

Energy Consumption Series

User-Needs Study
for the 1992
Commercial Buildings
Energy Consumption
Survey

September 1992

This publication and other Energy Information Administration (EIA) publications may be purchased from the Superintendent of Documents, U.S. Government Printing Office.

All telephone orders should be directed to:

U.S. Government Printing Office
Farragut Bookstore
1510 H Street, NW
Washington, DC 20005
(202) 653-2050
FAX (202) 376-5055
9 a.m. to 5 p.m., eastern time, M-F

Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402
(202) 783-3238
FAX (202) 512-2233
8 a.m. to 5 p.m., eastern time, M-F

All mail orders should be directed to:

U.S. Government Printing Office
c/o Mellon Bank
P.O. Box 371954
Pittsburgh, PA 15250-7954

Complimentary subscriptions and single issues are available to certain groups of subscribers, such as public and academic libraries, Federal, State, local and foreign governments, EIA survey respondents, and the media. For further information, and for answers to questions on energy statistics, please contact EIA's National Energy Information Center. Address, telephone numbers, and hours are as follows:

National Energy Information Center, EI-231
Energy Information Administration
Forrestal Building, Room 1F-048
Washington, DC 20585
(202) 586-8800
Telecommunications Device for the Hearing Impaired Only (202) 586-1181
9 a.m. to 5 p.m., eastern time, M-F

Energy Consumption Series

User-Needs Study for the 1992 Commercial Buildings Energy Consumption Survey

September 1992

This report was prepared by the Energy Information Administration, the independent analytical and statistical agency within the Department of Energy. The information contained herein should not be construed as advocating or reflecting any policy position of the Department of Energy or any other organization.

Contacts

This publication was prepared under the general direction of W. Calvin Kilgore, Director of the Office of Energy Markets and End Use (202/586-1617). The project was directed by Lynda T. Carlson, Director of the Energy End Use and Integrated Statistics Division (EEUUSD) (202/586-1112), and Nancy L. Leach, Chief of the Residential and Commercial Branch (202/586-1114). Specific technical information may be obtained from the CBECS Team Leader, Martha M. Johnson (202/586-1135). The FAX number for all EEUUSD personnel is 202/586-0018.

Contents

Executive Summary	v
Introduction	1
What Is CBECS?	1
User-Needs Study: Methodology	2
Organization of the Report	3
General and Survey Process Comments	5
General Comments	5
Survey Process Comments	6
Comments on Specific CBECS Questionnaire Items	11
Equipment-Related Comments	11
Building Characteristics Comments	15
Conservation Activities and Energy Management Comments	18
Energy Sources and Related Information Comments	21
References	22
Appendices	
A. Federal Register Notice	27
B. Correspondence Review	37
C. 1992 CBECS Building Questionnaire	55
Tables	
B1. Summary of General Comments--Usefulness of CBECS	40
B2. Summary of General Comments--Utility of CBECS	41
B3. Summary of Survey Process Comments--Accuracy and Sample Characteristics	42
B4. Summary of Survey Process Comments--Geographic Disaggregation	43
B5. Summary of Survey Process Comments--CBECS Publication Format	43
B6. Summary of Question-Specific Comments--Equipment-Related Concerns	44
B7. Summary of Question-Specific Comments--Building Characteristics	47
B8. Summary of Question-Specific Comments--Conservation Activities and Energy Management	49
B9. Summary of Question-Specific Comments--Energy Source Concerns	50

Executive Summary

The Commercial Buildings Energy Consumption Survey (CBECS) that is conducted by the Energy Information Administration (EIA) is the primary source of energy data for commercial buildings in the United States. The survey began in 1979 and has subsequently been conducted in 1983, 1986, and 1989.¹ The next survey will cover energy consumption during the year 1992. The building characteristic data will be collected between August 1992 and early December 1992. Requests for energy consumption data are mailed to the energy suppliers in January 1993, with data due by March 1993. Before each survey is sent into the field, the data users' needs are thoroughly assessed. The purpose of this report is to document the findings of that user-needs assessment for the 1992 survey.

As a result of the Department of Energy's development of the National Energy Strategy (NES) and the associated energy legislation currently pending in the Congress, the successful accomplishment of the 1992 CBECS has become increasingly more important. To respond to this heightened awareness of energy-related concerns, EIA undertook a thorough assessment of the 1992 CBECS data collection forms. Input was obtained through:

- A series of six user-needs meetings conducted by EIA to determine the priorities for additional commercial data that would be most useful to energy modelers and analysts
- A Federal Register notice soliciting broad-based public comments
- The establishment of a joint EIA and DOE, Office of Conservation and Renewable Energy (CE) User-Needs Working Group which met six times in 1991.

Assessment of Needs

Both written and oral responses to EIA's solicitation of CBECS data needed by users emphasized the uniqueness of CBECS as the sole nationwide data set addressing the energy-related issues in commercial buildings and the overall usefulness of CBECS for program and policy analysis. The following user-needs assessment, which is amplified in this report, reflects the users' perceptions of some of the drawbacks to the CBECS data as well as new areas of commercial building energy issues that will be of increased importance throughout the nineties.

1. The small sample size (approximately 6,000 commercial buildings) does not allow for either publishing or analyzing detailed building characteristics information.
2. State-level data would be more useful than the current National and Census region or division-level data.
3. Because of survey design changes and questionnaire content changes, comparisons of data over time and across surveys are difficult.
4. More detailed information is needed on lighting and refrigeration within buildings.
5. More detail is needed on the physical characteristics of the buildings.
6. Information on how space is used within a building is missing.

¹ The title of the survey was the Nonresidential Buildings Energy Consumption Survey from 1979 to 1986.

7. A better understanding of the relationship between increased use of office equipment and electricity loads is needed.
8. Information is needed on the type and impact of Demand-Side Management (DSM) programs.
9. Gas Transported for the Account of Others is an emerging issue.
10. Information is needed on the characteristics of new commercial buildings and on the amount of building demolition that has occurred over the years.

Assessment Results

Analysis of the written and oral comments resulted in a list of specific user needs and led to changes in the 1992 CBECS sample size and questionnaire content. Those changes included, among others, an increase in sample size to oversample new, large office buildings, and the addition, modification, or deletion of specific CBECS questionnaire items to meet many of the requirements. Additionally, the 1992 CBECS will reinterview a portion of the 1986 CBECS buildings in order to provide longitudinal data to assess changes in specific buildings between 1986 and 1992.

Major changes in the Building Questionnaire included:

1. Additional questions on types of lighting and lighting features
2. Additional questions on the types and the number of refrigeration equipment and new questions on types of hot water equipment
3. New questions eliciting information about the number of personal computers or computer terminals
4. New questions about the shape of buildings and below-ground floors in buildings
5. New questions about how space is used in a building within a given building activity
6. Detailed questions about DSM programs (will also be asked on the Electric and Natural Gas Energy Suppliers forms)
7. Questions about Gas Transported for the Account of Others (will also be asked on the Natural Gas Energy Supplier form).

Some recommended changes were not incorporated into the 1992 CBECS because of budgetary constraints, incompatibility of the level of desired detail with the CBECS sample size, limited knowledge by interviewer or respondent, unavailability of respondents with the requisite knowledge, insufficient time, and lack of respondent interest. However, the user-needs assessment process has updated CBECS sufficiently, so that the data from the 1992 CBECS will provide information on commercial buildings needed to begin addressing questions raised by the proposed energy legislation.

Organization of the Report

The implementation and results of the CBECS user-needs assessment proceedings are documented in this report. The text summarizes the major issues addressed during the review process and the outcome of those issues. The appendices provide backup data and the 1992 CBECS Building Questionnaire.

Introduction

As a result of the development of the National Energy Strategy (NES) by the Department of Energy (DOE), the Energy Information Administration (EIA) has been reviewing its energy consumption data collections. Recognizing NES's reliance on current information about the commercial sector, the Energy End Use and Integrated Statistics Division of the Office of Energy Markets and End Use of EIA undertook a major effort to obtain a well-defined picture of the data needs of users of EIA's Commercial Buildings Energy Consumption Survey (CBECS). This survey is conducted triennially and has nationwide coverage.

To assist in the redesign of the 1992 CBECS, EIA conducted a CBECS User-Needs Study in 1991. Through a series of meetings and the solicitation of written comments, the study generated responses about CBECS procedures, the Building Questionnaire, and to a lesser extent the Energy Suppliers Forms. The objective of the study was to ensure that, given resource constraints, the 1992 CBECS reflects as many of the information requirements as possible of those who use these data.

A brief background discussion of CBECS and of the User-Needs Study itself is essential to a full understanding of the responses elicited by the User-Needs Study.

What Is CBECS?

EIA conducts CBECS as the principal nationwide survey of energy-related characteristics, energy consumption, and energy expenditures in U.S. commercial buildings.¹ The survey is essential to EIA's mission of serving as the Government's primary source of energy statistics. For the purpose of CBECS, a building is considered a commercial building if it is over 1,000 square feet and has more than 50 percent of its floorspace used for commercial activities. This includes, but is not limited to, stores, offices, schools, churches, gymnasiums, libraries, museums, hospitals, clinics, warehouses, and jails.

CBECS is a two-stage survey. Stage one collects information about the selected buildings through a voluntary personal interview with the buildings' owners, managers, or tenants. Respondents supply data on such energy-related characteristics of commercial buildings as use, size, location, and structure; energy sources and end uses; conservation features; heating, cooling, and lighting equipment; and percent of floorspace heated, cooled, or lighted. After supplying the building characteristics data, the respondents are asked to sign an authorization form releasing the building's billing records to the data collection contractor during the Energy Suppliers Survey, which is the second stage.

In the second stage, suppliers of energy to the buildings sampled in stage one provide billing records via a mail survey conducted under EIA's mandatory data collection authority. The billing records provide data on the measurement of actual energy consumption and expenditures related to that building.

EIA publishes the CBECS data to provide meaningful, objective, and accurate energy information to a wide audience, including Congress, Federal and State agencies, industry, and the general public. The data are major sources of input to the National Energy Modeling System (NEMS), EIA's new forecasting system that is presently under development. The data are also used by a broad spectrum of DOE programmatic and policy offices. Public-use diskettes are available for researchers and others who are interested in data on commercial buildings.

¹For a detailed discussion of the CBECS design, see *Commercial Buildings Energy Consumption 1989*, DOE/EIA-0318(89), Energy Information Administration (Washington D.C: Government Printing Office, April 1992), Appendix A, "How the Survey Was Conducted."

User-Needs Study: Methodology

To tailor the 1992 CBECS as closely as possible to the data needs of its various users, EIA first solicited written comments on CBECS from the public through a notice in the April 10, 1991 *Federal Register* (Appendix A) and through a May 6, 1991 letter to current and potential users of the CBECS data in State and non-DOE Federal agencies and in the private sector. Other correspondence sought written comments from the DOE offices at headquarters and from the DOE field offices throughout the Nation.

Second, a series of meetings were held with analysts within EIA and other parts of DOE, attendees at major industry conferences, representatives of the natural gas industry, and organizations interested in electricity demand modeling. The following organizations were represented at the natural gas industry meeting: The American Gas Association, American Gas Cooling Center, Gas Appliance Manufacturers Association, Gas Research Institute, Interstate Natural Gas Association of America, and Natural Gas Supply Association. Represented at the electricity demand modeling meeting were: Electric Power Research Institute, Applied Econometrics Inc., Barakat and Chamberlin Inc., and Regional Economic Research Inc.

Third, EIA established a User-Needs Working Group with members of the DOE Office of Conservation and Renewable Energy and representatives from four National Laboratories: Pacific Northwest Laboratories (PNL), Solar Energy Research Institute (now the National Energy Research Laboratory, NERL), Lawrence Berkeley Laboratory (LBL), and Brookhaven National Laboratory (BNL). This group met six times in 1991.

Prior to both the general user-group meetings and the User-Needs Working Group meetings, EIA sent a packet with background information and agenda to each participant for review. The meeting summaries were prepared from minutes or transcripts of the audiotapes.

The following eight areas constituted the major themes of meeting discussions concerning commercial buildings:

- Total exposed surface area and other shell/wall area
- Space functions
- Changes in buildings surveyed in 1986
- Lighting power densities (from utility audit information)
- Rate structure (from utilities' rate schedules)
- Maintenance personnel and expenses
- Office equipment as could be inferred from a single question aimed at determining computer saturation
- Ventilation system type (constant or variable air system).

A review of both written and oral responses to the above solicitation efforts led to their summarization and subsequent organization into three major categories and several subcategories as noted in Appendix B, "Correspondence Review." The three major response classifications are general comments, survey process comments, and comments on specific items that are included in or are felt should be included in the CBECS questionnaires.

Organization of the Report

This publication summarizes general and survey process comments first, then comments pertaining to specific CBECS questions. Each section of comments concludes with a description of the impact of those comments on the development of the 1992 CBECS.

For ease of reference, the user group meetings are identified below and are referred to by their group letter throughout the report. Written comments are referenced by the numbers in brackets following the comment. These reference sources are identified at the end of the text. For the most part, users comments expressed during the series of general user-need meetings and Working Group meetings will be discussed first, followed by pertinent written comments. How these needs are addressed in the 1992 CBECS will be discussed after each specific section. Unless otherwise noted, the survey questions that are referenced refer to the Building Questionnaire, which can be found in Appendix C, "1992 CBECS Building Questionnaire."

Group	User Group Name
A	DOE/Office of Policy Planning & Analysis
B	DOE, EIA/Energy Modelers
C	International Energy Program Evaluation Conference
D	Natural Gas Industry Representatives
E	Electricity Demand Modeling Representatives
F	Conference Call--Lawrence Berkeley Laboratory
G	CE User-Needs Working Group (June 6, 1991)
H	CE User-Needs Working Group (June 20, 1991)
I	CE User-Needs Working Group (July 15, 1991)
J	CE User-Needs Working Group (August 8, 1991)
K	CE User-Needs Working Group (September 13, 1991)
L	CE User-Needs Working Group (October 11, 1991)

General and Survey Process Comments

Tables B1 and B2 and B3 through B5 in Appendix B, "Correspondence Review," summarize written comments² of a general nature on CBECS and those about the survey process, respectively. The tables link those comments to their respective sources.³ The following sections contain an overview of general and survey process comments, both written and oral.

General Comments

General comments generated by the User-Needs Study are those that address (1) the overall usefulness of the CBECS data, and (2) the utility of CBECS in terms of specific applications of the data.

Overall Usefulness of CBECS Data

The general consensus obtained from the meetings and the written comments indicate that CBECS continues to provide both necessary and useful data, unavailable elsewhere, on nationwide building characteristics and energy consumption in the commercial sector. For example, the DOE Office of Conservation and Renewable Energy (CE) states that regarding district heating and cooling: "There are no sources of survey information other than what is collected through CBECS,"[14] and the survey provides broad indications of commercial buildings' energy use.[14] Other comments state that the survey is seen as a tremendous resource to policymakers[3] and energy decisionmakers.[6]

Regional Economic Research Inc. writes, "In the past ten years, we have come to rely quite heavily on this national data source, and we are pleased to see that the survey continues to evolve as new issues arise."[20] A letter from Oak Ridge National Laboratory comments, "Without the CBECS data, our estimates (of potential energy savings) would be much more troublesome and less reliable."[18]

Utility of CBECS

The utility of the CBECS data, in terms of specific applications, drew mixed reviews. General comments expressed by participants attending meetings held as part of the User-Needs Study focused primarily on the utility of the CBECS data for specific applications, such as providing information on new buildings and energy intensities. Many comments addressed the need for more detailed data on the components of energy-consuming systems in commercial buildings; on building controls and lighting; on small appliances, computers, office equipment, and ventilation systems; on matters relevant to the development of energy efficiency standards for equipment and to a determination of Demand-Side Management (DSM) effectiveness; on gas cooling; and on the frequency of major renovations that affect the energy efficiency of commercial buildings.

²Comments cited in this report either represent a quote or a paraphrase of a comment. For the most part, comments were not reviewed for feasibility, accuracy, impact, or other qualitative factors; nor were such factors used as a basis for including or excluding any particular comment.

³The full text of the written comments, as well as detailed minutes of the oral discussions at the meetings held in conjunction with the study, are available at the DOE.

More specific comments pertaining to the utility of the survey were made by the following groups and written correspondence. Only the groups or written correspondence that were relevant to the specific topic are included.

Group B (DOE Modelers) indicated that there were insufficient data in a number of areas (heating systems types, office equipment, type and age of equipment stock, the building's physical evaluation, DSM, gas cooling technologies and energy use intensities). Because of the group's expressed concerns about the lack of detail provided by CBECS, they wished to find new ways to link available CBECS data to more detailed regional surveys.

Group C (Energy Program Evaluators) pointed out that CBECS provided very detailed data on the building shell but provided limited data on equipment, building controls, and lighting. This information was required for evaluation of DSM programs and building standards.

Group D (Natural Gas Industry) expressed the need for data permitting evaluation of the current and projected market for gas equipment. Members of Group D were also concerned about factors adversely affecting the comparability of the CBECS data with audit data from utilities and other sources of information.

Group E (Electricity Demand Representatives) indicated that its constituents are moving more toward technology modeling and CBECS, which has collected more and more technology data, is facilitating this movement. However, there was concern that CBECS was missing a great deal of small area geographic detail.

Group F (LBL) stated that CBECS provides good data about the physical characteristics of a building and while it addresses the energy-consuming systems of the buildings, it does not meet the needs of Group F, because the survey lacks data on the components of the systems.

Written comments include those citing the CBECS utility in: the development of estimates of energy intensities by end-use; floor stock by building type and year of construction; market shares for specific types of equipment; DSM potential; equipment and technology profiles; and insights into building demolition rates, retrofit rates, and changes in energy intensities over time.[20]

The most frequent negative comment focused on the difficulty or inability to apply the CBECS data in certain areas because of the survey's small sample size or the absence or dearth of detail in the survey. Several comments indicated a lack of detailed end-use data.[4,5,9] Also, a memorandum from Oak Ridge National Laboratory indicated that estimates of energy savings due to retrofits could not be obtained from the CBECS data (or other statistical data) due to the sparse retrofit information.[18] Another memorandum from CE states, "The proposed CBECS questionnaires . . . suffer from (1) the lack of detail on building characteristics, which are determinants of energy use and (2) the small sample size, and this combination makes it impossible to use the results for policy and information analysis of all but the broadest generalities." [14]

Survey Process Comments

The survey process comments elicited by the User-Needs Study focus on (1) the timeliness of the publication of the CBECS data, (2) accuracy and sample characteristics, (3) geographic disaggregation, and (4) the CBECS publication format.

Timeliness of the CBECS Data

There was a general concern over the delay between the time the CBECS data are collected and the publication of that information. Additionally, **Group B** would like EIA to track trends occurring in the interim years of the survey cycle, and **Group D** would like monthly data to augment the seasonal information on natural gas consumption patterns.

Accuracy and Sample Characteristics

Two types of concerns were evident from the review of both the written comments and the comments from the meetings. First, there was concern about the small sample size and whether this would contribute to little meaningful information about the newer building stock; and second, there was concern that the CBECS data were not comparable from survey to survey or between the building characteristics and the consumption and expenditures components.

Group C participants raised the questions of how the CBECS interviewers could gain access to decisionmakers and how the interviewers could determine the level of expertise of respondents. Success in that regard might benefit data accuracy and completeness.

Group E reached general agreement on the desirability of refining CBECS consistency checks, which flag unusual and, therefore, possibly inaccurate data as they enter the reporting system. Discussed was the possibility of including a list of the CBECS flags on the published data tapes to benefit users.

Written comments focused on disadvantages due to the CBECS small sample size,[14] particularly related to new buildings,[23] on limitations on survey scope imposed by survey technique,[20] and on the desirability of end-use metering data.[4,10]

A major concern of one of the CBECS users was that the CBECS data are not consistently captured from survey to survey, nor between the building characteristics and the consumption and expenditures components. This led to suggestions that: the data be grouped similarly from survey to survey, prior years' data be restated when errors/changes dictate, the sample population in any given survey year be standardized, and the data collected from survey to survey be comparable.[22]

Geographic Disaggregation

There was general agreement that data would have greater utility if reported on a State basis rather than by Census region or division.

Group B would like to be able to link available national data to more detailed regional surveys.

Group D stated that nationwide annual data are not sufficient for their needs and that they would prefer that CBECS provide data in fewer, collapsed building categories in order to enlarge the amount of publishable data in each Census division.

Written comments from State officials stressed the need for State-level data. It was suggested that if the decision was made to continue to code data above the State level, the data collected would be of limited value to most States. It was thus recommended that data be coded by State rather than by Census region. [5,8,19,23]

Publication Format

The comments included suggestions for copying the report on computer software media,[1] formatting certain data on a monthly basis,[23] and speculation on whether the publication of the CBECS data should be in the form of an add-on to local utility data sets, which those utilities would gather with assistance from EIA.[Group B]

Impact of General and Survey Process Comments

Many of the general concerns expressed by the users were also reflected in their comments about specific CBECS questionnaire items. These concerns, which are addressed briefly in this section, are discussed in greater detail in the following section, "Comments on Specific CBECS Questionnaire Items."

Lack of Detail: In response to this concern, the 1992 CBECS has included new questions about building equipment, lighting, use of space within the building, energy management controls, and energy end uses.

Sample Size: In response to the data user comments pertaining to sample size, the 1992 CBECS sample will increase by 400 buildings, of which 150 are an oversample of newly built, large office buildings. The increase in sample size will result in a better understanding of energy use in those buildings and will reduce the relative standard errors associated with the data.

Several changes were made for the 1992 CBECS in response to the survey process comments expressed by the CBECS users.

Timeliness: Several of the data users expressed concern about the timeliness of the CBECS data--that is, how long it takes for data to be published. "Timeliness" of data is a consequence of the type of data being collected and the survey method utilized. The CBECS data are collected nationwide in a process which actually involves two sets of surveys: (1) a personal interview with the owners, managers, or tenants of a building and (2) a mail survey to the various energy suppliers. The building data are collected by personal interview because high-quality information with usable response rates cannot be collected by either mail or telephone.

Once the buildings' data are collected, the second survey is implemented which collects the consumption and expenditures data from all of the energy suppliers to the buildings. For example, in the 1989 CBECS there were over 10,000 requests to 1,253 energy suppliers. Following the personal interview and the mail survey, the combined data for each building is linked to the weather data for the individual buildings. Additionally, the very volume of data collected for the buildings results in an extended data processing and verification period.

A number of steps are currently being taken in an attempt to make the data available to users on a more timely basis. First, the energy suppliers will be offered the option of reporting the consumption and expenditures data on prepared data entry diskettes that will be sent to them. This should lead to more timely receipt by EIA of the consumption and expenditures data. Second, approximately 6 months before the publication of the detailed data tables, EIA will issue preliminary summary data in the *Monthly Energy Review* for both the buildings and consumption and expenditures sections. Finally, EIA will be issuing the data tables on diskette and will be exploring the possibility of providing the data to various nationwide electronic bulletin board services.

Accuracy and Sample Characteristics: In response to the suggestion that CBECS gather information about the level of expertise of the respondent, the CBECS staff determined that obtaining information about the individual who has day-to-day responsibility for physically operating and maintaining the building's heating and/or cooling equipment would yield more relevant data for the CBECS purposes. Questions H-18 through H-20 address this concern. Additionally, as in previous CBECS, the 1992 CBECS will continue to obtain the title of the respondent.

To address the concern that the CBECS lacks consistency from survey to survey, a brief discussion of why changes occurred over time, that could be related to survey design changes, was included in the *Commercial Buildings Energy Consumption and Expenditures 1989* report. Also, a report on changes in buildings over the last decade is planned by EIA to address many of the questions raised about consistency between surveys.

Additionally, the 1992 CBECS will reinterview a portion of the buildings that were in the 1986 CBECS, thus providing data on the same building at two different time periods.

In response to the concern expressed that there is a lack of consistency between the CBECS buildings characteristics report and the consumption and expenditures report, the 1989 CBECS consumption and expenditures report included data on the total building stocks rather than just commercial buildings that were supplied with a major fuel as was done in previous reports.

Geographic Disaggregation: EIA, in an effort to address the need for State-level data, has begun a long-term project to determine whether it would be feasible to produce State-level synthetic estimates for a few variables from CBECS. However, the potential success of this project cannot be determined at this time.

Publication Format: EIA is exploring the feasibility of issuing the CBECS tables on diskettes. The CBECS data are currently published on public-use diskettes.

Comments on Specific CBECS Questionnaire Items

The User-Needs Study also generated question-specific written and oral comments. Tables B6 through B9 in Appendix B, "Correspondence Review," summarize written comments (keyed to their sources) that focus on specific items in (or should be in) the CBECS questionnaire. Highlights of major question-specific written and oral comments follow.

Equipment-Related Comments

There was a general acknowledgment by most of the groups and the written correspondence for data on equipment related to: lighting systems; office equipment; heating, ventilation, and air-conditioning (HVAC) systems; refrigeration; and hot water heating, since the energy efficiency of these equipment types are directly related to the building's overall energy consumption.

The need for increased information about the amount, size, and operating hours of equipment found in commercial buildings is driven by DOE's roles in (1) identifying technologies that have the greatest potential for improving equipment efficiency, and (2) in developing and finalizing efficiency standards for a wide range of energy-using equipment in commercial buildings.

Each of the areas is discussed below.

Lighting Systems

In response to DOE initiatives to address the potential conservation associated with energy consumed for lighting and to address increased interest by utilities in DSM Programs, and of other Federal agencies' programs, such as the Environmental Protection Agency's Green Lights Program, which promotes energy-efficient lighting, it was the consensus of most of the participants of the user-needs meetings and of most respondents to the written solicitations that more data on lighting in commercial buildings was a high priority. It is estimated that approximately 39 percent of commercial buildings' electricity consumption is related to lighting.⁴

Specific comments related to lighting needs are reflected below:

Group A suggested that lighting is the single most important area for standards development.

Group C suggested collecting lighting data on reflectors, on refixturing, and on compact fluorescent bulbs.

⁴An analysis of the penetration of energy-conserving lighting in commercial buildings may be found in *Lighting in Commercial Buildings*, DOE/EIA-0555(92)/1 (Washington, D.C., May 1992).

Group F needed information on the average floorspace that was illuminated and the average time that lighting is used at peak load to assist in the feasibility studies related to promoting energy efficiency in Federal buildings through the development of Federal Lighting Standards.

