Preliminary Review of NECPA Generated Information Requirements for the Office of Conservation and Solar Applications

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A. L. Nieves**

March 8, 1979

**Prepared for Office of Conservation
and Solar Applications
Department of Energy
under Contract EY-76-C-06-1830**

**Pacific Northwest Laboratory
Operated for the U.S. Department of Energy
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PACIFIC NORTHWEST LABORATORY
operated by
BATTELLE
for the
UNITED STATES DEPARTMENT OF ENERGY
Under Contract EY-76-C-06-1830

Printed in the United States of America
Available from
National Technical Information Service
United States Department of Commerce
5285 Port Royal Road
Springfield, Virginia 22151
Price: Printed Copy \$____*; Microfiche \$3.00

*Pages	NTIS Selling Price
001-025	\$4.00
026-050	\$4.50
051-075	\$5.25
076-100	\$6.00
101-125	\$6.50
126-150	\$7.25
151-175	\$8.00
176-200	\$9.00
201-225	\$9.25
226-250	\$9.50
251-275	\$10.75
276-300	\$11.00

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PRELIMINARY REVIEW OF NECPA GENERATED
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Richland, Washington 99352

SUMMARY

Effective implementation of energy conservation policy requires large quantities of various types of good quality, timely data. To obtain the desired data, the information requirements must first be identified so that they can be communicated in a justifiable form to the Energy Information Administration (EIA) and other data collecting organizations.

This report represents the initial results of an effort to describe the general information needed by the Office of Conservation and Solar Applications (CS) to carry out their responsibility in implementing the National Energy Conservation Policy Act (NECPA). The assessment of the NECPA-generated information requirements is organized around the conservation programs for utilities, residences, industry, federal and public buildings and transportation. This assessment identifies the factors that generate the information requirements (sections, parts and titles of NECPA), describes the general information needed to implement the act and references potential sources of data. Appendix A contains a summary of this assessment in table form.

This report is the first in a series in a study to assess the information and data requirements of the Conservation and Solar Office. Subsequent reports will concentrate on specific programs to access detailed data needs.

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1.0 INTRODUCTION

The effectiveness of the Conservation and Solar Applications Office (CS) depends, in a large part, on the smooth flow of the information that is needed to carry out its mandate. This requires that the information and data requirements be identified, that good quality data be available and that the data be retrievable efficiently. Constraints in these requirements create special problems in establishing the direction of a program and in managing it. The most recent task in the CS program is the implementation of the National Energy Act (NEA), in particular, the implementation of the National Energy Conservation Policy Act (NECPA).

The purpose of this study is to make a preliminary assessment of the general information requirements for implementing the various provisions of NECPA as it affects the Office of Conservation and Solar Applications. The Act authorizes the making of rules regarding conservation policy that affect the residential, commercial and industrial sectors. It is important that potential impacts on the affected groups be thoroughly understood before these rules are promulgated. The analyses accompanying the development of these rules require extensive data. The assessment of these data requirements and a brief review of potential data sources is the focus of this study.

The Department of Energy Organization Act (PL 95-91) consolidated the responsibility for primary energy data gathering activities in the Energy Information Administration (EIA) of DOE. Due to the diverse nature of the CS program and the historical fact that consumption data by end-use functions has not been systematically collected (such data collection is rather expensive), it is often difficult for users in the CS program divisions and their contractors to identify and obtain reliable data. The identification and access of data is further complicated by the fact that data needed for analysis and decision-making is of a type or types (e.g., socioeconomic) that is compiled and maintained in data bases other than those maintained by EIA. (Appendix B contains a summary of potential federal, state and private data sources.) Diversity in location and in methods of data organization make it very difficult to assess the adequacy of data including appropriateness of level of

aggregation, accuracy and precision, consistency, lack of standardization, and appropriateness of time and frequency of collection.

Throughout this report the following distinction between data and information will be made: data are facts collected from observations or measurements. Information is the meaningful interpretation and correlation of data. In subsequent work, assessments will be made on the detailed data needs generated by a variety of factors and on the adequacy of available data.

2.1 METHODOLOGY

2.1 INTRODUCTION

The identification of information requirements is one of the first steps in the process of making decisions. From this step data can be identified, collected, processed and stored so that they are available while still relevant. The incorporation of these activities defines an information system that should be the core of any organization involved in policy-making and implementation. The methodology defined in this section describes one method of identifying the information and data requirements for effective decision-making. This method can be used to identify the information needs of the CS office in implementing energy conservation policy including research, development, demonstration and commercialization programs.

Data needs in any organization results from the need to make business or policy decisions. The data needs of the CS office result, primarily, from the need to implement mandates resulting from legislative and executive actions. From these actions a series of events takes place that result in the formulation, implementation and administration of national energy policy. In general, the process takes the following form:

In energy conservation policy, the CS office plays a direct role in the administrative action and indirect roles in the research, analysis and data collection activities. The procedure for assessing information requirements addresses the problem of defining the necessary, information-gathering administrative actions from the Executive and Legislative actions.

2.2 PLAN DESCRIPTION

The procedure for assessing information and data needs of the CS office consists of "filling" a data needs matrix. The data needs matrix consists of an agglomeration of smaller matrices, each having the following dimensions:

1. Factors generating data needs
2. Programmatic functional areas
3. Information - Data types.

The factors generating data needs (factors) consist primarily of Executive, Legislative and Administrative actions. Each factor determines information and data requirements at different levels of abstraction. The factors may be ranked by degree of abstraction as follows:

- laws and policies
- objectives
- regulations
- programs.

Programs are defined as the research, analysis and monitoring activities required to formulate or support regulations. Regulations are the means by which policies and laws are implemented. Laws, policies and objectives generate needs at the same level of abstraction. The objectives may be internally generated by CS and include numerical energy conservation goals and targets.

The second dimension, programmatic functional areas, corresponds approximately to the various CS program offices. These include: Buildings and Community Systems, Industrial Programs, Transportation Programs, Solar Applications, State and Local Programs, Small Scale Technology and Commercialization. Also, each Program Office has a dimension in itself defined by internal areas of responsibility.

The third dimension consists of the information-data types. These may be defined as economic, social, demographic, climatic, technical and other types of information and data requirements generated by a particular factor. Each information-data type is further defined by levels of abstraction which range from more general to more detailed. The most detailed levels would consist of data elements and the most general would consist of information categories. Figure 1 illustrates this concept.

FIGURE 1. Data Needs Matrix

Laws, policies and goals generate information needs which are too general to be used to recommend data collection. Specific data needs are identified and formulated during the research, analysis and monitoring activities necessary for the development of regulations needed to implement the laws. Classifying the data dimension by levels of generality facilitates the investigation of these needs and leads to justified data collection recommendations in a systematic way.

2.3 STRATEGY

The development of the data needs matrix can be approached several ways. One is to take "slices" of a plane. Another is to address individual "elements".

The initial approach taken will be the "slice" approach. We will identify elements in the factors dimension, determine the interaction on the programmatic functional area axis and identify the upper levels of abstraction in the information-data dimension. In other words, we will fill in the top slice of each matrix defined by the factors and the functional area. The second step will be to assess the detailed data needs by individual elements. A method of delimiting the factors that generate data needs is to define logically coherent subsets of the relevant law or policy and proceed toward a preliminary ranking depending on data acquisition priorities determined in concert with relevant CS personnel. The initial subset to be examined is the National Energy Conservation Policy Act, NECPA.

The output generated using this plan will be a series of short reports addressing specific factors and organizational interactions with assessments of information needs at different levels of generality. This is the initial report in the series.

Using this kind of structure to analyze data needs has certain advantages. First, different elements of this matrix can be addressed without losing continuity in analysis and reporting. Second, it provides a structure for systematically guiding the analysis as well as for reporting and assessing progress. Third, it is a general approach that can be adapted to any organization.

3.0 INFORMATION NEEDS FOR NEA IMPLEMENTATION

3.1 INTRODUCTION

The National Energy Act (NEA) which expands the federal role with respect to energy in the U.S. is the latest in a series of energy-related acts (see Appendix C) designed to increase energy efficiency. The act is composed of five bills:

- The National Energy Conservation Policy Act (NECPA, PL 95-619)
- The Energy Tax Act (PL 95-618)
- The Natural Gas Policy Act (PL-621)
- The Public Utility Regulatory Policy Act (PL 95-617)
- The Powerplant and Industrial Fuel Use Act (PL 95-620)

By virtue of its mandate, the Conservation and Solar Applications Office of DOE bears primary responsibility for implementing a significant portion of this law. The act most affecting the CS office is the National Energy Conservation Policy Act. The Energy Tax Act involves some CS resources and coordination with other DOE offices.

