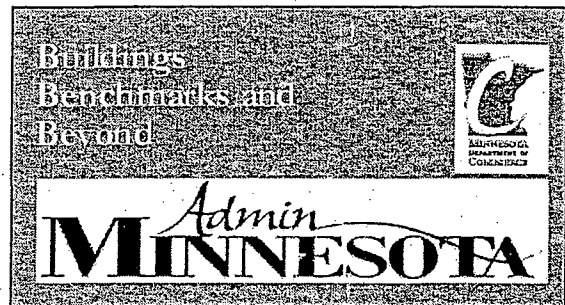


05 - 0443

## B3 Public Building Benchmarking

### Interim Comprehensive Plan



For

State of Minnesota

January 15, 2004  
7138.20

## Project Team

State of Minnesota Department of Administration

State of Minnesota Department of Commerce

LHB Architects and Engineers

The Weidt Group

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1.1 Introduction

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# 1.0 Executive Summary

## Historical Overview

January 2002

The Department of Administration issued a report on January 15, 2002 identifying preliminary energy efficiency benchmarks based on a survey of public buildings.

May 2002

The Department of Administration, in cooperation with the Department of Commerce and other agencies, issued a Request for Proposal to execute Phase I of the B3 project.

July 2002

The State selected vendors. The Project Management, Guidelines, and Benchmarking teams assembled and launched the project. The mission of the Benchmarking project was to create a "good list of bad buildings," public buildings that represented the largest return on investment for implementing energy conservation measures.

September 2002

The Benchmarking team created a plan for data acquisition, storage, and performance analysis of public buildings in Minnesota. The team gathered building data from a variety of sources to create a preliminary master inventory of public buildings.

November 2002

The Benchmarking team initiated a pilot data acquisition program to estimate the time it would take to collect data. Tier 1 data collection time averaged one hour per building.

January 2003

The Benchmarking team issued a report in January 2003 that detailed the work done to date.

February 2003

Members of the legislature discovered that an error in the legislation and initiated a legislative audit of the B3 project. The project was put on hold while the legislation was being reviewed and revised.

November 2003

The legislative audit was completed and the Benchmarking project was resumed.

December 2003

The Benchmarking project leaders held a kickoff meeting and resumed work on the project.

## Core Plan

The Public Building Benchmarking legislation enacted in 2001 provides a powerful management tool that will reduce the operating costs of public buildings in Minnesota.

Benchmarking is key to cost-effective energy savings in public buildings.

The benchmarking program will accurately identify Minnesota public buildings that are least efficient in their use of energy. Money spent improving the least efficient buildings will save the most money in future annual energy costs. Without an effort to identify the least efficient buildings, it would cost more money in improvements to achieve equivalent annual savings.

### Economic Value of Energy Benchmarking

The charts below and on the next page provide a budget analysis of the first costs and savings of implementing versus not implementing an energy benchmarking system for all State Buildings in Minnesota. The cost and savings data (\*) in the column "Program without Benchmarking" is based on FY 1992 through FY 2004 Energy Retrofit Project information obtained from the Department of Administration's Plant Management Division. The Energy Retrofit program used a random approach to improving buildings and averaged a 10 year payback on investment.

	Program with Benchmarking	Program without Benchmarking
1. Average Energy Cost per sq. ft. for Selected Buildings	\$2.00	\$1.34
2. % Average Annual Savings per project	25%	15%
3. Average Annual Energy Savings \$/ sq. ft after Recommission/ Retrofit Improvement	\$0.50	\$0.20 *
4. Average Cost per sq. ft. to Recommission/ Retrofit	\$2.00	\$2.00 *
5. Simple Payback - years	4.0	10.0 *

Line item 2 is derived from the Oak Ridge National Laboratory Buildings Technology Center Website which identifies improved energy savings based on poor performing buildings.

#### Key points:

Line Item 1. Benchmarking will identify buildings that have higher energy consumption levels than the average of a random sample of buildings (without benchmarking).

Line Item 2 & 3. Average savings per project will be greater with benchmarking due to greater opportunities.

Line Item 4. & 5. Greater savings opportunities translate to a significantly lower payback time frame with benchmarking than without.

The chart below identifies the total benchmarking impact if applied to the entire population of all State buildings.

	Program with Benchmarking	Program without Benchmarking
6. Approximate State Building Floor Area SF	50,000,000	50,000,000
7. Estimated % of Building Floor area to improve	15%	37.5%
8. Total Building sq. ft. required to improve	7,500,000	18,750,000
9. Estimated Improvement Cost	\$15,000,000	\$37,500,000
10. Total Annual Energy Cost Savings	\$3,750,000	\$3,750,000
11. Simple Payback - years	4.0	10.0

Using benchmarking to identify the best opportunities, the same annual energy savings of 3.75 million dollars in line 10 are achieved by investing only 15 million in improvement costs versus 37.5 million dollars using a random sample of buildings to fix.

The steps necessary to implement the conservation measures for the energy benchmarking plan is as follows:

- Compile a list of Minnesota public buildings.
- Collect data about the buildings relevant to energy efficiency.
- Analyze the data.
- Create a list of buildings with the greatest opportunity for improvement.
- Rank the buildings on the list by economic opportunity

## 1.1 Introduction

The State has mandated that the Department of Administration maintain information on the energy usage of all public buildings. The goal is to conserve energy by maximizing thermal and electrical efficiency in these buildings.

The B3 benchmarking project was created to obtain and manage information on all public buildings towards the goal of improving their energy performance.