Group H participants were in agreement that lighting issues should be of the highest priority when collecting energy consumption data on commercial buildings. They cited the desirability of data on external lighting systems (fixture type and number, lighting level, circuitry, hours of operation, etc.). Regarding interior lighting, the group suggested that CBECS gather information on lighting used for purposes other than illumination (for example, lighting as a heat source), localized control of lighting, and use of lighting control and natural illumination for conservation purposes.

However, this group's most important interior lighting concern pertained to acquiring data on power densities in watts per square foot. Also emphasized was the need to know the cost of maintaining, changing, and upgrading lighting systems, not just the installed cost.

Because some of the foregoing data might be difficult to collect using current survey methods, several working group members suggested some perceptual questions to the survey, such as, "Do you feel that the lighting in your building/work station is adequate?"

Written comments indicate that generally the issue of indoor lighting is well covered in CBECS. However, more specific fixture, lamp, and ballast inventory data would be useful as well as the percentage of the lighting capacity that is on during the building's occupied periods and unoccupied periods and the determination of whether lighting controls, such as clocks, occupancy sensors, or daylighting controls, have been installed and the extent of installation.[20] However, it was also felt that lighting data would have greater utility if they were related to uses such as security and safety, rather than from an equipment perspective.[22]

Impact of Lighting Comments

In response to the expressed need for more precise identification of types of lighting equipment, the 1992 CBECS will include more detailed questions on the types of light bulbs and lighting equipment as well as the amount of square feet inside the building served by each specific type of light bulb and equipment. Question G-5 will obtain data that distinguishes between incandescent light bulbs, fluorescent lighting (other than compact bulbs), compact fluorescent bulbs, high-intensity discharge lights, and other types of lighting. The types of lighting equipment asked about in Question G-8 includes reflectors, daylighting controls, occupancy sensors, time clocks or timed switches, manual dimmer switches, and other lighting-conservation equipment.

Office Equipment

The consensus of the Working Group was that information-processing equipment is the fastest growing energy consumer today. How this increased growth of office equipment impacts electricity consumption in office buildings is of interest to the CBECS data users for forecasting, budgeting, planning future research and development efforts, and developing energy efficiency standards. Three types of office technology were identified as large users of energy: computers, copiers, and others (such as adding machines, coffee makers, etc.). These needs are reflected in the following comments:

Group H noted the importance of obtaining computer-related data through CBECS stating, "[Computer] technology is a massive and distinctive energy end user. Computers often require special auxiliary temperature and air quality-control equipment. In many cases, some or all of computer energy-consuming equipment is left to run constantly regardless of business or normal building occupation hours." This Group considered the number of personal computers and terminals per employee as the most important issues. The group also

noted that copiers are heavy energy users, including desk top, floor, and production models. Participants stated that, as with computers, copiers are sometimes left on day and night, consuming energy unnecessarily.

Four factors were identified as most critical to collection of office equipment technology:

1. The amount of equipment
2. The size of equipment
3. The operating time of equipment
4. The ratio of operating time to nonoperating time.

Written responses also indicated the need for more information about office equipment suggesting that this end use represents the largest growth segment in the commercial sector in the last 8 years. A general comment suggested that adding questions about computer use would enhance CBECS.[7] It was felt that the current CBECS survey does not provide information on data-processing equipment and that the type of data that would be helpful would include number of units for each type of computer (personal computer, minicomputer, and mainframe), for computer terminals, and for each type of printer (laser and other). Also desired is the number of photocopy machines and electronic registers in each surveyed building.[20]

Impact of Office Equipment Comments

The EIA CBECS team determined that one of the main problems of gathering detailed information about many types of office equipment is that the lack of respondent knowledge of their equipment stock could lead to unreliable estimates of electricity consumption. As an alternative, the 1992 CBECS will ask about the number of personal computers or terminals since this was considered, by the Working Group, to be the most important type of office equipment. These equipment types would then be used as a proxy for other equipment in the building.

Questions B-8 and B-9 of the Building Questionnaire will obtain the needed information on office equipment to help quantify the growth in electricity loads for office equipment. Those questions ask about the number of personal computers and computer terminals in the building. As a result of the pretest, it was decided that providing the respondent with a range to estimate the number of personal computers and/or computer terminals in the building elicited a more favorable response rate than asking the exact number of equipment or the ratio of equipment to workers. The range categories of number of computers match the range categories of number of workers in the building, (Question E-19) thus allowing the data user to calculate the approximate ratio of equipment to worker.

Heating, Ventilation, and Air-Conditioning (HVAC) Systems

To support the continued research related to energy-efficient HVAC systems, a fuller understanding of the relationship between the HVAC systems and other energy-using systems in the building as well as the relationship between the HVAC system and the building structure is needed. The CBECS data users expressed a need for more information on the characteristics of the HVAC equipment, its distribution system, operating hours, and how these systems are managed in commercial buildings. Several data users noted the lack of information on gas-cooling technologies, which, although currently affect only a small share of the commercial floorspace, are a growing market. These concerns are evidenced in some of the following specific comments:

Group B participants noted that they lacked data on types of heating system, gas-cooling technologies, and the life expectancy of HVAC systems.

Group D representatives were concerned that CBECS did not present adequate data on gas cooling, particularly market saturation levels.

Group F found that many of the HVAC questions in previous CBECS did not characterize the systems well and that there was a need for more basic information such as whether a system was a constant volume type.

Group L emphasized the lack of data on ventilation, such as ventilation type (constant or variable air system). The group also highlighted the need for data on building systems maintenance personnel and costs related to maintenance of this equipment.

Written comments focusing on HVAC equipment included suggestions that CBECS collect data related to the thermostat settings for heating and cooling equipment during operating and nonoperating hours, the total capacity of heating equipment in thousand Btu per hour and of primary cooling equipment in tons, and the rated efficiency of primary heating and cooling equipment. In addition, it was suggested that air-handling equipment should be separated from cooling and heating systems, and the list of air-handling equipment should be expanded beyond air ducts or air-handling units and fan-coil units.[20] Written comments also included a suggestion that a distinction be made between the amount of fresh air from forced ventilation through ducts versus through open windows.[12]

Impact of HVAC Systems Comments

In response to the user needs expressed above, the 1992 CBECS Building Questionnaire will obtain a more precise identification of the types and number of HVAC equipment in buildings. The following are brief descriptions of new questions or reworded questions pertaining to HVAC equipment. The exact wording of the questions can be found in Appendix C, "1992 CBECS Building Questionnaire."

Question D-3 will be an open-ended question that asks the respondent to describe the overall system that is used to heat and/or cool the building. This response, to be recorded verbatim by the interviewer, was added to characterize the overall heating and cooling system before asking more specific questions about each component of the HVAC system.

Question D-5 asks about the percent of floorspace that is heated by each type of heating equipment and Question D-6 ties the heating distribution system to the specific heating equipment found in the building, while Questions D-10 and D-11 gather the same type of information as Questions D-5 and D-6, except that they pertain to cooling equipment.

A category was added to Question H-1, which ascertains whether the heating or cooling system is a variable air-volume system. Question H-2 will determine if most of the windows in the building can be opened and closed.

Question H-13 combines two questions from the 1989 CBECS Building Survey Questionnaire. This question asks whether or not there was a change in temperature setting or a reduction in the use of equipment when the building is not in full use. For the 1992 CBECS, Question H-13 also includes hot water heating, lighting and other equipment, as well as the heating and cooling equipment.

Refrigeration, Hot Water Heaters, and Other Equipment

In previous CBECS, this group of equipment has been the least represented. However, in some types of commercial buildings (for example, food sales, laundries), this equipment can constitute a significant end use of energy. Information about these types of equipment will (1) establish a baseline of equipment levels for subsequent surveys, (2) provide a more complete picture of the types of equipment that are in commercial buildings in 1992, which will assist in forecasting, planning future DOE research and development efforts, and developing energy efficiency standards.

Group I participants were in agreement that specialized equipment has not been well represented in previous CBECS. The group also agreed that in order to provide the most useful information for general estimates of energy use, the approximate number, size, and age of particular pieces of equipment were needed. Additionally, it was stressed that this type of equipment must be tied to various building types in order to allow for a more detailed analysis of efficiency opportunities. (These equipment types are discussed in greater detail under the Space Function Category of this report.)

Subsequent discussions with several members of the Working Group resulted in a further request for delineating the refrigeration equipment by type and refining the hot water heating question to include whether it was a centralized or distributed system.

Written comments included a request for data indicating whether refrigerators and freezers are in the building[13] and a suggestion that the CBECS question on refrigeration include information on the capacity of refrigerators and freezers by type.[20]

There was also a request for data on water-heating equipment by type (central water boiler, point-of-use water-heaters, etc.), and use (dishes, laundry, showers, etc.); for data on cooking equipment by type and fuel used; and for similar information on other specialized equipment as air compressors, audio equipment, elevators, fans, medical devices, and televisions.[20]

Impact of Refrigeration, Hot Water Heaters and Other Equipment Comments

The request for refrigeration data is reflected in Questions D-13 through D-15. Questions D-13 and D-14 obtain information on refrigerated/freezer walk-in units, and Questions D-15 through D-18 obtain type, number, and size of refrigerated and/or freezer cases or cabinets. Question D-19 addresses the need for water-heating information. The question asks whether the water-heating system is a centralized or distributed system and the type of equipment associated with each of the systems.

Building Characteristics Comments

A building can be characterized by its physical properties; by the principal activity that occurs within the building, such as health care, lodging, office, retail, etc.; or by functional space utilization, which identifies how specific areas in the building are used. For example, a building that is classified as an office building may also have some space devoted to food service or a building classified as a warehouse may require a portion of the building for office space or retail. Because buildings rarely have only a single use, energy consumption patterns in buildings classified by only a primary activity can vary greatly depending on how specific space within the buildings was utilized.

A need emerged from both the user-needs groups and from written comments for more detailed data relating to the three types of classification. Under the rubric of physical characteristics of the buildings, information is needed on building shape, orientation, wall and roof materials, and amount of surface that is glass. Under the activity of the building, more information is needed to further identify these building activities, and information is needed about the functional use of space within a building. These increased data on characteristics of buildings in the commercial sector will assist DOE in developing priorities for building technologies and in identifying efforts to increase energy efficiency in commercial buildings.

Physical Characteristics of Buildings

The CBECS data users identified several areas where more information about the physical characteristics of the buildings are needed in order to develop estimates of overall heat loss through the building exterior and engineering estimates of HVAC loads.

Group H participants proposed a number of CBECS questions to help define the potential for integrating energy-conserving solar technologies into existing buildings.

- How many windows face south, and of what materials are they made?
- Are the windows facing south shaded or obstructed?
- What are the lighting power densities, and is daylighting integrated into buildings or sections thereby permitting the lowering of lighting levels?
- Are roofs of the proper structure, aspect, and strength to accommodate solar panels, batteries, and equipment?

Group L requested data on the building's height, exposed surface area, and shape.

Written comments expressed a need for more data on the physical characteristics of buildings, such as:

(1) gross floorspace, (2) number of floors below ground level, (3) building shape and orientation, (4) area of exterior wall which is see-through glass, (5) percentage of window space by type of glazing, and (6) type and thickness of insulation.[20] Other correspondence indicated a need for information about the amount of window space,[7] glazing,[15] and insulated opaque wall area.[18] Another written comment expressed concern that the lack of roof and wall area data could limit analysis of envelope characteristics or building configuration.[14]

Impact of Physical Characteristics Comments

Questions A-10 and A-11, pertaining to the number of floors below ground level, and Questions F-3 through F-5, on the shape of the building and whether it is attached to another building, will provide needed data on the characteristics of the building pertaining to the shape and exposed surfaces of buildings. This information will assist in the calculations of heat loss through exposed surfaces. Question F-3 asks whether the building is one of nine shapes: rectangular, square, square with an interior courtyard, H-shaped, U-shaped, E-shaped, T-shaped, L-shaped, or cross-shaped.

Building Activities

In CBECS, buildings are classified by their principal building activity; that is, the type of activity or function that occupies most of the floorspace in the building. Examples of building activities include health care, food sales, food service, lodging, education, etc. Because of this classification scheme, there was a concern that the CBECS data could not be used to provide a standard building classification.

Group J focused primarily on the classification of buildings. Concerns were expressed that because of the diverse nature of the way space was used in actual commercial buildings, it was difficult to develop a standardized building classification scheme. One suggestion was to split the activity categories by building size for analysis purposes since, in general, it has been found that office buildings of a particular size have relatively similar patterns of energy use that remain constant. It was also suggested that the Working Group reach a distinction as to what was a "pure" building (i.e., develop a list of standard features of a particular type of building such as an office building).

Written comments contained suggestions for providing subcategories of major activities such as preschool, middle school, high school, and college for the education activity; and supermarket, grocery store, and convenience store for food sales.[1,20] Other suggestions were that the information from the survey would be more useful if the building activity data were disaggregated by owner;[2] if additional information about the number of residential units in commercial buildings were collected;[7] if additional information about vacant buildings, warehouses and assembly buildings were collected;[16] and if more detailed energy information about food services and health care facilities were included.[17]

Impact of Building Activities Comments

In response to the concerns of the data users, the 1992 CBECS Building Questionnaire will ask about space functions (see below). Additionally, for multibuilding facilities or a complex, the several major building categories are delineated by finer breakdowns. Question E-4 separates schools into three subcategories and retail sales and service into three subcategories.

Space Functions

Considerable time was spent in the Working Group in addressing the question of how space is used in commercial buildings since this issue was one of the major elements in the Working Group's list of crucial data needs in the commercial sector. Such information would be used by DOE and other analysts to (1) determine in greater detail the types of floorspace that currently exists in the commercial building stock, (2) to understand the distribution of energy use across the CBECS sample, and (3) as a source of input to energy-use models.

In addressing the issue of space function analysis the following specific comments were made.

Group E suggested that CBECS ascertain the location (within a building) of high energy-using equipment.

Groups J and K attached major significance to a more detailed description of space functions. Participants selected five space-function types that CBECS should identify:

- **Food Preparation**--Distinguish between an office kitchenette that is sporadically and lightly used and a commercial food preparation space.
- **Refrigerated Storage**--Included are chilled and deep-freeze storage rooms, reported in terms of square feet of floorspace. Refrigeration units and refrigerated displays would fall under the equipment category and reported elsewhere on the CBECS form.
- **Special Conditioning/Ventilation**--(square feet). This category encompasses clean rooms, dry cleaning facilities, laboratories, operating rooms, etc.
- **Computer rooms**--This was justified as a separate category, in contrast to being a subdivision of "special conditioning/ventilation," because computer-room data could be used to track the important trend away from centralized and toward decentralized computer facilities.
- **Other Special-Case Areas**--Included here are laundry rooms, saunas, swimming pools, ice-skating rinks, car washes, and the like.

These groups also suggested that the question that had been dropped from the 1986 survey—namely, whether residential space (living quarters with kitchen) exists within an otherwise commercial building—be reinstated.

Written comments included a major concern about the way CBECS currently identifies space use in buildings. It was felt that the CBECS questionnaire only partially identifies how space in the building is allocated among activities. For example, if one activity occupies over 75 percent of the space, it appears that no data are gathered on remaining uses. This can be a problem for mixed-use buildings since a building might be 80 percent office space (four floors) and 20 percent restaurant space (first floor), but the restaurant energy use and the office energy use could be about equal. With the 1989 form, the restaurant space would go undetected.[20]

Impact of Space Functions Comments

In response to the need for information, not only on the major activity of a building, but also on space use in the building, the 1992 CBECS Building Questionnaire asks whether the following types of functions occur in the building and, if so, the percent of floorspace used for each function: commercial food preparation and serving, computer room(s) with separate air-conditioning system(s), special ventilation equipment such as laboratories or clean rooms, any activity requiring large amounts of hot water, and any other function that requires large amounts of energy such as an ice-skating rink.

Renovations and Demolitions

The need for new data in this area is influenced by the new federal building codes instituted by DOE and the updates on building standards. Comments from a number of sources within DOE addressed the following specific needs for data on the renovation and demolition of commercial buildings.

Group A wanted data on the frequency of major renovations in buildings and, if a building has been remodeled, to what extent the impetus for remodeling was due to new energy codes.

Group B would like information on the distribution by type of building and energy use of the retirement, demolition, and conversion of existing building stock.

Group L requested information on the demolition rate of commercial buildings in order to establish a more accurate estimate of the total number of commercial buildings. This group would like to better understand the total cost for improvements to buildings and specifically, the cost for improving energy efficiency.

Impact of Renovations and Demolitions Comments

The 1992 CBECS sample of buildings will include buildings that were in the 1986 CBECS, thus providing an opportunity to look at changes in the same buildings since 1986. Also, Questions A-15 and A-16 ask whether the building's square footage has increased or decreased since 1986 and if so, by how much.

Conservation Activities and Energy Management Comments

Demand-Side Management

Recently renewed concern about energy efficiency has led to increased interest in Demand-Side Management (DSM) programs, which are programs that are specifically targeted and designed to improve energy efficiency, reduce energy costs, and promote the use of different energy sources. This interest was evidenced at various

user-needs meetings where participants agreed that DSM programs were clearly something DOE should track. There was an expressed need for information about the following types of data in order to better measure the effects of DSM programs:

- The energy impacts of DSM programs, particularly the amount of megawatts saved
- Whether the net effect of such programs are load shifting or load reduction
- The energy utilization indices of buildings in DSM programs in contrast to buildings that are not in DSM programs
- The extent DSM programs are available to commercial buildings
- What type of motivation is needed for utility customers to participate or not participate in DSM programs.

Regarding energy efficiency, meeting participants desired more information on whether building owners or occupants intended to install new, energy-efficient equipment in the next 5 years. If not, why not? They also wanted CBECS to collect data on the use of alternative and renewable energy sources.

Group A indicated that currently there is a great amount of information about program participation, estimates of energy saved, etc., from the energy supply side. However, what is missing is the perspective from the energy-users' side to determine if they are directly benefitting from the programs.

Group B stated that they would like details about the sources and/or motivations for DSM programs as well as the effects of these programs.

Group C wanted information on whether there was participation in specific DSM programs like lighting programs, energy management controls, building shell, etc. Also, this group would like information on energy audits for comparison of energy use in buildings with and without audits.

Group E expressed a need for detailed audit information.

Group F would like information on a building's plans for DSM programs and whether the sponsors of the programs are corporations, utilities, or Government. This group would also like data on the availability of grants and the cost to the building for conservation measures.

Group L wanted to know the reasons a respondent chose to use or not to use DSM programs if they were available.

Written comments pertaining specifically to DSM programs included a suggestion that CBECS collect data on utility DSM measures including rate types.[15]

Impact of DSM Comments

To provide a baseline for analysis of the type and level of DSM activity at the building level, the 1992 CBECS will obtain information about the building's level of participation in DSM programs, the types of DSM programs, the nature of the assistance received, and the sponsors of the programs. Questions H-3 through H-9 of the Buildings Questionnaire gather information on: (1) whether the building's electric or natural gas utility has sponsored any DSM programs; (2) whether the building or facility has participated in or plans to participate in any in-house DSM programs, utility-sponsored programs, or third-party-sponsored programs;

(3) the specific DSM program areas the building has participated in such as lighting, building envelope, HVAC, etc; (4) the specific program sponsor; and (5) the type of assistance received through the DSM program such as general information, incentives, alternative rates, etc.

DSM information will also be obtained from the Energy Suppliers Survey respondent. The energy suppliers will be asked whether a particular building has participated in a DSM program and, if so, the type of program, such as energy audit, incentives, and alternative rates.

Energy Management and Occupancy Characteristics

Primary drivers of energy use in commercial buildings are the number of occupants in a building and the number of hours the building is in use. Occupancy rate information is used to develop occupancy profiles of a building, while information about operating hours are key inputs to the estimation of HVAC and other loads. The issues discussed under energy management and occupancy characteristics include the number of hours the building is operating at full level and at partial level, the occupancy rate (is the building vacant or has the building been vacant in the past 12 months), and the level of expertise of the individual responsible for operating the heating and cooling system.

Because of the importance of these variables to estimating energy loads, there was interest expressed in obtaining information not only on the operating hours when the building is mostly in use (as the current CBECS does) but also in obtaining information on the number of additional hours a building is operating. These additional hours or shoulder hours could occur during evening when the building is being cleaned or in the morning before most of the occupants arrive. Coupled with this information is a need to know whether or not there is a reduction in equipment use during the additional hours of operation. These two pieces of information are considered by the Working Group to be crucial in determining energy use in commercial buildings.

Most of the emphasis in understanding energy efficiency in buildings has focused on the physical properties of the buildings and the types of equipment used in the buildings. Little is known about the individuals who are operating the equipment in terms of the level of expertise or amount of time devoted to operating and maintaining the equipment.

The additional benefit of this type of information is twofold. First, it will help in comparing why energy differs in the same types of buildings with similar equipment and how important the "human factor" is in energy use in commercial buildings. Second, it could provide information for targeting conservation/education programs. The importance in understanding the role of the energy manager in energy use was emphasized by Group L who felt that *regularity of maintenance and the professional quality of the staff conducting it, as well as the costs involved, are significant, if secondary, factors in a building's energy consumption.*

Impact of Energy Management and Occupancy Characteristics Comments

In response to the need for more precise information on building occupancy and operating hours for modeling energy use in different types of buildings, and for more information related to the professional quality of the staff operating the heating and cooling systems in order to identify potential areas for targeting conservation/education programs, the following questions were added to the 1992 CBECS. Questions E-9 and E-10 will obtain which months the building or part of the building was vacant and the percentage of space that was vacant during each month. Questions H-15 and H-16 ascertain whether there are additional hours other than normal operating hours when the heating and cooling equipment and lighting are in use and, if so, the approximate additional hours per week this equipment is operating. Questions H-18 through H-20 collect information about the individual responsible for the day-to-day operation and maintenance of the building's

heating and cooling equipment. The latter questions will provide a better understanding of potential target areas for conservation/education information as well as understanding the amount of time devoted to maintaining building equipment.

Energy Sources and Related Information Comments

Data requests related to energy consumption surfaced at several meetings of CBECS users. For example, information is needed to answer such questions as (1) Is as much energy consumed in lighting or heating/cooling a building during the summer as during the winter; on weekends as during a weekday; in the morning as in the afternoon? (2) What is the total use of oil in the commercial sector? (3) What are the utilities' rate schedules? (4) What is the average versus marginal cost per Kilowatthour? and (5) What buildings received energy audits (reports from utilities about energy usage)?

EIA requested comments from the CBECS data users on how best to capture data on gas transported for the account of others (transport gas). Recent examination of the differences between supply data and consumption data suggests that some of the difference could be due to limited information about transport gas. More precise information in this area would aid in reconciling these differences.

Group D suggested that the building respondent would provide a more accurate accounting of the expenditures for transport gas while the energy supplier could generally provide information on the volume of gas supplied to a building.

Written comments addressed the need to include in CBECS more buildings using wood and solar energy, to cross-reference equipment with its fuel type, to determine fuel mix for single-use HVAC equipment, to estimate the fraction of space cooling by fuel type, to identify the use of thermal and electric output produced by cogeneration systems, and to include questions about energy service companies.[11,3,18,20,7,21]

Impact of Energy Sources and Related Information Comments

These concerns are reflected in several questions on both the Building Questionnaire and on the Energy Supplier Forms. Questions P-4 through P-7 will collect data on whether the building purchases transport gas, who the supplier was, and what the costs were. The Natural Gas Supplier Form also contains questions about the amount of transport gas supplied to the building. Subsequently, inquiries to both buildings' respondents and energy suppliers were conducted by CBECS contractor staff. Results of the inquiries indicated that expenditure data for transport gas should be collected during the building questions while consumption data should be obtained from the energy supplier. As in the 1989 CBECS, the building respondent will be asked whether or not the building received an energy audit. For the 1992 CBECS, this question is also included on the Energy Supplier Forms. Also, as in 1989, the Energy Supplier Forms will contain a question asking for the account classification of the building.

References

1. Johnson Controls, Inc., Milwaukee, WI, Letter from James R. Smith (May 10, 1991.)
2. U.S. Department of Commerce, Bureau of Economic Analysis (BEA), Washington, DC, Letter from Robert P. Parker (May 31, 1991.)
3. American Gas Association, Arlington, VA, Letter from Paul F. McArdle (June 24, 1991.)
4. Pacific Gas and Electric Company, San Ramon, CA, Letter from Grant J. Brohard (May 17, 1991.)
5. State of Michigan, Department of Commerce, Lansing, MI, Letter from Rose M. Hughes (May 24, 1991.)
6. State of Mississippi, Department of Economic and Community Development, Jackson, MS, Letter from Andrew Jenkins (May 28, 1991.)
7. Gas Research Institute, Chicago, IL, Letter from Daniel A. Dreyfus (May 30, 1991.)
8. Commonwealth of Kentucky, Department of Natural Resources, Frankfort, KY, Letter from John M. Stapleton (May 31, 1991.)
9. State of Louisiana, Department of Natural Resources, Baton Rouge, LA, Letter from Diane D. Smith (June 28, 1991.)
10. Lawrence G. Spielvogel, Inc., Wyncote, PA, Letter from Lawrence G. Spielvogel (July 1, 1991.)
11. Office of Coal, Nuclear, Electric and Alternative Fuels, Data Analysis and Forecasting Branch, (EI-532), U.S. DOE, Washington, DC, Memorandum from John Geidl, EI-532 (May 24, 1991.)
12. Energy End Use and Integrated Statistics Division, Residential and Commercial Branch (EI-651), U.S. DOE, Washington, DC, Memorandum from Robert Latta, EI-651 (June 4, 1991.)
13. Energy End Use and Integrated Statistics Division, Residential and Commercial Branch (EI-651), U.S. DOE, Washington, DC, Memorandum from Robert Latta, EI-651 (June 7, 1991.)
14. Office of Conservation and Renewable Energy, Office of Planning and Assessment (CE-70), U.S. DOE, Washington, DC, Memorandum from Fred Abel, CE-70 (June 14, 1991.)
15. Solar Energy Research Institute, Boulder CO, Facsimile from Craig Chrisensen through Dan Packey (SERI) (June 19, 1991.)
16. Energy End Use and Integrated Statistics Division, Residential and Commercial Branch (EI-651), U.S. DOE, Washington, DC, Memorandum from Robert Latta, EI-651 (August 19, 1991.)
17. State of Nevada, Office of Community Services, Carson City, NV, Letter from James P. Hawke (May 15, 1991.)
18. Oak Ridge National Laboratory, Oak Ridge, TN, Letter from Michael MacDonald (May 16, 1991.)
19. Maryland Department of Housing, Annapolis, MD, Letter from Charles L. Miller, Jr. (June 5, 1991.)
20. Regional Economic Research, Inc., San Diego, CA, Letter from J. Stuart McMenemy and Ingrid Rohmund (June 11, 1991.)