This report outlines the information and data requirements implicit in the implementation of NECPA and the Energy Tax Act. In line with the methodology described in the previous section, this report identifies the factors that generate data needs, identifies areas of responsibility and defines the general information needs for each factor. In effect it addresses the top portion of the data matrix shown in Figure 1. In some cases, however, detailed data needs are explored.

The assessment is organized into the following categories:

- conservation and solar applications office responsibilities
- utility program
- residential sector
- industrial sector
- government and public buildings
- transportation.

Parts 3.2 through 3.7 provide a detailed assessment of needs in these categories. The information needs for NECPA are summarized in the sequential order of the act in Appendix A.

3.2 CS RESPONSIBILITIES

The responsibilities of the Conservation and Solar Applications Office for implementing the NEA are summarized in Table 1. The table shows the interaction of NECPA with the various CS program offices. It identifies the sections for which each office is responsible and identifies some interoffice interactions. In following iterations of this study, specific data needs generating factors will be selected and studied in more detail with respect to organizational responsibility and data needs. The data needs generating factors will be detailed in terms of ongoing and planned research, analysis and monitoring programs generated by both NECPA and the Energy Policy Conservation Act (EPCA).

3.3 UTILITY PROGRAM

Title II, Part 1 of NECPA, the Utility Program, authorizes a utility conservation program for residential buildings. The program requires utilities to offer energy audits to their residential customers that would identify appropriate energy conservation and solar energy measures and estimate their likely costs and savings. Utilities also will be required to offer to arrange for the installation and financing of any such measures. DOE is involved in setting the procedures and standards to guide this program.

3.3.1 Covered Utilities

Section 211 of NECPA requires the publication of a list of utilities affected by this law. Although responsibility for its collection may fall outside CS, data are required to identify utilities who sell natural gas (for purposes other than resale) in excess of 10 billion cubic feet per year and utilities who sell electrical energy (for purposes other than resale) in excess of 750 million kW-hours.

TABLE 1. NEA-CS Interaction Matrix

Factors	Functional Areas ^(a)					
	BCS	IP	T	S	SL	Other
NECPA, Title II, Part 1 Utility Program	Sec 211, 212- 224				Sec 213- 220	
NECPA, Title II, Part Weatherization Grants for the Benefit of Low Income Families	Sec 231 233				Sec 231	
NECPA, Title II, Part 4 Miscellaneous	Sec 251- 254					
NECPA, Title III, Part 1 Conservation Programs for Schools and Hospitals	Sec 302, 303					
NECPA, Title III, Part 2 Conservation Program for Units of Local, Government and Public Care Institutions	Sec 311					
NECPA, Title IV, Parts 1 & 2 Energy Efficiency Standards for Consumer Products	Sec 421 422 424 425	X		Sec 401 403 404		
NECPA, Title IV, Part 3 Energy Efficiency of Industrial Equipment		Sec 441				
NECPA, Title IV, Part 4 Energy Efficiency by use of Recovered Materials		Sec 461				
NECPA, Title V, Parts 1 & 2 Demonstration of Solar Heating and Cooling in Federal Buildings	Sec 501			Sec 521 522 523		
NECPA, Title, Part 3 Energy Conservation and Solar Energy in Federal Buildings	Sec 545 546 547					
NECPA, Title V, Part 4 Federal Photovoltaic Utilization	X ^(b)			Sec 566 567		
NECPA, Title VI, Part 1 Industrial Energy Efficiency Reporting		Sec 601				
NECPA, Title VI, Part 2 State Energy Conservation Plans	X				Sec 621 622 623	

(a) The following CS offices make up the functional areas; Building and Community Systems, Industrial Programs, Transportation Programs, Solar Applications and State and Local Programs. Other offices include Small Scale Technologies, Commercialization and Policy Planning and Evaluation.

(b) Secondary responsibility for this part of the law.

3.3.2 Utility Programs

Sections 213 through 220 of NECPA authorize the implementation of the residential energy conservation plan through states and utilities. The NECPA requires that a utility must inspect the customer's residence upon request to determine which conservation and solar energy measures would be cost effective. The utility must also provide lists of lenders, suppliers and contractors and offer to arrange for the installation or financing of conservation and solar measures by listed firms. Except in certain cases, utilities are prohibited from directly installing such materials or actually making loans. One exception is that utilities may install furnace modifications and thermostats if customers desire.

CS has a responsibility in the development of guidelines for implementing this program. These data needs will be outlined in Section 3.4.1 of this report.

3.3.3 Product Standards

Section 222 of NECPA authorizes the setting of standards on products or materials for judging the efficacy, energy efficiency, safety or other attributes of energy conservation materials, products or devices. Although DOE is responsible for these standards, they will actually be developed by the National Bureau of Standards under contract to DOE.

3.4 RESIDENTIAL SECTOR

Authority in the residential sector is given by Title II of NECPA and indirectly by Title I of the Energy Tax Act. The responsibilities are 1) making the rules prescribing the content and implementation of the residential energy conservation plan, 2) determining the standards and guidelines for the weatherization grant program, 3) reporting on energy conservation in apartment buildings, 4) studying weatherization and residential energy efficiency standards, and 5) assisting in establishing the criteria and certification procedures for the residential energy credit.

3.4.1 Residential Energy Conservation Plan

Section 212 of NECPA provides authority for making rules prescribing the content and implementation of residential energy conservation plans. These plans will provide the guidelines for energy audits by utilities and for the weatherization programs. The rules should include standards on safety, efficiency, prices, interest rates and business practices.

The information requirements for developing these rules are extensive and at a level of complexity comparable to those for the development of new building energy performance standards (BEPS). Some of the information obtained for (and results from) the BEPS program may be transferable and used in developing these rules. However, there are some major differences that will require additional information.

Information is needed to establish a baseline on housing characteristics. Data are needed to characterize residences by structure type, age, size, orientation, climatic region and demographic data including community size, housing patterns, etc. Information is also needed to determine the economic and environmental impacts of these plans, that is, the impacts on homeowners, utilities, suppliers of materials for modification and retrofitting and on lending institutions. Models such as that used by ORNL (described later) are an important source for this kind of information.

Data are needed to determine the life cycle costs of homes. This need requires both economic and technical data on the thermal efficiency of homes, effects of weatherization, amounts of energy used, cost of materials, and most importantly the expected costs of energy.

Improvements in thermal efficiency will have secondary effects on the home environment (e.g., air circulation). There are many toxic substances whose vapors can accumulate to dangerous levels without proper ventilation. Data is needed to determine the type, quantity and characteristics of these toxic substances and, in general, to establish a baseline on human environmental needs in a home.

Section 220 of Title II does not supersede any law or regulation of any state or political subdivision of a state. Data are needed to identify the legal and financial barriers to implementing the Residential Energy Conservation plan if any, and to develop means to overcome them.

3.4.2 Weatherization Grant Program

The program for Weatherization Grants for the Benefit of Low Income Families is described by Part 2 of Title II of NECPA, Residential Energy Conservation. The responsibility of the CS office is defined by Section 231, DOE Weatherization Grant Program and, indirectly, by Section 233, Availability of Labor. Section 231 is an amendment to Section 412 of the Energy Conservation in Existing Buildings Act of 1976. It prescribes the writing of standards to be applied to each dwelling unit to determine cost-effective measures to achieve optimum savings of energy.

Information needs generated by these sections involve the determination of:

- the effects of weatherization material
 - caulking and weatherstripping
 - furnace efficiency modification
 - ceiling, attic, wall, floor, and duct insulation
 - water heating insulation
 - storm windows and doors
 - heat-absorbing or heat-reflective materials
- the effects of improved technology on space conditioners
- the effects of variation in climate and climatic regions
- the value of energy saved by the application of the weatherization material.

The responsibility of Section 233, Availability of Labor, falls on DOE. However, responsibility for the information and resources to carry out this task lies with the Community Services Administration and the Department of Labor. To carry out this responsibility information is needed to:

- determine the number of individuals needed to supply sufficient labor to carry out the weatherization program
- identify the areas of the country where there is an insufficient number of volunteers, training participants and public service employment workers to carry out the weatherization program
- insure that the weatherization programs are supported to the maximum extent practicable in such areas by volunteers and training participants and public service employment workers.

3.4.3 Report on Energy Conservation in Apartment Buildings

Section 224 of NECPA calls for the preparation of a report on the potential for energy conservation in apartment buildings. Information is required to determine the conservation effects of structural and energy control measures, and an application of a utility program to apartment buildings. Information is also needed to determine the cost of achieved energy conservation, and the need for federal financial assistance.

The data needs for this report are similar to the needs of the residential energy plan and the weatherization grant program. Although the report is due before data can be identified and collected, legislation resulting from this report may require it.

The information for this report may best be generated through models. Typical data needs for these models are outlined in Section 3.4.7.1.