Minnesota Session Laws - 2002  
CHAPTER 398-H.F.No. 2972

<http://www.revisor.leg.state.mn.us/slaws/2002/c398.html>

Sec. 8. Laws 2001, chapter 212, article 1, section 3, is amended to read: Sec. 3. [BENCHMARKS FOR EXISTING PUBLIC BUILDINGS.] The department of administration shall maintain information on energy usage in all public buildings for the purpose of establishing energy efficiency benchmarks and energy conservation goals. The department shall report preliminary energy conservation goals to the chairs of the senate telecommunications, energy and utilities committee and the house regulated industries committee by January 15, 2002. The department shall develop, in coordination with the department of commerce, a comprehensive plan by January 15, 2004, to maximize electrical and thermal energy efficiency in existing public buildings through conservation measures having a simple payback within ten to 15 years. The plan must detail the steps necessary to implement the conservation measures and include the projected costs of these measures. The owner or operator of a public building subject to this section shall provide information to the department of administration necessary to accomplish the purposes of this section.

The B3 Benchmarking team has defined the goal of this phase of the benchmarking project:

*Create a plan to identify public buildings with the largest opportunity for improvement in energy performance.*

### **Buildings**

We have compiled a Minnesota public building database that suggests that there are approximately 6,000 public buildings in Minnesota greater than 5,000 square feet.

### ***Definition of Benchmarking***

*"Benchmarking"* is a general term that describes the act of comparing a building's actual energy performance to some kind of measurement standard or "benchmark," such as

- A population of similar buildings
- The building's own historical performance
- A theoretical performance model
- Minnesota Energy Code

We will use several different kinds of benchmarking and other analysis techniques to identify the buildings with the largest opportunity for improvement.

### ***Tasks***

High-level tasks in the B3 Benchmarking project are:

- Compile a list of Minnesota public buildings.
- Collect data about the buildings relevant to energy efficiency.
- Analyze the data.
- Create a list of buildings with the greatest opportunity for improvement.
- Rank the buildings on the list by economic opportunity

### ***This Report***

**Section 1.2 Methodology** discusses how the B3 team will accomplish the above tasks.

**Section 1.3 Plan and Schedule** lays out the plans for future Phases of the B3 Benchmarking project.

**Section 1.4 Appendices** contains various documents relevant to the project.



## 1.2 Methodology

We have a methodology for energy benchmarking public buildings in the state to support the goal of identifying public buildings for recommissioning/ retrofit programs. The strategy consists of creating a list of poorly performing buildings by comparing the energy performance to energy code consumption targets, and also to determine which of the poorly performing buildings have good opportunities to be improved. By selecting buildings with poor energy performance and great opportunities for improvement, funds spent on fixing these buildings will have a far greater return on investment than selecting buildings at random out of the existing population.

We have developed a balanced approach to the data collection requirements, understanding that collecting too much data for all buildings will incur high costs and difficulties in collecting data accurately. Conversely, too little information will not allow proper assessment to accurately rank the opportunities in energy savings.

### ***A "Tiered" approach to data collection and analysis***

There are approximately 6,000 existing State, School, University, College, County, and Municipal buildings greater than 5,000 square feet to benchmark. Recognizing that less than 1,000 buildings will be good candidates for repair, collecting the same information on all 6,000 buildings will be resource inefficient. So, we plan a tiered data and analysis approach to collect a minimum level of data for all projects. The data is analyzed to screen for poorly performing buildings based on energy consumption per square foot by building type. After this filtering process we will then have a preliminary list of buildings that indicate poor performance and potentially have good opportunities for improvement. From this preliminary list of filtered buildings, a second tier of data collection and analysis is conducted. The second tier involves first, verifying the basic data collected, and if found satisfactory, collecting deeper information to recognize the building's potential for repair. After this level of collection, further analysis will be conducted to obtain the final list of poorly performing buildings, which are targeted as strong candidates for a recommissioning and or retrofit program.

Below is a table that describes the different Tiers of data collection:

<b>Tier 1</b>	All Buildings Minimal Data Collection Coarse Screening Criteria/ Analysis
<b>Tier 2</b>	Detailed Review on Subset of Buildings defined by Tier 1 Criteria Detailed building system information to define saving opportunities Refine Analysis and List of Candidates
<b>Tier 3</b>	Tier 1 + Tier 2 + Sustainable Design Guideline Information for New Projects

## ***Tiered Data Collection/ Analysis Overview Diagram***

Below is a conceptual diagram of the data collection and analysis process for Benchmarking existing Public Buildings.

We have identified 6,000 buildings over 5,000 square feet representing over 300 million square feet of floor area

Complete List  
of Buildings

**Tier 1** data includes basic building information: Building name, address, building type, age, and floor area. Energy information includes Utility, account number, and energy consumption by each meter per year.

Collect Tier 1 Data  
Building info  
Energy Use  
Analyze and Filter

Here we compare building energy consumption data normalized by floor area to an energy code-building target. A candidate list of buildings for further analysis will be identified. We assume that this list will represent about **1,800 buildings or 30% of all buildings** above.

Preliminary List of Bad  
Buildings

**Tier 2** data is collected for each building identified in Tier 1. The first step verifies Tier 1 results. The second step collects data to identify a building's potential to be improved.

Collect Tier 2 Data  
Analyze  
and Filter

By reviewing the opportunities and verified energy consumption data, we assume this list will represent about **15% of all buildings in the Benchmarking system, or approximately 1,000 buildings.**

Good List of  
Bad  
Buildings

Footnote: Oak Ridge Study

At this stage the current Benchmarking project scope is complete. A program for Recommissioning / Retrofitting existing buildings then follows.

Determine  
Recommissioning and  
Retrofit Measures

After energy measures are implemented on a project, both Tier 1 and Tier 2 data are updated to evaluate retrofit effectiveness.

Fix Buildings

## ***Collecting Tier 1 Data***

To be successful, we see the need to have multiple data collection methods that are convenient for different building contacts and utility providers. For Tier 3 data, development is underway within the Sustainable Design guidelines project that will identify what data and metering requirements will be needed to inventory sustainable design features for new construction projects.

Below is a table that identifies Tier 1 data:

Building Name	Person Contact Info
Location/ Address	
Building Age	Energy Utility Provider
Building Floor Area	Account Number
Building Type	Energy Consumption

Survey forms, website design and database schema can be found in the appendix.