21. Oak Ridge National Laboratory, Oak Ridge, TN, Letter from Eric Hirst (July 12, 1991.)
22. American Petroleum Institute, Houston, TX, Excerpt from a presentation by Bill Finger, to Dr. Calvin Kent (EIA) (September 20, 1991.)
23. Pacific Northwest Laboratories, Washington, D.C. Office; Letter from Andrew Nicholls and Dave Belzer (October 10, 1991.)

APPENDIX A

FEDERAL REGISTER NOTICE

Appendix A

Federal Register Vol. 56, No. 69, April 10, 1991

[6450-01]

ENERGY INFORMATION ADMINISTRATION

Commercial Buildings Energy Consumption: Solicitation of
Comments for the Design of the 1992 Commercial Buildings Energy
Consumption Survey.

AGENCY: Office of Energy Markets and End Use, Energy
Information Administration, Department of Energy

ACTION: Notice of request for comments

SUMMARY: The Energy Information Administration (EIA) of the Department of Energy (DOE) is examining data requirements, user needs, costs to respondents, and respondent burden for energy consumption and related data for the 1992 Commercial Buildings Energy Consumption Survey (CBECS). The CBECS, which was formerly called the Nonresidential Buildings Energy Consumption Survey (NBECS), provides basic statistical information on the consumption of and expenditures for energy in commercial buildings, and on the energy-related characteristics of these buildings. It is designed to meet the needs of many users in addition to meeting the legislative requirements of EIA as specified in Section 52(a) of the Federal Energy Administration Act of 1974 (Pub. L. No. 93-275 (FEA)).

Section 52(a) of the FEA Act requires the EIA to establish a national energy information system that "...shall contain such information as is required to provide a description of and facilitate analysis of energy supply and consumption within and affecting the United States on the basis of such geographic areas and economic sectors as may be appropriate..."

The purpose of this Federal Register notice is to obtain information on: the need for commercial building energy consumption data; the types of data that can be provided; and the strengths and weaknesses of existing commercial building energy consumption data. This information is required prior to the redesign of the CBECS planned for the 1992 survey cycle. As required by the Paperwork Reduction Act, EIA will submit a formal request for clearance for the 1992 CBECS to the Office of Management Budget by March 1, 1992.

DATE: Written comments must be submitted within 30 days of the publication of this notice. If you anticipate that you will be submitting comments, but find it difficult to do so within the period of time allowed by this notice, you should advise the contact listed below of your intentions to do so as soon as possible.

ADDRESS: Send comments to: Julia D. Oliver, (EI-652), Energy Information Administration, Department of Energy, 1000

Independence Avenue, S.W., Washington D.C. 20585. Her telephone number is (202) 586-5744 and her FAX number is (202) 586-9753.

FOR FURTHER INFORMATION: Requests for additional information should be directed to Ms. Oliver at the address listed above.

SUPPLEMENTARY INFORMATION:

- I. Background
- II. Request for Comments

I. Background

The EIA serves as the Government's primary source of energy statistics and provides information to the Executive Branch, Congress, State and local governments, industry and the general public. EIA's mission is to ensure that accurate, timely, and objective statistics on the Nation's energy position are available for use in private and public decisionmaking. The legislation that created the EIA provides for the collection of data on energy supply and demand to fulfill these responsibilities. As part of its program, the EIA conducts energy consumption surveys in the residential, residential transportation, commercial and manufacturing sectors.

The CBECS provides basic statistical information on the consumption of and expenditures for energy in commercial buildings, and on the energy-related characteristics of these buildings. (Previous surveys were conducted in 1979, 1983, 1986

under the name of the Nonresidential Buildings Energy Consumption Survey. As of the 1989 survey, the title of the survey was changed to the CBECS.) To obtain this information, personal interviews are conducted for a sample of commercial buildings in the 50 States and the District of Columbia. For buildings in the survey, data are collected on structural characteristics, activities conducted inside the building, energy conservation measures, heating and air-conditioning equipment, and both the types and uses of energy consumed. In response to needs for additional data that were identified in the preparation of the National Energy Strategy and through feedback from users of the past CBECS reports and data files, EIA is planning to expand the survey to collect more detailed information on: the vintage, capacity and energy efficiency of the heating, cooling, and ventilation equipment; major appliances used in the building; lighting equipment in the building by type and square footage covered; participation in utility-sponsored conservation and demand-side management programs; conservation procedures and demand-shifting technologies used; building ownership and occupancy characteristics; and size of building. A major goal of this user-needs survey is to determine at what level of detail this information can be collected from building occupants.

Obtaining information from the CBECS user community and from the potential CBECS respondents on the strengths and weaknesses of the survey is an important part of the 1992 questionnaire design effort.

II. Request for Comments

The EIA is soliciting comments from data users on the building-level energy consumption data that are required for public policy formulation and analysis, building research, and program monitoring and evaluation purposes in the commercial building sector. EIA is soliciting comments on the types of applicable information currently available from sources such as energy suppliers or their associations, building owners and managers or their associations, other Federal, State or local government agencies, and other private sources. Finally, the EIA is soliciting estimates from potential respondents on the burden and costs to them of providing the data to EIA.

In addition to the publication of this notice, the EIA will directly contact and solicit comments from public policymakers (at the local, State, and Federal levels), public policy groups, the building energy research community, potential survey respondents and industry trade associations.

The following general questions are provided to assist in the preparation of responses:

As a current or prospective user of commercial building energy consumption data:

1. For what purposes do you use, or would you use, commercial building energy consumption data? Be specific.

2. What data sources are you currently using, if any?
What types of data are provided?
How often are the data available?
Are the data maintained on a consistent schedule or intermittently?
Are the data distributed in a paper or electronic medium or both?
Are the data current enough to meet your needs? (If not, specify the problem.)
What are the costs, if any, associated with using it?
Do you have access to the individual building data or only tabulated aggregate data?
3. What are the strengths and weaknesses of these sources?
4. In your opinion, what are the major gaps, if any, in the data currently available on commercial building energy consumption?
5. Please provide other comments that you believe to be relevant.

As a potential respondent:

1. Do you or your establishment/firm/organization currently maintain energy consumption and expenditure data?

2. If you do maintain such data, are the data compiled monthly, annually, or for some other period of time? Are the data maintained consistently or intermittently? Are the data maintained in a paper or electronic medium or both?
3. Are you aware of other Federal, State, or local agencies or private organizations that collect similar data? If so, please provide the names of such agencies or organizations.

EIA is also interested in receiving comments from persons regarding their views on the costs and benefits of the EIA maintaining data on commercial building energy consumption.

Any written comments received in response to this notice will be available for public inspection at the DOE's Freedom of Information Office.

STATUTORY AUTHORITY: Sections 5(a), 5(b), 13(b) and 52 of Pub. L. No. 93-275, Federal Energy Administration Act of 1974, 15 U.S.C. §§ 764(a), 764(b), 772(b), 790a.

Issued in Washington, D.C. April 10, 1991

Yvonne M. Bishop
Director
Office of Statistical Standards
Energy Information Administration

APPENDIX B

CORRESPONDENCE REVIEW

Appendix B

Correspondence Review

The 1992 Commercial Buildings Energy Consumption Survey (CBECS) User-Needs Study sought comments from both current and potential users of the CBECS data. All correspondence resulting from the solicitation efforts were reviewed by the Energy Information Administration (EIA) CBECS staff. Comments that were specifically related to the CBECS data were divided into 9 areas. These comments are reported in Tables B1 through B9. The reference number in the tables is keyed to the reference number in the "List of Correspondence" preceding the tables.

Three pieces of correspondence were received that did not pertain to the CBECS User Needs Study. They are listed at the end of the "List of Correspondence."

Comments are categorized in the following topics.

- Table B1. Summary of General Comments--Usefulness of CBECS
- Table B2. Summary of General Comments--Utility of CBECS
- Table B3. Summary of Survey Process Comments--Accuracy and Sample Characteristics
- Table B4. Summary of Survey Process Comments--Geographic Disaggregation
- Table B5. Summary of Survey Process Comments--CBECS Publication Format
- Table B6. Summary of Question-Specific Comments--Equipment-Related Concerns
- Table B7. Summary of Question-Specific Comments--Building Characteristics
- Table B8. Summary of Question-Specific Comments--Conservation Activities and Energy Management
- Table B9. Summary of Question-Specific Comments--Energy Source Concerns

List of Correspondence

Reference Number	Correspondence
1.	Johnson Controls, Inc., Milwaukee, WI, Letter from James R. Smith, May 10, 1991.
2.	U.S. Department of Commerce, Bureau of Economic Analysis (BEA), Washington, DC, Letter from Robert P. Parker, May 31, 1991.
3.	American Gas Association, Arlington, VA, Letter from Paul F. McArdle, June 24, 1991.
4.	Pacific Gas and Electric Company, San Ramon, CA, Letter from Grant J. Brohard, May 17, 1991.
5.	State of Michigan, Department of Commerce, Lansing, MI, Letter from Rose M. Hughes, May 24, 1991.
6.	State of Mississippi, Department of Economic and Community Development, Jackson, MS, Letter from Andrew Jenkins, May 28, 1991.
7.	Gas Research Institute, Chicago, IL, Letter form Daniel A. Dreyfus, May 30, 1991.
8.	Commonwealth of Kentucky, Department of Natural Resources, Frankfort, KY, Letter from John M. Stapleton, May 31, 1991.
9.	State of Louisiana, Department of Natural Resources, Baton Rouge, LA, Letter from Diane D. Smith, June 28, 1991.
10.	Lawrence G. Spielvogel, Inc., Wyncote, PA, Letter from Lawrence G. Spielvogel, July 1, 1991.
11.	Office of Coal, Nuclear, Electric and Alternative Fuels, Data Analysis and Forecasting Branch, (EI-532), U.S. DOE, Washington, DC, Memorandum from John Geidl, EI-532, May 24, 1991.
12.	Energy End Use and Integrated Statistics Division, Residential and Commercial Branch (EI-651), U.S. DOE, Washington, DC, Memorandum from Robert Latta, EI-651, June 4, 1991.
13.	Energy End Use and Integrated Statistics Division, Residential and Commercial Branch (EI-651), U.S. DOE, Washington, DC, Memorandum from Robert Latta, EI-651, June 7, 1991.
14.	Office of Conservation and Renewable Energy, Office of Planning and Assessment (CE-70), U.S. DOE, Washington, DC, Memorandum from Fred Abel, CE-70, June 14, 1991.
15.	Solar Energy Research Institute, Boulder CO, Facsimile from Craig Chrisensen through Dan Packey (SERI), June 19, 1991.
16.	Energy End Use and Integrated Statistics Division, Residential and Commercial Branch (EI-651), U.S. DOE, Washington, DC, Memorandum from Robert Latta, EI-651, August 19, 1991.
17.	State of Nevada, Office of Community Services, Carson City, NV, Letter from James P. Hawke, May 15, 1991.
18.	Oak Ridge National Laboratory, Oak Ridge, TN, Letter from Michael MacDonald, May 16, 1991.
19.	Maryland Department of Housing, Annapolis, MD, Letter from Charles L. Miller, Jr., June 5, 1991.
20.	Regional Economic Research, Inc., San Diego, CA, Letter from J. Stuart McMenamin and Ingrid Rohmund, June 11, 1991.
21.	Oak Ridge National Laboratory, Oak Ridge, TN, Letter from Eric Hirst, July 12, 1991.

22. American Petroleum Institute, Houston, TX, Excerpt from a presentation by Bill Finger, to Dr. Calvin Kent (EIA), September 20, 1991.

23. Pacific Northwest Laboratories, Washington, D.C. Office, Letter from Andrew Nicholls and Dave Belzer, October 10, 1991.

24. Washington State Energy Office, Olympia, WA, Letter from Rick Kunckle, May 21, 1991.

25. Pennsylvania Energy Office, Harrisburg, PA, Letter from Marcus B. Sheffer, May 29 1991.

The following pieces of correspondence were received but did not address the specific concerns of the CBECs User-Needs Study; thus, were not included in the following tables:

● Electric Power Research Institute, Palo Alto, Ca, Letter from Veronika A. Rabl, May 14, 1991.

● Office of Program Review and Analysis (PE-16), U.S. DOE, Washington, D.C., Returned Distribution Memorandum from the Energy End Use and Integrated Statistics Division (EI-65), Department of Energy, May 14, 1991.

● Energy End Use and Integrated Statistics Division, Transportation and Industrial Branch (EI-652), U.S. DOE, Washington, D.C., Memorandum from Eugene Burns and Miriam Goldberg, EI-652, June 10, 1991.

Table B1. Summary of General Comments--Usefulness of CBECS

Summary of Comments	Reference Number
○ The 1983 version of the survey was very useful because of the data it provided. Unfortunately, these data were not reported in later issues, so the value of the data is somewhat less.	1
○ CBECS is a tremendous resource to policymakers, energy industry participants, and academics, as well as others.	3
○ The scope of CBECS is extremely good.	3
○ AGA uses CBECS data to estimate energy demand for specific building applications/end uses within certain Census regions, climatic zones, buildings sizes, business types, and other criteria.	3
○ The CBECS provides excellent detailed building specific data.	3
○ Measured data are used in energy use models and for determining savings for replacing end-use devices with higher efficiency devices.	4
○ Surveys such as the CBECS will help identify areas within the commercial sector where energy efficiency efforts can be targeted.	6
○ CBECS will be extremely beneficial in providing highly accurate information for energy decision-makers.	6
○ Information from surveys such as the CBECS will assist in making decisions on methods to utilize and to best modify efficiency standards.	6
○ The coverage of CBECS questions is very good.	7
○ An initial assessment of the CBECS 1989 questionnaire is very positive.	8
○ CBECS data collection that addresses schools, from elementary to college level, and hospitals energy consumption, expenditures, and usage patterns is useful for program analysis and evaluation purposes.	14
○ The Office of Building Technologies (DOE, CE) believes that the NBECS/CBECS data base is the best thing available in the commercial buildings data area.	14
○ CBECS provides useful data on the building stock.	14
○ CBECS provides broad indications of commercial buildings' energy use.	14
○ CBECS data have been important in deriving data that are required for making calculations of potential energy savings.	18
○ This national data source is relied on heavily, and it is pleasing to see that the survey continues to evolve as new issues arise.	20
○ CBECS data have provided a valuable source of information for estimating national and regional market profiles.	20

Notes: • Reference number refers to the correspondence number in the list of correspondence preceding Tables B1 through B9. • Comments appearing on these tables are, for the most part, paraphrases of statements made in written responses. • Where appropriate, language has been altered to facilitate grammatical accuracy. • Every effort has been made to preserve the spirit of the comments as they were originally presented.

Table B2. Summary of General Comments--Utility of CB ECS

Reference Number	Summary of Comments
2	<ul style="list-style-type: none"> ○ CB ECS fuel, repair, and maintenance expenditure data will be used as control values by BEA to derive specific commodity expenditures.
14	<ul style="list-style-type: none"> ○ The major interest from the Integrated Resource Planning Program (IRP) office in the CB ECS is to identify the level of utility activity in commercial building conservation/demand-side management implementation.
14	<ul style="list-style-type: none"> ○ CB ECS is useful to identify which areas the IRP program could target or highlight in its DSM activities.
14	<ul style="list-style-type: none"> ○ CB ECS' lack of detail and small sample make it impossible to use for policy and information analysis.
14	<ul style="list-style-type: none"> ○ CB ECS is not useful to address issues of building orientation.
14	<ul style="list-style-type: none"> ○ CB ECS, as proposed, will lack the necessary detail on building characteristics, which are determinants of energy use, to provide major support for program development, implementation, or evaluation.
14	<ul style="list-style-type: none"> ○ The small sample size is a detriment to CB ECS' applicability.
14	<ul style="list-style-type: none"> ○ CB ECS makes no projection of building construction and, therefore, will be of no use in program development in that area.
14	<ul style="list-style-type: none"> ○ Building stock is inadequately characterized for use as a basis for program evaluation.
14	<ul style="list-style-type: none"> ○ Lack of building characteristics or detail on building characteristics and small sample size make CB ECS data hard to apply to modeling purposes.
18	<ul style="list-style-type: none"> ○ The data on retrofit to existing buildings are too sparse to be used to assess the potential energy savings in this area.
20	<ul style="list-style-type: none"> ○ The CB ECS is used to develop end-use market profiles, equipment and technology profiles, and estimates of end-use intensity values.
20	<ul style="list-style-type: none"> ○ CB ECS provides estimates of the amount of floor stock by building type and year of construction.
20	<ul style="list-style-type: none"> ○ CB ECS provides estimates of energy intensities (energy use per square foot). Although COMMENT requires these estimates by end use, CB ECS provides whole-building control totals.
20	<ul style="list-style-type: none"> ○ CB ECS provides estimates of conditioned space and fuel shares. Fuel shares represent the fraction of floorspace conditioned or served by a specific end use and fuel.
20	<ul style="list-style-type: none"> ○ CB ECS provides information on a variety of secondary factors such as square feet per employee, vacancy rates, and operating hours.
20	<ul style="list-style-type: none"> ○ CB ECS results for individual buildings across surveys provide insights into building demolition rates, retrofit rates, and changes in fuel shares and energy intensities over time.

Table B2. Summary of General Comments--Utility of CBECS (Continued)

Summary of Comments	Reference Number
○ CBECS is used to develop estimates of market shares for specific types of equipment.	20
○ CBECS is used to evaluate fuel competition.	20
○ CBECS is used to estimate DSM potential.	20

Notes: • Reference number refers to the correspondence number in the list of correspondence preceding tables B1 through B9. • Comments appearing on these tables are, for the most part, paraphrases of statements made in written responses. • Where appropriate, language has been altered to facilitate grammatical accuracy. • Every effort has been made to preserve the spirit of the comments as they were originally presented.

Table B3. Summary of Survey Process Comments--Accuracy and Sample Characteristics

Summary of Comments	Reference Number
○ The survey should endeavor to identify what energy is used for on each individual meter, if possible.	10
○ It would be very helpful if there were better correlation between the IRP and the EIA CBECS.	14
○ The sample size is too small.	14
○ The size of the proposed CBECS sample will prevent us from obtaining meaningful information about the newer building stock.	14
○ There are clear limitations on the survey scope that are imposed by the survey technique.	20
○ Data are not consistently captured from survey to survey, nor between the building characteristics and the consumption and expenditures components, thereby limiting the utility of the data because of a lack of comparability.	22
○ Floorspace data, by year constructed, are not consistently grouped for buildings constructed in 1979 and before.	22
○ Historical floorspace data (M. sq. ft.), by year constructed, are inexplicably changed through time for older vintage buildings.	22
○ The survey populations were NOT consistent for the <i>Characteristics of Commercial Buildings</i> and <i>Commercial Buildings Consumption and Expenditures</i> reports within the <u>same</u> survey year (1986).	22
○ The population of buildings covered by the 1986 survey differed slightly from that in 1979 and 1983 (e.g., it excluded buildings 1000 sq. ft. or smaller and included Alaska and Hawaii), affecting comparison of total consumption or expenditures between 1986 and earlier surveys.	22
○ Addition of the following would improve the survey: group data similarity from survey to survey, restatement of prior year's data when errors/changes dictate; standardized sample population in any given survey year; and standardized sample from survey to survey to ensure comparability.	22

Table B3. Summary of Survey Process Comments -- Accuracy and Sample Characteristics (Continued)

Summary of Comments	Reference Number
○ Expand the longitudinal coverage to include HVAC and lighting retrofit, audits, and utility subsidies of conservation measures.	23
○ Increase the sample size for new buildings.	23

Notes: • Reference number refers to the correspondence number in the list of correspondence preceding Tables B1 through B9. • Comments appearing on these tables are, for the most part, paraphrases of statements made in written responses. • Where appropriate, language has been altered to facilitate grammatical accuracy. • Every effort has been made to preserve the spirit of the comments as they were originally presented.

Table B4. Summary of Process Comments--Geographic Disaggregation

Summary of Comments	Reference Number
○ The 1983 survey included data that were cross-referenced by principal building activity and climatic zone, which made the data much more usable than the current data.	1
○ Any Michigan-specific data, or that pertaining to the Midwest region, would be of interest.	5
○ Virtually all data which come from the U.S. Department of Energy should not only focus on the Nation as a whole, but should be provided according to regions.	9
○ We recommend that data are coded by State.	19
○ Data would have greater utility if reported on a State basis rather than by Census region.	23

Notes: • Reference number refers to the correspondence number in the list of correspondence preceding Tables B1 through B9. • Comments appearing on these tables are, for the most part, paraphrases of statements made in written responses. • Where appropriate, language has been altered to facilitate grammatical accuracy. • Every effort has been made to preserve the spirit of the comments as they were originally presented.

Table B5. Summary of Survey Process Comments--CBECS Publication Format

Summary of Comments	Reference Number
○ Copying the report on computer software media would be cheaper and more environmentally acceptable than printing the reports, and the data would be more usable by all.	1
○ If the data that a user needs are already being collected, it is unfortunate that our analyses are restricted because available data are not made accessible.	18

Notes: • Reference number refers to the correspondence number in the list of correspondence preceding Tables B1 through B9. • Comments appearing on these tables are, for the most part, paraphrases of statements made in written responses. • Where appropriate, language has been altered to facilitate grammatical accuracy. • Every effort has been made to preserve the spirit of the comments as they were originally presented.

Table B6. Summary of Question-Specific Comments--Equipment-Related Concerns

Summary of Comments	Reference Number
HVAC	
○ Improvement to the CBECS could be achieved by increasing the amount of definition on HVAC equipment types.	3
○ Detailed information on heating, ventilation, and air conditioning (HVAC) equipment vintage, efficiency, and capacity will give an accurate snapshot of the efficiency of the commercial sector and knowledge of how quickly one can expect changes in sector-specific efficiency.	3
○ The survey should be expanded to include questions about air circulation and ventilation (i.e., fan-capacity, air movement requirements for the building, etc.).	7
○ A question should be added to determine if fans are used to circulate fresh air throughout a building through ducts.	12
○ A question should be added to determine if fresh air is circulated through a building by simply opening windows.	12
○ CBECS should determine what percentage of floorspace in a building is provided fresh air via forced ventilation through ducts.	12
○ CBECS needs to show the percentage of floorspace in a building that is provided fresh air by just opening windows.	12
○ The CBECS should survey information on HVAC system types for perimeter and core zones.	15
○ The ability to estimate floorspace conditioned by water chillers by building type and region would be useful.	18
○ The ability to estimate the floorspace conditioned by unitary cooling and heat pump devices by building type and region would be a major breakout.	18
○ A question to find the total capacity of heating equipment in thousand Btu per hour is suggested.	20
○ It would be helpful to survey the rated efficiency rating of the primary heating equipment.	20
○ Air-handling systems should be treated separately from HVAC systems.	20
○ Cooling system types could be improved by breaking heat pumps into air-source and water-source heat pumps.	20
○ We would like to know the total capacity of the primary cooling equipment in tons.	20
○ CBECS should find the rated efficiency of kW/ton of the primary cooling equipment, and the main type of compressor and condenser could be identified.	20
○ The list of air-handling equipment should be expanded beyond air ducts or air-handling units and fancoil units.	20
○ It would be useful to know the minimum percent of outside air that is introduced into an HVAC system.	20
○ We would like the CBECS to find the supply of outside air rate in cfm for estimating HVAC loads.	20

Table B6. Summary of Question-Specific Comments--Equipment-Related Concerns (Continued)

Summary of Comments	Reference Number
○ CBECS should find the HVAC supply fan power in horsepower.	20
○ CBECS needs to collect information on HVAC systems' characterization.	23
Lighting	
○ Lighting is covered adequately by the current survey.	20
○ More specific lighting fixture, lamp, and ballast inventory data would be useful.	20
○ It would be valuable for estimating energy usage to include a question that identifies the fraction of lighting capacity that is on during occupied and unoccupied periods.	20
○ The main uses of outdoor lighting and their shares of total outside lighting should be identified by CBECS.	20
○ The CBECS should identify the primary source of outdoor lighting.	20
○ Lighting data would have greater utility if captured from an applied energy use (e.g., task, security, safety, efficiency) rather than an "equipment/conservation feature employed" and "percent lit vs. not lit" perspective.	22
Office Equipment	
○ Adding questions concerning the use of computers in commercial buildings will improve the survey.	7
○ Add questions that ask about current office equipment holdings and how they compare with equipment holdings from a few years earlier.	20
○ CBECS needs to ascertain whether there are data or information processing equipment in each commercial building surveyed and to indicate the total number of each type of such equipment.	20
○ More data are needed for the office equipment and computer end-use which is the fastest growing uses of electricity.	24
Refrigeration, Hot Water, and Other Equipment	
○ There is a need for more detailed energy end-use data collection at the device level.	4
○ Adding questions about the use of small electric appliances (e.g., telephones, radios, typewriters, adding machines, microwave ovens, noninstitutional stoves, coffee makers, toasters, clocks, etc.), will improve the survey.	7
○ Questions concerning institutional cooking and water-heating equipment should be expanded to determine the number of such appliances in the building.	7
○ Suggested Question: "Are commercial refrigeration units that are powered solely by electricity present in the building?"	13
○ Suggested Question: "Are commercial refrigeration units that burn natural gas as part of the cooling process present in the building?"	13
○ Suggested Question: "Are there commercial refrigeration units that burn a fossil fuel other than natural gas as part of the cooling process present in the building?"	13

Table B6. Summary of Question-Specific Comments--Equipment-Related Concerns (Continued)

Summary of Comments	Reference Number
○ Suggested Question: "Are commercial freezers that are powered solely by electricity present in the building?"	13
○ Suggested Question: "Are there commercial freezers that burn natural gas as part of the cooling process present in the building?"	13
○ Suggested Question: "Are there commercial freezers that burn a fossil fuel other than natural gas as part of the cooling process present in the building?"	13
○ We were unable to derive any useful information from the NBECS data on water heating.	14
○ We believe that the CBECS could be improved by asking questions about water heating.	17
○ The data on unitary equipment would be most useful if they were broken out by the major equipment categories.	18
○ Regarding cooking and miscellaneous energy end-use equipment, we recommend that CBECS expand its current scope.	20
○ A categorization of technology by equipment type would contribute to a full description of equipment.	20
○ A description of unit capacity and unit counts for each type of equipment is recommended.	20
○ Equipment usage is an issue that should be addressed by CBECS.	20
○ An estimate of hot water delivered by each fuel and data on uses of hot water would be useful.	20
○ Increased resources should be devoted to quantifying the types and amounts of equipment in place in commercial buildings.	20
○ The following water heating uses should be identified and quantified: The number of meals served per day, the number of loads of dishes washed per day, the pounds of laundry washed per day, the number of showers per day.	20
○ The delivery temperature of hot water should be identified.	20
○ The types of water-heating equipment and the fuels for each system should be identified.	20
○ For each water-heating system used in a building, the estimated share of hot water provided by that system should be identified.	20
○ For each water-heating system in use in a building, the output capacity in thousand Btu per hour and storage capacity in gallons should be identified.	20
○ The section on refrigeration equipment should be expanded to incorporate questions about the number of units or capacity in linear feet or square feet.	20
○ The survey should provide a list of other (non-HVAC) electric and gas equipment, and request the number of each type of equipment.	20

Notes: • Reference number refers to the correspondence number in the list of correspondence preceding Tables B1 through B9. • Comments appearing on these tables are, for the most part, paraphrases of statements made in written responses. • Where appropriate, language has been altered to facilitate grammatical accuracy. • Every effort has been made to preserve the spirit of the comments as they were originally presented.