3.4.4 Studies on Weatherization and Residential Energy Efficiency Standards

Sections 253 and 254 of NECPA require that studies be made on residential energy efficiency standards and on the weatherization programs. The authority for the efficiency standards study is placed with HUD. For the weatherization study, authority rests with the President. DOE is responsible for consulting and being a resource for these studies.

The Residential Energy Efficiency Standards Study should determine the need for, the feasibility of, and the problems of requiring, by mandatory federal action, that all residential dwelling units meet applicable energy efficiency standards. Information is needed to determine the impacts of these standards on:

- real estate, home building and mortgage and banking industries
- sellers and purchasers
- national energy conservation goals
- the national economy
- national security
- voluntary energy conservation efforts.

Information is also needed to:

- determine the energy savings due to conservation efforts
- determine the legal effects of standards on home buyers
- determine the barriers and incentives for implementation of standards.

The weatherization study (Section 254) requires monitoring weatherization activities authorized by NECPA and other acts. Information is needed to determine the:

- adequacy and costs of materials
- effects on different income groups and utilities
- status of energy conservation goals
- need and desirability of modifying the weatherization program.

3.4.5 Procedures for the Residential Energy Credit

Section 101 of the Energy Tax Act authorizes the development of criteria to be used in prescribing performance and quality standards on insulation, energy-conserving components and renewable energy source property. Primary responsibility lies with the Department of the Treasury; however, DOE has consulting responsibilities in establishing these criteria. The information needs generated by this section include:

- information on the type, quality, efficiency and cost of insulation designed for dwellings and pipes
- information on the type, quality, efficiency and costs of components used in energy conservation. These may include furnace burners, devices for modifying flue openings, electrical or mechanical furnace ignition systems, storm or thermal window or doors, thermostats, caulking or weatherstripping, energy usage meters and any other item which might increase energy efficiency.

- information dealing with the technical, environmental and efficiency characteristics of energy derived from geothermal deposits, wind and other energy sources used for nonbusiness residential purposes.

3.4.6 Other Sections

There are other sections in NECPA where the CS office is not directly affected but where it may be called on as a source of residential information. Among these are Section 251, "Energy-Conserving Improvements for Assisted Housing"; Section 252 "Energy Conserving Standards for Newly Constructed Residential Housing Insured by Federal Housing Administration or Assisted by Farmers Home Administration"; Section 232 "Farmers Home Administration Weatherization Grant Program"; and others. The data needs of these other sections are similar to those described in Sections 3.4.1 through Section 3.4.5 of this report.

3.4.7 Information Sources

The data available to address these needs are not always adequate. Government residential data relevant to conservation policy generally come from models (such as the ORNL Engineering-Economic Model of Residential Energy Use) and through surveys conducted by the Department of Commerce. Data bases exist in other private or public organizations such as The National Association of Home Builders, University of Wisconsin, the Rand Corporation, etc. The Residential Energy Consumption Survey being conducted by the Energy Information Administration will be a useful source of residential energy consumption data. Information is being collected on energy consumption in personal transportation, space conditioning and appliances. However, no data source in itself is completely adequate since each is oriented to a specific need. The following sections describe some relevant data sources and their drawbacks.

3.4.7.1 The ORNL Engineering-Economic Model of Residential Energy Use

This model was developed to simulate energy use in the residential sector from 1970 through the year 2000. The model provides information on annual energy uses by fuel, end use, and housing type, and also estimates annual

equipment installation and ownership, equipment energy requirements, structure thermal performance, fuel expenditures, equipment costs and costs for improving thermal performance of new and existing housing units.

A key factor in this model is the use of price, cross price and income elasticities to arrive at its output. Factors considered in the assessment of elasticities on substitution and consumption include overall fuel use, equipment fuel choice, equipment usage, and technical efficiency. The data to estimate (or infer) these parameters come from a variety of sources. Among these are:

- Bureau of Mines
- National Oceanic and Atmospheric Administration
- Environmental Science Services Administration
- Edison Electric Institute
- Annual Housing Survey, Bureau of Census
- United States Department of Agriculture
- Survey of Current Business, Bureau of Census
- Rand Corporation
- American Gas Association

Data from these sources are inadequate to estimate the desired elasticities; this is an aspect of the model's use requiring improvements. Better data are needed in the following areas:

- fuel consumption
- fuel prices
- fuel availability
- equipment costs
- utilization of equipment
- operating costs
- capital costs
- discount rates
- equipment lifetimes
- lifecycle costs.

The data needs outlined above are an aggregated summary of the overall data needs for this type of model. Detailed technical and economic data are needed to develop such information as discount rates, lifecycle costs, equipment costs, etc.

3.4.7.2 Data Bases

There are a variety of data bases available relevant to needs generated by NECPA, some of these were mentioned in the previous section. Some problems associated with this data are:

- lack of standardization
- inappropriate level of aggregation
- inappropriate time or frequency of collection
- inadequacy in quantity and detail
- inconsistency in sample population.

Moreover, they are difficult to identify and retrieve.

There are several sources of data that have significant value. Among these are The National Association of Home Builders (of whose data the BEPS program makes significant use), the Bureau of the Census and EIA. The most current data will be available through EIA from the Residential Energy Consumption Survey. The survey is now being implemented and data should be available this year. The data will cover residential energy consumption relating the social and economic characteristics of residents to energy consumption in personal transportation, space conditioning and appliances. It also provides data on structural characteristics and thermal characteristics of homes.

The data from The National Association of Home Builders and the Annual Housing Survey covers a period of years and is useful time series data. The Annual Housing Survey has a section on energy conservation. It is not as extensive as EIA's Residential Energy Consumption Survey, but does provide some information on weatherization and space conditioning characteristics.

A good general source on residential data is the Buildings Energy Use Data Book prepared by ORNL. The book presents a large amount of relevant data on current and past energy and use activities in the residential and commercial

sector. The indexing matrix being developed for Edition 2 of the Buildings Data Book will provide one way of identifying data gaps.

A summary of potential data sources is outlined in Appendix B.

3.5 INDUSTRIAL SECTOR

The needs for data in the industrial sector are generated primarily by Title IV of NECPA. It provides authority to 1) develop energy efficiency standards for appliances, 2) improve energy efficiency of industrial equipment, 3) develop targets, create procedures and provide incentives for increased industrial utilization of energy saving recovered materials, 4) report on industrial energy efficiency, and 5) study barriers to implementation. This section of the law is an amendment to Section 323 of EPCA.

Because of its proprietary nature, it may be difficult to obtain some of the needed industrial data. The possibility of this information becoming public knowledge might discourage its disclosure. Information such as use characteristics of industrial equipment and estimates of current and future equipment stock profiles could be considered business sensitive. Although the law authorizes the collection of this information, (NECPA Section 425), it may be difficult to obtain at low enough levels of aggregation for effective implementation of this law.

3.5.1 Appliance Energy Efficiency Standards

Section 422 of the National Energy Conservation Policy Act, an amendment to Section 325 of EPCA, authorizes the rulemaking on energy efficiency standards for the following products:

- refrigerators and refrigerator-freezers
- freezers
- dishwashers
- clothes dryers
- water heaters
- room conditioners
- home heating equipment, (not including furnaces)
- television sets
- kitchen ranges and ovens
- clothes washers
- humidifiers and dehumidifiers
- central air conditioners
- furnaces.

In addition, DOE has made a tentative determination to include heat pumps as a class of central air conditioners.

An energy efficiency standard is defined as a performance standard (as opposed to a design standard) which prescribes a minimum energy efficiency level for each unit of a covered product. The standards include test procedures and any other requirements to ensure compliance.

In the Advance Notice of Proposed Rulemaking, DOE identifies seven factors to consider in devising these standards:

- impact on manufacturers and consumers
- savings in operating costs throughout the estimated average life of a product
- total projected amount of energy savings likely to result from the imposition of the standard
- any lessening of the utility or the performance of the product likely to result from the imposition of the standard
- the impacts of any lessening of competition
- the need of the nation to conserve energy (estimated National Energy Savings)
- other factors such as impact on suppliers, distribution and retailers of component parts.

The Office of Consumer Products in the Office of Buildings and Community Systems (BCS) has compiled an extensive list of technical and economic data requirements on products and industry. (SRI International organized and summarized these data requirements under DOE Contract No. EY-76-6-03-0115). The emphasis of this effort is to identify the data needed from industry for determining appliance energy efficiency standards. This data needs assessment was made on some of the covered products and on industry.

The economic data needs covered in the Office of Consumer Products summary are those needed to help assess the present and projected impacts of appliance standards on a company's:

- financial structure
- cost structure
- manufacturing structure
- sales and marketing.