The sequence to collect Tier 1 Data is:

1. Identify Contact for building(s)
2. Introduce the Benchmarking program over the phone
3. Mail them the Tier 1 data collection forms
4. Follow up until complete

In some cases we can obtain static building data and dynamic consumption data for multiple buildings from a single contact. Here is a chart showing the minimum number of Contacts we will establish a relationship with during data collection:

<b>Government Entity</b>	<b>Agency</b>	<b>Minimum # Contacts</b>
State		1
	MNSCU	1
	DOT	1
	DNR	1
	DVA	1
	DHS	1
	Military	1
	Corrections	1
U of M		1
Counties		89
Cities		887
School Districts		490
<b>Total</b>		<b>1475</b>

## ***Tier 1 Data Analysis***

We are currently evaluating numerous methods for Tier 1 data analysis:

1. Benchmark a building against its population of like buildings using statistical percentile rankings to determine a threshold that identifies buildings with high energy consumption.
2. Benchmark a building against a target energy consumption range of a Building type model that meets the current Minnesota Energy Code.
3. Benchmark a building against a national population of similar building types using EPA's Energy Star Benchmarking/Portfolio Manager.

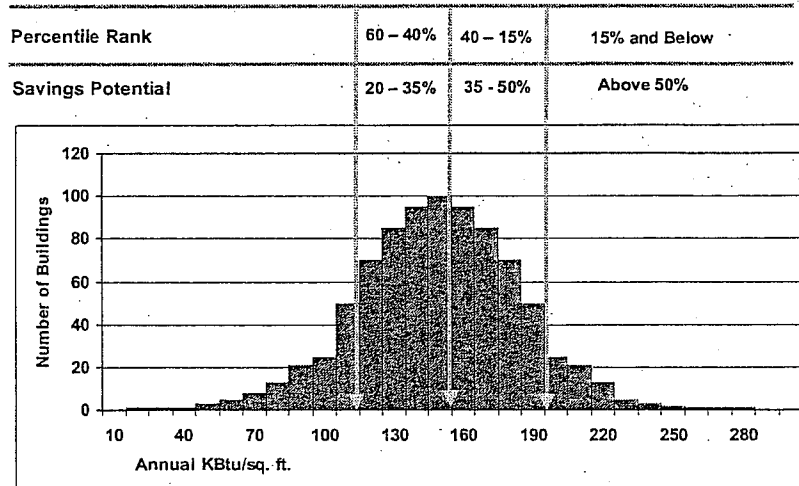
The first approach requires that all Tier 1 data be collected and analyzed before Tier 2 data can be collected. The second approach allows buildings to be benchmarked automatically based on a predetermined target. The latter approach allows a building to be processed irrespective of waiting to collect data on other buildings

The second approach puts a stake in the ground first by establishing a targeted range in energy consumption for a specific building type. The target is based on the current technological requirements of the State Energy Code. By comparing a building's energy consumption to the current code's energy performance a quantitative measure of a project's potential technical savings is known.

The third approach will allow us to see how an individual building's performance ranks against a population of similar buildings across the nation. The Energy Star Benchmarking/Portfolio Manager system rates a building's performance based on energy consumption, space usage, and normalized weather data. The Energy Star rating will provide a third indicator in the consideration to promote a building to Tier 2 status. Note that the Energy Star Benchmarking/Portfolio Manager is based on CBECS data, and thus only supports a limited set of building types. We will not be able to use Energy Star Benchmarking/Portfolio Manager to analyze all Minnesota public buildings.

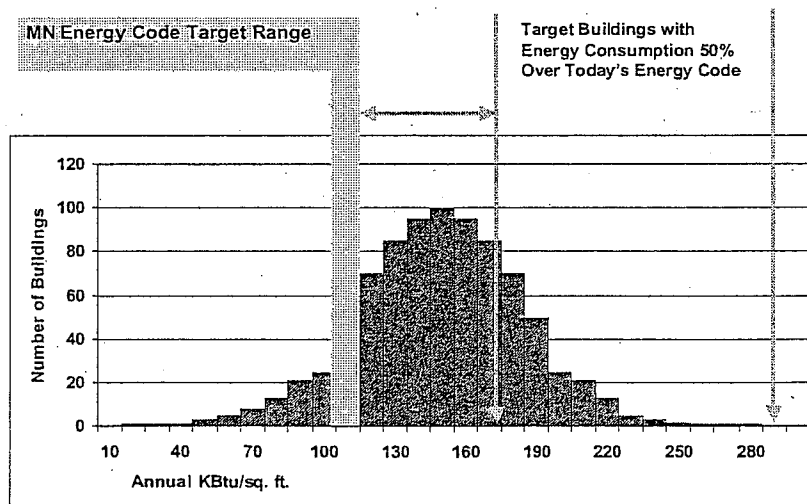
### Develop Criteria Based on a statistical population comparison of similar buildings

Below is a hypothetical diagram that identifies a number of buildings and their associated energy consumption normalized by square feet of floor area for a specific building type population. Buildings that fall below an approximate threshold rank of 30% become candidates for Tier 2 analysis.



### Develop Criteria Based on Percentage over Energy Code

Below is a similar diagram of buildings. Here the criteria for selecting buildings are based on a comparison of a building type energy model that meets the requirements of the Minnesota Energy Code. The buildings that consume approximately 50% more than the energy code model become candidates for Tier 2 analysis.



### Collecting Tier 2 Data

Tier 2 data is collected in order to rank a building's opportunity for energy performance improvement. After this stage of analysis, we assume there will be approximately 1,000 buildings out of the 6,000 projects that would be good qualified candidates for a building recommissioning/ retrofit program.