Table B7. Summary of Question-Specific Comments--Building Characteristics

Summary of Comments	Reference Number
Physical Characteristics	
○ The office complex category of building characteristics should be broken into subcategories by the number of stories or square footage.	1
○ Addition of questions about how many residential units are in the commercial building is recommended.	7
○ A question should be added to the survey asking about the existence or nonexistence of exterior windows.	7
○ CBECS questionnaires continue to provide the Office of Building Technology (OBT) with a facade of reasonableness, but suffer from the lack of detail on building characteristics.	14
○ The question on building floorspace is constructed on an increasing scale that will prevent meaningful analysis of size characteristics in the larger increments or meaningful categorization across the stock.	14
○ Lack of roof area data and wall area data prevents any meaningful analysis of envelope characteristics or building configuration.	14
○ Data are needed on glazings in the form of percent areas by orientation.	15
○ A question should be added to ascertain the types of glazings in existence (i.e., single, double, reflective, low-emissivity, etc.).	15
○ The CBECS needs to find information on the load-bearing capacities of commercial buildings' roof structure.	15
○ The ability to estimate the insulated opaque wall area would be useful in assessments of possible benefits of improved insulation.	18
○ A key data point for each building would be actual gross floorspace for each building.	18
○ Building size is treated appropriately in the current survey form, using an enclosed-space approach. The auxiliary measures of size, such as number of beds and number of rooms, are also useful.	18
○ The format of questions dealing with building size seems a bit cumbersome, although it may work well in the actual interview process.	18
○ The data on envelope materials are useful because they translate into indicators of thermal mass, absorptivity, and conductance that are required to estimate HVAC loads.	18
○ It would be useful to know how many floors are below ground level.	18
○ There are no data on building shape or on building orientation.	18
○ CBECS provides a good description of the exterior surface materials of buildings.	18
○ To develop a better indicator of building mass, a question about overall building construction could be added that would differentiate between "light" weight (e.g., wood frame construction), "medium" weight (e.g., brick or light weight concrete), "heavy" (e.g., heavy concrete or concrete block), or pre-engineered metal construction.	18

Table B7. Summary of Question-Specific Comments--Building Characteristics (Continued)

Summary of Comments	Reference Number
○ A question describing the wall coloring would be an important aspect for determining solar gains through walls.	18
○ A question to determine how much exterior wall area is glass that can be seen through and suggested categories in 10 percent increments would be a welcome addition to CBECS.	18
○ CBECS could identify the main types of exterior windows and the window space for each type of glazing.	18
○ CBECS could identify the types of window treatment and the percentage of window space so treated.	18
○ CBECS should indicate the percentage of windows that have: interior blinds or drapes, exterior coverings or awnings, and storm windows used in the winter months.	18
○ It is necessary to estimate the total number of building occupants in addition to the number of employees at a particular establishment.	20
○ While the information provided on the presence of wall and roof/ceiling insulation is valuable, it would be more useful if the CBECS identified the type and thickness of insulation or the R values.	20
○ A mapping is required between the strata, which are SIC-code based, and the domains of study, which are based on building types in order to indicate more accurately actual building type.	20
Building Activities	
○ The educational category of building characteristics should be broken into four subcategories: preschool, middle school, high school, and college/university.	1
○ The health care category of building characteristics should be broken into at least three subcategories: medical hospitals, long-term care facilities, and outpatient facilities.	1
○ Information from this survey would be more useful to BEA if these data by building activity were further disaggregated by owner.	2
○ The 1992 CBECS Buildings Survey Questionnaire should contain skip patterns that allow the interviewer to get more detailed information about certain building types.	16
○ The question on operating hours is good.	20
○ The food service category of the building activity questions could be broken into fast food restaurant, full-service restaurant, and other food service subcategories.	20
○ The retail category of the building activity questions can be broken into shopping center, department store, shop-in-mall, and stand-alone retail subcategories.	20
○ Dormitory area is included as a part of college floorspace, but since it is not possible to break the college campus energy bills into bills for individual buildings, it is difficult to apply.	20
○ The food sales category of the building activity section of the questionnaire could be broken down into supermarket, grocery store, convenience store, and other food sales subcategories.	20
○ Educational buildings could be subcategorized as primary schools, secondary schools, and colleges.	20

Table B7. Summary of Question-Specific Comments -- Building Characteristics (Continued)

Summary of Comments	Reference Number
○ As a general principle, we feel that greater building type detail, as occurred in the 1979 survey, is preferred to broader categories.	20
○ In order to make room for recommended new features, questions on the number of establishments per building and multibuilding facilities can be eliminated from the survey form.	23
Space Function Characteristics	
○ Where a portion of the building is industrial (less than 50 percent), CBECS should include questions about the type of industrial activity and try to get more detail on the industrial portion of the building.	7
○ We believe that the survey could be improved by asking for more detailed end-use information, particularly from food services and health care facilities.	16
○ To date, there is little information to be obtained from CBECS about commercial cooking.	20
Renovation and Demolition	
○ The information on the year buildings are constructed is straightforward and the vintage categories that are provided in the current CBECS are adequate.	18
○ We would like for CBECS to collect information on demolition rates of buildings.	23

Notes: • Reference number refers to the correspondence number in the list of correspondence preceding Tables B1 through B9. • Comments appearing on these tables are, for the most part, paraphrases of statements made in written responses. • Where appropriate, language has been altered to facilitate grammatical accuracy. • Every effort has been made to preserve the spirit of the comments as they were originally presented.

Table B8. Summary of Question-Specific Comments--Conservation Activities and Energy Management

Summary of Comments	Reference Number
Demand-Side Management	
○ Questions covering the energy efficiency of energy management systems, economizers, heat recovery, thermal energy storage, and retrofit should be added to the CBECS.	15
○ The CBECS should collect data on utility rate types and utility sponsored DSM measures.	15
○ Asking questions about energy management responsibilities and goals would improve the survey.	17
○ To estimate heating loads, a question asking for thermostat settings for heating during operating and nonoperating hours would be helpful.	20
○ The addition of a question to ascertain the thermostat settings for cooling during operating and nonoperating hours would be helpful.	20
○ A question to find whether the distribution system has an economizer cycle is highly recommended.	20

Table B8. Summary of Question-Specific Comments--Conservation Activities and Energy Management (Continued)

Summary of Comments	Reference Number
○ Equipment vintage and efficiency are types of information that would be useful.	20
○ CBECS should identify whether lighting controls, such as clocks, occupancy sensors, or daylighting controls, have been installed and the extent of installation.	20
○ Ask a couple of questions in the commercial building survey about the involvement with energy service companies.	21
○ Questions on energy management could be eliminated in favor of adding new, recommended questions.	23
Maintenance Personnel and Costs	
○ Questions concerning not only energy related to water supply and waste water treatment, but the actual cost of water supply should be added to the CBECS.	10
○ CBECS needs to gather more information on the building's standards and operation procedures in the buildings it samples.	23

Notes: • Reference number refers to the correspondence number in the list of correspondence preceding Tables B1 through B9. • Comments appearing on these tables are, for the most part, paraphrases of statements made in written responses. • Where appropriate, language has been altered to facilitate grammatical accuracy. • Every effort has been made to preserve the spirit of the comments as they were originally presented.

Table B9: Summary of Question-Specific Comments--Energy Source Concerns

Summary of Comments	Reference Number
Sources	
○ The addition of fuel-switching data, both in terms of extent and short-term ability to switch fuels, is a tremendous addition to the 1989 CBECS.	3
○ Improvement could be achieved in the CBECS by cross-referencing equipment with its fuel type.	3
○ Perhaps estimating the end-use market shares for each fuel type would enhance the survey.	3
○ We would like to see the sampling scheme of the CBECS pick up more commercial buildings using wood and solar energy.	11
○ Data users are very interested in average cost of heat energy in \$/MMBtu for active solar systems.	11
○ We would benefit by knowing the heating fuel mix (cross-tab) by building type and region.	18
○ The heating fuel mix (cross-tab) for unitary devices would be useful.	18
○ One of the critical needs for commercial buildings' energy-use data is the monthly utility data for the CBECS buildings.	18

Table B9. Summary of Question-Specific Comments--Energy Source Concerns (Continued)

Summary of Comments	Reference Number
○ The "mix" category of space-heating fuels could be quantified by requesting a judgmental estimate of the amount of heat delivered by each heating fuel.	20
○ The percentage of space cooling supplied by the various fuel types would be useful.	20
○ The number of electric, natural gas, and other fuel type cooking units by unit type needs to be determined if any useful inferences about cooking energy use are to be drawn from the data set.	20
○ A question about the relative importance of each cooking fuel is critical.	20
○ Consumption per square foot and expenditures per square foot by fuel type, building type, and Census region would be appreciated.	25
Cogeneration	
○ It is recommended that CBECS expand the cogeneration questions to ask about the use of thermal and electric output produced by the cogeneration system.	7
○ An item should be added to the CBECS questionnaire to ask for the amount of electricity generated by equipment that generates electricity for purposes other than emergency power.	11

Notes: • Reference number refers to the correspondence number in the list of correspondence preceding Tables B1 through B9. • Comments appearing on these tables are, for the most part, paraphrases of statements made in written responses. • Where appropriate, language has been altered to facilitate grammatical accuracy. • Every effort has been made to preserve the spirit of the comments as they were originally presented.

APPENDIX C

1992 CBECS BUILDING QUESTIONNAIRE

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

Form Approval
OMB No: 1905-0145
Expires: May 31, 1994

U.S. DEPARTMENT OF ENERGY Commercial Buildings Energy Consumption Survey For 1992 BUILDING QUESTIONNAIRE

ID: _____
BUILDING NAME: _____
ADDRESS: _____
STREET
CITY STATE ZIP
COMMENTS: _____

INITIAL CONTACT TO DETERMINE RESPONDENT

I'm _____ from Westat, Inc., a social science research firm. We are conducting a study for the U.S. Department of Energy about energy consumption in nonresidential buildings. May I speak with the building manager or a person knowledgeable about the types of energy coming into the building? May I have that person's name, title and address at which he or she might be located?

NAME: _____

TITLE: _____

LOCATION: _____ PHONE (____) _____

FAX # (____) _____

INTRODUCTION TO INTERVIEW

Hello, I'm _____ from Westat, Inc., a social science research firm. We are conducting a study for the U.S. Department of Energy about energy consumption in nonresidential buildings (HAND LETTER). Although your response is voluntary, we hope you will participate in this important study of energy use.

IF ASKED ABOUT CONFIDENTIALITY, READ:

Any information we collect that would permit identification of respondents or their buildings will be confidential and used only for statistical purposes. Data that can be identified with individual respondents will not be disclosed or released to anyone, including the Department of Energy, for any other purpose, except as required by law.

INTERVIEWER NAME: _____ ID NO. _____

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

BOX 1

INTERVIEWER OBSERVATION OF BUILDING

1-1. IS BUILDING A SHOPPING CENTER/MALL, SERIES OF ATTACHED STORAGE UNITS,
A BLOCK OF CLASSROOMS OR MOTEL ROOMS?

YES 1 (BOX 3 AND CIRCLE 1)

NO 2

1-2. CAN YOU DETERMINE FROM THE LISTING, THE BUILDING TO INTERVIEW?

YES, THE LISTED STRUCTURE IS CLEARLY IDENTIFIABLE
AND SEPARATE FROM ANY OTHER STRUCTURE 1 (BOX 3 AND CIRCLE 1)

NO 2

1-3. FROM YOUR OBSERVATION, THE LISTED STRUCTURE,

APPEARS TO BE ATTACHED TO ANOTHER LISTED STRUCTURE(S)
(RECORD ADDRESS OF OBSERVED ATTACHED STRUCTURE):
..... 1 (A-2)

APPEARS TO BE ATTACHED TO ANOTHER UNLISTED STRUCTURE(S)
(RECORD ADDRESS OF OBSERVED ATTACHED STRUCTURE):
..... 2 (A-2)

APPEARS TO BE TWO OR MORE ATTACHED STRUCTURES
DESCRIBED BY A SINGLE LISTING LINE (RECORD ADDRESSES OR
DESCRIPTIONS OF OBSERVED ATTACHED STRUCTURES):
..... 3 (A-1)

IS THREE OR FEWER FREESTANDING STRUCTURES (CONDUCT AN
INTERVIEW FOR EACH STRUCTURE). 4 (BOX 3 AND CIRCLE 2)

IS FOUR OR MORE FREESTANDING STRUCTURES (CALL SAMPLING
HOTLINE FOR INSTRUCTIONS) 5

COULD BE ONE OF SEVERAL STRUCTURES, CANNOT DETERMINE
WHICH ONE (CALL SUPERVISOR FOR INSTRUCTIONS) 6

TIME BEGAN: _____

A. BUILDING IDENTIFICATION QUESTIONS

A-1. First, I need to make sure we have correctly described the building we want you to answer questions about. Our records list the structure as (ADDRESS OR DESCRIPTION FROM LABEL OR LISTING). Is the entire structure owned by the same person or organization?

YES 1
NO 2 (A-1B)

A-1A. Are there permanent walls that extend from the ground level to the roof that subdivide (ADDRESS OR DESCRIPTION FROM LABEL OR LISTING) into totally separate structures such as (READ DESCRIPTION FROM 1-3)?

YES 1
NO 2 (BOX 3 AND CIRCLE 5)

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (3/92)

A-1B. What are the addresses of the (separate/separately owned) parts of this structure? IF PARTS OF STRUCTURE DO NOT HAVE ADDRESSES, OBTAIN DISTINGUISHING DESCRIPTIONS. ONLY RECORD PARTS OF STRUCTURE DESCRIBED BY SAMPLED LISTING LINE.

(1) _____	}	(BOX 3 AND CIRCLE 6)
(2) _____		
(3) _____		
(4) _____		

A-2. First, I need to make sure we have correctly described the building we want you to answer questions about. Our records list the structure as (ADDRESS OR DESCRIPTION FROM LABEL OR LISTING). Is that attached or connected to any other structure, such as (READ THE DESCRIPTION(S) FROM 1-3)?

YES 1
NO 2 (BOX 3 AND CIRCLE 1)

What is(are) the attached address(es)? (RECORD ADDITIONAL ADDRESS(ES)):

(1)	
(2)	
(3)	
(4)	

A-3A. Is (READ A-2 LINE (1), REPEAT FOR LINE (2) ETC.) also owned by the same person or organization that owns (ADDRESS OR DESCRIPTION FROM LABEL OR LISTING)?	A-3B. FOR EACH "YES" IN A-3A ASK: Are there permanent walls that extend from the ground level to the roof of the structure described by (LABEL OR LISTING LINE DESCRIPTION) which totally separate it from the structure described by (A-2(1), A-2(2) ETC. DESCRIPTION)?	
	YES	NO
A-2 LINE (1) YES 1	1	2
NO 2		
A-2 LINE (2) YES 1	1	2
NO 2		
A-2 LINE (3) YES 1	1	2
NO 2		
A-2 LINE (4) YES 1	1	2
NO 2		
IF ALL ABOVE ARE "NO" GO TO BOX 3 AND CIRCLE 3.		

BOX 2		
ARE ALL A-3B ANSWERS YES?		
ALL "YES"	1	(BOX 3 AND CIRCLE 1)
ALL "NO"	2	(BOX 3 AND CIRCLE 5)
SOME "YES"; SOME "NO"	3	(BOX 3 AND CIRCLE 4)

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (3/92)

BOX 3

INTERVIEW WILL BE FOR:

SAMPLED LISTED BUILDING 1

EACH SEPARATE FREE STANDING STRUCTURE 2

*THE SEPARATELY OWNED STRUCTURE DESCRIBED BY THE
SAMPLED LISTED LINE. CONDUCT ONE INTERVIEW FOR THE
SAMPLED BUILDING ONLY*3

*THE STRUCTURE DESCRIBED BY THE SAMPLED LISTING LINE,
INCLUDING EACH STRUCTURE THAT IS NOT SEPARATED FROM
IT BY A PERMANENT WALL. CONDUCT ONE INTERVIEW FOR
ALL PARTS OF THE BUILDING* 4

*STRUCTURE CONSIDERED TO BE ONE BUILDING. INCLUDE ALL
PARTS OF THE BUILDING* 5

*EACH SEPARATE OR SEPARATELY OWNED STRUCTURE
DESCRIBED BY THE SAMPLED LISTING LINE* 6

A-4. The questions I will be asking you will be about the building at (READ ALL ADDRESSES THAT DESCRIBE THE BUILDING).

Does this building, as we have described it, have any other addresses associated with it?

YES 1
NO 2 (A-5)

RECORD VERIFIED STREET ADDRESS(ES): _____

A-5. What is the name of the building? (IF BUILDING HAS NO NAME, ASK NAME OF (LARGEST) ESTABLISHMENT THAT OCCUPIES BUILDING OR OTHER GENERAL DESCRIPTION)

VERIFIED NAME: _____ (BOX 4)

BOX 4

VERIFIED BUILDING NAME IS: (CIRCLE ONE)

NAME OF BUILDING OR ONLY ESTABLISHMENT IN BUILDING ... 1

NAME OF LARGEST ESTABLISHMENT IN BUILDING 2

NAME OF ESTABLISHMENT BUT NOT LARGEST 3

OTHER 4

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (3/92)

A-6. What is the building's ZIP Code? (RECORD NINE DIGIT ZIP CODE IF AVAILABLE)

ZIP Code

BOX 5

IF AREA SAMPLE: CHECK TO SEE IF THE FIRST FIVE DIGITS OF BUILDING'S ZIP CODE MATCH ZIP CODE ON THE LABEL (CHECK ONE BOX)

BUILDING ZIP MATCHES LABEL: CONTINUE WITH INTERVIEW 1

BUILDING ZIP DOES NOT MATCH LABEL. VERIFY THAT YOU ARE AT THE CORRECT ADDRESS AND WITHIN THE SEGMENT BOUNDARIES.

IF YOU ARE, CONTINUE WITH INTERVIEW 2

IF YOU ARE NOT, DISCONTINUE AND CALL SUPERVISOR 3

A-7. What is the gross or total square feet of all the space, both finished and unfinished, enclosed within the exterior walls of this building, including: basements, indoor parking facilities, hallways, lobbies, stairways, and elevator shafts?

TOTAL SQUARE FEET (BOX 6)

RECORD ON FOLD-OUT PAGE

DONT KNOW 9-8

A-8. Here is a card that has categories of gross total square feet. HAND CARD A-8. Which category in your estimation best describes the total gross square feet in this building including all the areas just mentioned? CIRCLE CODE BELOW AND ENTER RANGE ON FOLD-OUT PAGE.

HAND
CARD
A-8

- 1,000 SQUARE FEET OR LESS 01
- 1,001 TO 5,000 SQUARE FEET 02
- 5,001 TO 10,000 SQUARE FEET 03
- 10,001 TO 25,000 SQUARE FEET 04
- 25,001 TO 50,000 SQUARE FEET 05
- 50,001 TO 100,000 SQUARE FEET 06
- 100,001 TO 200,000 SQUARE FEET 07
- 200,001 TO 500,000 SQUARE FEET 08
- 500,001 TO 1 MILLION SQUARE FEET 09
- OVER 1 MILLION SQUARE FEET 10
- DONT KNOW 98

INTERVIEWER:
REMEMBER THAT 1,000
SQUARE FEET IS
APPROXIMATELY TWICE
THE SIZE OF A
TWO CAR GARAGE.

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (3/92)

BOX 6

IS A-7/A-8 GREATER THAN 1,000?

YES 1 (A-9)

NO 2 (TERMINATE)

This completes the interview. Thank you for your time and help.

TIME ENDED: _____

A-9. Including basements, floors that may be used as a parking garage, or any other floors below ground level, how many floors are in the tallest section of the building?

_____ →

OF FLOORS

DON'T KNOW 998 (A-12)

RECORD ON FOLD-OUT PAGE, THEN:
IF ONE FLOOR, A-10.
IF MORE THAN ONE FLOOR, A-11.

A-10. ASK IF ONLY ONE FLOOR: Is any portion of this floor below ground level?

YES 1 (A-12)

NO 2 (A-12)

A-11. ASK IF MORE THAN ONE FLOOR: How many of these floors are below ground level? Please include any floors that are partially below ground level.

FLOORS BELOW GROUND

DON'T KNOW 998

A-12. When was the construction of the major or largest portion of the (A-7/A-8 SQUARE FEET) square feet completed?

_____ →

YEAR

DON'T KNOW 9-8 (A-14)

RECORD ON FOLD-OUT PAGE THEN:
IF COMPLETED IN 1992, ASK A-13
IF COMPLETED 1987 TO 1991, ASK B-1
IF COMPLETED BEFORE 1987, ASK A-15

A-13. In what month of 1992 was the building first open for occupancy?

_____ (B-1)

MONTH

DON'T KNOW 9-8 (B-1)

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (3/92)

A-14. Here is a card with categories of years. In your estimation, which category contains the year the largest portion of the building was completed?

RECORD ON
FOLD-OUT PAGE

HAND
CARD
A-14

1899 or before	01	1970 - 1979	06	
1900 - 1919	02	1980 - 1986	07	
1920 - 1945	03	1987 - 1989	08	(B-1)
1946 - 1959	04	1990 - 1992	09	(B-1)
1960 - 1969	05	DON'T KNOW	98	

A-15. Has there been an expansion (addition) or reduction (deletion) to the gross total square feet of this building since December 31, 1986? CIRCLE ONE.

- YES, AN EXPANSION (ADDITION) 1
- YES, A REDUCTION (DELETION) 2
- NO 3 (BOX 7)

A-16. How large, in square feet, was this (expansion/reduction)?

SQUARE FEET

DONT KNOW 9-8

BOX 7

LOOK AT THE LABEL ON THE FOLDOUT PAGE.

IS THE BUILDING FROM THE 1986 SAMPLE?

YES 1 (BOX 8)

NO 2 (B-1)

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (3/92)

BOX 8

CHECK QUESTIONS A-7/A-8, A-9, AND A-12/A-14 ON THE FOLD-OUT PAGE, ARE THEY THE SAME AS 1986 ON FOLD-OUT PAGE FOR THE FOLLOWING?

	<u>YES</u>	<u>NO</u>	<u>UNABLE TO COMPARE</u>
<i>SQUARE FEET</i>	<i>1</i>	<i>2</i>	<i>8</i>
<i>NUMBER OF FLOORS</i>	<i>1</i>	<i>2</i>	<i>8</i>
<i>YEAR CONSTRUCTED</i>	<i>1</i>	<i>2</i>	<i>8</i>

ARE THE SQUARE FEET/NUMBER OF FLOORS/YEAR CONSTRUCTED:

ALL ANSWERED YES OR UNABLE TO COMPARE 1 (B-1)

ONE OR MORE NO 2

A-17. An interview was conducted for (ADDRESS OR DESCRIPTION FROM LABEL OR LISTING) in 1986. At that time, the (square feet/number of floors/year constructed) was (READ 1986 VALUE FROM THE FOLD-OUT PAGE). Could you please explain the difference? (RECORD EXPLANATION VERBATIM)

BOX 9

ARE YOU AT THE SAME ADDRESS AS DESCRIPTION FROM LABEL OR LISTING?

YES. 1
(CONTINUE INTERVIEW)

NO. 2
(DISCONTINUE INTERVIEW AND CALL SUPERVISOR.)

**Commercial Buildings Energy Consumption Survey for 1992
Building Questionnaire, Form EIA-871A**

Form EIA-871A (3/92)

THIS PAGE INTENTIONALLY LEFT BLANK

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

B. PRINCIPAL BUILDING ACTIVITIES

B-1.

INTERVIEWER: BEFORE ASKING QUESTION B-2, CODE BEST DESCRIPTION BASED ON YOUR OBSERVATION. (CIRCLE ONE)

B-2.

HAND
CARD
B-2

In the next few questions, we are trying to define the principal activity in this building. By activity, we mean what the building is used for. Here is a card that shows how building activities are categorized for this study. Considering all of the (A-7/A-8 SQUARE FEET) square feet in this building, would you estimate that 75 percent or more of this space (is used for/is) (INTERVIEWER OBSERVATION)?