The technical data needs covered in the Office of Consumer Products summary include the performance characteristics, design data and technical specifications for the following products:

- air conditioners
- water heaters
- refrigerators
- freezers
- refrigerator-freezers
- clothes washer
- dishwashers
- clothes dryers
- kitchen ovens
- kitchen ranges

3.5.2 Energy Efficiency of Industrial Equipment

Section 441 of NECPA calls for improved energy efficiency of industrial equipment. The law provides authority for, 1) evaluating industrial equipment, 2) setting test procedures for classes of equipment, and 3) labeling equipment. The types of equipment affected are:

1. electric motors	9. electrolytic equipment
2. pumps	10. electric arc equipment
3. compressors	11. steam boilers
4. fans	12. ovens
5. blowers	13. furnaces
6. refrigeration equipment	14. kilns
7. air conditioning equipment	15. evaporators
8. electric lights	16. dryers.

The evaluation of industrial equipment will culminate in a report to Congress detailing the results of the evaluation and recommending appropriate legislation. This evaluation will require data for a variety of studies. For example, data are needed to:

- characterize equipment and general usage within equipment types
- determine standard classifications with respect to size, function, type of energy used and other appropriate factors
- determine the practicability and impacts of requiring equipment to meet performance standards
- identify significant factors that determine energy efficiency

- estimate current and future equipment population profiles
- estimate the potential for technologically feasible and economically justified improvements in energy efficiency
- estimate total energy savings (if any) resulting from the standards

The number of industries is so large and the operations and products are so diversified that information may best be generated through models. Models such as the Industrial Sector Technology Use Model (ISTUM) from Energy and Evaluation Analysis, Inc. and others generate some of the desired information. Obtaining a useful level of aggregation in terms of region, industry and process type is sometimes problematic. The Standard Industrial Classification (SIC) provides one framework for describing the industrial sector. It may be more useful; however, to break down data needs by the types of processes that describe different industries:

1. processes that change the molecular structure of materials
2. processes that change the configuration of materials
3. processes that change the physical arrangement or location of materials.

Industries in different categories are more intensive in the use of different industrial equipment. For example, industries in the second and third categories might be more intensive in the use of equipment types three through eight and industries in the third category might be more intensive in the use of equipment types nine through sixteen.

Data are also needed to characterize the decision-making behavior of industries. This requires economic data for estimating the demand for industrial products, the cross fuel elasticities of substitution, etc. The data needs are similar to the industrial data described for the appliance energy efficiency standards.

3.5.3 Use of Recovered Materials

The development of targets, procedures and incentives for increased industrial utilization of energy saving recovered materials is authorized by Section 461 of NECPA. This is an amendment to ECPA Section 374 and is oriented

to the metals and metal products, paper and allied products, textile mill products, and rubber industries.

The materials covered are those recovered from solid waste, as defined in the Solid Waste Disposal Act, and include: aluminum, copper, lead, zinc, iron, steel, paper and allied products, textiles and rubber. There is a need for baseline information on the recovery of these materials. This requires data to identify industries that are recovering or could recover materials, how these recovered materials are being used, their quality before and after processing and the cost and energy required to recover them. Information is also needed to estimate present and projected demand and supply for these products and their feasible recovery rates.

Creating the procedures whereby industries may cooperate in establishing and achieving the targets requires little data collection. Providing incentives, on the other hand, will require assessing the economic impacts on different size industries and on fair competition. This will require information on the technologies used and on the adaptability of new technologies for materials recovery.

The law requires that targets be established on energy-saving recovered materials for each of the identified industries at levels that represent the maximum feasible increase in utilization. It also mandates that the standards must be within the technological and economic ability of an industry to reach them by January 1, 1987. This will require both technical and economic data on affected industries. Data are needed to:

- identify significant factors that determine energy efficiency
- determine the criteria for technological and economic feasibility
- estimate the potential energy savings from the utilization of recovered materials.

Industry, as a cooperative partner in the establishment of these targets, will submit recommendations on what these targets should be. To evaluate these proposals data is needed to understand the factors guiding industrial decision-making. Data on the technical factors of material recovery, the industrial manufacturing structure, and the industry cost structure would be useful for understanding their activity.

3.5.4 Energy Efficiency Reporting

Section 601 of NECPA requires that an annual report be submitted to Congress on the industrial energy efficiency program. (This program is authorized by ECPA Section 372). The report should include a summary of the progress made in meeting efficiency targets and recommendations to Congress on how additional improvements might be achieved. The law also authorizes DOE to request reports from corporations on the progress each corporation has made in improving its energy efficiency. It also authorizes the development of forms for obtaining the information needed from corporations. However, the law specifies that forms be designed in a manner to avoid imposing an undue burden on corporations.

Information is needed to identify and classify industries by the amount of energy consumed (authorized by ECPA, Section 374), and to set targets representing the maximum feasible improvement in energy efficiency. Data are also needed on the amount of energy consumed, the type of energy consumed and the classification of its consumption.

3.5.5 Information Sources

Data that describe industrial energy vary widely in scope and availability. Some data, in the form of internal management information, are available from individual firms, or from trade associations. One source of industrial energy-use data is the quinquennial Census of Manufacturers and the Annual Survey of Manufacturers from the Department of Commerce. These data include amounts of fuel and electric energy consumed for heat and power by manufacturing industries. Purchased fuels and electricity consumed by the mineral industries are also reported by the Department of Commerce at five-year intervals.

Other federal sources of industrial energy consumption are:^(a)

- the Bureau of Mines' annual survey of petroleum distributors and medium to large retailers
- the Federal Reserve Board's monthly survey of industrial electric power use

(a) Some of this data may be incorporated in EIA's data bases.

- the Federal Energy Regulatory Commission's monthly data on fuels used by electric power utilities.

An important source of industrial energy consumption data is the Energy Information Administration. Extensive data files are maintained and the Information Element Dictionary, IED, (being developed) will facilitate the identification and access of industrial energy information.

Two other developments are worth indicating at this time. One is the industrial survey being developed by EIA. It is in the preliminary planning stages and will not be implemented for two years. The other is an effort by ORNL to develop an Industrial Data Book. This too is in a preliminary stage of development, but when completed should provide information in a manner similar to the Transportation and Buildings data books.

A summary of potential data sources is outlined in Appendix B.

3.6 GOVERNMENT AND PUBLIC BUILDINGS

In the government and public buildings sector, two titles of PL 95-619 principally apply. Title III delineates conservation programs funded by grants to states and public and nonprofit schools and hospitals to implement conservation measures in schools, hospitals, buildings owned by units of local governments and public care institutions. Title V, Federal Energy Initiative, details conservation measures and demonstration of alternative technologies to be implemented in federal buildings.

3.6.1 Schools and Hospitals

Schools and hospitals are major consumers of energy, but substantial conservation is achievable through implementation of energy conservation measures. It is recognized that public and nonprofit schools and hospitals may often require financial assistance to accomplish such goals. This part of the act authorizes grants to assist in identifying and implementing conservation measures.

Also in Part 1, the Secretary is required to establish guidelines for conducting preliminary energy audits and energy audits. In addition, the Secretary is required to establish guidelines for state plans for implementation

of energy conservation projects in schools and hospitals. Inherent in the establishing of such guidelines is a need for data/information concerning factors that may be involved in grant decisions. Among such factors are: cost, energy consumption, energy savings and energy conservation goals. Some variation between regions exists and regional appropriateness must be detailed. It is apparent that the level of disaggregation necessary is at least regional.

Also required by this part is a statement of the criteria for determining severe hardships. Such determination necessitates information concerning:

- climate
- fuel costs
- fuel availability
- ability to provide non-federal share of costs and such other factors as the Secretary may deem appropriate.

3.6.2 Units of Local Government and Public Care Institutions

Part 2 of Title III pertains to units of local government and public care institutions. For purposes of this part the term "unit of local government" means the government of a county, municipality, or township, which is a unit of general purpose government below the State (determined on the basis of the same principles as are used by the Bureau of the Census for general statistical purposes) and the District of Columbia. This term also means the recognized governing body of an Indian tribe (as defined in Section 412 of the Energy Conservation and Production Act) which governing body performs substantial governmental functions. A public care institution, on the other hand, is defined as a public or nonprofit institution which owns a) a facility for long term care, a rehabilitation facility, or a public health center, as described in Section 1633 of the Public Health Service Act, or b) a residential child care center.

The reporting requirements for both parts 1 and 2 of Title III require that the Secretary submit a detailed report of the actions taken or planned under the provisions of these parts. Among the requirements are two with present and future data/information requirements. These involve:

- information on the types of conservation measures implemented
- an estimate of the energy savings achieved.

Inherent in any assessment of achieved savings is a requirement for baseline data on present consumption levels.

3.6.3 Federal Solar Program

Title V of NECPA deals with conservation measures and alternative technologies in federal buildings. Part 2 delineates the requirements of the Federal Solar Program to demonstrate the application of solar heating and solar heating and cooling technology in federal buildings. This part requires that the Secretary establish requirements and criteria for the submission and evaluation of proposals for the installation of solar energy equipment in federal buildings.