Below is a list of Tier 2 we will collect:

<b>Occupancy Level</b>	<b>Cooling System</b>
Occupied Hours per Day	Primary Cooling System (list)
Occupied Days per Week	Primary Cooling Fuel Source (list)
Occupied Months per Year	% of Building Cooled
Number of Building Occupants	Year of Last Replacement
<b>Lighting System</b>	<b>Air Handler System</b>
Primary Lamp Type (list)	Primary Type (list)
Year of Last Retrofit	Year of Last Retrofit
<b>Envelope System</b>	<b>Heating System</b>
Primary Window Type (list)	Primary Heating System (list)
Year of Last Replacement	Primary Heating Fuel Source
Primary Roof Type (list)	% of Building Heated
Year of Last Replacement	Year of Last Replacement
Primary Wall Type (list)	
Year of Last Replacement	
<b>Has the building had an energy audit?</b>	<b>Does the building have an Energy Management system</b>

Operation hours and occupancy levels provide a first checkpoint to assess if energy consumption of the Tier 2 building is high due to heavy use and occupancy as compared to the established prototype model.

Please note that the collection of this data is not intended to develop a detailed recommissioning or retrofit plan for the building, but rather to quickly and cost-effectively rank a building's opportunity as a good candidate for an energy audit that would identify in detail what measures are cost effective for improvement.

Data collection will be conducted by a variety of means including phone interviews, paper and web based data surveys and in some cases site visits.

## **Tier 2 Data Analysis**

We are currently evaluating a number of methods to rank and estimate the savings opportunities for buildings in Tier 2. The following identifies "general" methods under investigation.

### **1. Qualitative analysis**

A simple qualitative method ranks a building as a high, medium or low energy savings opportunity based on the age of the existing building systems. Older lighting, envelope, and HVAC systems have a higher potential for savings if retrofitted with today's technologies than newer systems. However, Tier 2 buildings with new systems (which by definition have high energy use) are likely candidates for recommissioning. It is difficult to discern the difference in operational problems versus inefficient systems, leaving most of the Tier 2 buildings ranked as an opportunity for further study.

### **2. Quantitative analysis option**

A more efficient method to discern between operational versus building system opportunities is to analyze each Tier 2 building using its building type code model. This method would provide a quantitative solution to ranking buildings by opportunity. Specific building system Tier 2 data would be entered into the model to obtain an estimate of its energy consumption results. Modeled results that match fairly close to actual metered consumption identify a building that has low recommissioning opportunities, but high retrofit possibilities. Modeled results that are higher than metered data identify buildings that have high recommissioning potential and lower retrofit opportunities. And buildings with modeled results much higher than metered consumption likely have inaccurate Tier 2 data or inaccurate metered results.

This approach requires reasonable assumptions correlating building system age with key energy characteristics needed for the model (i.e. lighting power density, heating plant efficiency, cooling plant efficiency). For example, we know that office buildings with original lighting systems between 1970 and 1980 will utilize T12 florescent lamps with magnetic ballast systems and be lamped to provide 70 foot candles. Based on the building type we also know that the lighting power density for this system vintage could range from 2.5 to 2.0 watts per square foot. This system will require a table of building system vintages to be correlated to building system energy metrics, where age of system would automatically relate to an energy metric in the model.

Below is an example of a table for office lighting.

Lighting Vintage	Power Density W/sq. ft.
Older than 1960	2.75
1960 to 1970	2.50
1970 to 1980	2.25
1980 to 1990	2.00
1990 to 2000	1.50

### ***Collecting Tier 3 Data***

Tier 3 data will be collected on new buildings that have gone through the guidelines or existing buildings that have been recommissioned and or retrofit. The data will be collected from the design team of record for these projects. The definition of data to collect in Tier 3 will be completed in Phase 3 after the Guideline project has completed its first trial year.