	<u>ACTIVITY</u>	<u>CIRCLE ONE</u>	<u>YES</u>	<u>NO</u>
a.	VACANT	01	1 (B-5a)	2 (B-3)
b.	OFFICE/PROFESSIONAL	02	1 (B-7)	2 (B-3)
c.	SHOPPING CENTER/MALL/RETAIL/SERVICE	03	1 (B-7)	2 (B-3)
d.	LABORATORY	04	1 (B-7)	2 (B-3)
e.	NON-REFRIGERATED WAREHOUSE OR STORAGE	05	1 (B-7)	2 (B-3)
f.	FOOD SALES (SUCH AS GROCERY STORES)	06	1 (B-7)	2 (B-3)
g.	PUBLIC ORDER AND SAFETY	07	1 (B-7)	2 (B-3)
h.	OUTPATIENT HEALTH SERVICES/CLINIC	08	1 (B-7)	2 (B-3)
i.	INDUSTRIAL PROCESSING AND MANUFACTURING (IF ANY RETAIL ACTIVITY, CODE AS OTHER AND DESCRIBE)	09	1 (B-6)	2 (B-3)
j.	AGRICULTURAL PURPOSES (IF ANY RETAIL ACTIVITY, CODE AS OTHER AND DESCRIBE)	10	1 (B-6)	2 (B-3)
k.	REFRIGERATED WAREHOUSE OR STORAGE	11	1 (B-7)	2 (B-3)
l.	RELIGIOUS WORSHIP (E.G. CHURCH, SYNAGOGUE, OR MOSQUE)	12	1 (B-5i)	2 (B-3)
m.	PUBLIC ASSEMBLY	13	1 (B-5m)	2 (B-3)
n.	EDUCATION (CLASSROOM BUILDING)	14	1 (B-5n)	2 (B-3)
o.	FOOD SERVICES (RESTAURANTS)	15	1 (B-5o)	2 (B-3)
p.	HOSPITAL/INPATIENT HEALTH SERVICES	16	1 (B-5p)	2 (B-3)
q.	SKILLED NURSING/OTHER RESIDENTIAL CARE (NURSING HOME)	17	1 (B-5q)	2 (B-3)
r.	HOTEL/MOTEL/DORM, ETC.	18	1 (B-5r)	2 (B-3)
s.	RESIDENTIAL (LIVING QUARTERS WITH KITCHEN)	19	1 (B-6)	2 (B-3)
t.	INDOOR ENCLOSED PARKING GARAGE	20	1 (B-7)	2 (B-3)
u.	OTHER (SPECIFY): _____ (E.G. "RETAIL STORE IN A PRINT SHOP" OR "AIRCRAFT HANGAR")	21	1 (B-7)	2 (B-3)

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (3/92)

B-3.

Please tell me which activities occupy space in this building.

CIRCLE ALL ACTIVITIES MENTIONED

B-4. Of the (A-7/A-8 SQUARE FEET) square feet in this building, approximately what percentage of space does this activity occupy? TOTAL SHOULD EQUAL 100%

a.	01	%	-->		
b.	02	%			<p>B-5. a. IF 50% OR MORE VACANT, ASK: What was this vacant space previously used for?</p> <p>OR IF NEVER USED: What was this space intended to be used for?</p> <p>_____</p> <p>_____</p> <p>_____</p> <p style="text-align: center;">(GO TO B-7)</p>
c.	03	%			
d.	04	%			
e.	05	%			
f.	06	%			
g.	07	%			
h.	08	%			
i.	09	%		IF 50% OR MORE, GO TO B-6.	
j.	10	%		IF 50% OR MORE, GO TO B-6.	
k.	11	%			
l.	12	%	-->		B-5. l. What is the total seating capacity of religious worship areas of the building? _____ SEATS
m.	13	%	-->		m. What is the fixed seating capacity of public assembly areas of the building? _____ SEATS
n.	14	%	-->		n. How many students can be seated in all of the classrooms in the building at one time? _____ STUDENTS
o.	15	%	-->		o. What is the total seating capacity of the food service areas of the building? _____ SEATS
p.	16	%	-->		p. What is the licensed bed capacity of the building? _____ BEDS
q.	17	%	-->		q. What is the licensed bed capacity of the building? _____ BEDS
r.	18	%	-->		r. How many guest rooms are there in the building? _____ ROOMS
s.	19	%		IF 50% OR MORE, GO TO B-6.	<p>AFTER COMPLETING ALL B-4 AND B-5 QUESTIONS GO TO B-7</p>
t.	20	%			
u.	21	%			

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

IF INELIGIBLE TERMINATE:
B-6. This completes the interview. Thank you very much for your time and help. TIME END: _____

COLUMN A	COLUMN B
<p>B-7. Now I am going to ask you some questions about some of the ways that space may be used in this building. Previously you told me that this building contains (INSERT A-7/A-8 SQUARE FEET) square feet.</p> <p>Thinking about all the square footage in this building, please tell me if any space in this building is used:</p> <p style="text-align: center;">FEATURE</p> <p>a. for commercial food preparation and serving such as kitchens, steam tables and warming areas? <u>Do not include seating areas.</u></p> <p>YES 1 ----></p> <p>NO 2</p> <p>DON'T KNOW 8</p> <p>b. as computer room(s) with separate air conditioning system(s)?</p> <p>YES 1 ----></p> <p>NO 2</p> <p>DON'T KNOW 8</p> <p>c. any use that requires special ventilation equipment, such as laboratories or "clean rooms"?</p> <p>YES 1 ----></p> <p>NO 2</p> <p>DON'T KNOW 8</p> <p>d. any activities requiring large amounts of hot water such as a commercial laundry room, heated pool, spa, sauna, steam room?</p> <p>YES 1 ----></p> <p>NO 2</p> <p>DON'T KNOW 8</p> <p>e. any other function that requires large amounts of energy, such as an ice-skating rink?</p> <p>YES 1 ----></p> <p>NO 2</p> <p>DON'T KNOW 8</p> <p>IF YES, SPECIFY: _____</p> <p>_____</p>	<p>IF "YES" IN COLUMN A: What is your best estimate of the percent of the floorspace used for (FEATURE)</p> <p>_____ %</p> <p>_____ %</p> <p>_____ %</p> <p>_____ %</p> <p>_____ %</p>

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (3/92)

B-8. Are there any personal computers and/or computer terminals in this building? (Personal Computers are also known as PCs.)

- YES 1
- NO 2 (C-1)
- DON'T KNOW 8 (C-1)

B-9. Which category in your estimation best describes the number of PCs and/or computer terminals in this building? CIRCLE ONLY ONE.

HAND CARD B-9

- 1-4 01
- 5-9 02
- 10-19 03
- 20-49 04
- 50-99 05
- 100-249 06
- 250-499 07
- 500-999 08
- 1,000-2,499 09
- 2,500-4,999 10
- 5,000 or more 11
- DON'T KNOW 98

**Commercial Buildings Energy Consumption Survey for 1992
Building Questionnaire, Form EIA-871A**

Form EIA-871A (03/92)

THIS PAGE INTENTIONALLY LEFT BLANK

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

C. ENERGY SOURCES AND END USES

C-1. Here is a list of various types of fuels or energy sources. During calendar year 1992 which of these fuels or energy sources will have been used to supply energy to this building?

HAND
CARD
C-1

- | | |
|--|--|
| ELECTRICITY | DISTRICT CHILLED WATER PIPED INTO THE BUILDING FROM A CENTRAL PLANT OR UTILITY |
| NATURAL GAS | WOOD |
| FUEL OIL, DIESEL OR KEROSENE | COAL |
| BOTTLED GAS, LPG OR PROPANE | PHOTOVOLTAIC CELLS (PVCs) THAT CONVERT SUNLIGHT DIRECTLY INTO ENERGY |
| DISTRICT STEAM PIPED INTO THE BUILDING FROM A CENTRAL PLANT OR UTILITY | SOLAR THERMAL PANELS THAT USE SUNLIGHT TO HEAT FLUIDS |
| DISTRICT HOT WATER PIPED INTO THE BUILDING FROM A CENTRAL PLANT OR UTILITY | |

FOR EACH ENERGY SOURCE MENTIONED, PLACE A CHECK (✓) IN COLUMN C-1 ON THE FOLD-OUT PAGE

C-2. In addition to (NAMES OF ENERGY SOURCES IN C-1), are there any other energy sources used in this building?

YES 1 —>
NO 2

RECORD ON
FOLD-OUT PAGE

C-3. Of the energy sources you just mentioned:

- a. Which is used as the main energy source for heating: that is, the energy source used to heat most of the square footage in this building most of the time?
- b. Which other energy sources, if any, are used for heating?

RECORD ON
FOLD-OUT PAGE

Which, if any, of the energy sources you just mentioned are used:

- c. For air-conditioning?
- d. For domestic hot water heating?
- e. For commercial or institutional cooking or food serving?
- f. For manufacturing or any other type of industrial activity?
- g. To generate electricity?

}

(CHECK ALL THAT APPLY)

BOX 10

SCAN THE FOLD-OUT PAGE. DOES EACH REPORTED ENERGY SOURCE, OTHER THAN ELECTRICITY, HAVE AT LEAST ONE END-USE REPORTED?

YES 1 (BOX 11)
NO 2 (C-4)

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

C-4. How is (ENERGY SOURCE WITHOUT END-USE) used in the building (during calendar year 1992)? IF OTHER END-USE APPEARS ON THE FOLD-OUT PAGE, RECORD ON FOLD-OUT PAGE, IF NOT, SPECIFY HERE, AND GO TO BOX 11.

RECORD ON
FOLD-OUT PAGE
AND GO TO BOX 11.

BOX 11

SCAN THE FOLD-OUT PAGE. HAS AT LEAST ONE BOX BEEN CHECKED IN EACH C-3 COLUMN?

YES 1 (BOX 12)
NO 2 (C-5)

C-5. What energy source is used for (END-USE) (during calendar year 1992)?

RECORD ON
FOLD-OUT PAGE
AND GO TO BOX 12.

BOX 12

SCAN THE FOLD-OUT PAGE. DOES THE BUILDING HAVE AT LEAST ONE FUEL FOR HEATING?

YES 1 (C-6)
NO 2 (C-8)

C-6. Could this building switch to a different main heating fuel within one week's time without substantially reducing the area heated or the temperature maintained in the heated area?

YES 1
NO 2 (C-8)
DON'T KNOW 8 (C-8)

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

C-7. If the building did have to switch the main heating fuel within one week's time, what fuels would be used instead of (ENERGY SOURCE FROM C-3 column a)? CIRCLE ALL THAT APPLY.

- ELECTRICITY 01
 - NATURAL GAS 02
 - FUEL OIL/KEROSENE/DIESEL 03
 - PROPANE 04
 - DISTRICT STEAM 05
 - DISTRICT HOT WATER 06
 - WOOD 07
 - OTHER (SPECIFY) 08
-
-

C-8. Here is a card which lists some special energy technologies which only a few buildings have currently. Are any of these technologies used at present in this building? CIRCLE ALL THAT APPLY.

HAND
CARD
C-8

- a. THERMAL ENERGY STORAGE (TES) OR PUMP STORAGE ... 01
 - b. PASSIVE SOLAR FEATURES 02
 - c. GEOTHERMAL ENERGY 03
 - d. WELL WATER FOR COOLING 04
 - e. WASTE INCINERATION TO PRODUCE ENERGY 05
 - f. WIND GENERATION 06
 - g. ANY OTHER TECHNOLOGY (SPECIFY) 07
-
-
- h. NONE 08

**Commercial Buildings Energy Consumption Survey for 1992
Building Questionnaire, Form EIA-871A**

Form EIA-871A (03/92)

THIS PAGE INTENTIONALLY LEFT BLANK

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

D. EQUIPMENT

BOX 13

SCAN COLUMN A OF C-3 ON THE FOLDOUT PAGE. DOES THIS BUILDING HAVE AN ENERGY SOURCE FOR HEATING CHECKED?

YES..... 1 (D-1)
NO..... 2 (SKIP TO BOX 14 ON PAGE 20)

D-1. What percentage of the (A-7/A-8 SQUARE FEET) square feet in this building is heated to at least 50° Fahrenheit during calendar year 1992? Be sure to include basements and enclosed garages if they are heated to at least 50 degrees.

_____ % (D-3)

HEATED BUT LESS THAN 50 DEGREES 995 (BOX 14 ON PAGE 20)
DONT KNOW 998

D-2. Here is a list of ranges. What is your best estimate of the percent of heated square feet in this building (to at least 50° Fahrenheit during calendar year 1992)?

HAND
CARD
BLUE

- a. 25 PERCENT OR LESS 1
- b. 26 TO 50 PERCENT 2
- c. 51 TO 75 PERCENT 3
- d. 76 TO 100 PERCENT 4
- e. DONT KNOW 8

INTERVIEWER:

INTENT IS TO DETERMINE THE PERCENTAGE HEATED FOR HUMAN OCCUPANCY.

INCLUDE ALL PARTS OF THE BUILDING HEATED TO AT LEAST 50 DEGREES.

D-3. Now I am going to ask you some questions about how this building is heated and cooled. First, I will ask about the overall heating and cooling system. Then, I will ask a few questions about specific types of heating and cooling equipment.

Briefly, please describe the overall system that is used to heat and/or cool this building.

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

COLUMN A			
<p>D-4. Here is a card listing different types of specific equipment that may be part of the building's heating system and that you may or may not have mentioned in your description. Does this building use:</p>			
<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <p>HAND CARD D-4</p> </div>			
<p>ASK ABOUT EACH FEATURE IN THIS COLUMN BEFORE GOING TO COLUMN B.</p>			
FEATURE	YES	NO	DK
a. Heat pumps? <i>(These are devices that heat the interior of a building by absorbing heat from the outside air. They may stand alone or be combined with another type of equipment. In warmer weather, they can also be used to cool a building.)</i>	1	2	8
b. Furnaces that heat air directly, without using steam or hot water? <i>(Similar to a residential furnace.)</i>	1	2	8
c. Individual space heaters, free standing or mounted in walls, ceilings, or windows? <i>(This includes portable heaters, hanging unit heaters, heating panels, electric baseboards, perimeter heaters that contain heating elements, wood stoves, and fireplaces.)</i>	1	2	8
d. District steam or hot water piped in from outside the building? Hot water does not include domestic hot water used for cooking and cleaning.	1	2	8
e. Boilers inside the building that produce steam or hot water? <i>(Also include boilers just outside the building that are primarily associated with it.)</i>	1	2	8
f. Packaged heating units, often mounted on the roof or on a slab beside the building? <i>(These are known as self-contained units. They contain heating equipment as well as fans, and may or may not include air conditioning equipment.)</i>	1	2	8
g. Some other heating equipment? (SPECIFY):	1	2	8
<p>_____</p> <p>_____</p>			
<p><input type="checkbox"/> BUILDING IS HEATED BUT RESPONDENT DOESN'T KNOW ANY EQUIPMENT TYPE. CHECK THIS BOX AND SKIP TO BOX 14 ON PAGE 20; OTHERWISE GO TO COLUMN B)</p>			

BE SURE THAT AT LEAST ONE HEATING SYSTEM IN ROWS "a" THROUGH "g" IS MARKED IN COLUMN A BEFORE GOING TO COLUMN B.

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

COLUMN B	COLUMN C				
<p>D-5. ASK ABOUT ALL FEATURES WITH A "YES" IN COLUMN A BEFORE GOING TO COLUMN C:</p> <p>Thinking of the heated floorspace in the building, what percent is heated by the (FEATURE)?</p>	<p>D-6. FOR EACH FEATURE WITH A "YES" IN COLUMN A, ASK:</p> <p>Please select the method or methods that best describe how the heat from the (FEATURE) is distributed throughout the building. CIRCLE ALL THAT APPLY</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p>HAND CARD D-6</p> </div>				
	STEAM OR HOT WATER RADIATORS OR BASEBOARDS	FORCED AIR THROUGH VENTS (DUCTS) OR AIR HANDLING UNITS	FAN-COIL UNITS WITHOUT VENTS (DUCT)	OTHER	DONT KNOW
a. _____ %		2	3	4	8
b. _____ %		2		4	8
c. _____ %					
d. _____ %	1	2	3	4	8
e. _____ %	1	2	3	4	8
f. _____ %		2		4	8
g. _____ %	1	2	3	4	8
TOTAL _____					
TOTAL SHOULD ADD UP TO AT LEAST 100%					

INTERVIEWER: IF DISTRICT STEAM OR HOT WATER IS PIPED IN FROM OUTSIDE THE BUILDING THERE IS PROBABLY NO BOILER IN THE BUILDING.

MANY PEOPLE USE THE WORDS "BOILER" AND "FURNACE" INTERCHANGEABLY. BE CAREFUL THAT THE DEFINITION IS HEARD.

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

BOX 14

SCAN COLUMN C OF C-3 ON THE FOLDOUT PAGE. DOES THIS BUILDING HAVE AT LEAST ONE ENERGY SOURCE FOR AIR CONDITIONING CHECKED?

YES..... 1 (D-7)
NO..... 2 (SKIP TO D-12 ON PAGE 24)

D-7. What percentage of the (A-7/A-8 SQUARE FEET) square feet in the building is cooled by air-conditioning equipment (during calendar year 1992)?

_____ % (D-9)

DONT KNOW 998

D-8. Here is a list of ranges. What is your best estimate of the percent of the square feet in this building that is cooled by air-conditioning equipment (during calendar year 1992)?

- | | |
|----------------------|-------------------------------|
| HAND
CARD
BLUE | a. 25 PERCENT OR LESS 1 |
| | b. 26 TO 50 PERCENT 2 |
| | c. 51 TO 75 PERCENT 3 |
| | d. 76 TO 100 PERCENT 4 |
| | e. DONT KNOW 8 |

INTERVIEWER:
THE TERM AIR CONDITIONING REFERS TO THE REMOVAL OF HEAT FROM THE AIR THROUGH THE USE OF REFRIGERATION EQUIPMENT. THE CIRCULATION OF AIR BY FANS IS NOT CONSIDERED AIR-CONDITIONING.

**Commercial Buildings Energy Consumption Survey for 1992
Building Questionnaire, Form EIA-871A**

Form EIA-871A (03/92)

THIS PAGE INTENTIONALLY LEFT BLANK

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

COLUMN A			
<p>D-9. Here is a card listing different types of specific equipment that may be part of a building's cooling system and which you may or may not have mentioned in your earlier description.</p> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin-bottom: 10px;"> <p>HAND CARD D-9</p> </div> <p>Does this building use:</p> <p>ASK ABOUT EACH FEATURE IN THIS COLUMN BEFORE GOING TO COLUMN B.</p>			
FEATURE	YES	NO	DK
a. Residential type central air conditioners, other than heat pumps, that cool air directly and circulate it without using chilled water? (They may be found either alone or in combination with a boiler or furnace.)	1	2	8
b. Heat pumps for cooling? (These are devices that can also be used for heating in cooler weather by absorbing heat from the outside air. They may stand alone or be combined with another type of equipment.)	1	2	8
c. Individual room air-conditioners mounted in a window or wall?	1	2	8
d. District chilled water piped in from outside the building?	1	2	8
e. Central chillers inside the building that chill water for air conditioning? (Also include chillers just outside the building that are primarily associated with it.)	1	2	8
f. Packaged air conditioning units, often mounted on the roof or on a slab beside the building? (These are known as self-contained units, or Direct Expansion (DX). They contain air conditioning equipment as well as fans, and may or may not include heating equipment.)	1	2	8
g. "Swamp" coolers (Evaporative Coolers)?	1	2	8
h. Some other cooling equipment?	1	2	8
<p>SPECIFY: _____</p>			
<p><input type="checkbox"/> BUILDING AIR-CONDITIONED BUT RESPONDENT DOES NOT KNOW EQUIPMENT TYPE. CHECK THIS BOX AND SKIP TO D-12. OTHERWISE GO TO D-10, COLUMN B.</p>			

BE SURE THAT AT LEAST ONE COOLING SYSTEM IN ROWS "a" THROUGH "h" IS MARKED IN COLUMN A BEFORE GOING TO COLUMN B

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

COLUMN B	COLUMN C			
<p>D-10. ASK ABOUT ALL FEATURES WITH A "YES" IN COLUMN A BEFORE GOING TO COLUMN C: Thinking of the cooled floorspace in the building, what percent is air-conditioned by (FEATURE)?</p>	<p>D-11. FOR EACH FEATURE WITH A "YES" IN COLUMN A, ASK: Please select the method(s) that best describes how the air-conditioning from the (FEATURE) is distributed throughout the building. CIRCLE ALL THAT APPLY.</p> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin-bottom: 10px;">HAND CARD D-11</div>			
	FAN-COIL UNITS WITHOUT VENTS (DUCTS)	FORCED AIR THROUGH VENTS (DUCTS) OR AIR HANDLING UNITS	OTHER	DON'T KNOW
a. _____ %		2	3	8
b. _____ %		2	3	8
c. _____ %				
d. _____ %	1	2	3	8
e. _____ %	1	2	3	8
f. _____ %		2	3	8
g. _____ %	1	2	3	8
h. _____ %	1	2	3	8
TOTAL _____				
TOTAL SHOULD ADD UP TO AT LEAST 100%				

INTERVIEWER: IF DISTRICT CHILLED WATER IS PIPED IN FROM OUTSIDE THE BUILDING THERE IS PROBABLY NO CHILLER IN THE BUILDING.

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

D-12. Is there any commercial refrigeration or freezer equipment present in this building?

YES 1
 NO 2 (BOX 15)
 DON'T KNOW 8 (BOX 15)

INTERVIEWER: THIS INCLUDES EQUIPMENT OUTSIDE, IF ADJACENT TO THE BUILDING.

D-13. Are there any refrigerated and/or freezer walk-in units in this building?

YES 1
 NO 2 (D-15)
 DON'T KNOW 8 (D-15)

D-14. How many of these walk-in units are there?

_____ UNITS

DON'T KNOW 98

D-15. In this building, are there any refrigeration and/or freezer cases or cabinets other than walk-ins for the sale, display or storage of perishable materials, such as food or medical supplies?

YES 1
 NO 2 (BOX 15)
 DON'T KNOW 8 (BOX 15)

COLUMN A	COLUMN B	COLUMN C
<p>D-16. Other than walk-in units, are any of these commercial sales, display or storage cases or cabinets:</p> <p style="text-align: center;">READ ACROSS EACH ROW, THEN DOWN</p>	<p>D-17. IF "YES" IN COLUMN A, ASK: How many units are there?</p>	<p>D-18. IF "YES" IN COLUMN A, ASK: Approximately how many linear feet of (D-16 EQUIPMENT TYPE) cases or cabinets are there in this building?</p>
<p>a. Open (without doors or with only flexible covers)?</p> <p>YES 1 ----></p> <p>NO 2</p> <p>DON'T KNOW 8</p> <p>b. Closed (with doors)?</p> <p>YES 1 ----></p> <p>NO 2</p> <p>DON'T KNOW 8</p>	<p>a. _____ UNITS</p> <p>DON'T KNOW .. 9-8</p> <p>b. _____ UNITS</p> <p>DON'T KNOW .. 9-8</p>	<p>a. _____ LINEAR FEET</p> <p>DON'T KNOW 9-8</p> <p>b. _____ LINEAR FEET</p> <p>DON'T KNOW 9-8</p>

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

BOX 15

SCAN COLUMN D OF C-3 ON THE FOLDOUT PAGE. DOES THIS BUILDING HAVE AT LEAST ONE ENERGY SOURCE FOR WATER HEATING CHECKED?

YES 1 (D-19)
NO 2 (SKIP TO SECTION E)

D-19. Here is a listing of types of water heating systems. How would you best describe this building's water heating system? (CIRCLE ALL THAT APPLY)

- HAND
CARD
D-19
- a. A CENTRALIZED SYSTEM (WHERE ALL WATER HEATING IS PERFORMED IN ONE PLACE):
- 1. WITH A STORAGE TANK THAT GENERATES ITS OWN HEAT 1
 - 2. WHICH DRAWS HEAT FROM THE SPACE HEATING EQUIPMENT 2
 - 3. OTHER TYPE OF CENTRALIZED SYSTEM 3
- SPECIFY _____
- _____
- b. A DISTRIBUTED/POINT OF USE SYSTEM (WHICH HAS MORE THAN ONE WATER HEATING UNIT LOCATED AT, OR CLOSE BY, THE POINT OF USE):
- 4. WITH RESIDENTIAL-TYPE STORAGE WATER HEATERS 4
 - 5. WITH INSTANTANEOUS HEATERS AT POINT OF USE (NO HOT WATER STORAGE TANKS) 5
 - 6. OTHER TYPE OF DISTRIBUTED SYSTEM 6
- SPECIFY _____
- _____
- c. DONT KNOW 8

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

E. BUILDING OWNERSHIP AND OCCUPANCY CHARACTERISTICS

The next few questions are about the ownership and occupancy of the building.

E-1. Is this building owned by: **CIRCLE ONLY ONE.**

HAND
CARD
E-1

- a. a federal government agency? 1
- b. a state government agency? 2
- c. a local government agency? 3
- d. one of the following types of privately-owned utility companies:
railroad, oil pipeline, electric,
gas, telephone, or TV cable? 4
- e. a church, synagogue, or other religious organization or group? 5
- f. any other type of individual or group? (such as a private business or non-profit organization)? 6

E-2. By "occupancy", we mean to hold or lease space on a full-time basis. Is any part of this building occupied by: **CIRCLE ONE RESPONSE ON EACH LINE.**

HAND
CARD
E-2

- | | <u>YES</u> | <u>NO</u> | <u>DK</u> |
|--|------------|-----------|-----------|
| a. a federal government agency? | 1 | 2 | 8 |
| b. a state government agency? | 1 | 2 | 8 |
| c. a local government agency? | 1 | 2 | 8 |
| d. one of the following types of privately-owned utility companies:
railroad, oil pipeline, electric,
gas, telephone, or TV cable? | 1 | 2 | 8 |
| e. a church, synagogue, or other religious organization or group? | 1 | 2 | 8 |
| f. any other type of individual or group (such as a private business or non-profit organization)? | 1 | 2 | 8 |
| g. building is completely vacant? | 1 | 2 | 8 |

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

E-3. Is the building part of a multibuilding facility or complex? By a multibuilding facility or complex, we mean a group of two or more buildings on the same site owned or operated by a single organization, business or individual.

YES 1 _____>
NO 2 (E-5)

RECORD ON
FOLD-OUT PAGE

E-4. What is the primary business, commerce, or function carried on in this multibuilding facility or complex? CIRCLE ONLY ONE.