Among the requirements generating potential data/information needs are those calling for a complete analysis of the present value, as determined by the Secretary, of the costs and benefits of the proposal to the federal agency, and for the demonstration, to the maximum extent practicable, of innovative and diverse applications in a variety of types of federal buildings of solar heating and solar heating and cooling technology. It further calls for location of demonstration projects in areas where a private sector market for solar energy equipment is likely to develop. Also in conjunction with Part 2 are requirements for life-cycle cost analysis and reports to the Secretary when such solar energy equipment is not the minimum life-cycle cost alternative. Such reports would state the amount by which the life-cycle cost of equipment exceeds the minimum.

3.6.4 Energy Conservation and Solar Energy in Federal Buildings

Part 3, dealing with energy conservation and solar energy in federal buildings, recognizes that the Federal government should be in the forefront in implementing energy conservation measures and promoting the use of renewable energy sources. It also recognizes that in the construction or renovation of buildings, the cost of energy consumed in such buildings must be considered in addition to the initial cost of such construction. It is stipulated that all federal buildings be life-cycle cost-effective and that cost evaluation shall be made on the basis of life-cycle rather than initial cost.

3.6.5 Federal Photovoltaic Utilization

Part 4 of Title V deals with federal photovoltaic utilization and establishes a photovoltaic energy commercialization program to speed procurement and installation of photovoltaic systems for electricity production in federal facilities.

As a consequence of Part 4 the Secretary is required to prescribe rules and regulation to monitor and assess the performance and operation of photovoltaic electric systems. Implicit in this requirement is a need for data/information regarding costs, operating and performance characteristics of such systems.

3.7 TRANSPORTATION SECTOR

Title IV of NECPA deals with energy efficiency of certain products and processes. Part 1 pertains to energy efficiency standards for automobiles stipulating guidelines for civil penalties relating to automobile fuel efficiency. This part further requires that the Environmental Protection Agency, in consultation with the Secretaries of Energy and Transportation, report to Congress providing a realistic estimate of average fuel economy likely to be achieved.

It is probable that the Transportation and Energy Conservation Office of CS will bear responsibility for such collaborative efforts necessitated by this part of the act.

Title II of the Energy Tax Act of 1978 (PL 95-618) is titled Transportation and contains the following parts:

- Part I - Gas Guzzler Tax
- Part II - Motor Fuels
- Part III - Provisions Related for Buses
- Part IV - Incentives for Van Pooling

Primary responsibility under Title II of this act lies with the Secretary of the Treasury and the administration of the Environmental Protection Act. Potential for consultation with various DOE components does exist, however, and in some cases is explicit in the provisions of the act.

Required or potentially required data/information needs include the following:

- Part I: Fuel economy - Small Manufacturers and special rules.
- Part II: Alcohol fuel industry - firms engaged in such production
Alcohol fuels - quantity sold by state
Revenue losses resulting from alcohol fuel tax exemption
Production costs for alcohol fuels
Retail costs of alcohol fuels compared to gasoline and
special fuels before Federal excise tax
- Part III: There are no explicit reporting requirements in Part III
(provisions related to buses). In areas such as inventory
characteristics, stocks, fuel efficiency it is conceivable
that the Secretary of the Treasury may rely on either DOE
or DOT for information.
- Part IV: This part contains no explicit requirements. Comments directly
above are applicable.

APPENDIX A

SUMMARY OF GENERAL INFORMATION NEEDS FOR NEA IMPLEMENTATION

GENERAL INFORMATION NEEDS FOR NEA IMPLEMENTATION

LAW: NECPA

TITLE: II -- Residential Energy Conservation

PART: 1 -- Utility Program

A-1

ACT SECTION	DESCRIPTION	GENERAL INFORMATION NEEDS	AFFECTED OFFICE	POTENTIAL DATA SOURCES
212	Rules prescribing the content and implementation of residential energy conservation plans	<p>Major categories of information needs:</p> <ul style="list-style-type: none"> -<u>Economic</u>. Impacts on home owners, business and industry. -<u>Demographic</u>. Social, economic and geographical profiles of residents -<u>Environmental</u>. Basic human needs, vis-a-vis home environment (e.g., air circulation) -<u>Climatic</u>. Regional characteristics -<u>Building</u>. Stock -<u>Structural</u>. Characteristics of residential buildings -<u>Financial and Legal</u>. Building codes, etc. 	BCS	<p><u>Energy Consumption</u></p> <ul style="list-style-type: none"> -Energy Information Administration* -American Gas Association* -Edison Electric Institute* -Oak Ridge National Laboratory* -Bureau of Mines^(b) -Federal Energy Regulatory Commission^(b) -EPRI -SERT <p><u>Building Stock & Structural Characteristics</u></p> <ul style="list-style-type: none"> -Dept. of Commerce*, Bureau of Census Annual Housing Survey Characteristics of New Housing Housing Starts -National Association of Homebuilders* Research Foundation -American Institute of Architects Research Corporation*

* Data source used in buildings data book

(b)Some data from the Bureau of Mines and the Federal Power Commission are now in EIA data bases.

GENERAL INFORMATION NEEDS FOR NEA IMPLEMENTATION

LAW: NECPA

TITLE: 11 -- Residential Energy Conservation

PART: 1 -- Utility Program

A-2

ACT SECTION	DESCRIPTION	GENERAL INFORMATION NEEDS	AFFECTED OFFICE	POTENTIAL DATA SOURCES
212	Rules prescribing the content and implementation of residential energy conservation plans Cont.			<u>DEMOGRAPHIC, ENVIRONMENTAL AND CLIMATIC</u> -Energy Information Administration* -Dept. of Commerce* -Environmental Science Service Administration -NOAA* -Rand Corporation* -USDA -Brookhaven National Laboratory
211 & 215	Utility programs	Information Needed to Identify Affected Utilities and to: -Determine building categories -Determine costs of operating buildings -Identify alternative conservation techniques	BCS	Same sources as for the previous section (section 212)
222	Product standards	Need Information on component and material standards of components used in energy conservation products, material and devices	BCS	National Bureau of Standards*

* Data source used in Buildings data book

GENERAL INFORMATION NEEDS FOR NEA IMPLEMENTATION

LAW: NECPA

TITLE: 11 -- Residential Energy Conservation

PART: 1 -- Utility Program

A-3

ACT SECTION	DESCRIPTION	GENERAL INFORMATION NEEDS	AFFECTED OFFICE	POTENTIAL DATA SOURCES
224	Report on energy conservation in apartment buildings	<p>Need Information on component and material standards of components used in energy conservation products, material and devices</p> <p>Need information:</p> <ul style="list-style-type: none"> -On energy consumption -To describe the type, quantity, use and occupancy of apartments -To establish a baseline on energy use -To identify the type of retrofits and increases in energy efficiency -On costs of retrofits (baseline) -On economic characteristics of dwelling owners 	BCS	<p><u>Energy Consumption</u></p> <ul style="list-style-type: none"> -Energy Information Administration* -American Gas Association* -Edison Electric Institute* -Oak Ridge National Laboratory* -Bureau of Mines* -Federal Energy Regulatory Commission*(b) <p><u>Building Stock</u></p> <ul style="list-style-type: none"> -Dept. of Commerce* -NAH, Research Foundation -AIA Research Corporation* <p><u>Demographic</u></p> <ul style="list-style-type: none"> -Energy Information Administration* -Dept. of Commerce* -Environmental Science Service Administration -NOAA* -Rand Corporation* -USDA -Brookhaven National Laboratory*

* Data source used in Buildings data book

(b) Some data from the Bureau of Mines and the Federal Power Commission are now in EIA data bases

GENERAL INFORMATION NEEDS FOR NEA IMPLEMENTATION

LAW: NECPA

TITLE: II -- Residential Energy Conservation

PART: 2 -- Weatherization Grants for the Benefit of Low Income Families

ACT SECTION	DESCRIPTION	GENERAL INFORMATION NEEDS	AFFECTED OFFICE	POTENTIAL DATA SOURCES
231	DOE weatherization grant program	Need baseline information on the cost-effectiveness of conservation measures (as per section 412(9) of F.C.E.B.A. of 1976 amended per this section)	BCS	-State Agencies -Bureau of Census,* Dept. of Commerce -American Gas Association* -Edison Electric Institute*
233	Availability of labor	Need information on the labor necessary to carry out weatherization program in various areas of country Need information to identify areas of country with insufficient labor from volunteers, training participants and public service employees	BCS	-Department of Labor -Community Services Administration -State Employment Offices -State Welfare Offices

* Data source used in Buildings data book

GENERAL INFORMATION NEEDS FOR NEA IMPLEMENTATION

LAW: NECPA

TITLE: II -- Residential Energy Conservation

PART: 4 -- Miscellaneous

A-5

ACT SECTION	DESCRIPTION	GENERAL INFORMATION NEEDS	AFFECTED OFFICE	POTENTIAL DATA SOURCES
253	Residential energy efficiency standards study	<p><u>Information on:</u></p> <ul style="list-style-type: none"> - Energy savings due to conservation efforts - Impact on national economy and security <p><u>Also information on:</u></p> <ul style="list-style-type: none"> - Decision making behavior of home purchasers - Impact on real estate, home building and mortgage/banking institutions - Incentives and barriers on implementation - Impact on sellers and purchasers - Effects on availability of credit - Effects on available homes - Impact on volunteer conservation efforts 	BCS	(Same as section 212 and 224)

GENERAL INFORMATION NEEDS FOR NEA IMPLEMENTATION

LAW: NECPA
 TITLE: II -- Residential Energy Conservation
 PART: 4 -- Miscellaneous (cont.)