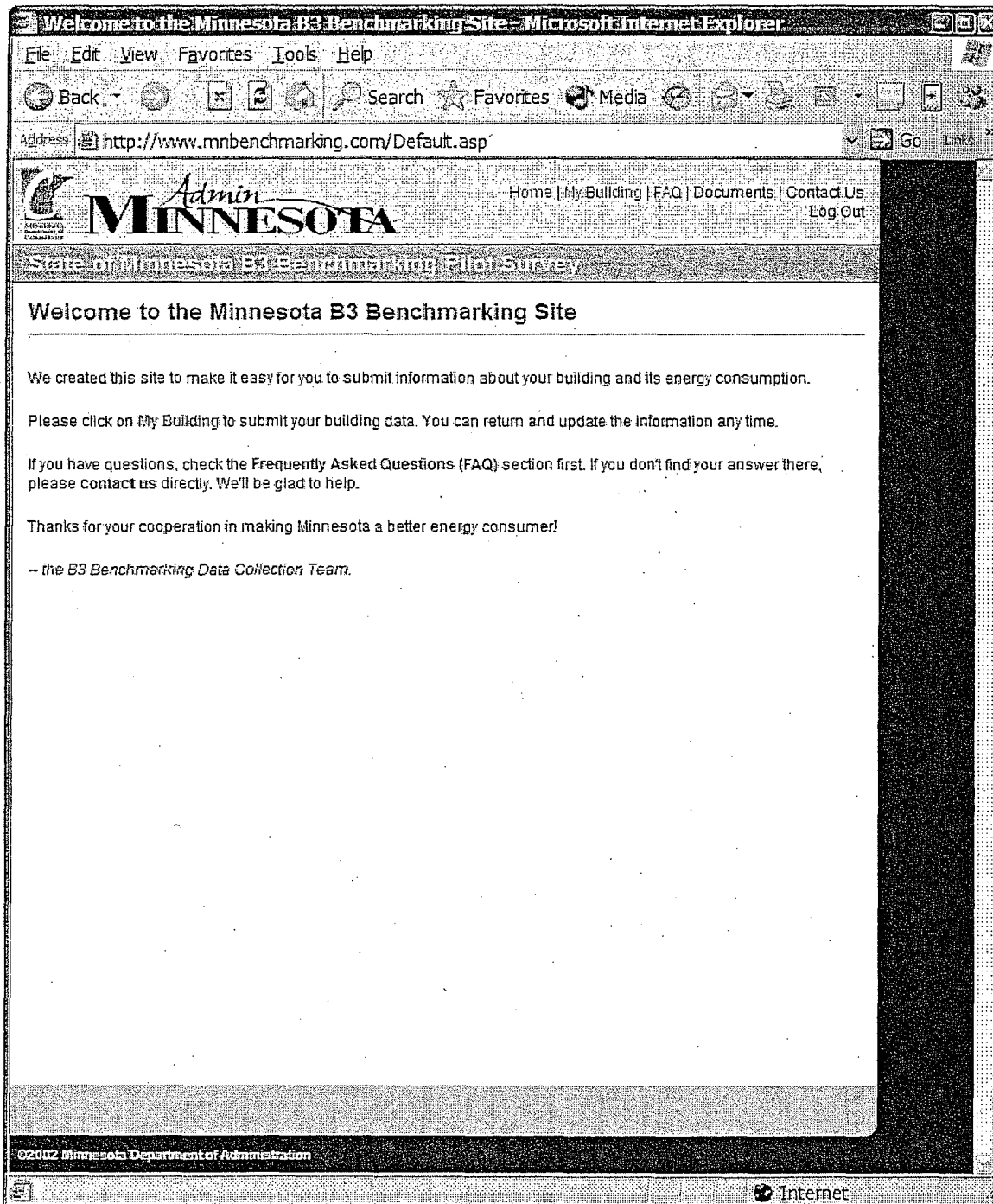
# 1.3 Plan/Schedule

B3 Benchmarking Implementation Plan	2004												2005												2006					
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
	Phase II						Phase III						Phase IV																	
<b>Tier 1</b>																														
Build Production SQL Database																														
Update Prototype Web Site to Production																														
Build Direct Mail & Tracking System																														
Code Building Use Type Energy Models																														
Data Collection																														
Analysis																														
Identify Tier 2 Buildings																														
<b>Tier 2</b>																														
Add Tier 2 Data to Production Database																														
Add Tier 2 Forms to Production Web Site																														
Enhance Direct Mail & Tracking for Tier 2																														
Validate Tier 1 data																														
Data Collection																														
Analysis																														
Rank by Energy Improvement Opportunity																														
<b>Tier 3</b>																														
Define T3 Data																														
Add Tier 3 Data to Production Database																														
Add Tier 3 Forms to Production Web Site																														
Communications for Tier 3 Data Collection																														
Data Collection																														
Analysis																														

## 1.4 Appendices

- A. Pilot Tier 1 Web Site Screen Shots
- B. Tier 1 Data Collection Forms
- C. Tier 1 Database Schema

## Appendix A – Pilot Tier 1 Web Site Screen Shots



Welcome to the Minnesota B3 Benchmarking Site - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites Media Go Links

Address http://www.mnbenchmarking.com/Default.asp?Edit=Edit+Building+Information&ID=1234

**Admin MINNESOTA**

Home | My Building | FAQ | Documents | Contact Us | Log Out

State of Minnesota B3 Benchmarking Pilot Survey

### Step 1. Building & Contact Information

Building ID: 1234

Building Name: Chaska Town Hall

#### Contact Information

Salutation: Mr

First Name: Darin

Last Name: Aguilar

Government Organization: The Weidt Group

Mailing Address: 5800 Baker Road

City: Minnetonka

State: MN

Zip: 55345

Phone: 952.938.1588

Fax: 952.938.1480

Email: dka@twgi.com

#### Building Data

Fill out building data and specify the accuracy level (1 = rough guess to 5 = 100% sure). Fill out the time in minutes to obtain and record information.

	Data accuracy level	Time to obtain in minutes
Building Address: 123 Main Street	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input checked="" type="radio"/> 5	10
City/Zip Code: Chaska 12345	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input checked="" type="radio"/> 5	10
Building Floor Area: 10,000.000 (sq. ft.)	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input checked="" type="radio"/> 5	10
Year Built: 1988	<input checked="" type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5	10

Done Internet

Welcome to the Minnesota B3 Benchmarking Site - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites Media Go Links

Address: http://www.mnbenchmarking.com/Default.asp?Page=FuelEdit&FuelID=58&FuelTypeID=

Admin MINNESOTA Home | My Building | FAQ | Documents | Contact Us Log Out

State of Minnesota B3 Benchmarking Pilot Survey

### Electric Energy Meter Form

Fill out this form if your building uses electric energy. Enter data below for the calendar year 2001.

My Meter Name:

Utility Name:

Account #:

Meter ID:

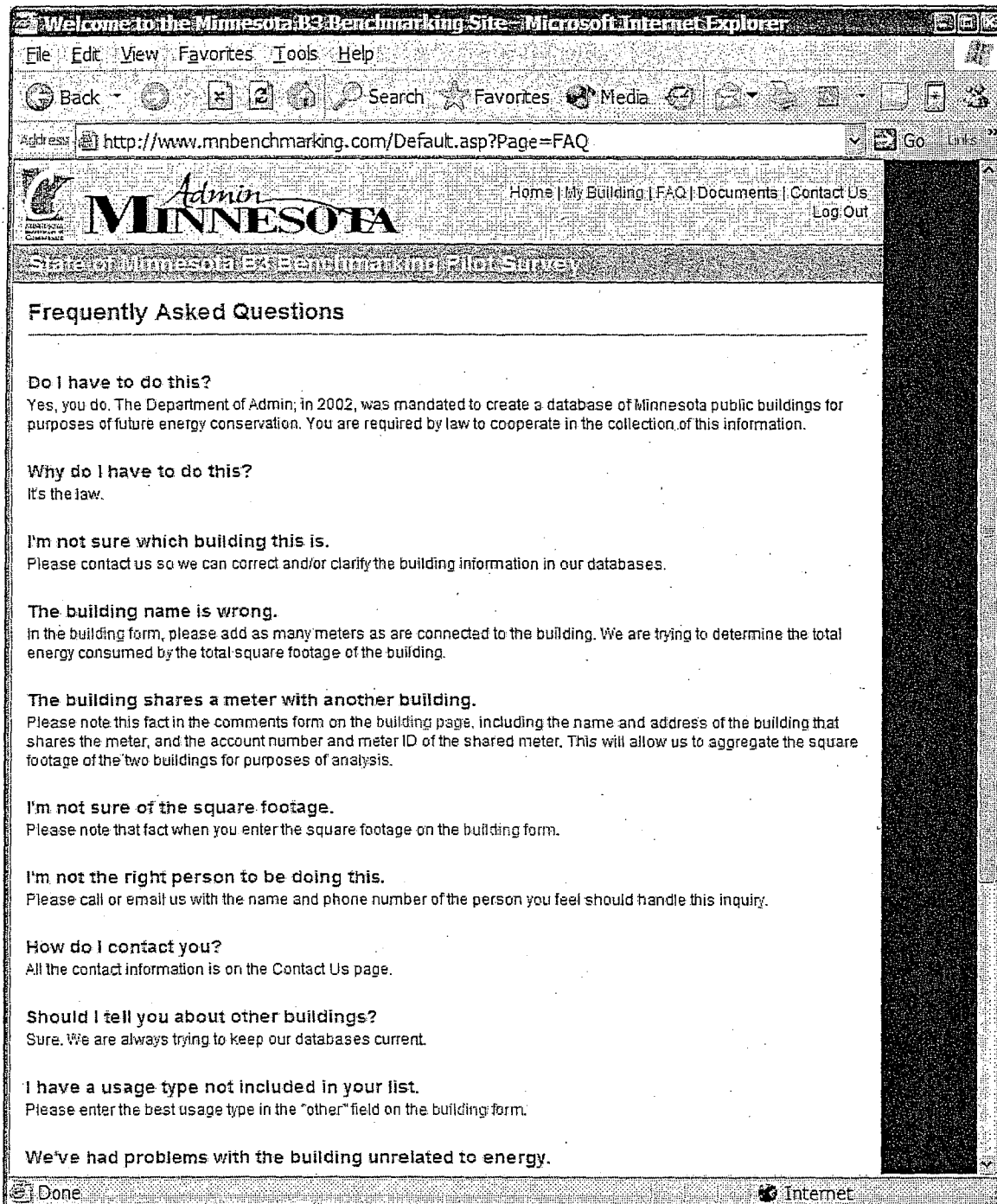
**Meter Services:**

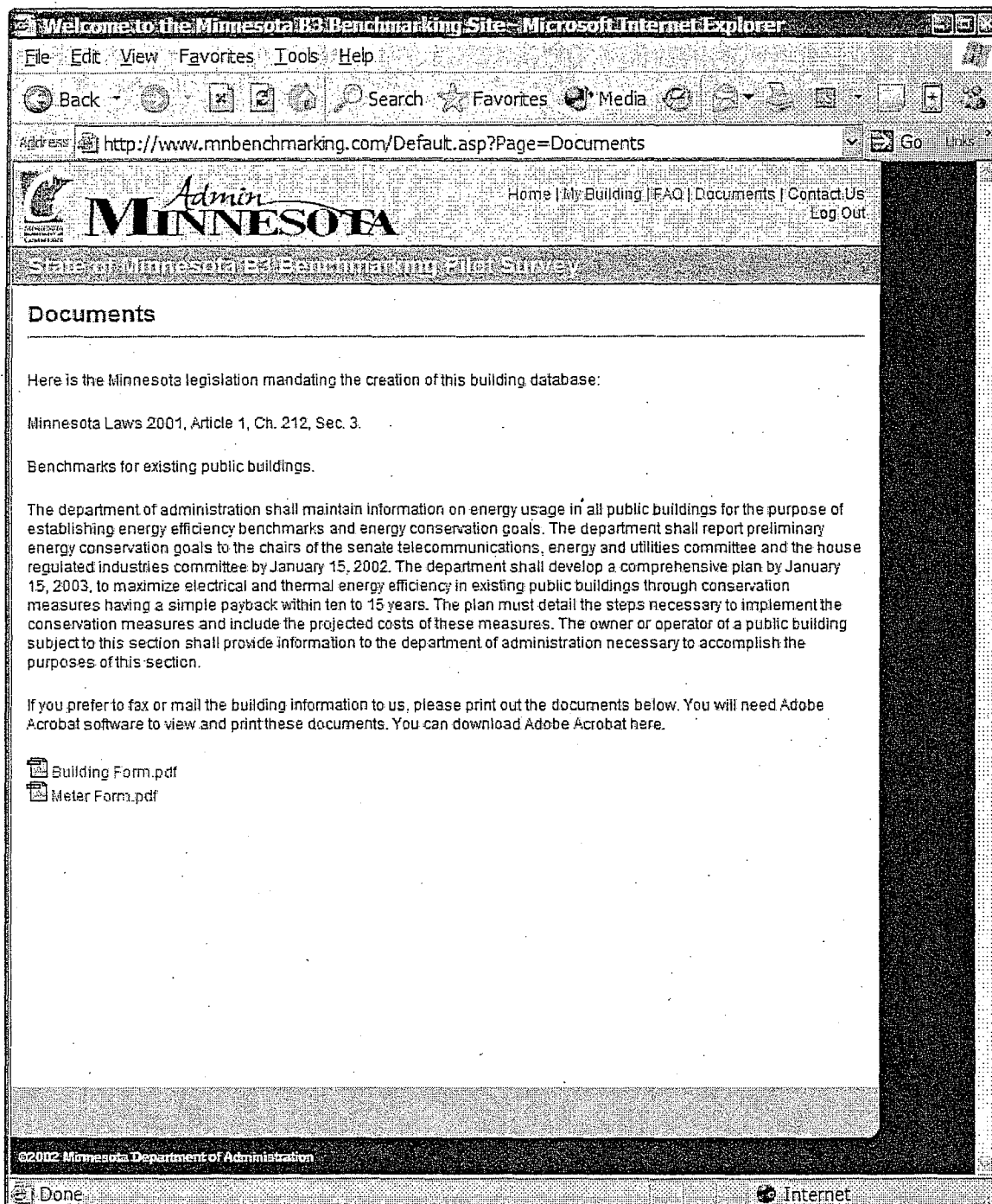
- ☒ Floor area of entire building only
- ☐ Floor area of building and parking area
- ☐ Floor area of building and other buildings
- ☐ Partial floor area of building
- ☐ Parking area only
- ☐ Not sure

