, O'Gara said the University would insist on doing one because of the critical area designation of the affected portion of the Mississippi River.

If the University's proposal is accepted by ERDA, the benefits the surrounding community reaps from the project may be of secondary importance to the national impact a successful operation could have. In an energy-conscious time, the University may become a model for the future.

Export of cheap, clean source found in conserved energy

March 10, 1977
Minnesota
Daily

John Millhone

By PATRICK MILLIMAN

"The fastest, cheapest and cleanest source of energy is the energy that can be saved through conservation," John Millhone, director of the Minnesota Energy Agency, Wednesday told participants at the Third Annual Minnesota Energy Conference.

"We are rational people," Millhone said, "and we ought to be able to determine how much energy we need without going through the wringer of crisis."

Avoiding the wringer of crisis is exactly what the Minnesota Energy Conference is all about. According to a pamphlet distributed at the conference held at the Minneapolis Auditorium, the program works on two levels. The first is to provide detailed talks on energy conservation in industrial and commercial buildings and the second is to provide model exhibits to help business persons and industrialists better understand possible alternatives for energy use and conservation.

Millhone, in his opening speech said Minnesota was able to foresee this winter's energy crisis and take preventive measures before the crisis reached the stage it did in other northern states such as Ohio, where unemployment, school closings and industrial cutbacks were the norm.

"This is the lesson that must be learned," he said. "Just as we were able to see ahead and take successful preventive action this winter, we must be able to see ahead in the 1980s and 90s and take similar preventive actions."

Some time next week, Millhone

said, he will ask Gov. Rudy Perpich to call off the present energy emergency. The situation has improved to the point where energy stockpiles are nearly back to normal, he said.

However, in the future, Minnesota will have to plan ahead and understand thoroughly what Millhone calls a "relatively simple equation"—energy supplies versus energy consumption. "It is far easier to squint into the future for several weeks than for several years, but the price of failure to do so will be much more severe," he said.

Millhone said Minnesota will have to build new pipelines to the southern and western states in order to maintain existing stores of natural gas and oil, which provide 73 percent of the state's energy.

The new pipelines are crucial now that Canada will be discontinuing oil exportation to the United States, he said.

He pointed out, however, that peak production for both natural gas and oil occurred in the early 1970s, and Minnesota must start preparing for more extensive use of coal and alternative sources of energy.

Coal is the most promising energy source for Minnesota, he said, because the state is relatively near the large, low-sulfur coal deposits of the Northern Great Plains. Though there is some question about the adverse environmental effects of burning coal, Millhone said, the technology exists both to use coal and to maintain environmental quality. Minnesota has as a goal the development of a model coal-use plant that would take

into account energy and environmental problems.

Millhone said he does not support a moratorium on nuclear energy. However, he said, Minnesota should explore conservation and alternative measures first. He said Perpich has proposed one of the most comprehensive alternative energy programs of any state.

"Minnesota possesses existing potentials for alternative sources here that are quite exciting," he said. A number of environmental factors such as relatively long, sunlit days, strong winds, and large peat reserves add to the attraction of developing alternative energy sources. Currently, the state has provided \$400,000 dollars in state funds for alternative energy model projects.

Ultimately, Millhone said, energy conservation might be the most critical factor in determining the state's success in dealing with future energy problems. He listed conservation projects such as energy and building codes, state-financed insulation of homes, and commuter-van programs for state employees as indicative of Minnesota's commitment to energy conservation.

This past winter, Millhone said, energy conservation measures led by the 65 degree program helped Minnesota get by relatively unscathed. "The energy conservation program has worked," Millhone said. "The greatest difficulty I see is to those who look at conservation and say they think it is a good idea but then throw out a dozen ideas on why the conservation programs shouldn't be implemented."