ACT SECTION	DESCRIPTION	GENERAL INFORMATION NEEDS	AFFECTED OFFICE	POTENTIAL DATA SOURCES
254	Weatherization study	<u>Information on:</u> -Effect of weatherization activities on national energy conservation goals -Adequacy and costs of materials necessary for weatherization -Need to modify weatherization activities	BCS	-Energy Information Administration* -Edison Electric Institute* -Dept. of Commerce, Bureau of the Census* -American Gas Association*

* Data source used in Buildings data book

GENERAL INFORMATION NEEDS FOR NEA IMPLEMENTATION

LAW: NECPA
 TITLE: III -- Energy Conservation Programs for Hospitals, Schools and Buildings Owned by Government and Public
 PART: 1 -- Schools and Hospitals

A-7

ACT SECTION	DESCRIPTION	GENERAL INFORMATION NEEDS	AFFECTED OFFICE	POTENTIAL DATA SOURCES
302	Guidelines for energy conservation program for schools and hospitals (Amendment to EPCA Title III Section 392)	<ul style="list-style-type: none"> - Information to characterize buildings by type, age, climatic region, etc. - Baseline information on energy consumption - Baseline information on environmental and health requirements - Information on economic characteristics of areas where buildings are located - Information on the costs to operate buildings - Information on costs to retrofit to meet conservation goals - Financial information to determine amount of subsidy needed 	BCS	<ul style="list-style-type: none"> - American Gas Association* - Edison Electric Institute* - American Hospital Association* - New, Health Resources* Administration - Illuminating Engineering Society* - American Society For Heating, Refrigerating and Air Conditioning Engineers* - State Education Offices - American Institute of Architects Research Corporation* - National Oceanic and Atmospheric Administration*

* Data source used in Buildings data book

GENERAL INFORMATION NEEDS FOR NEA IMPLEMENTATION

LAW: III -- Energy Conservation Programs for Hospitals, Schools
TITLE: and Buildings Owned by Government and Public
PART: 2 -- Units of Local Government and Public Care Institutions

ACT SECTION	DESCRIPTION	GENERAL INFORMATION NEEDS	AFFECTED OFFICE	POTENTIAL DATA SOURCES
311	Guidelines and rules for energy conservation programs for buildings owned by units of local government and public care institutions (Amendment to EPCA Title III, Part II Section 400B)	<p>Need information:</p> <ul style="list-style-type: none"> -To characterize buildings by type, age, climatic region, etc. -To determine a baseline on energy consumption -To determine baseline on environmental and health requirements -On economic characteristics of regions where buildings are located -On costs of operating buildings -On costs of retrofit to meet conservation goals -Financial status of local governments and capacity to cover part of the costs 	BCS	<ul style="list-style-type: none"> -American Institute of Architects[*] Research Corporation -American Gas Association[*] -Edison Electric Institute[*] -HEW, Health Resources Administration -Energy Information Administration[*] -Oak Ridge National Laboratory[*]

* Data source used in Buildings data book

GENERAL INFORMATION NEEDS FOR NEA IMPLEMENTATION

LAW: NECPA

TITLE: IV -- Energy Efficiency of Certain Products and Processes

2 -- Energy Efficiency Standards for Consumer Products

PART: Other Than Automobiles

A-9

ACT SECTION	DESCRIPTION	GENERAL INFORMATION NEEDS	AFFECTED OFFICE	POTENTIAL DATA SOURCES
422	Energy efficiency standards (Amendment to EPCA Section 325) "The secretary shall determine the maximum improvement in energy efficiency that is technologically feasible for each type (class) of covered products..."	<ul style="list-style-type: none"> -Energy use of appliances Type and class (Section 323, EPCA) -Energy efficiency of appliances Maximum improvement -Economics of appliance manufacturing and retailing -Conservation measures impact on energy use -Economic impact on manufacturers and consumers -Economic impact on utilities -Impact on competitive structure of industry 	BCS	<ul style="list-style-type: none"> -Association of Home Appliance Manufacturers* -Air Conditioning and Refrigeration Institute* -National Bureau of Standards* -American Society of Heating-Refrigeration and Air Conditioning Engineers -Gas Appliance Manufacturers Association* -Illuminating Engineering Society* -Trendex -Energy Information Administration
424	Effect of standards on other laws	-State and local government's energy	BCS	
427	Effects of other laws on standards	standards or laws		

* Data source used in Buildings data book

GENERAL INFORMATION NEEDS FOR NEA IMPLEMENTATION

LAW: NECPA

TITLE: IV -- Energy Efficiency of Certain Products and Processes

PART: 3 -- Energy Efficiency of Industrial Equipment

ACT SECTION	DESCRIPTION	GENERAL INFORMATION NEEDS	AFFECTED OFFICE	POTENTIAL DATA SOURCES
441	Energy efficiency of industrial equipment (Amendment to Title III of EPCA Section 342 and 343)	<p>Need information:</p> <ul style="list-style-type: none"> -To characterize equipment and its general use -To determine standard classifications with respect to size, function, type of energy used, method of manufacture, etc. -On use characteristics of industrial equipment (to determine energy use by type and class) and by average use cycles -To identify significant factors that determine energy efficiency -To estimate current and future equipment population profiles -On costs of operating industrial equipment 	IP	<ul style="list-style-type: none"> -Individual Corporations -Energy Information Administration -American Gas Association -Edison Electric Institute -Department of Commerce, Bureau of the Census

GENERAL INFORMATION NEEDS FOR NEA IMPLEMENTATION

LAW: NECPA

TITLE: IV -- Energy Efficiency of Certain Products and Processes

PART: 4 -- Energy Efficiency by Use of Recovered Materials

A-11

ACT SECTION	DESCRIPTION	GENERAL INFORMATION NEEDS	AFFECTED OFFICE	POTENTIAL DATA SOURCES
461	Use of recovered materials (Amendment to EPCA Title III, Part E, Section 374A)	<p>Need information:</p> <ul style="list-style-type: none"> -On energy use profiles of affected industries -To identify potential recoverable materials (type and quantity and use) -On economic impact on manufacturer from the implementation of the rules -On state-of-the-art of recovery processes 	IP	<ul style="list-style-type: none"> -Individual Corporations -Energy Information Administration (Survey Being Planned) -Department of Commerce Bureau of the Consus -American Gas Association -Edison Electric Institute

GENERAL INFORMATION NEEDS FOR NEA IMPLEMENTATION

LAW: NECPA

TITLE: V -- Federal Energy Initiative

PART: 2 -- Demonstration of solar Heating and Cooling in Federal Buildings

ACT SECTION	DESCRIPTION	GENERAL INFORMATION NEEDS	AFFECTED OFFICE	POTENTIAL DATA SOURCES
522 523	Federal solar program (Amendment to EPCA Section 381)	<p>Need information:</p> <ul style="list-style-type: none"> -For an economic analysis of existing buildings--(baseline information on value) -To establish a baseline of solar energy equipment; life cycle costs, reliability, availability, etc. -To perform cost/benefit analysis of installing new equipment -On climatic effects 	S	<ul style="list-style-type: none"> -Solar Energy Research Institute -American Institute of Architects Research Corporation -Department of Commerce Bureau of the Census -Oak Ridge National Laboratory -Energy Information Administration -Individual corporations involved in solar energy products

GENERAL INFORMATION NEEDS FOR NEA IMPLEMENTATION

LAW: NECPA

TITLE: V -- Federal Energy Initiative

PART: 3 -- Energy Conservation and Solar Energy in Federal Buildings

ACT SECTION	DESCRIPTION	GENERAL INFORMATION NEEDS	AFFECTED OFFICE	
545 & 546	Establishment and use of life cycle cost methods Energy performance targets for federal buildings	Need information: -To determine use profiles of federal buildings -To determine use profile and cost analysis of supporting equipment in federal buildings	BCS	-American Society for Heating, Refrig- eration and Air Conditioning Engineers -American Institute of Architects Research Corporation -American Gas Association -Edison Electric Institute