Date	Consumption (KWh)	Peak KW Demand	Total Dollars
January 2001	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="\$0.00"/>
February 2001	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="\$0.00"/>
March 2001	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="\$0.00"/>
April 2001	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="\$0.00"/>
May 2001	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="\$0.00"/>
June 2001	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="\$0.00"/>
July 2001	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="\$0.00"/>
August 2001	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="\$0.00"/>
September 2001	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="\$0.00"/>
October 2001	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="\$0.00"/>
November 2001	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="\$0.00"/>
December 2001	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="\$0.00"/>
Total:	<input type="text" value="0"/> Calculate >>	<input type="text" value="0"/>	<input type="text" value="\$0.00"/>

OK Cancel

Done Internet





## Appendix B – Tier 1 Data Collection Forms



Office of the Commissioner  
200 Administration Building  
50 Sherburne Avenue  
St. Paul, MN 55155  
Voice: 651.296.1424  
Fax: 651.297.7909  
TTY: 651.297.4357

85 7<sup>th</sup> Place East, Suite 500  
St. Paul, MN 55101-2198  
Voice: 651-296-4026  
Fax: 651-297-1959  
TTY: 651-297-3067

November 12, 2002

Darin Aguilar  
The Weidt Group  
5800 Baker Road  
Minnetonka, MN 55345

Dear Darin:

The State of Minnesota has mandated that the Department of Administration create and maintain a database of all public buildings in the state. The Legislation is attached.

You are required by law to send us information relating to the energy performance of the following public building(s).

Building Name	Survey ID	Site Password
Chaska Town Hall	1234	1234

For your convenience, we are providing you with a variety of means to submit this information. Please select one of the methods below:

- Fill out and mail us the attached survey forms in the preaddressed envelope.
- Fill out and fax the attached survey forms to us at fax number 952-938-1480.
- Enter the data directly on our Website at: <http://www.mnbenchmarking.com>. To enter data on the website you will be asked to enter the **Survey ID** and the **Site Password** for each building.

Please submit this information to us no later than **January 10, 2003**. If you have any questions about the survey or wish to advise us of a more appropriate contact for the building(s) above, please call our help desk at (952) 939-1878.

Thank you in advance for your cooperation.

Janet Streff  
Department of Commerce

Wes Chapman  
Department of Administration



Minnesota Session Laws - 2002  
CHAPTER 398-H.F.No. 2972

<http://www.revisor.leg.state.mn.us/slaws/2002/c398.html>

Sec. 8. Laws 2001, chapter 212, article 1, section 3, is amended to read: Sec. 3. [BENCHMARKS FOR EXISTING PUBLIC BUILDINGS.] The department of administration shall maintain information on energy usage in all public buildings for the purpose of establishing energy efficiency benchmarks and energy conservation goals. The department shall report preliminary energy conservation goals to the chairs of the senate telecommunications, energy and utilities committee and the house regulated industries committee by January 15, 2002. The department shall develop, in coordination with the department of commerce, a comprehensive plan by January 15, 2004, to maximize electrical and thermal energy efficiency in existing public buildings through conservation measures having a simple payback within ten to 15 years. The plan must detail the steps necessary to implement the conservation measures and include the projected costs of these measures. The owner or operator of a public building subject to this section shall provide information to the department of administration necessary to accomplish the purposes of this section.

# Building Characteristic Data Form

Survey ID: 1234

**STEP 1:** Verify and update building name and contact information in far right column if not correct.

<b>Building Name</b>	Chaska Town Hall	
<b>Contact Information</b>		
Contact Name	Darin Aguilar	
Government Organization	The Weidt Group	
Mailing Street Address	5800 Baker Road	
City	Minnetonka	
Zip Code	55345	
Phone Number	952.938.1588	
Fax Number	952.938.1480	
Email address	dka@twgi.com	

**STEP 2:** Fill out building data below and circle confidence level (1 = rough guess to 5 = 100% sure) and fill out time in minutes to obtain and record information.

<b>Building Data</b>	Enter information below	Data confidence level	Time to obtain in minutes
Building Address	123 Main Street	1 2 3 4 5	
City / Zip Code	Chaska 12345	1 2 3 4 5	
Building Floor area (sq. ft.)	10000000	1 2 3 4 5	
Original Construction Date	1988	1 2 3 4 5	

**STEP 3:** Identify your **Composite Building Use** by entering the % floor area next to the Building Use Types below. As in step 2 enter accuracy level and time to obtain information.

1 2 3 4 5	
-----------	--

<b>Assembly Use Types</b>	
	Auditorium
	Coliseum/ Stadium
	Field House/ Gym
<b>Education Use Types</b>	
	Elementary School
	Middle School
	High School
	College Classroom
	College Laboratory

<b>Office Use Types</b>	
	Administration
	City Hall
	Office
<b>Public Service Use Types</b>	
	Courthouse
	Community Center
	Fire Station
	Library
	Prison / Jail

<b>Shop Use Types</b>	
	Machine Shop
	Parts Assembly
	Maintenance Repair
<b>Miscellaneous Use Types</b>	
	Retail / Store
	Park/ Recreation
	Museum
	Ice Arena
<b>Residential Use Types</b>	

## Electric Energy Use Form

Survey ID: 1234

**STEP 4a:** Fill out this form if your building uses electric energy. Enter data below for the calendar year 2001. If your building has more than two electric meters, make additional copies of this page.