HAND
CARD
E-4

SCHOOLS:

- PRIMARY OR SECONDARY SCHOOL
(GRADES K-12) 01
- COLLEGE, UNIVERSITY OR JUNIOR
COLLEGE 02
- OTHER SCHOOLS 03

RETAIL SALES AND SERVICES:

- SHOPPING CENTER/MALL 04
- AUTOMOTIVE SALES AND SERVICE 05
- OTHER RETAIL SALES AND SERVICE 06

OTHER FUNCTIONS:

- OFFICE 07
- WAREHOUSE 08
- INDUSTRIAL/MANUFACTURING 09
- HOSPITAL OR OTHER HEALTH SERVICE 10
- RELIGIOUS ACTIVITIES (OTHER THAN
SCHOOLS) 11
- HOTEL/MOTEL 12
- AMUSEMENT OR RECREATION (SUCH AS
A COUNTRY CLUB OR CONCERT HALL) 13
- TRANSPORTATION (SUCH AS TERMINALS,
DEPOTS, AIRPORTS) 14
- RESIDENTIAL 15
- AGRICULTURAL 16
- OTHER (SPECIFY) _____ .. 17

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

E-5. Here is a card that lists different ways businesses or organizations can occupy a building. (By "occupy", we mean to hold or lease space on a full-time basis.) Please tell me which category best applies to this building.

RECORD ON
FOLD-OUT PAGE

HAND
CARD
E-5

- a. ONE BUSINESS OR ORGANIZATION AND THE OCCUPANT IS:
- 1. THE OWNER OR OWNER'S REPRESENTATIVE 1 (E-8)
 - 2. NOT THE OWNER OR OWNER'S REPRESENTATIVE 2 (E-8)
- b. MORE THAN ONE BUSINESS OR ORGANIZATION AND THE OCCUPANT(S):
- 3. INCLUDE THE OWNER OR OWNER'S REPRESENTATIVE 3
 - 4. DO NOT INCLUDE THE OWNER OR OWNER'S REPRESENTATIVE 4
- c. CURRENTLY UNOCCUPIED 5 (E-8)

E-6. (Including the owner or owner's representative), how many businesses or organizations currently occupy the building?

RECORD ON
FOLD-OUT PAGE

NUMBER OF BUSINESSES OR ORGANIZATIONS

(E-8)

DON'T KNOW 9-8

E-7. Which category on this card gives your best estimate of the number of businesses or organizations currently occupying the building?

HAND
CARD
E-7

- 2 - 5 1
- 6 - 10 2
- 11 - 20 3
- 21 - 49 4
- 50 - 99 5
- 100 OR MORE 6
- DON'T KNOW 8

E-8. Has any space in the building been vacant or unoccupied for at least 3 consecutive months during calendar year 1992? Please include your expectations for the rest of the year.

- YES 1
- NO 2 (E-12)
- DON'T KNOW 8 (E-12)

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

COLUMN A	COLUMN B	COLUMN C				
<p>E-9. Please indicate which months during 1992 that this building or part of this building was vacant. Please include your expectations for the rest of the year. CIRCLE ALL THAT APPLY.</p> <p style="text-align: center;">MONTH</p>	<p>ASK FOR EACH MONTH CIRCLED IN COLUMN A</p> <p>E-10 What is your best estimate of the percent of (A-7/A-8 SQUARE FEET) that was vacant during (MONTH)?</p>	<p>ASK ONLY IF THE ANSWER TO COLUMN B IS "DON'T KNOW".</p> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 5px auto;">HAND CARD BLUE</div> <p>E-11. Please indicate the range that best describes the vacant floorspace during (MONTH).</p>				
		0- 25%	26- 50%	51- 75%	76- 100%	DONT KNOW
JANUARY 01	_____ % DON'T KNOW . . . 998 -->	1	2	3	4	8
FEBRUARY 02	_____ % DON'T KNOW . . . 998 -->	1	2	3	4	8
MARCH 03	_____ % DON'T KNOW . . . 998 -->	1	2	3	4	8
APRIL 04	_____ % DON'T KNOW . . . 998 -->	1	2	3	4	8
MAY 05	_____ % DON'T KNOW . . . 998 -->	1	2	3	4	8
JUNE 06	_____ % DON'T KNOW . . . 998 -->	1	2	3	4	8
JULY 07	_____ % DON'T KNOW . . . 998 -->	1	2	3	4	8
AUGUST 08	_____ % DON'T KNOW . . . 998 -->	1	2	3	4	8
SEPTEMBER 09	_____ % DON'T KNOW . . . 998 -->	1	2	3	4	8
OCTOBER 10	_____ % DON'T KNOW . . . 998 -->	1	2	3	4	8
NOVEMBER 11	_____ % DON'T KNOW . . . 998 -->	1	2	3	4	8
DECEMBER 12	_____ % DON'T KNOW . . . 998 -->	1	2	3	4	8

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

E-14. During the months it is in use, what is the total number of operating hours per week for most of the building?

_____ (E-16)
HOURS
DONT KNOW 9-8

E-15. Which category on the card best describes the number of operating hours per week for most of the building when it is in use?

HAND CARD E-15

- 1-39 HOURS 1
- 40-48 HOURS 2
- 49-60 HOURS 3
- 61-84 HOURS 4
- 85-167 HOURS 5
- OPEN CONTINUOUSLY 6 (E-18)
- DONT KNOW 8

BOX 16

ARE ALL "OPEN 24 HOURS A DAY" BOXES CHECKED IN E-13?

YES 1 (RECORD ON FOLDOUT, THEN GO TO E-18)

NO 2 (E-16)

COLUMN A	COLUMN B
<p>ASK ABOUT EACH FEATURE IN THIS COLUMN BEFORE GOING TO E-17 COLUMN B.</p> <p>E-16. Are there additional hours during the week when most of the:</p>	<p>FOR EACH FEATURE WITH A "YES" IN COLUMN A, ASK:</p> <p>E-17. Approximately how many additional hours per week is the (INSERT FEATURE) in use?</p>
<p>a. heating and/or cooling equipment is in use?</p> <p style="padding-left: 40px;">YES 1</p> <p style="padding-left: 40px;">NO 2</p> <p style="padding-left: 40px;">DONT KNOW 8</p>	<p style="text-align: center;">_____</p> <p style="text-align: center;">ADDITIONAL HOURS/WEEK</p> <p>DONT KNOW 9-8</p>
<p>b. lighting is in use?</p> <p style="padding-left: 40px;">YES 1</p> <p style="padding-left: 40px;">NO 2</p> <p style="padding-left: 40px;">DONT KNOW 8</p>	<p style="text-align: center;">_____</p> <p style="text-align: center;">ADDITIONAL HOURS/WEEK</p> <p>DONT KNOW 9-8</p>

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

E-18. My next few questions are about the number of people who work in this building.

When the building is in use, approximately how many people work in the building? Do not include employees who work out of the building such as drivers with delivery routes, customers, patients, or students. Do include volunteer workers. If there are multiple shifts, so that the number of people in the building varies at different times of the day, please give us the total number of employees across all shifts.

HAND
CARD
E-18

_____ (E-20)
NUMBER OF PEOPLE
DONT KNOW 9-8

E-19. Here is a card which shows categories. Which category in your estimation best applies to the number of people who work in the building (when the building is in use) across all shifts?

HAND
CARD
PINK

NONE	00
1-4	01
5-9	02
10-19	03
20-49	04
50-99	05
100-249	06
250-499	07
500-999	08
1,000-2,499	09
2,500-4,999	10
5,000 OR MORE	11
DONT KNOW	98

E-20. (When the building is in use) how many people work in the building during its main shift? By main shift, we mean the shift when most people are in the building.

_____ (F-1)
NUMBER OF PEOPLE
DONT KNOW 9-8

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

E-21. Which category on this card best describes the number of people who normally work in the building during its main shift?

HAND
CARD
PINK

NONE	00
1-4	01
5-9	02
10-19	03
20-49	04
50-99	05
100-249	06
250-499	07
500-999	08
1,000-2,499	09
2,500-4,999	10
5,000 OR MORE	11
DONT KNOW	98

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

F. BUILDING ENVELOPE CHARACTERISTICS:

F-1. Here is a card that shows different types of construction materials. Which best describes the major type of exterior wall construction material used on this building? CIRCLE ONLY ONE.

HAND CARD F-1

- WINDOW OR VISION GLASS (GLASS THAT CAN BE SEEN THROUGH) 01
- DECORATIVE OR CONSTRUCTION GLASS 02
- SHEET METAL PANELS 03
- PRE-CAST CONCRETE PANELS 04
- BRICK, STONE, STUCCO, CONCRETE OR OTHER MASONRY 05
- ALUMINUM, ASBESTOS, PLASTIC OR WOOD SIDING, SHINGLES, TILES OR SHAKES 06
- OTHER (SPECIFY) _____ 07
- DON'T KNOW 98

F-2. Here is a card with different types of roofing materials. Which category best describes the building's major type of exterior roof surface? CIRCLE ONLY ONE.

HAND CARD F-2

- WOOD SHINGLES, SHAKES OR OTHER WOODEN MATERIALS 01
- SLATE OR TILE SHINGLES 02
- ASPHALT, FIBERGLASS, OR OTHER SHINGLES 03
- BUILT-UP (TAR, FELTS OR FIBERGLASS AND A BALLAST, SUCH AS STONE) 04
- METAL SURFACING 05
- PLASTIC, RUBBER, OR SYNTHETIC SHEETING (SINGLE OR MULTIPLE PLY) 06
- CONCRETE 07
- OTHER (SPECIFY) _____ 08
- DON'T KNOW 98

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

F-3. Here is a card that shows some common building shapes. Please tell me which one most nearly resembles the floorplan of this building at ground level. This is sometimes called the "footprint" of the building. CIRCLE ONLY ONE.



- SQUARE 01
- RECTANGLE 02
- RECTANGLE OR SQUARE WITH AN
INTERIOR COURTYARD 03
- "H" SHAPED 04 (F-6)
- "U" SHAPED 05 (F-6)
- "E" SHAPED 06 (F-6)
- "T" SHAPED 07 (F-6)
- "L" OR RIGHT ANGLE SHAPED 08 (F-6)
- "+" OR "CROSS" SHAPED 09 (F-6)
- OTHER: (SPECIFY OR DRAW IN SPACE
BELOW) _____ 10 (F-6)

F-4. What is your best estimate of the:

a. length of this building at ground level?

_____ FEET

DONT KNOW 9-8

b. width of this building at ground level?

_____ FEET

DONT KNOW 9-8

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

F-5. Now please think about all the exterior walls of this building that are above ground. How many of the walls touch or are attached to another structure? Would you say it is: CIRCLE ONLY ONE.

- None, the building is freestanding? 0
- One? 1
- Two? 2
- Three? 3
- Four? 4
- DON'T KNOW 8

F-6. Which of the ranges on this card best describes the percent of the exterior wall surface of this building that is covered with glass doors or window glass?



- 10 PERCENT OR LESS 1
- 11 TO 25 PERCENT 2
- 26 TO 50 PERCENT 3
- 51 TO 75 PERCENT 4
- 76 TO 100 PERCENT 5
- DON'T KNOW 8

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

G. THE LIGHTING SYSTEM

G-1. The next set of questions pertains to the electric lighting system used in this building.

What percentage of the (A-7/A-8 SQUARE FEET) square feet of the interior of this building is lit electrically during operating hours?

_____ % (G-3)
 BUILDING HAS NO OPERATING
 HOURS (E-12 = 00) 991 (G-3)
 DON'T KNOW 998

INTERVIEWER: REMEMBER, IF A BUILDING HAS NO OPERATING HOURS, BY DEFINITION, ALL BUILDING HOURS ARE CONSIDERED "OFF HOURS"

G-2. Here is a list of ranges. What is your best estimate of the percent of the square feet in this building that is lit electrically?

HAND
CARD
BLUE

25 PERCENT OR LESS 1
 26 TO 50 PERCENT 2
 51 TO 75 PERCENT 3
 76 TO 100 PERCENT 4
 DON'T KNOW 8

G-3. What percentage of the (A-7/A-8 SQUARE FEET) square feet of the interior of this building is lit during off hours? By off hours, we mean on weekends and holidays, during the off-season and any extended periods when the whole building is not in use. Do not include the space lit by emergency lighting.

_____ % (BOX 17)
 NO OFF-HOURS (OPEN 24 HOURS
 A DAY) 991 (BOX 17)
 DON'T KNOW 998

G-4. Which of the ranges on the card best describes the percent of the square feet in the building lit during off-hours?

HAND
CARD
BLUE

25 PERCENT OR LESS 1
 26 TO 50 PERCENT 2
 51 TO 75 PERCENT 3
 76 TO 100 PERCENT 4
 DON'T KNOW 8

BOX 17

LOOK AT THE ANSWERS TO G-1 AND G-3. IS ANY PERCENTAGE OF THE BUILDING REPORTED LIT IN EITHER G-1 OR G-3?

YES 1 (GO TO G-5)
 NO 2 (GO TO H-1)

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

COLUMN A	COLUMN B	COLUMN C
<p>READ ALL OF COLUMN A BEFORE COLUMN B.</p> <p>G-5. Is any of the square footage inside this building served by:</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;">HAND CARD G-5</div> <p style="text-align: center; margin-top: 20px;">FEATURE</p>	<p>IF "YES" IN COLUMN A, ASK:</p> <p>G-6. Thinking about the amount of building space that is lighted, what percent of the lighted space is lit by (FEATURE)?</p>	<p>IF "DON'T KNOW" IN COLUMN B, ASK:</p> <p>G-7. Which of these ranges best represents the percent of the inside of this building lit by (FEATURE)?</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;">HAND CARD BLUE</div>
<p>a. Incandescent light bulbs, including regular or energy efficient light bulbs?</p> <p>YES 1</p> <p>NO 2</p> <p>DONT KNOW 8</p> <p>b. Fluorescent Lighting other than compact fluorescent bulbs?</p> <p>YES 1</p> <p>NO 2</p> <p>DONT KNOW 8</p> <p>c. Compact Fluorescent bulbs?</p> <p>YES 1</p> <p>NO 2</p> <p>DONT KNOW 8</p> <p>d. High Intensity Discharge (HID) Lights such as high pressure sodium, metal halide or mercury vapor?</p> <p>YES 1</p> <p>NO 2</p> <p>DONT KNOW 8</p> <p>e. Some other type of lighting?</p> <p>YES (SPECIFY) _____ 1</p> <p>NO 2</p> <p>DONT KNOW 8</p>	<p>_____ %</p> <p>DONT KNOW ... 9-8 --></p> <p style="text-align: center; margin-top: 20px;">TOTAL MUST BE AT LEAST 100%</p>	<p>25% OR LESS 1</p> <p>26 to 50% 2</p> <p>51 to 75% 3</p> <p>76 to 100% 4</p> <p>DONT KNOW 8</p> <p>25% OR LESS 1</p> <p>26 to 50% 2</p> <p>51 to 75% 3</p> <p>76 to 100% 4</p> <p>DONT KNOW 8</p> <p>25% OR LESS 1</p> <p>26 to 50% 2</p> <p>51 to 75% 3</p> <p>76 to 100% 4</p> <p>DONT KNOW 8</p> <p>25% OR LESS 1</p> <p>26 to 50% 2</p> <p>51 to 75% 3</p> <p>76 to 100% 4</p> <p>DONT KNOW 8</p> <p>25% OR LESS 1</p> <p>26 to 50% 2</p> <p>51 to 75% 3</p> <p>76 to 100% 4</p> <p>DONT KNOW 8</p>

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

COLUMN A	COLUMN B	COLUMN C
<p>READ ALL OF COLUMN A BEFORE COLUMN B.</p> <p>G-8. Here is a list of some features that may be part of this building's interior lighting system. Does your lighting system use any:</p> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 10px auto;">HAND CARD G-8</div> <p style="text-align: center;">FEATURE</p>	<p>IF "YES" IN COLUMN A:</p> <p>G-9. Thinking about the amount of building space that is lighted, what percent of the lighted inside of this building is served by (FEATURE)?</p>	<p>IF DON'T KNOW IN COLUMN B, ASK:</p> <p>G-10. Which of the following ranges best represents the percentage of the inside of this building served by (FEATURE)?</p> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 10px auto;">HAND CARD BLUE</div>
<p>a. Reflectors specifically designed to increase the amount of light from the fixture? (These are known as Specular Reflectors.)</p> <p>YES 1</p> <p>NO 2</p> <p>DON'T KNOW 8</p> <p>b. Daylighting controls that detect natural light and turn lights off when there is sufficient natural light?</p> <p>YES 1</p> <p>NO 2</p> <p>DON'T KNOW 8</p> <p>c. Occupancy sensors that shut lights off when no motion is detected?</p> <p>YES 1</p> <p>NO 2</p> <p>DON'T KNOW 8</p> <p>d. Time clocks or timed switches which turn interior lights on or off according to predetermined schedule?</p> <p>YES 1</p> <p>NO 2</p> <p>DON'T KNOW 8</p> <p>e. Manual dimmer switches?</p> <p>YES 1</p> <p>NO 2</p> <p>DON'T KNOW 8</p> <p>f. Some other lighting conservation equipment?</p> <p>YES (SPECIFY) _____ 1</p> <p>NO 2</p> <p>DON'T KNOW 8</p>	<p style="text-align: center;">_____ %</p> <p>DON'T KNOW 9-8 --></p> <p style="text-align: center;">_____ %</p> <p>DON'T KNOW 9-8 --></p> <p style="text-align: center;">_____ %</p> <p>DON'T KNOW 9-8 --></p> <p style="text-align: center;">_____ %</p> <p>DON'T KNOW 9-8 --></p> <p style="text-align: center;">_____ %</p> <p>DON'T KNOW 9-8 --></p> <p style="text-align: center;">_____ %</p> <p>DON'T KNOW 9-8 --></p>	<p>25% OR LESS 1</p> <p>26 to 50% 2</p> <p>51 to 75% 3</p> <p>76 to 100% 4</p> <p>DON'T KNOW 8</p> <p>25% OR LESS 1</p> <p>26 to 50% 2</p> <p>51 to 75% 3</p> <p>76 to 100% 4</p> <p>DON'T KNOW 8</p> <p>25% OR LESS 1</p> <p>26 to 50% 2</p> <p>51 to 75% 3</p> <p>76 to 100% 4</p> <p>DON'T KNOW 8</p> <p>25% OR LESS 1</p> <p>26 to 50% 2</p> <p>51 to 75% 3</p> <p>76 to 100% 4</p> <p>DON'T KNOW 8</p> <p>25% OR LESS 1</p> <p>26 to 50% 2</p> <p>51 to 75% 3</p> <p>76 to 100% 4</p> <p>DON'T KNOW 8</p>

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

H. ENERGY MANAGEMENT FEATURES OR PRACTICES

COLUMN A	
<p>H-1. This next section deals with energy management features or practices. Are any of the following present in this building: FOR EACH "YES" IN COLUMN "A", IMMEDIATELY FOLLOW THE ARROW TO COLUMN "B" AND "C". WHEN THERE IS NO ARROW, RETURN TO COLUMN "A" AND ASK ABOUT THE NEXT FEATURE.</p>	
<div style="border: 1px solid black; padding: 2px; display: inline-block;"> HAND CARD H-1 </div>	
FEATURE	
<p>a. A variable air volume (VAV) system on the heating or cooling system?</p>	<p>YES 1 --> NO 2 DON'T KNOW 8</p>
<p>b. Equipment that uses outside air for cooling (Economizer Cycle)?</p>	<p>YES 1 --> NO 2 DON'T KNOW 8</p>
<p>c. Roof or ceiling insulation?</p>	<p>YES 1 --> NO 2 DON'T KNOW 8</p>
<p>d. Insulation in exterior walls?</p>	<p>YES 1 --> NO 2 DON'T KNOW 8</p>
<p>e. Storm windows, storm doors, thermal pane or double or triple paned glass?</p>	<p>YES 1 --> NO 2 DON'T KNOW 8</p>
<p>f. Tinted or reflective glass or shading films?</p>	<p>YES 1 --> NO 2 DON'T KNOW 8</p>
<p>g. Exterior awnings or interior horizontal or vertical shades or mini blinds?</p>	<p>YES 1 --> NO 2 DON'T KNOW 8</p>

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

COLUMN B				COLUMN C			
IF "YES" IN COLUMN A ASK: (Was/Were) the (FEATURE) installed during building construction or added afterwards?				IF "ADDED" IN COLUMN B ASK: When (was/were) the (FEATURE) most recently added? Was it in 1992, between 1987 and 1991, or before 1987?			
DON'T KNOW	INSTALLED	ADDED		1992	1987-1991	BEFORE 1987	DON'T KNOW
a. 8	1	2 -->		1	2	3	8
b. 8	1	2 -->		1	2	3	8
c. 8	1	2 -->		1	2	3	8
d. 8	1	2 -->		1	2	3	8
e. 8	1	2 -->		1	2	3	8
f. 8	1	2 -->		1	2	3	8
g. 8	1	2 -->		1	2	3	8

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

H-2. Can you open and close most of the windows (including door panels) in this building?

- YES 1
- NO 2
- NO WINDOWS 3
- DON'T KNOW 8

H-3. The next group of questions concern programs specifically targeted and designed to improve energy efficiency, reduce energy costs, or promote the use of a different energy source. Such programs are often called Demand-Side Management (DSM) programs.

During the past 3 years, has your electric or natural gas utility sponsored demand-side management programs which you may or may not have participated in? CIRCLE ONE.

- YES 1
- NO 2
- BUILDING DID NOT PURCHASE
ELECTRICITY OR NATURAL
GAS FROM A UTILITY 3
- DON'T KNOW 8

H-4. During the past 3 years, has this building participated in any demand-side management programs, either in-house, utility, or third-party sponsored?

- YES 1 (H-7)
- NO 2
- DON'T KNOW 8

BOX 18	
IS E-3 ON THE FOLD-OUT PAGE CHECKED?	
YES	1 (H-5)
NO	2 (H-5)

H-5. During the past 3 years, has the facility participated in any demand-side management programs, either in-house, utility or third-party sponsored?

- YES 1
- NO 2
- DON'T KNOW 8

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

H-6 Are there plans for this building to participate in a demand side management program in the future?

YES 1 (H-10)

NO 2 (H-10)

DONT KNOW 8 (H-10)

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

COLUMN A	COLUMN B																																																																													
<p>H-7. Here is a card listing potential areas for demand-side management programs. In which of the following has this building participated during the past 3 years? (CIRCLE ALL THAT APPLY)</p> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-bottom: 10px;">HAND CARD H-7</div> <p style="text-align: center;">READ ALL OF COLUMN A BEFORE COLUMN B.</p> <p style="text-align: center;">POTENTIAL AREA</p>	<p>H-8. FOR EACH H-7 CIRCLED, ASK H-8 AND H-9 BEFORE GOING TO NEXT CIRCLED H-7 POTENTIAL AREA.</p> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-bottom: 10px;">HAND CARD H-8</div> <p>Who was the (H-7 POTENTIAL AREA) program sponsored by?</p> <p>EU = Electric Utility, GU = Gas Utility, IH = In-house, TP = Third Party, O = Other, DK = DON'T KNOW (CIRCLE ALL THAT APPLY)</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 10%;"></td> <td style="width: 10%;">EU</td> <td style="width: 10%;">GU</td> <td style="width: 10%;">IH</td> <td style="width: 10%;">TP</td> <td style="width: 10%;">O</td> <td style="width: 10%;">DK</td> </tr> </table>		EU	GU	IH	TP	O	DK																																																																						
	EU	GU	IH	TP	O	DK																																																																								
<p>a. Lighting? 01</p> <p>b. Building envelope or shell? 02</p> <p>c. Heating, ventilation and air conditioning (HVAC) equipment installation or retrofit? 03</p> <p>d. Energy efficient motor(s) including adjustable speed drives or variable speed motors? 04</p> <p>e. Water heating? 05</p> <p>f. Direct electricity load control? 06</p> <p>g. Thermal storage? 07</p> <p>h. Standby electricity generation? 08</p> <p>i. Process heating or cooling, such as waste heat recovery? 09</p> <p>j. Any other type of program? 10</p> <p>SPECIFY _____</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;"></td> <td style="width: 10%;">1</td> <td style="width: 10%;">2</td> <td style="width: 10%;">3</td> <td style="width: 10%;">4</td> <td style="width: 10%;">5</td> <td style="width: 10%;">8</td> </tr> <tr> <td>a.</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>8</td> </tr> <tr> <td>b.</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>8</td> </tr> <tr> <td>c.</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>8</td> </tr> <tr> <td>d.</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>8</td> </tr> <tr> <td>e.</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>8</td> </tr> <tr> <td>f.</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>8</td> </tr> <tr> <td>g.</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>8</td> </tr> <tr> <td>h.</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>8</td> </tr> <tr> <td>i.</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>8</td> </tr> <tr> <td>j.</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>8</td> </tr> </table>		1	2	3	4	5	8	a.	1	2	3	4	5	8	b.	1	2	3	4	5	8	c.	1	2	3	4	5	8	d.	1	2	3	4	5	8	e.	1	2	3	4	5	8	f.	1	2	3	4	5	8	g.	1	2	3	4	5	8	h.	1	2	3	4	5	8	i.	1	2	3	4	5	8	j.	1	2	3	4	5	8
	1	2	3	4	5	8																																																																								
a.	1	2	3	4	5	8																																																																								
b.	1	2	3	4	5	8																																																																								
c.	1	2	3	4	5	8																																																																								
d.	1	2	3	4	5	8																																																																								
e.	1	2	3	4	5	8																																																																								
f.	1	2	3	4	5	8																																																																								
g.	1	2	3	4	5	8																																																																								
h.	1	2	3	4	5	8																																																																								
i.	1	2	3	4	5	8																																																																								
j.	1	2	3	4	5	8																																																																								

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

COLUMN C							
<p>H-9. (Here is a card with types of assistance which can be provided through demand-side management programs.) What type of assistance was received for (H-7 POTENTIAL AREA)? CIRCLE ALL THAT APPLY FOR EACH H-7 POTENTIAL AREA.</p>							
HAND CARD H-9							
	GENERAL INFORMATION	SITE-SPECIFIC INFORMATION	INCENTIVES	ALTERNATIVE RATES	FUEL SWITCHING	OTHER PROGRAM	DON'T KNOW
a.	1	2	3	4	5	6	8
b.	1	2	3	4	5	6	8
c.	1	2	3	4	5	6	8
d.	1	2	3	4	5	6	8
e.	1	2	3	4	5	6	8
f.	1	2	3	4	5	6	8
g.	1	2	3	4	5	6	8
h.	1	2	3	4	5	6	8
i.	1	2	3	4	5	6	8
j.	1	2	3	4	5	6	8

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

H-10. Since December 31, 1986, has an energy audit been performed on this building?

- YES 1
 NO 2 (H-12)
 DONT KNOW 8 (H-12)

H-11. Was the most recent energy-audit: CIRCLE ONE.