Southwest

A journal of a Minneapolis Community

April 1977

Photo by EDITH FRENCH

Twin City neighborhood newspapers serve 250,000

By EMILY SMITH

More than half a million Twin Cities residents read the news of neighborhood meetings, school activities, and neighborhood theater and art events in newspapers like SOUTHWEST. Like SOUTHWEST, the papers are free and most struggle to pay their bills.

The 36 neighborhood newspapers in the Twin Cities have a combined circulation of 250,000. They are mouthpieces for the neighborhoods, covering stories the TRIBUNE, STAR, and PIONEER PRESS ignore or report superficially. They are information centers and forums for local politics.

"The papers function like small-town newspapers," said Elberta Matters, editor of the GRAND GAZETTE in St. Paul. "People want to know what happens in the neighborhood."

Most papers are non-profit monthlies staffed by volunteer neighborhood residents committed to community participation and communication within the neighborhood. New talent is welcome, but most staffs are short-handed. Like SOUTHWEST, they operate on shoe-string budgets and earn their small revenues from local advertising. Many exist issue-to-issue, barely paying the bills.

The papers are as diverse as their names: TOWER TALKS, THE WEDGE, THE SEWARD PROFILE. Circulation varies from 1,700 at the SEWARD WEST NEWS to 41,700 at SOUTHWEST NEWSPAPER. Some, like the SEWARD WEST NEWS, are newsletters run off on an office ditto machine. Others, like the SEWARD PROFILE, are

put together in the editor's home and printed by a commercial firm.

Papers run from four to 39 pages in size. Budgets can range from \$50 to \$3,500 per issue, depending on circulation, size of the paper, type of print, graphics and other production variables. Residents find them in the mailbox on the doorstep, or at the local store.

Some papers are associated with the neighborhood organization like the WEDGE (the Lowry Hill East Neighborhood Association) and TOWER TALKS (Prospectors Community Council). They receive part or all of their support from the neighborhood association.

Some papers, like the SOUTHWEST NEWSPAPER and the HIGHLAND VILLAGER in St. Paul, rent office space and are run by professional staffs in almost traditional newsroom fashion. The majority of papers are published by non-profit associations like SOUTHWEST and depend on advertising for support.

Despite the crazy-quilt pattern of organization, operation and format among the newspapers contacted, they share the same overriding concern: money and where it's coming from.

Although neighborhood newspapers offer the corner grocery store and laundry advertising space they can afford, success in getting advertising varies from paper to paper. Political advertising often pads fall revenues.

THE SUMMIT-UNIVERSITY FREE PRESS in St. Paul distributes in an area with a weak, unstable business community, so it has a hard time getting advertisements.

The Hill and Lake Press has few difficulties finding advertisers because the paper serves a high-income area. Advertisers rush to buy space in a paper that distributes to an area with strong buying power.

Staff members of the GRAND GAZETTE, THE TOWN PUMP, and the SEWARD PROFILE think increasing advertising dollars in their areas depends on having more advertising sales people.

"The economic base is there. We just don't have the people to ask for the ads," said Dunne Barnhart, editor of the SEWARD PROFILE. "We must call on 40 businesses to get 15 ads. Often we have to make call backs. We might have to make 60 stops for 15 ads. I intend to mail a letter to every community member and ask help in advertising."

Competition with larger area papers causes difficulties. "We can't ever fully rely on advertising," said Jo Marson, SOUTHWEST staff member, "because of the DAILY and the number and kind of businesses in the area."

Department stores, chain-owned businesses and financial institutions are reluctant to advertise in neighborhood papers. "We can't get the big stores," said Maurice Mischko, publisher of the HIGHLAND VILLAGER. "If the stores have several outlets they think only of the metropolitan papers. They always think in terms of how they can cover all the stores. If we were a weekly we might appeal to the chain grocery stores."

The larger community newspapers are taking steps to lure advertisers. "We're beginning to talk with other community papers to get together with rates that will appeal to larger advertisers," said Gene Lhotka, business manager for the SOUTHWEST NEWSPAPER.