GENERAL INFORMATION NEEDS FOR NEA IMPLEMENTATION

LAW: NECPA
 TITLE: V -- Federal Energy Initiative
 PART: 4 -- Federal Photovoltaic Utilization

ACT SECTION	DESCRIPTION	GENERAL INFORMATION NEEDS	AFFECTED OFFICE	DATA SOURCES (POTENTIAL)
563 565 566 567	Photovoltaic Energy Program	Need information: -On economics of photovoltaic manufacturing (Baseline information on economic status) -On photovoltaic systems and storage capabilities -On costs of photovoltaic systems -On performance of photovoltaic equipment (prior to and after installation)	S	-Jet Propulsion Laboratory -Solar Energy Research Institute -Corporations involved in photovoltaic products, manufacturing and installation

GENERAL INFORMATION NEEDS FOR NEA IMPLEMENTATION

LAW: NECPA
 TITLE: VI -- Additional Energy-Related Measures
 PART: I -- Industrial Energy Efficiency Reporting

ACT SECTION	DESCRIPTION	GENERAL INFORMATION NEEDS	AFFECTED OFFICE	DATA SOURCES (POTENTIAL)
601	Industrial Energy Efficiency Reporting	Need information: -On energy consumption of industries by industry (to identify those that consume more than 10^{12} BTU/yr	IP	

GENERAL INFORMATION FOR NEA IMPLEMENTATION

LAW: NEA, Energy Tax Act

TITLE: II-- Transportation

PART: 2 -- Motor Fuels

[illegible]

A-16

GENERAL INFORMATION FOR NEA IMPLEMENTATION

LAW: NEA, Energy Tax Act

TITLE: III -- Investment Tax Credit

PART: 1

ACT SECTION	DESCRIPTION	GENERAL INFORMATION NEEDS	AFFECT OFFICE	DATA SOURCES (POTENTIAL)
301	<p>Consultation with IRS to develop performance and quality standards for energy property which includes:</p> <ul style="list-style-type: none"> Alternative energy property Solar on wind energy property Specially defined e.p. recycling equipment equipment for producing natural gas from geopressured brine 	<p>Information on performance characteristics, life cycle costs, etc.</p>		

APPENDIX B

POTENTIAL SOURCES OF ENERGY RELATED DATA

POTENTIAL SOURCES OF ENERGY-RELATED DATA

FEDERAL

1. Alaska Power Administration
2. Appalachian Regional Commission
3. Bonneville Power Administration
4. Council on Environmental Quality
5. Department of Commerce
 - National Bureau of Standards
 - Bureau of the Census
6. Community Services Administration
7. Department of Defense
 - Department of the Army, Corps of Engineers
8. Delaware River Basin Commission
9. Department of Energy
 - Energy Information Administration
 - Office of Conservation and Solar Applications
 - Federal Energy Regulatory Commission
10. Environmental Protection Agency
11. Department of Health, Education, and Welfare
 - Public Health Service, Health Resources Administration
 - National Institute of Health
12. Department of Housing and Urban Development
13. Department of Interior
 - Bureau of Mines
14. Interstate Commerce Commission
15. Department of Labor
 - Occupational Safety and Health Administration
16. National Science Foundation
17. Southeastern Power Administration
18. Southwestern Power Administration
19. Tennessee Valley Authority
20. U.S. Geological Survey

STATE

1. Alabama - Energy Management Board Development Office; Office of the Governor
2. Alaska - Division of Energy and Power Development; Department of Commerce and Economic Development
3. Arizona - Energy Programs Section; Office of Economic Planning and Development; Office of the Governor
4. Arkansas - Energy Conservation and Policy Office
5. California - California Energy Commission
6. Colorado - Office of the Governor
7. Connecticut - Energy Division; Office of Policy and Management
8. Delaware - Energy Office; Executive Office of the Governor
9. Florida - State Energy Office; Department of Administration
10. Georgia - Energy Resources Division; Office of Planning and Budget
11. Guam - Guam Energy Office
12. Hawaii - State Energy Office; Department of Planning and Economic Development
13. Idaho - Office of Energy; Office of the Governor
14. Illinois - Institute of Energy and Environmental Resources
15. Indiana - Indiana Energy Office; Department of Commerce
16. Iowa - Energy Policy Council
17. Kansas - Kansas Energy Office
18. Kentucky - Department of Energy; Capital Plaza Tower
19. Louisiana - Division of Research and Development; Department of Natural Resources
20. Maine - Office of Energy Resources; Executive Department
21. Maryland - Office of Energy Policy; Energy and Coastal Zone Administration; Department of Natural Resources
22. Massachusetts - Massachusetts Energy Office
23. Michigan - Energy Administration; Department of Commerce
24. Minnesota - Minnesota Energy Agency
25. Mississippi - Fuel and Energy Management Commission; Office of the Governor
26. Missouri - Missouri Energy Program; Division of Policy Development; Department of Natural Resources

27. Montana - Energy Division; Department of Natural Resources and Conservation
28. Nebraska - State Energy Office; Department of Revenue
29. Nevada - Department of Energy
30. New Hampshire - Council on Energy; Executive Department; Office of the Governor
31. New Jersey - Department of Energy
32. New Mexico - Energy and Minerals Department
33. New York - New York State Energy Office
34. North Carolina - Energy Division; Department of Commerce
35. North Dakota - Energy Management and Conservation Office; Office of the Governor
36. Ohio - Department of Energy
37. Oklahoma - Department of Energy
38. Oregon - Department of Energy
39. Pennsylvania - Governor's Energy Council; Office of the Governor
40. Puerto Rico - Energy Office; Office of the Governor
41. Rhode Island - Governor's Energy Office
42. South Carolina - South Carolina Energy Management Office
43. South Dakota - Office of Energy Policy
44. Tennessee - Tennessee Energy Authority
45. Texas - Governor's Office of Energy Resources
46. Utah - Energy Conservation and Development Council; Department of State Planning
47. Vermont - State Energy Office; Agency of Administration
48. Virgin Islands - Virgin Islands Energy Office
49. Virginia - Energy Division; Office of Emergency and Energy Services
50. Washington - State Energy Office
51. West Virginia - Fuel and Energy Office; Governor's Office of Economic and Community Development
52. Wisconsin - Office of State Planning and Energy; Department of Administration
53. Wyoming - Energy Conservation Committee

PRIVATE

American Chemical Society
American Gas Association
American Hospital Association
American Institute of Chemical Engineers
American Institute of Mining, Metallurgical, and Petroleum Engineers
American National Standards Institute
American Nuclear Society
American Petroleum Institute
American Power Conference
American Public Health Association
American Society for Heating, Refrigerating and Air Conditioning Engineers
American Society of Mechanical Engineers
Argonne National Laboratories
Battelle Northwest Laboratories
Colorado School of Mines Research Institute
Edison Electric Institute
Electric Power Research Institute
Environmental Research Institute
Institute of Electrical and Electronics Engineers
Institute of Gas Technology
Kansas State University, Engineering Experiment Station
Lawrence Berkley Laboratory
National Academy of Science
National Coal Association
National Oil Fuel Institute
National Petroleum Council
National Resources Analysis Center
Natural Gas Processors Association
National Resources Research Institute, University of Wyoming
Oak Ridge National Laboratory
Power Information Center, University of Pennsylvania

Rand Corporation
Resources for the Future, Inc.
Solar Energy Research Institute
Solar Energy Society