HAND
CARD
H-11

- a. sponsored or performed by a local utility? 1
 b. sponsored or performed as a part of a Federal,
 State, or local government program? 2
 c. initiated by the building or business owner
 and performed by in-house personnel or a
 private contractor? 3
 d. sponsored and performed by some other group?
 (SPECIFY) _____ 4
 e. DONT KNOW 8

H-12. Is there a regularly scheduled maintenance and repair program for the heating and cooling system in the building?

- YES 1
 NO 2
 DONT KNOW 8

CHECK HERE IF BUILDING ALWAYS IN FULL USE/ALWAYS OPEN 24 HOURS (I.E., BOX 16 ON FOLDOUT CHECKED) AND GO TO H-14.

H-13. When the building is not in full use, is there a change in temperature setting or a reduction in the use of any of the following equipment: CIRCLE ONE ON EACH LINE.

- | | YES | NO | DK |
|--------------------------------------|-----|----|----|
| a. heating? | 1 | 2 | 8 |
| b. cooling? | 1 | 2 | 8 |
| c. domestic hot water heating? | 1 | 2 | 8 |
| d. lighting? | 1 | 2 | 8 |
| e. any other equipment? | 1 | 2 | 8 |

SPECIFY: _____

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

H-14. Does this building have a computerized energy management and control system or EMCS?

YES 1
 NO 2 (H-16)
 DON'T KNOW 8 (H-16)

H-15. Does the energy management system routinely control the following equipment:

	<u>YES</u>	<u>NO</u>	<u>DK</u>
a. heating?	1	2	8
b. cooling?	1	2	8
c. domestic hot water heating?	1	2	8
d. lighting?	1	2	8
e. any other equipment such as elevator banks and escalators? ...	1	2	8

SPECIFY: _____

H-16. Does this building have any other features which are specifically designed to help conserve energy?

YES 1
 NO 2 (H-18)
 DON'T KNOW 8 (H-18)

H-17. Briefly, please describe those features. RECORD VERBATIM.

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

H-18. Which of the following best describes the person who has day-to-day responsibility for physically operating and maintaining the building's heating and/or cooling equipment? Is this person: CIRCLE ONE.

HAND CARD H-18

- a. the building owner/manager
(including office/store/branch site managers)? 1
- b. the custodian or maintenance engineer? 2
- c. a dedicated energy manager, whose chief
responsibility is to manage energy use and energy
using equipment? 3
- d. a cleaning or maintenance contractor? 4
- e. someone else?
(SPECIFY): _____ 5
- f. No one, a repair service is called when something happens? ... 6 (I-1)
- g. NOT APPLICABLE: BUILDING NOT HEATED OR COOLED 7 (I-1)
- h. DON'T KNOW 8 (I-1)

H-19. How long has this person had this responsibility for this building: CIRCLE ONE.

- Less than 1 year? 1
- 1 to 3 years? 2
- 4 to 6 years? 3
- over 6 years? 4
- DON'T KNOW 8

H-20. In a typical week, how much of this person's time is devoted to operating and maintaining the heating and/or cooling equipment in this building?

HAND CARD H-20

- 10 PERCENT OR LESS 1
- 11 TO 25 PERCENT 2
- 26 TO 50 PERCENT 3
- 51 TO 75 PERCENT 4
- 76 TO 100 PERCENT 5
- DON'T KNOW 8

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

I. ELECTRICITY GENERATION OR COGENERATION

I-1. Does this building have the ability to generate electric power?

- YES 1
- NO 2 (BOX 19)
- DON'T KNOW 8 (BOX 19)

I-2. Please indicate the primary use of the generators in the building as listed on this card.
CIRCLE ONE.

HAND CARD I-2

- EMERGENCY BACK-UP GENERATION, FOR USE ONLY WHEN THERE IS AN INTERRUPTION OF NORMAL SERVICE FROM YOUR UTILITY 1 (BOX 19)
- GENERATORS USED ONLY DURING PERIODS OF HIGH ELECTRIC POWER DEMAND 2
- GENERATORS OPERATING CONTINUOUSLY FOR MOST OF THE YEAR 3
- OTHER (SPECIFY) _____ 4
- DON'T KNOW 8

I-3. Is the electric power generating system in this building also a cogeneration system? That is, in addition to producing electric power, does the same system simultaneously produce heat which is used in this or another building for space heating, water heating, air cooling, industrial processes, and so on?

- YES 1
- NO 2
- DON'T KNOW 8

I-4. Is the building's cogeneration or generation system electrically interconnected with an electric utility? That is, is it able to deliver electricity to the grid as well as receive electricity?

- YES 1
- NO 2
- DON'T KNOW 8

I-5. Using this card, indicate what happens to the electric power which is generated onsite. Is it: CIRCLE ALL THAT APPLY.

HAND CARD I-5

- a. Totally consumed within the building? 1
- b. Partially or totally delivered to the local electric utility? 2
- c. Partially or totally delivered to another building or buildings? ... 3
- d. DID NOT USE GENERATORS DURING CALENDAR YEAR 1992 . 4
- e. DON'T KNOW 8

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

J. CENTRAL PHYSICAL PLANT/MULTIBUILDING FACILITIES

BOX 19
LOOK AT E-3 ON THE FOLD-OUT PAGE. IS THE BUILDING PART OF A MULTIBUILDING FACILITY?

YES 1

NO 2 (SECTION K)

J-1. Does this multibuilding facility have a central physical plant that produces district hot water, district steam, district chilled water or electricity?

YES 1
 NO 2 (SECTION K)
 DON'T KNOW 8 (SECTION K)

J-2. Does the central physical plant on the multibuilding facility produce:

	YES	NO	DK
a. district hot water? ...	1	2	8
b. district steam?	1	2	8
c. district chilled water? .	1	2	8
d. electricity?	1	2	8

J-3. Is the central physical plant for this multibuilding facility located in the building we have been talking about?

YES 1 (SECTION K)
 NO 2
 DON'T KNOW 8 (J-5)

J-4. What is the full name of the building containing the central plant?

BUILDING NAME

BUILDING STREET ADDRESS

CITY, STATE, ZIP

J-5. What is the name, phone number, and FAX number of a contact person for this central physical plant?

_____ () ()

CONTACT NAME PHONE NUMBER FAX NUMBER

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

THIS PAGE INTENTIONALLY LEFT BLANK

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

K. ELECTRICITY PAGE

LOOK AT THE FOLD-OUT PAGE, IF NO ELECTRICITY USED IN BUILDING DURING CALENDAR YEAR 1992
CHECK HERE AND GO TO NATURAL GAS PAGE (SECTION L).

K-1a. Is all the electricity used in this building generated in this building?

YES 1 (SECTION L)

NO 2

K-1. What is the name and address of the supplier that provided (or may yet provide) electricity to the building during calendar year 1992?

Does this building have any other electricity suppliers? ASK K-1 UNTIL THE RESPONDENT ANSWERS "NO" AND CHECK THE "NO OTHER SUPPLIERS" BOX. IF MORE THAN THREE SUPPLIERS, GO TO ADDITIONAL SUPPLIER PAGE (SECTION O).

K-2. Is there a single bill or statement, or are there separate bills or statements, from (SUPPLIER) for this building?

K-3. Please tell me the name of each business or organization that received a bill or statement from (SUPPLIER) for electricity during calendar year 1992.

IF LIST IS NOT PROVIDED,
COMPLETE A CUSTOMER SHEET.

K-4. (Does the bill or statement/Do the bills or statements) from (SUPPLIER) cover just this building or are other buildings covered as well?

K-5. What is the approximate square footage of the other buildings that are included (on this bill or statement/on these bills or statements)?

K-6. (Does the bill or statement/Do any of the bills or statements) include charges for any other major electrical usage outside the building, such as parking lot lights, exterior lights, signs or billboards, large pumps or, swimming pools?

K-7. What are the other major electrical uses? SPECIFY:

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

K. ELECTRICITY PAGE

SUPPLIER NO. 1 ID:	SUPPLIER NO. 2 ID:	SUPPLIER NO. 3 ID:
K-1. NAME _____ _____ ST. ADD. _____ PO BOX _____ CITY _____ STATE/ZIP _____ <input type="checkbox"/> NO OTHER SUPPLIERS	NAME _____ _____ ST. ADD. _____ PO BOX _____ CITY _____ STATE/ZIP _____ <input type="checkbox"/> NO OTHER SUPPLIERS	NAME _____ _____ ST. ADD. _____ PO BOX _____ CITY _____ STATE/ZIP _____ <input type="checkbox"/> NO OTHER SUPPLIERS
K-2. SINGLE BILL 1 (K-4) SEPARATE BILLS 2 (K-3)	SINGLE BILL 1 (K-4) SEPARATE BILLS 2 (K-3)	SINGLE BILL 1 (K-4) SEPARATE BILLS 2 (K-3)
K-3. LIST PROVIDED 1 NOT PROVIDED 2	LIST PROVIDED 1 NOT PROVIDED 2	LIST PROVIDED 1 NOT PROVIDED 2
K-4. JUST THIS BUILDING . . 1 (K-6) OTHER BUILDING(S) . . . 2 DON'T KNOW 8 (K-6)	JUST THIS BUILDING . . 1 (K-6) OTHER BUILDING(S) . . . 2 DON'T KNOW 8 (K-6)	JUST THIS BUILDING . . 1 (K-6) OTHER BUILDING(S) . . . 2 DON'T KNOW 8 (K-6)
K-5. _____ SQUARE FOOTAGE DON'T KNOW 8	_____ SQUARE FOOTAGE DON'T KNOW 8	_____ SQUARE FOOTAGE DON'T KNOW 8
K-6 YES 1 (K-7) NO 2 (BOX 20) DON'T KNOW 8 (BOX 20)	YES 1 (K-7) NO 2 (BOX 20) DON'T KNOW 8 (BOX 20)	YES 1 (K-7) NO 2 (BOX 20) DON'T KNOW 8 (BOX 20)
K-7. _____ <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: auto;">GO TO BOX 20</div>	_____ <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: auto;">GO TO BOX 20</div>	_____ <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: auto;">GO TO BOX 20</div>

BOX 20
 ASK K-2 THROUGH K-7 ABOUT NEXT ELECTRICITY SUPPLIER. IF NO ADDITIONAL SUPPLIERS, GO TO NATURAL GAS PAGE (SECTION L).

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

L NATURAL GAS PAGE

<input type="checkbox"/>	LOOK AT THE FOLD-OUT PAGE, IF NO NATURAL GAS USED IN BUILDING DURING CALENDAR YEAR 1992 CHECK HERE AND GO TO FUEL OIL/DIESEL/KEROSENE PAGE (SECTION M).
--------------------------	---

L-1. What is the name and address of the supplier that has provided (or may yet provide) natural gas to this building during calendar year 1992?

Does this building have any other natural gas suppliers? ASK L-1 UNTIL THE RESPONDENT ANSWERS "NO" AND CHECK THE "NO OTHER SUPPLIERS" BOX. IF MORE THAN THREE SUPPLIERS, GO TO ADDITIONAL SUPPLIER PAGE (SECTION O).

L-2.	Is there a single bill or statement, or are there separate bills or statements, from (SUPPLIER) for this building?
L-3.	Please tell me the name of each business or organization that received a bill from (SUPPLIER) for natural gas during calendar year 1992. <div style="text-align: center; border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;">IF LIST NOT PROVIDED COMPLETE A CUSTOMER SHEET</div>
L-4.	(Does the bill or statement/Do the bills or statements) from (SUPPLIER) cover just this building or are other buildings covered as well?
L-5.	What is the approximate square footage of the <u>other</u> buildings that are included (on this bill or statement/on these bills or statements)?
L-6.	(Does the bill or statement/Do any of the bills or statements) include charges for any <u>other</u> major natural gas usage outside the building, such as for kilns, gas space heaters, exterior or decorative lighting, compressed natural gas vehicles, or pumps not used in this building?
L-7.	What are the other major natural gas uses? SPECIFY:

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

L NATURAL GAS PAGE

SUPPLIER NO. 1 ID:	SUPPLIER NO. 2 ID:	SUPPLIER NO. 3 ID:
L-1. NAME _____ _____ ST. ADD. _____ PO BOX _____ CITY _____ STATE/ZIP _____ <input type="checkbox"/> NO OTHER SUPPLIERS	NAME _____ _____ ST. ADD. _____ PO BOX _____ CITY _____ STATE/ZIP _____ <input type="checkbox"/> NO OTHER SUPPLIERS	NAME _____ _____ ST. ADD. _____ PO BOX _____ CITY _____ STATE/ZIP _____ <input type="checkbox"/> NO OTHER SUPPLIERS
L-2. SINGLE BILL 1 (L-4) SEPARATE BILLS 2 (L-3)	SINGLE BILL 1 (L-4) SEPARATE BILLS 2 (L-3)	SINGLE BILL 1 (L-4) SEPARATE BILLS 2 (L-3)
L-3. LIST PROVIDED 1 NOT PROVIDED 2	LIST PROVIDED 1 NOT PROVIDED 2	LIST PROVIDED 1 NOT PROVIDED 2
L-4. JUST THIS BUILDING . . 1 (L-6) OTHER BUILDING(S) . . . 2 DON'T KNOW 8 (L-6)	JUST THIS BUILDING . . 1 (L-6) OTHER BUILDING(S) . . . 2 DON'T KNOW 8 (L-6)	JUST THIS BUILDING . . 1 (L-6) OTHER BUILDING(S) . . . 2 DON'T KNOW 8 (L-6)
L-5. _____ SQUARE FOOTAGE DON'T KNOW 8	_____ SQUARE FOOTAGE DON'T KNOW 8	_____ SQUARE FOOTAGE DON'T KNOW 8
L-6. YES 1 (L-7) NO 2 (BOX 21) DON'T KNOW . . . 8 (BOX 21)	YES 1 (L-7) NO 2 (BOX 21) DON'T KNOW . . . 8 (BOX 21)	YES 1 (L-7) NO 2 (BOX 21) DON'T KNOW 8 (BOX 21)
L-7. _____ <div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">GO TO BOX 21</div>	_____ <div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">GO TO BOX 21</div>	_____ <div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">GO TO BOX 21</div>

BOX 21

ASK L-2 THROUGH L-7 ABOUT NEXT NATURAL GAS SUPPLIER. IF NO ADDITIONAL SUPPLIERS, GO TO FUEL OIL/DIESEL/KEROSENE PAGE (SECTION M).

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

M. FUEL OIL/DIESEL/KEROSENE PAGE

<input type="checkbox"/>	LOOK AT THE FOLD-OUT PAGE. IF NO FUEL OIL/DIESEL/KEROSENE HAS BEEN OR WILL BE DELIVERED DURING CALENDAR YEAR 1992, CHECK HERE AND GO TO STEAM/HOT WATER/CHILLED WATER PAGE (SECTION N).
--------------------------	---

M-1. What is the name and address of the supplier that has provided (or may yet provide) fuel, oil, diesel or kerosene to the building during calendar year 1992?

M-1a. Does this supplier deliver diesel, residual or some other type of fuel oil? CHECK BOX IN M-1a SUPPLIER COLUMN ON NEXT PAGE FOR EACH TYPE USED.

Does this building have any other fuel oil, diesel or kerosene suppliers? ASK M-1 UNTIL THE RESPONDENT ANSWERS "NO" AND CHECK THE "NO OTHER SUPPLIERS" BOX. IF MORE THAN THREE SUPPLIERS GO TO ADDITIONAL SUPPLIER PAGE (SECTION O)

M-2.	Is there a single bill or statement or are there separate bills or statements from (SUPPLIER) for this building?
------	--

M-3.	Please tell me the name of each business or organization that received a bill from (SUPPLIER) for fuel oil, diesel or kerosene during calendar year 1992.	
<table border="1" style="margin: auto; width: 50%;"> <tr> <td style="text-align: center;">IF LIST NOT PROVIDED, COMPLETE A "CUSTOMER SHEET"</td> </tr> </table>		IF LIST NOT PROVIDED, COMPLETE A "CUSTOMER SHEET"
IF LIST NOT PROVIDED, COMPLETE A "CUSTOMER SHEET"		

M-4.	(Does the bill or statement/Do the bills or statements) from (SUPPLIER) cover just this building or are other buildings covered as well?
------	--

M-5.	What is the approximate square footage of the <u>other</u> buildings that are included (on this bill or statement/on these bills or statements)?
------	--

M-6.	(Does the bill or statement/Do any of the bills or statements) include charges for any <u>other</u> major fuel oil, diesel, or kerosene usage outside the building, such as for kilns, welding, pumps or motors?
------	--

M-7.	What are the other major uses? SPECIFY:
------	---

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

M. FUEL OIL/DIESEL/KEROSENE PAGE

SUPPLIER NO. 1 ID:	SUPPLIER NO. 2 ID:	SUPPLIER NO. 3 ID:
M-1. NAME _____ _____ ST. ADD. _____ PO BOX _____ CITY _____ STATE/ZIP _____ M-1a. <input type="checkbox"/> Diesel (No. 1, 2, or 4) <input type="checkbox"/> Residual (No. 5 or 6) <input type="checkbox"/> Other (SPECIFY) _____ <input type="checkbox"/> NO OTHER SUPPLIERS	NAME _____ _____ ST. ADD. _____ PO BOX _____ CITY _____ STATE/ZIP _____ <input type="checkbox"/> Diesel (No. 1, 2, or 4) <input type="checkbox"/> Residual (No. 5 or 6) <input type="checkbox"/> Other (SPECIFY) _____ <input type="checkbox"/> NO OTHER SUPPLIERS	NAME _____ _____ ST. ADD. _____ PO BOX _____ CITY _____ STATE/ZIP _____ <input type="checkbox"/> Diesel (No. 1, 2, or 4) <input type="checkbox"/> Residual (No. 5 or 6) <input type="checkbox"/> Other (SPECIFY) _____ <input type="checkbox"/> NO OTHER SUPPLIERS
M-2. SINGLE BILL 1 (M-4) SEPERATE BILLS 2 (M-3)	SINGLE BILL 1 (M-4) SEPERATE BILLS 2 (M-3)	SINGLE BILL 1 (M-4) SEPERATE BILLS 2 (M-3)
M-3. LIST PROVIDED 1 NOT PROVIDED 2	LIST PROVIDED 1 NOT PROVIDED 2	LIST PROVIDED 1 NOT PROVIDED 2
M-4. JUST THIS BUILDING . . 1 (M-6) OTHER BUILDING(S) . . . 2 DON'T KNOW 8 (M-6)	JUST THIS BUILDING . . . 1 (M-6) OTHER BUILDING(S) . . . 2 DON'T KNOW 8 (M-6)	JUST THIS BUILDING . . 1 (M-6) OTHER BUILDING(S) . . . 2 DON'T KNOW 8 (M-6)
M-5. _____ SQUARE FOOTAGE DON'T KNOW 8	_____ SQUARE FOOTAGE DON'T KNOW 8	_____ SQUARE FOOTAGE DON'T KNOW 8
M-6. YES 1 (M-7) NO 2 (BOX 22) DON'T KNOW . . . 8 (BOX 22)	YES 1 (M-7) NO 2 (BOX 22) DON'T KNOW . . . 8 (BOX 22)	YES 1 (M-7) NO 2 (BOX 22) DON'T KNOW . . . 8 (BOX 22)
M-7. _____ <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">GO TO BOX 22</div>	_____ _____ <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">GO TO BOX 22</div>	_____ _____ <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">GO TO BOX 22</div>

BOX 22

ASK M-2 THROUGH M-7 ABOUT NEXT FUEL OIL, DIESEL OR KEROSENE SUPPLIER. IF NO ADDITIONAL SUPPLIERS, GO TO STEAM/HOT WATER/CHILLED WATER PAGE (SECTION N).

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

N. STEAM/HOT WATER/CHILLED WATER

- LOOK AT THE FOLD-OUT PAGE. IF NO STEAM, HOT WATER, OR CHILLED WATER USED IN BUILDING DURING CALENDAR YEAR 1992, CHECK HERE AND GO TO SECTION O.
FOR EACH DISTRICT ENERGY SOURCE USED, WRITE "STEAM", "HOT WATER" OR "CHILLED WATER" ABOVE A COLUMN.

N-1. What is the name and address of the supplier or organization that has provided (or may yet provide) (steam/hot water/chilled water) to the building during calendar year 1992?

IF CENTRAL PLANT WITH NAME AND ADDRESS RECORDED IN SECTION J: ENTER "CP" IN COLUMN. IF NOT CENTRAL PLANT: RECORD NAME AND ADDRESS IN COLUMN.

Does this building have any other (steam/hot water/chilled water) suppliers? ASK N-1 UNTIL THE RESPONDENT ANSWERS "NO" FOR THIS DISTRICT ENERGY SOURCE. IF MORE THAN THREE SUPPLIERS, GOT TO SECTION O.

N-2. Is there a single bill or statement or are there separate bills or statements from (SUPPLIER) for this building?

N-3. Please tell me the name of each business or organization that received a bill from (SUPPLIER) during the calendar year 1992.

IF LIST NOT PROVIDED,
COMPLETE A "CUSTOMER SHEET"

N-4. (Does the bill or statement/Do the bills or statements) from (SUPPLIER) cover just this building or are other buildings covered as well?

N-5. What is the approximate square footage of the other buildings that are included (on this bill or statement/on these bills or statements)?

N-6. What is the approximate square footage of the other buildings on the district loop that serves this building?

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

N. STEAM, HOT WATER, OR CHILLED WATER PAGE

ENERGY SOURCE	ENERGY SOURCE	ENERGY SOURCE
SUPPLIER ID: N-1. NAME _____ _____ ST. ADD. _____ PO BOX _____ CITY _____ STATE/ZIP _____	SUPPLIER ID: NAME _____ _____ ST. ADD. _____ PO BOX _____ CITY _____ STATE/ZIP _____	SUPPLIER ID: NAME _____ _____ ST. ADD. _____ PO BOX _____ CITY _____ STATE/ZIP _____
N-2. SINGLE BILL 1 (N-4) SEPARATE BILLS 2 (N-3) NO BILLS 3 (N-6)	SINGLE BILL 1 (N-4) SEPARATE BILLS 2 (N-3) NO BILLS 3 (N-6)	SINGLE BILL 1 (N-4) SEPARATE BILLS 2 (N-3) NO BILLS 3 (N-6)
N-3. LIST PROVIDED 1 NOT PROVIDED 2	LIST PROVIDED 1 NOT PROVIDED 2	LIST PROVIDED 1 NOT PROVIDED 2
N-4. JUST THIS BUILDING . 1 (BOX 23) OTHER BUILDING(S) . . 2 DON'T KNOW 8 (BOX 23)	JUST THIS BUILDING . 1 (BOX 23) OTHER BUILDING(S) . . 2 DON'T KNOW 8 (BOX 23)	JUST THIS BUILDING . 1 (BOX 23) OTHER BUILDING(S) . . 2 DON'T KNOW 8 (BOX 23)
N-5. _____ SQUARE FOOTAGE DON'T KNOW 8 <div style="text-align: center; border: 1px solid black; width: fit-content; margin: 5px auto; padding: 2px;">GO TO BOX 23</div>	_____ SQUARE FOOTAGE DON'T KNOW 8 <div style="text-align: center; border: 1px solid black; width: fit-content; margin: 5px auto; padding: 2px;">GO TO BOX 23</div>	_____ SQUARE FOOTAGE DON'T KNOW 8 <div style="text-align: center; border: 1px solid black; width: fit-content; margin: 5px auto; padding: 2px;">GO TO BOX 23</div>
N-6. _____ SQUARE FOOTAGE DON'T KNOW 8 <div style="text-align: center; border: 1px solid black; width: fit-content; margin: 5px auto; padding: 2px;">GO TO BOX 23</div>	_____ SQUARE FOOTAGE DON'T KNOW 8 <div style="text-align: center; border: 1px solid black; width: fit-content; margin: 5px auto; padding: 2px;">GO TO BOX 23</div>	_____ SQUARE FOOTAGE DON'T KNOW 8 <div style="text-align: center; border: 1px solid black; width: fit-content; margin: 5px auto; padding: 2px;">GO TO BOX 23</div>

BOX 23

ASK ABOUT NEXT DISTRICT ENERGY SOURCE. IF NO ADDITIONAL DISTRICT SOURCES, GO TO SECTION O.

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

ADDITIONAL SUPPLIER PAGE (FOR USE ONLY WHEN MORE THAN THREE SUPPLIERS FOR ANY ENERGY SOURCE)

NO ADDITIONAL SUPPLIERS. GO TO SECTION P.

O-1. Is there any other supplier that has provided (or may yet provide) (ENERGY SOURCE) to the building?
ASK O-1 UNTIL RESPONDENT ANSWERS "NO" AND CHECK THE "NO OTHER SUPPLIERS" BOX.

O-2. Is there a single bill or statement, or are there separate bills or statements from (SUPPLIER) for this building?

O-3. Please tell me the name of each business or organization that received a bill or statement from (SUPPLIER) for energy during the calendar year 1992.

IF LIST NOT PROVIDED,
COMPLETE A "CUSTOMER SHEET"

O-4. (Does the bill or statement/Do the bills or statements) from (SUPPLIER) cover just this building or are other buildings covered as well?

O-5. What is the approximate square footage of the other buildings that are included (on this bill or statement/these bills or statements)?

O-6. (Does the bill or statement/Do any of the bills or statements) include charges for any other major use of this energy source besides the ones you have already told me about?