'U' seeks community input on proposed heating plant change

By Bill Huntzicker
(University of Minnesota News Service)

The University of Minnesota is seeking neighborhood responses to a proposal to enlarge its heating plant, which officials say would improve heating efficiency for the community and generate additional electricity.

The University is one of five finalists in a federal Energy Research and Development Administration (ERDA) program for the study of a Grid-Connected Integrated Community Energy System (ICES).

The University is studying the feasibility of such a system under a \$49,223 ERDA grant, and community responses to the plan must be submitted this spring along with the feasibility study, according to Warren E. Soderberg, director of the University physical plant.

If the University is chosen, ERDA would help fund expansion of the University's heating facility to incorporate an ICES demonstration system, Soderberg said.

The larger ERDA grant would allow the University to expand the use of the Southeast steam plant that it plans to acquire from the Northern States Power (NSP) Company to complement its heating plant in Minneapolis.

The proposed ICES would generate enough heat to replace the current heating plants for St. Mary's and Fairview Hospitals and possibly Augsburg College and still put electricity back into NSP's power system.

In addition, Soderberg said, the system would replace the incinerators on the University's Twin Cities campus and at the hospitals by burning current incinerated waste through a pyrolysis process.

The pyrolysis process involves heating the waste, mostly paper, to 3,000 degrees Fahrenheit and using the gas produced for additional energy in the heating plant, said James C. O'Gara, principle engineer for the physical plant.

O'Gara said the hot gas would be used to generate steam, and the waste produced would have a sand-like texture and could be hauled away in trucks. Soderberg indicated that the volume of solid waste would be only about 7 per cent of the waste presently remaining after incineration.

The major fuel for the power plant would be coal. The efficiency of one system would be greater than having the separate heating plants for each of the institutions convert to coal.

"The grant would allow the University to expand the plant to encompass some of the large community users now limited to gas and oil," Soderberg said. "It would remove 1.5 million gallons of critical oil from use at the St. Mary's Hospital plant alone."

Soderberg said the grant would also allow the University to improve coal unloading and handling both economically and environmentally by moving from trucking to an automated conveyor system.

"This is really a state-of-the-art demonstration to see if the community can generate by-product electricity and feed it into a utility company's grid and be cost effective," Soderberg said. "We know it is energy effective."

Soderberg said pollution by the University would not change once the "bag houses" are installed to reduce the pollution from the stacks on the Minneapolis heating plant.

"Once these bag houses are installed," he said, "the University will be well within present air-quality standards."

He listed possible impacts of the system on the neighborhood as more efficient use of energy, conversion to coal in one plant instead of several, more coal storage through the use of the Southeast steam plant facility, and less hauling of coal.

People who wish to raise questions about the system may call Soderberg at 575-4521 or O'Gara at 575-4521. Feedback would be welcome.

NEIGHBORHOOD NEWSPAPERS
Continued on page 2

U to borrow \$3 million for pollution control

The University will borrow about \$3 million to build and install filters to control pollution from its Minneapolis and Duluth heating plant smoke stacks, the Board of Regents decided Friday.

The bag house filters must be installed by March 1, 1978, according to an agreement between the University and the federal Environmental Protection Agency (EPA), University officials said. The EPA earlier this year directed the University to clean up emissions from the heating plants.

The state legislature in 1976 appropriated about \$1 million to finance the filters for the Minneapolis plant, but costs have increased by \$1.9 million. The Duluth project will cost about \$1 million.

The University will borrow the additional money from banks because "if we wait until 1978 for legislative money, the EPA will immediately judge us to be in violation of the agreement," said Donald P. Brown, acting vice president for finance. The University should receive money from the legislature to pay back the loans by July 1978, he said.

If the filters are not installed, the University would have to burn oil instead of coal to heat its buildings, Brown said. Oil for one heating season would cost \$1 million more than coal, he said.

Construction of the bag houses is "near completion," according to Brown.