APPENDIX C

ENERGY-RELATED PUBLIC LAWS ENACTED
FROM THE 91st TO THE 95th CONGRESS

ENERGY-RELATED PUBLIC LAWS ENACTED
FROM THE 91st TO THE 95th CONGRESS

Public Law #	Legislative Basis	Name	CS Related (X)
1. PL 91-158	S.J.Res.54	Interstate Oil Compact Commission, 2-Year Extension	
2. PL 91-173	S.2917	Coal Mine Health and Safety Act of 1969	
3. PL 91-245	S.1193	Oil and Gas Leases	
4. PL 91-581	S.368	Geothermal Steam Act of 1970	
5. PL 91-631	S.719	National Mines and Minerals Policy Act	
6. PL 92-84	H.R.9388	Atomic Energy Commission Authorization, 1972	
7. PL 92-307	H.R.14655	Temporary Operating Licenses for Nuclear Powerplants	
8. PL 92-314	S.3607	Atomic Energy Commission Appropriations, 1973	
9. PL 92-401	H.R.50565	Natural Gas Pipeline Safety Act of 1968	
10. PL 92-500	S.2770	Federal Water Pollution Control Act Amendments	
11. PL 92-583	S.3507	Coastal Zone Management Act of 1972	
	S.Res.45	To establish the Senate National Fuels and Energy Policy Study Group	
12. PL 93-28	S.398	Economic Stabilization Act Amendments of 1973; Voluntary Petroleum Allocation	
13. PL 93-69	S.1994	AEC Authorization	
14. PL 93-74	H.R.7528	NASA Authorization	
15. PL 93-87	S.502	Federal-Aid Highway	
16. PL 93-88	S.1993	Euratom Corporation Act of 1958 Amendments	
17. PL 93-119	H.R.5451	Oil Pollution Act Amendments	
18. PL 93-153	S.1081	Mineral Leasing Act of 1920, Amendments, and Trans-Alaska Oil Pipeline Authorization	
19. PL 93-159	S.1570	Emergency Petroleum Allocation Act of 1973	
20. PL 93-182	H.R.11324	Emergency Daylight Saving Time Energy Conservation Act of 1973	
21. PL 93-208	S.2794	G. I. Bill Benefits During Energy Crisis	
22. PL 93-239	H.R.11372	Highway Speed Limit Reduction	
23. PL 93-245	H.R.11576	Supplemental Appropriations; Naval Petroleum Reserves	
24. PL 93-248	A.1070	Intervention on the High Seas Act	
25. PL 93-249	S.J.Res.18	Truckers Fuel Costs	
26. PL 93-276	S.3292	AEC Authorization	
27. PL 93-316	H.R.13998	NASA Authorization	
28. PL 93-319	H.R.14368	Energy Supply and Environmental Coordination Act of 1974	
29. PL 93-322	H.R.14434	Special Energy Research and Development Appropriations for 1975	
30. PL 93-377	S.3669	AEC Omnibus Legislation of 1974	
31. PL 93-383	S.3066	Housing and Community Development Act	
32. PL 93-386	S.3331	Aid to Energy Affected Small Businesses	
33. PL 93-403	H.R.15205	Natural Gas Pipeline Safety Act, as Amended, Additional Appropriations	
34. PL 93-409	H.R.11864	Solar Heating and Cooling Demonstration Act of 1974	X

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Public Law #	Legislative Basis	Name	CS Related (X)
35. PL 93-410	H.R.14920	Geothermal Energy Research, Development, and Demonstration Act	X
36. PL 93-426	S.3270	Defense Production Act of 1950, 2-year Extension	
37. PL 93-434	HR.16102	Emergency Daylight Saving Time Energy Conservation Act of 1973, Amendments	
38. PL 93-438	H.R.11510	Energy Reorganization Act of 1974	X
39. PL 93-454	S.3362	Federal Columbia River Transmission System	
40. PL 93-473	S.3234	Solar Energy Research, Development and Demonstration Act of 1974	X
41. PL 93-482	H.R.11251	Duty Free Entry of Methanol for use as Fuel	
42. PL 93-485	A. 3698	International Nuclear Cooperation Act	
43. PL 93-496	H.R.15427	National Railroad Passenger Corporation	
44. PL 93-511	H.R.16757	Emergency Petroleum Allocation Act of 1973 Extension	
45. PL 93-514	S.3802	Nuclear Information Annual Report	
46. PL 93-522	H.J.Res.444	Sequoia National Park Hydroelectric Project	
47. PL 93-577	S.1283	Federal Nonnuclear Energy Research and Development Act of 1975	X
48. PL 93-627	H.R.10701	Deep Water Ports Act	
49. PL 93-643	S.3934	Federal-Aid Highway Act Amendments of 1975- Fuel Exports to U.S.S.R.	
50. PL 93-646	H.R.15977	Export-Import Bank Act Amendments	
	S.Res.138	National Consumer Effort to Save Gas	X
	S.Res.249	Oil Price Increase	
	S.Res.279	Washington Energy Conference	
51. PL 94-12	H.R.2166	Tax Reduction Act of 1975; Repeal of Depletion Allowance	
52. PL 94-18	S.994	Nuclear Regulatory Commission Authorization	
53. PL 94-79	S.1716	Nuclear Regulatory Commission Authorization	
54. PL 94-139	H.R.9472	TVA Bonding Authority	
55. PL 94-163	S.622	Energy Policy and Conservation Act	X
56. PL 94-180	H.R.8122	Public Works--ERDA Appropriations 1976	
57. PL 94-187	H.R.3474	ERDA Authorization 1976	
58. PL 94-197	H.R.8631	Nuclear Accident Indemnity	
59. PL 94-227	S.J.Res.59	International Petroleum Exposition	
60. PL 94-258	H.R.49	Naval Petroleum Reserves Production Act of 1976	
61. PL 94-269	S.3108	ERDA Supplemental Authorization 1976	
62. PL 94-291	S.3107	Nuclear Regulatory Commission Authorization	
63. PL 94-332	S.3625	Federal Energy Administration Extension	
64. PL 94-355	H.R.14236	Public Works--ERDA Appropriations, 1977	
65. PL 94-364	S.1518	Motor Vehicle Information and Cost Savings Act	X
66. PL 94-730	S.586	Coastal Zone Management Act Amendments, State grants	
67. PL 94-377	S.391	Federal Coal Leasing Amendments Act	
68. PL 94-385	H.R.12169	Energy Conservation and Production	X
69. PL 94-413	H.R.8800	Electric and Hybrid Vehicle Research, Development and Demonstration Act of 1976	
70. PL 94-422	S.327	Land and Water Conservation Fund Act	

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Public Law #	Legislative Basis	Name	CS Related (X)
71. PL 94-477	H.R.12168	Natural Gas Pipeline Safety	
72. PL 94-493	S.J.Res.126	Interstate Oil and Gas Compact	
73. PL 94-586	S.3521	Alaskan Gas Transportation	
74. PL 95-2	S.474	Emergency Natural Gas Act of 1977	
75. PL 95-39	S.36	ERDA Authorization Act of 1977 (Non-nuclear)	
76. PL 95-70	S.1468	Federal Energy Administration Authorization Act of 1977	
77. PL 95-74	H.R.7636	Interior Appropriations for FY78	
78. PL 95-87	H.R.2	Surface Mining Control and Reclamation Act of 1977	
79. PL 95-91	S.826	Department of Energy Organization Act	X
80. PL 95-95	H.R.6161	Clean Air Act Amendments of 1977	
81. PL 95-96	H.R.7553	Public Works Appropriations for FY78	
82. PL 95-158	H.J.Res.621	Alaska Natural Gas Transportation System	
83. PL 95-183	S.1339	ERDA Authorization Act of 1977 and 1978-Military Applications	
84. PL 95-236	S.266	Authorization for Funds to Limit Radiation Exposure from Uranium Mill Tailings used in Construction	
85. PL 95-238	S.1340	ERDA Authorization Act of 1978 - Civilian Applications	
86. PL 95-240	H.R.9375	Supplemental Appropriations for FY78	
87. PL 95-242	H.R.8638	Nuclear Non-Proliferation Act of 1978	
88. PL 95-246	H.J.Res.746	Supplemental Appropriations for the Southwestern Power Administration	
89. PL 95-253	H.J.Res.715	Sun Day Proclamation	X
90. PL 95-297	H.R.130	Petroleum Marketing Practices Act	
91. PL 95-315	H.R.11713	Small Business Energy Loan Act	X
92. PL 95-319	S.2401	Emergency Interim Consumer Product Safety Standards Act of 1978	X
93. PL 95-372	S.9	Outer Continental Shelf Lands Act of 1977	
94. PL 95-456	S.2249	To Prohibit Rate Discrimination in Rates Charged by the Southwestern Power Administration	
95. PL 95-465	H.R.12932	Interior and Related Agencies Appropriations Act for FY79	
96. PL 95-474	S.682	Tanker Safety Act	
97. PL 95-482	H.J.Res.1139	Continuing Appropriations (includes H.R.12928, Public Workd for Water and Power Development and Energy Research Appropriations Act of 1979)	
98. PL 95-509	H.R.11686	DOE National Security and Military Applications of Nuclear Energy Authorization Act of 1979	
99. PL 95-554	S.3189	Mineral Leasing Act of 1920, Amendment Coal Lease Authorization	
100. PL 95-577	H.R.13597	Rayburn Office Building and House Annex 2 Solar Collector Installation	
101. PL 95-590	H.R.12874	Solar Photovoltaic Energy Research Development and Demonstration Act of 1978	X
102. PL 95-604	H.R.13650	Uranium Mill Tailings Radiation Control Act of 1978	

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<u>Public Law #</u>	<u>Legislative Basis</u>	<u>Name</u>	<u>CS Related (X)</u>
103. PL 95-617	H.R.4018	Public Utility Regulatory Policies Act of 1978	
104. PL 95-618	H.R.5263	Energy Tax Act of 1978	X
105. PL 95-619	H.R.5037	National Energy Conservation Policy Act	X
106. PL 95-620	H.R.5146	Powerplant and Industrial Fuel Use Act of 1978	
107. PL 95-621	H.R.5289	Natural Gas Policy Act of 1978	

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