O-7. What are the (OTHER MAJOR ENERGY SOURCES) used for? SPECIFY:

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

O. ADDITIONAL SUPPLIERS

ENERGY SOURCE	ENERGY SOURCE	ENERGY SOURCE
<p>SUPPLIER ID: _____</p> <p>O-1. NAME _____</p> <p>_____</p> <p>ST. ADD. _____</p> <p>PO BOX _____</p> <p>CITY _____</p> <p>STATE/ZIP _____</p> <p><input type="checkbox"/> NO OTHER SUPPLIERS</p>	<p>SUPPLIER ID: _____</p> <p>NAME _____</p> <p>_____</p> <p>ST. ADD. _____</p> <p>PO BOX _____</p> <p>CITY _____</p> <p>STATE/ZIP _____</p> <p><input type="checkbox"/> NO OTHER SUPPLIERS</p>	<p>SUPPLIER ID: _____</p> <p>NAME _____</p> <p>_____</p> <p>ST. ADD. _____</p> <p>PO BOX _____</p> <p>CITY _____</p> <p>STATE/ZIP _____</p> <p><input type="checkbox"/> NO OTHER SUPPLIERS</p>
<p>O-2. SINGLE BILL 1 (O-4)</p> <p>SEPARATE BILLS 2 (O-3)</p>	<p>SINGLE BILL 1 (O-4)</p> <p>SEPARATE BILLS 2 (O-3)</p>	<p>SINGLE BILL 1 (O-4)</p> <p>SEPARATE BILLS 2 (O-3)</p>
<p>O-3. LIST PROVIDED 1</p> <p>NOT PROVIDED 2</p>	<p>LIST PROVIDED 1</p> <p>NOT PROVIDED 2</p>	<p>LIST PROVIDED 1</p> <p>NOT PROVIDED 2</p>
<p>O-4. JUST THIS BUILDING . . 1 (O-6)</p> <p>OTHER BUILDING(S) . . . 2</p> <p>DON'T KNOW 8 (O-6)</p>	<p>JUST THIS BUILDING . . . 1 (O-6)</p> <p>OTHER BUILDING(S) . . . 2</p> <p>DON'T KNOW 8 (O-6)</p>	<p>JUST THIS BUILDING . . 1 (O-6)</p> <p>OTHER BUILDING(S) . . . 2</p> <p>DON'T KNOW 8 (O-6)</p>
<p>O-5. _____</p> <p style="text-align: center;">SQUARE FOOTAGE</p> <p>DON'T KNOW 8</p>	<p>_____</p> <p style="text-align: center;">SQUARE FOOTAGE</p> <p>DON'T KNOW 8</p>	<p>_____</p> <p style="text-align: center;">SQUARE FOOTAGE</p> <p>DON'T KNOW 8</p>
<p>O-6. YES 1 (O-7)</p> <p>NO 2 (BOX 24)</p> <p>DON'T KNOW 8 (BOX 24)</p>	<p>YES 1 (O-7)</p> <p>NO 2 (BOX 24)</p> <p>DON'T KNOW 8 (BOX 24)</p>	<p>YES 1 (O-7)</p> <p>NO 2 (BOX 24)</p> <p>DON'T KNOW 8 (BOX 24)</p>
<p>O-7. _____</p> <p style="text-align: center; border: 1px solid black; padding: 2px;">GO TO BOX 24</p>	<p>_____</p> <p style="text-align: center; border: 1px solid black; padding: 2px;">GO TO BOX 24</p>	<p>_____</p> <p style="text-align: center; border: 1px solid black; padding: 2px;">GO TO BOX 24</p>

BOX 24
ASK ABOUT NEXT SUPPLIER. IF NO ADDITIONAL SUPPLIERS, RETURN TO APPROPRIATE ENERGY SOURCE PAGE.

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

P. ENERGY SOURCE DELIVERY

P-1. NO ELECTRICITY USED IN BUILDING. GO TO P-2.

Earlier you said that electricity was used in this building. Please give me the range on this card which will best describe the total expenditures during calendar year 1992 for the electricity used in this building.

HAND
CARD
GREEN

\$100 OR LESS	01
\$101 to \$500	02
\$501 to \$1,000	03
\$1,001 to \$2,000	04
\$2,001 to \$5,000	05
\$5,001 to \$10,000	06
\$10,001 to \$20,000	07
\$20,001 to \$50,000	08
\$50,001 to \$100,000	09
\$100,001 to \$200,000	10
\$200,001 to \$500,000	11
\$500,001 to \$1,000,000	12
OVER \$1,000,000	13
DONT KNOW	98

P-2. NO NATURAL GAS USED IN BUILDING. GO TO P-8.

Earlier you said that natural gas is used in this building. Please give me the range on this card which will best describe the total expenditures during calendar year 1992 for the natural gas used in this building.

HAND
CARD
GREEN

\$100 OR LESS	01
\$101 to \$500	02
\$501 to \$1,000	03
\$1,001 to \$2,000	04
\$2,001 to \$5,000	05
\$5,001 to \$10,000	06
\$10,001 to \$20,000	07
\$20,001 to \$50,000	08
\$50,001 to \$100,000	09
\$100,001 to \$200,000	10
\$200,001 to \$500,000	11
\$500,001 to \$1,000,000	12
OVER \$1,000,000	13
DONT KNOW	98

P-3. During the year, were any of the natural gas accounts in the building on an interruptible service rate? (This is a special rate offered to customers by gas companies, that allows the gas company to cut back on the amount of gas supplied to the building during periods of high demand.)

YES	1
NO	2
DONT KNOW	8

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

P-4. Does this building buy or contract for its natural gas from someone other than the local distribution company (utility) and then have the utility deliver that gas? Gas bought this way is often called gas for the account of others, transported gas, spot market gas, or direct purchase gas.

- YES 1
- NO 2 (P-8)
- DON'T KNOW 8 (P-7)

P-5. Can you give me the name of the company or broker that the direct purchase gas is bought or contracted from?

- YES 1 -->
- NO 2 (P-7)

RECORD BELOW AND
THEN GO TO P-6

COMPANY NAME: _____

ADDRESS: _____

CITY/STATE/ZIP: _____

CONTACT PERSON: _____

TELEPHONE (INCLUDE AREA CODE): (_____) _____

FAX NUMBER: (_____) _____

P-6. Can you supply us with cost figures for the components of the direct purchase gas. That is:

<ul style="list-style-type: none"> a. well head costs? ... \$ _____ b. city gate costs? \$ _____ c. local distributing company charges? .. \$ _____ d. other costs? \$ _____ e. DON'T KNOW 8 	}	<p>f. Prices quoted are per:</p> <ul style="list-style-type: none"> Therm 1 Cubic foot (cf) 2 100 Cu. ft. (Ccf) 3 1000 Cu. ft. (Mcf) 4 Other (SPECIFY) 5
--	---	---

GO TO P-8

P-7. Can you give me the name of a person who can provide more information about natural gas purchases for this building?

- YES 1
- NO 2

RECORD BELOW AND
THEN GO TO P-8

CONTACT PERSON: _____

TELEPHONE (INCLUDE AREA CODE): (_____) _____

FAX NUMBER: (_____) _____

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

F-8. NO FUEL OIL OR DIESEL USED IN BUILDING. GO TO P-10.

Earlier you said that fuel oil, diesel or kerosene is used in this building. Which of the ranges on this card will best describe the total expenditures during calendar year 1992 for the fuel oil, diesel or kerosene used in this building?

HAND
CARD
GREEN

- \$100 OR LESS 01
- \$101 to \$500 02
- \$501 to \$1,000 03
- \$1,001 to \$2,000 04
- \$2,001 to \$5,000 05
- \$5,001 to \$10,000 06
- \$10,001 to \$20,000 07
- \$20,001 to \$50,000 08
- \$50,001 to \$100,000 09
- \$100,001 to \$200,000 10
- \$200,001 to \$500,000 11
- \$500,001 to \$1,000,000 12
- OVER \$1,000,000 13
- DON'T KNOW 98

P-9. Think about all the fuel oil storage tanks for this building. What is the total capacity, in gallons, of all the fuel oil storage tanks?

- _____
- GALLONS
- DONT KNOW 9-8

P-10. NO BOTTLED GAS/LPG/PROPANE USED IN BUILDING. GO TO P-12.

Earlier you said that bottled gas is used in this building. HAND CARD P-10. Which of the ranges on this hand card will best describe the amount of bottled gas used in this building during calendar year 1992?

HAND
CARD
P-10

- | | | |
|------------------------|---|-----------------|
| LESS THAN 100 01 | } | GALLONS 1 |
| 100 TO 499 02 | | POUNDS 2 |
| 500 TO 999 03 | | |
| 1,000 OR MORE 04 | | |
| DON'T KNOW 98 | | |

INTERVIEWER: YOU MUST CIRCLE EITHER POUNDS OR GALLONS

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

P-11. Which of the ranges on this card will best describe the total expenditures during calendar year 1992 for the bottled gas used in this building?

HAND CARD P-11

- \$100 OR LESS 01
- \$101 to \$500 02
- \$501 to \$1,000 03
- \$1,001 to \$2,000 04
- \$2,001 to \$5,000 05
- \$5,001 to \$10,000 06
- \$10,001 to \$20,000 07
- OVER \$20,000 08
- DONT KNOW 98

P-12. NO WOOD USED IN BUILDING. GO TO SECTION Q.

Earlier you said that wood is used in this building. Which of the ranges on this card best describes how much wood will have been burned in this building by the end of calendar year 1992?

HAND CARD P-12

- LESS THAN 1 CORD 01
- 1 TO 9 CORDS 02
- 10 TO 20 CORDS 03
- MORE THAN 20 CORDS 04
- DONT KNOW 98

P-13. Has this wood been purchased or has it been provided free of charge from some other source such as waste wood?

- PURCHASED 1
- PROVIDED FREE OF CHARGE
FROM ANOTHER SOURCE 2 (SECTION Q)
- DONT KNOW 8 (SECTION Q)

P-14. Which of the ranges on this card will best describe the total expenditures during calendar year 1992 for the wood used in this building?

HAND CARD P-14

- \$100 OR LESS 01
- \$101 to \$500 02
- \$501 to \$1,000 03
- \$1,001 to \$2,000 04
- \$2,001 to \$5,000 05
- \$5,001 to \$10,000 06
- \$10,001 to \$20,000 07
- OVER \$20,000 08
- DONT KNOW 98

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

Q. AUTHORIZATION FORM

Q-1. As I mentioned, the purpose of the study is to relate building characteristics with energy consumption and expenditures. We are also interested in learning more about demand-side management and energy audit programs. This information can only be obtained by going directly to each energy supplier of the building. In order for the energy company to release this information to Westat, we need to have an authorization form from you, or some other representative of your company. We also need account numbers for the building.

a. Should the authorization form be signed by you or someone else?

RESPONDENT 1
SOMEONE ELSE (SPECIFY) 2

NAME: _____
TITLE: _____
ADDRESS: _____
CITY, STATE, ZIP: _____
PHONE NUMBER: () _____
FAX NUMBER () _____

b. Should the account number(s) be obtained from you or someone else?

RESPONDENT 1
INDIVIDUAL LISTED ABOVE 2
SOMEONE ELSE (SPECIFY BELOW) 3

NAME: _____
TITLE: _____
ADDRESS: _____
CITY, STATE, ZIP: _____
PHONE NUMBER: () _____
FAX NUMBER () _____

<i>BOX 25</i>			
<i>AFTER AUTHORIZATION OBTAINED, CODE STATUS OF ACCOUNT NUMBER EFFORT</i>			
	<u>OBTAINED</u>	<u>NOT OBTAINED</u>	<u>INAPPLICABLE</u>
<i>ELECTRICITY</i>	1	2	3
<i>NATURAL GAS</i>	1	2	3

Q-2. RECORD TIME ENDED AND CONTINUE WITH SECTION R.

TIME ENDED: _____

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871G (03/92)

Form Approval
OMB No: 0607-0751
Expires: December 31, 1993

R. CONSTRUCTION IMPROVEMENTS AND MAINTENANCE AND REPAIRS SUPPLEMENT

TIME BEGAN: _____

The final questions of the interview are about expenditures for construction improvements and maintenance and repairs to this building during calendar year 1992. This information will be used to measure the effect of these activities on the U.S. economy.

R-1. The first question is about the cost of construction improvements, including additions, alterations, and major replacements to the building. Approximately, what is the total amount of money that will be spent in calendar year 1992 by all persons and businesses for construction improvements to the building? Include expenditures to date plus estimated expenditures for the remainder of the year. Construction improvements are defined on this card.

HAND
CARD
R-1

\$ _____ (R-2)
DOLLARS

NEEDS A FEW DAYS TO COMPILE DATA 9-6 (R-1a)
DONT KNOW 9-8 (R-1b)

R-1a. When can I call you back to get this information?

_____ (R-2)
DATE TIME

R-1b. What is the name, address, and telephone number of the person who is most likely to know the total amount expected to be spent on construction improvements to this building during calendar year 1992?

NAME: _____ (R-2)
ADDRESS: _____
CITY, STATE, ZIP: _____
PHONE NUMBER: (_____) _____

NO ONE PERSON KNOWS THE TOTAL 6 (BOX 26)
DONT KNOW 8 (BOX 26)

BOX 26

LOOK AT QUESTIONS E-5 AND E-6 ON THE FOLDOUT PAGE AND CIRCLE ONE:

ONE OCCUPANT: THE OWNER (E-5 = 1) 1 (R-2)
ONE OCCUPANT: NOT THE OWNER (E-5 = 2) 2 (R-1c)
TWO OCCUPANTS: INCLUDING THE OWNER
(E-5 = 3 AND E-6 = 2) 3 (R-1c)
ALL OTHER SITUATIONS 4 (R-2)

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871G (03/92)

R-1c. How much money will the owner spend on construction improvements to this building during calendar year 1992?

\$ _____ (R-1e)
DOLLARS

DON'T KNOW 9-8 (R-1d)

R-1d. What is the name, address, telephone number, and FAX number of the person who is most likely to know how much the owner will spend on construction improvements to this building?

NAME: _____ (R-1e)

ADDRESS: _____

CITY, STATE, ZIP: _____

PHONE NUMBER: () _____

FAX NUMBER: () _____

DON'T KNOW 8 (R-2)

R-1e. CHECK HERE IF CURRENTLY UNOCCUPIED AND SKIP TO R-2.

R-1f. How much (additional) money will the current occupant spend on construction improvements to this building during calendar year 1992?

\$ _____ (R-2)
DOLLARS

DON'T KNOW 8 (R-1g)

R-1g. What is the name, address, telephone number, and FAX number of the current tenant in this building?

NAME: _____ (R-2)

ADDRESS: _____

CITY, STATE, ZIP: _____

PHONE NUMBER: () _____

FAX NUMBER: () _____

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871G (03/92)

R-2d. How much (additional) money will the current tenant spend on maintenance and repairs for this building during calendar year 1992?

\$ _____ (R-2e)
DOLLARS

DON'T KNOW 9-8 (R-2e)

R-2e. END: This completes the interview. Thank you very much for your time and help.

TIME ENDED: _____

BOX 28

INDICATE WHO PROVIDED THE EXPENDITURE INFORMATION FOR CONSTRUCTION IMPROVEMENTS AND MAINTENANCE AND REPAIRS:

	R-3 CONSTRUCTION IMPROVEMENTS (CIRCLE ONE)	R-4 MAINTENANCE AND REPAIRS (CIRCLE ONE)
a. OWNER	1	1
b. REPRESENTATIVE OF OWNER'S BUSINESS	2	2
c. OCCUPANT	3	3
d. OCCUPANT REPRESENTATIVE	4	4
e. OTHER (SPECIFY)	5	5

RESPONDENT NAME: _____

TELEPHONE: (_____) _____

FAX NUMBER: (_____) _____

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

INTERVIEWER OBSERVATIONS

FILL THIS OUT IF YOU COMPLETE THE BUILDING INTERVIEW.

1. Building is, or is part of a facility that is, a (CIRCLE ONE):

Hospital 1
College/University 2
Elementary/Middle/High School 3
Post Office 4
Other 5

2. Does the interview's definition of the building agree with the listing sheet (CIRCLE ONE)?

YES, BOX 3 = "SAMPLED LISTED
BUILDING" 1 (4)
NO 2

3. A. Please indicate the name and address(es) of the building from the listing sheet.

NAME: _____

ADDRESS: _____

- B. Please indicate the name and address(es) of the building as defined for the interview.

(A-5) NAME: _____

(A-4) ADDRESS: _____

- C. Please explain the circumstances of the above difference between listing and interview definition of the building.

4. The individual who completed all or most of the questionnaire should be recorded on the front cover. Did any other person respond to the questionnaire?

YES 1
NO 2 (6)

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

5. Please list all other respondents.

NAME: _____
TITLE: _____
LOCATION: _____
PHONE NO. () _____

NAME: _____
TITLE: _____
LOCATION: _____
PHONE NO. () _____

6. What is your observation of the type of building or kind of business that occurs within the building?
Please be thorough in your description.

7. Is this building, as defined for the interview, freestanding or attached to another building?

FREESTANDING 1
ATTACHED 2

8. Please describe any unusual circumstances you may have encountered in obtaining the energy consumption authorization form. (If you did not obtain the authorization form or account numbers, explain why.)

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

9. Is this a strip shopping center or enclosed mall?

- STRIP SHOPPING CENTER 1
- ENCLOSED MALL 2
- NOT A STRIP CENTER/MALL 3 (END)

10. Approximately how many establishments are in this shopping center/mall?

- 2-5 1
- 6-10 2
- 11-20 3
- 21-49 4
- 50-99 5
- 100 OR MORE 6

**Commercial Buildings Energy Consumption Survey for 1992
Building Questionnaire, Form EIA-871A**

Form EIA-871A (03/92)

THIS PAGE INTENTIONALLY BLANK

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

NONINTERVIEW REPORT

FILL THIS OUT IF YOU DID NOT COMPLETE
THE BUILDING INTERVIEW.

1. Why were you unable to complete the interview?

REFUSAL/BREAKOFF 1
INELIGIBLE BUILDING 2 (4)
RESPONDENT COULD NOT BE
CONTACTED 3

2. IF NOT RECORDED ON FRONT COVER: What is the name, title, and telephone number of the individual who refused, broke off, or could not be contacted for the interview?

NAME: _____

TITLE: _____

TELEPHONE NO.: () _____

3. Why did the respondent refuse? (RECORD VERBATIM) OR: Why were there problems contacting the respondent?

SKIP TO 5

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

4. Please explain in detail why the building was ineligible for the interview.

5. What is your observation of the type of building or kind of business that occurs within the building?

6. How many floors does the building have, ground level and above?

OF FLOORS

IF INELIGIBLE BUILDING: END.

7. IF INDUSTRIAL, AGRICULTURAL, OR RESIDENTIAL MENTIONED IN 5: Would you estimate that 50% or more of the space in this building is used for (industrial/agricultural/residential) activities?

- YES 1
- NO 2
- DON'T KNOW 8

8. Which category in your estimation best applies to the total square feet in this building?

- 1,000 square feet or less 1
- 1,001 to 50,000 square feet 2
- Over 50,000 square feet 3
- DON'T KNOW 8

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

SUPPLIER CUSTOMER SHEET

ENERGY SOURCE: _____

SUPPLIER'S NAME: _____

LIST OF RECIPIENTS OF SEPARATE BILLS	ADDITIONAL INFORMATION TO EXPLAIN BILLING
1. Name _____ Address _____	_____ _____
2. Name _____ Address _____	_____ _____
3. Name _____ Address _____	_____ _____
4. Name _____ Address _____	_____ _____
5. Name _____ Address _____	_____ _____
6. Name _____ Address _____	_____ _____
7. Name _____ Address _____	_____ _____
8. Name _____ Address _____	_____ _____
9. Name _____ Address _____	_____ _____
10. Name _____ Address _____	_____ _____
11. Name _____ Address _____	_____ _____
12. Name _____ Address _____	_____ _____

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

SUPPLIER CUSTOMER SHEET

ENERGY SOURCE: _____

SUPPLIER'S NAME: _____

LIST OF RECIPIENTS OF SEPARATE BILLS	ADDITIONAL INFORMATION TO EXPLAIN BILLING
13. Name _____ Address _____	_____ _____
14. Name _____ Address _____	_____ _____
15. Name _____ Address _____	_____ _____
16. Name _____ Address _____	_____ _____
17. Name _____ Address _____	_____ _____
18. Name _____ Address _____	_____ _____
19. Name _____ Address _____	_____ _____
20. Name _____ Address _____	_____ _____
21. Name _____ Address _____	_____ _____
22. Name _____ Address _____	_____ _____
23. Name _____ Address _____	_____ _____
24. Name _____ Address _____	_____ _____

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

SUPPLIER CUSTOMER SHEET

ENERGY SOURCE: _____

SUPPLIER'S NAME: _____

LIST OF RECIPIENTS OF SEPARATE BILLS	ADDITIONAL INFORMATION TO EXPLAIN BILLING
25. Name _____ Address _____	_____ _____
26. Name _____ Address _____	_____ _____
27. Name _____ Address _____	_____ _____
28. Name _____ Address _____	_____ _____
29. Name _____ Address _____	_____ _____
30. Name _____ Address _____	_____ _____
31. Name _____ Address _____	_____ _____
32. Name _____ Address _____	_____ _____
33. Name _____ Address _____	_____ _____
34. Name _____ Address _____	_____ _____
35. Name _____ Address _____	_____ _____
36. Name _____ Address _____	_____ _____

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

Form EIA-871A (03/92)

SUPPLIER CUSTOMER SHEET

ENERGY SOURCE: _____

SUPPLIER'S NAME: _____

LIST OF RECIPIENTS OF SEPARATE BILLS	ADDITIONAL INFORMATION TO EXPLAIN BILLING
37. Name _____ Address _____	_____ _____
38. Name _____ Address _____	_____ _____
39. Name _____ Address _____	_____ _____
40. Name _____ Address _____	_____ _____
41. Name _____ Address _____	_____ _____
42. Name _____ Address _____	_____ _____
43. Name _____ Address _____	_____ _____
44. Name _____ Address _____	_____ _____
45. Name _____ Address _____	_____ _____
46. Name _____ Address _____	_____ _____
47. Name _____ Address _____	_____ _____
48. Name _____ Address _____	_____ _____

Commercial Buildings Energy Consumption Survey for 1992 Building Questionnaire, Form EIA-871A

FOLD-OUT PAGE

1986 _____ SQUARE FEET _____ NO. OF FLOORS _____ YEAR BUILT	1992 A-7/A-8 _____ SQUARE FEET A-9 _____ NO. OF FLOORS A-12/A-14 _____ YEAR BUILT	E-3. MULTIBUILDING FACILITY <input type="checkbox"/> E-5. OCCUPANT STATUS: ONE: THE OWNER 1 ONE: NOT THE OWNER 2 MORE THAN ONE: INCLUDING THE OWNER 3 MORE THAN ONE: NOT INCLUDING THE OWNER 4 CURRENTLY UNOCCUPIED 5 E-6. NO. OF BUSINESSES: _____ BOX 16. OPEN 24 HRS <input type="checkbox"/>
--	---	--

C-1. Here is a list of various types of energy sources. Which of these fuels or energy sources have been or may be used to supply energy to this building during calendar year 1992?	C-3. END USES FOR ENERGY SOURCES DURING CALENDAR YEAR 1992:						
	a. Main fuel for heating	b. Any other heating fuels	c. Fuel for air-conditioning	d. Fuel for domestic hot water heating	e. Fuel for commercial/institutional cooking or serving	f. Fuel for manufacturing/industrial activity	g. Fuel to generate electricity
NOT PERFORMED	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C-1. ENERGY SOURCES (CHECK ALL USED)	CHECK ONE	CHECK ALL THAT APPLY	CHECK ALL THAT APPLY	CHECK ALL THAT APPLY	CHECK ALL THAT APPLY	CHECK ALL THAT APPLY	CHECK ALL THAT APPLY
a. Electricity <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Natural Gas <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Fuel Oil/Diesel/Kerosene <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Bottled Gas/LPG/Propane <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. District Steam <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. District Hot Water <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. District Chilled Water <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Wood <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Coal <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Electricity from solar photovoltaic cells (PVC's) <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. Thermal Energy from active solar collectors <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. Other (Specify) _____ <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
END USE PERFORMED BUT ENERGY SOURCE NOT KNOWN	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Selected Energy Statistics Available on EIA's Electronic Publishing System (EPUB)

EPUB is an electronic publishing system maintained by the Energy Information Administration (EIA) of the U.S. Department of Energy. EPUB allows the general public to electronically access selected energy data from many of EIA's statistical reports. The system is a menu-driven, bulletin-board-type system with extensive online help capabilities that can be accessed free of charge 24 hours a day by using a terminal or PC with an asynchronous modem. (EPUB is taken down briefly at midnight for backup.)

PC users must provide the following information to their communications software in order to successfully access the EPUB system:

Communications Parameters

Baud Rate: 300-2400 bps

Data Bits: 8

Stop Bits: 1

Parity: None

Duplex: Full

Terminal Type: ANSI, ANSI-BBS, VT100, etc.

Once communications software and/or hardware have been configured, EPUB can be accessed by dialing (202) 586-2557. When a connection to the system has been made, some users may find that the menu-driven instructions and the online help capabilities will provide enough information to effectively use EPUB. More detailed information is in the *EPUB Users Guide*, available online from the EPUB system or from:

National Energy Information Center, EI-231
Energy Information Administration
Forrestal Building, Room 1F-048
Washington, DC 20585
(202) 586-8800

Telecommunications device for the
hearing-impaired only: (202)586-1181
Hours: 9 a.m. to 5 p.m., M-F, eastern time

For communications or technical assistance, call (202) 586-8959, 8 a.m. to 5 p.m., eastern time, Monday through Friday. For questions about the content of EPUB reports and data, call the National Energy Information Center on (202) 586-8800.

EPUB provides statistical information, as well as data from selected EIA publications:

Heating fuel data
Updated the 2nd week of the month.

Oxygenate data
Updated approximately the 25th of the month.

Weekly Petroleum Status Report
Updated on Wednesdays (Thursdays in the event of a holiday) at 5 p.m.

Petroleum Supply Monthly
Updated on the 20th of the month.

Petroleum Marketing Monthly
Updated on the 20th of the month.

Natural Gas Monthly
Updated on the 20th of the month.

Weekly Coal Production
Updated on Fridays at 5 p.m.

Quarterly Coal Report
Updated 60 days after the end of the quarter.

Electric Power Monthly
Updated on the 1st of the month.

Monthly Energy Review
Updated the last week of the month.

Short-Term Energy Outlook
Updated 60 days after the end of the quarter.

Winter Fuels Report (October through April)
Updated every Thursday at 5 p.m.

Notice: By mid-1992, a second *Monthly Energy Review* (MER) file will be available to EPUB users with PostScript-compatible printers, from which they will be able to download and print an exact replica of the entire printed MER (except covers), including all text, tables, and graphics. This will mark the first time that EIA offers a "print-on-demand" service.

**Energy Information Administration
U.S. Department of Energy
Forrestal Building, EI-231
Washington, DC 20585**

**THIRD-CLASS MAIL
POSTAGE & FEES PAID
U. S. DEPT. OF ENERGY
PERMIT NO. G-765**

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, \$300

**Address Correction Requested
Do Not Forward**