Fill out the information below for the year 2001

**Meter Serves** (check only one box)

- ☐ Floor area of entire building only
- ☐ Floor area of building and parking area
- ☐ Floor area of building and other buildings
- ☐ Partial floor area of building
- ☐ Parking area only
- ☐ Not sure

**Meter Serves** (check only one box)

- ☐ Floor area of entire building only
- ☐ Floor area of building and parking area
- ☐ Floor area of building and other buildings
- ☐ Partial floor area of building
- ☐ Parking area only
- ☐ Not sure

Fill out information in the blank boxes below

Utility Name
Account #
Meter ID



**2001 data**

If you do not have the energy information data below, sign the utility information release form at the bottom of the page to allow us to collect the information from your utility provider.

Units
January
February
March
April
May
June
July
August
September
October
November
December

Consumption KWh	Peak KW Demand	Total Dollars

Consumption KWh	Peak KW Demand	Total Dollars

**2001 Total  
Consumption**

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I hereby authorize my Utility Company above to release monthly energy use and cost history to the Department of Administration for use in the Public Building Energy Benchmarking study per Minnesota Laws 2001, Article 1, Ch. 212, Sec. 3.

Name of Authorizing Person: \_\_\_\_\_

(printed name)

(Signature)

Phone Number: \_\_\_\_\_

Date: \_\_\_\_\_

# Natural Gas Energy Use Form

Survey ID: 1234

**STEP 4b:** Fill out this form if your building uses natural gas energy. Enter data below for the calendar year 2001. If your building has more than two meters, make additional copies of this page.

Fill out the information below for the year 2001

**Meter Serves** (check only one box)

- ☐ Floor area of entire building only
- ☐ Floor area of building and other buildings
- ☐ Partial floor area of building
- ☐ Not sure

**Meter Serves** (check only one box)

- ☐ Floor area of entire building only
- ☐ Floor area of building and other buildings
- ☐ Partial floor area of building
- ☐ Not sure

Fill out information in the blank boxes below

Utility Name
Account #
Meter ID



2001 data

If you do not have the energy information data below, sign the utility information release form at the bottom of the page to allow us to collect the information from your utility provider.

Units
Check the unit type for the data you will provide below
January
February
March
April
May
June
July
August
September
October
November
December

Consumption	Total Dollars
<input type="checkbox"/> CF	
<input type="checkbox"/> MCF	
<input type="checkbox"/> Therms or CCF	

Consumption	Total Dollars
<input type="checkbox"/> CF	
<input type="checkbox"/> MCF	
<input type="checkbox"/> Therms or CCF	

2001 Total Consumption
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I hereby authorize my Utility Company above to release monthly energy use and cost history to the Department of Administration for use in the Public Building Energy Benchmarking study per Minnesota Laws 2001, Article 1, Ch. 212, Sec. 3.

Name of Authorizing Person:

(printed name)

(Signature)

Phone Number:

Date:

# Purchased Chilled Water and Steam Energy Use Form

Survey ID: 1234

**STEP 4c:** Fill out this form if your building uses purchased chilled water and or steam. Enter data below for the calendar year 2001. If your building has more than two meters, make additional copies of this page.

Fill out the information below for the year 2001

## Steam Meter Serves:

(Check only one box)

- ☐ Floor area of entire building only
- ☐ Floor area of building and other buildings
- ☐ Partial floor area of building
- ☐ Not sure

## Chilled Water Meter Serves:

(Check only one box)

- ☐ Floor area of entire building only
- ☐ Floor area of building and other buildings
- ☐ Partial floor area of building
- ☐ Not sure

Fill out information in the blank boxes below

Utility Name
Account #
Meter ID



## 2001 data

If you do not have the energy information data below, sign the utility information release form at the bottom of the page to allow us to collect the information from your utility provider.

Units
January
February
March
April
May
June
July
August
September
October
November
December

Consumption Mlbs	Total Dollars

Consumption Ton-Hrs	Total Dollars

2001 Total Consumption
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I hereby authorize my Utility Company above to release monthly energy use and cost history to the Department of Administration for use in the Public Building Energy Benchmarking study per Minnesota Laws 2001, Article 1, Ch. 212, Sec. 3.

Name of Authorizing Person:

(printed name)

(signature)

Phone Number:

Date:

Building Owner Name:

Building Name:

Building Address:

# Non-Metered Fuel Consumption Form

Survey ID: 1234

**STEP 4d:** Fill out this form if your building uses a non-metered source of energy. Enter data below for the calendar year 2001. If your building has more than two non-metered fuel sources, make additional copies of this page.

Fill out the information below for the year 2001

Fuel Type (check only one box) Units	
<input type="checkbox"/> Propane	Gallons
<input type="checkbox"/> Fuel Oil 2 3 4 5 6	Gallons
<input type="checkbox"/> Hard Coal	Tons
<input type="checkbox"/> Soft Coal	Tons
<input type="checkbox"/> Other	

Fuel Type (check only one box) Units	
<input type="checkbox"/> Propane	Gallons
<input type="checkbox"/> Fuel Oil 2 3 4 5 6	Gallons
<input type="checkbox"/> Hard Coal	Tons
<input type="checkbox"/> Soft Coal	Tons
<input type="checkbox"/> Other	

Fill out information in the blank boxes below

Fuel Provider
Account #



2001 data

If you do not have the energy information data below, sign the utility information release form at the bottom of the page to allow us to collect the information from your utility provider.

Units
Beginning Inventory
Delivery 1
Delivery 2
Delivery 3
Delivery 4
Delivery 5
Delivery 6
Ending Inventory

Energy Units as above	Total Dollars

Energy Units as above	Total Dollars

2001 Total Consumption
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If you plan to use renewable energy sources in the future, check the source types you are considering.

- ☐ Photo voltaic panels  
☐ Wind generation  
☐ Other: \_\_\_\_\_

I hereby authorize my Utility Company above to release monthly energy use and cost history to the Department of Administration for use in the Public Building Energy Benchmarking study per Minnesota Laws 2001, Article 1, Ch. 212, Sec. 3.

Name of Authorizing Person: \_\_\_\_\_  
(printed name)

(Signature)

Phone Number: \_\_\_\_\_

Date: \_\_\_\_\_

Building Owner Name:

Building Name:

Building Address:

## Appendix C – Tier 1 Database Schema

