1 of 1

The 1992 Pacific Northwest Residential Energy Survey Phase I

(PNWRES92-I)

Executive Summary

Concordance

Glossary

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PREFACE

This document contains the Executive Summary, the Concordance, and the Glossary from the *primary documentation* for the **1992 Pacific Northwest Residential Energy Survey, Phase I (PNWRES92-I)**.¹ Its few pages are designed to serve as an introduction to and as an overview of the survey, its processes, and its results.

The complete 33-volume set of primary documentation provides information needed by energy analysts and interpreters with respect to planning, execution, data collection, and data management of the PNWRES92-I process. Thirty of these volumes are devoted to different "views" of the data themselves, with each view having a special purpose or interest as its focus. Analyses and interpretations of these data will be the subjects of forthcoming publications.

Conducted during the late summer and fall months of 1992, PNWRES92-I had the overarching goal of satisfying basic requirements for a variety of information about the stock of residential units in Bonneville's service region. Surveys with a similar goal were conducted in 1979 and 1983 and were respectively designated PNWRES79 and PNWRES83.

¹ From its planning stages, PNWRES92 was conceived as and intended to be a two-phase study. Phase I, the Telephone Survey, was to provide a modest amount of data on a large number (some 20,000) of Pacific Northwest households; Phase II, the On-Site Survey, was to provide a great deal of data on relatively few (perhaps 2,000-3,000) of the households interviewed in Phase I. Phase I households were intended also to provide a surrogate population of the region's households for specially focused future surveys.

PNWRES92-I differed from its two predecessors in several ways. It was designed to ...

... be conducted as a telephone survey—in contrast to an on-site/in-person interview.

... include all classes of housing units in the Pacific Northwest—in contrast to those that could be reached only through cooperating electric utilities.

... assure coverage of six geographic sub-regions² and three utility types³—in contrast, again, to depending upon the cooperation and effort of a selection of electric utilities.

... provide data on some 20,000 housing units—in contrast to some 4,000-5,000 housing units interviewed in PNWRES79 and PNWRES83.

... provide a surrogate population of Pacific Northwest households as a basis for future, fine-tuned surveys aimed at specific issues or limited data needs.

In order to provide a record of intention and achievement, the 33 coordinated volumes—designated **Volume A through Volume AG**—were prepared by PNWRES92-I's principal contractor, the Applied Management & Planning Group of Los Angeles, CA. These volumes are collected and published in a series of 12 "books," each of which contains a particular subgroup of the 33 volumes:

Book 1: Volumes A and B. The Executive Summary, the Concordance, and the Glossary (**A**)⁴ and the Report on Methodology and the Technical Appendix (**B**).

Book 2: Volume C. Item-by-item crosstabulations⁵ for the Pacific Northwest Region.

Book 3: Volume D. Item-by-item crosstabulations for the four Bonneville Area Offices (Puget Sound, Lower Columbia, Upper Columbia, and Snake River).

Book 4: Volume E. Item-by-item crosstabulations for the four Pacific Northwest states served by Bonneville (Western Montana, Idaho, Washington, and Oregon).

² Western Montana, Idaho, Eastern Washington, Western Washington, Eastern Oregon, and Western Oregon.

³ Publicly-Owned Generating Utilities, Publicly-Owned Non-Generating Utilities, and Investor-Owned Utilities.

⁴ Thus this stand-alone document contains all of **Volume A**.

⁵ Item-by-item crosstabulations display all responses to each of 80 survey items (excepting confidential/sensitive items like names and addresses) for each of the 15 survey domains and for the Region (**Volume C**), Bonneville's four Area Offices (**Volume D**), and the four Pacific Northwest states (**Volume E**).

- Book 5: Volume F.** Selected crosstabulations⁶ for the Pacific Northwest Region.
- Book 6: Volumes G, H, and I.** Selected crosstabulations for the three publicly-owned *generating* utility domains: Eastern Washington (**G**), Western Washington (**H**), and Western Oregon (**I**).
- Book 7: Volumes J, K, L, M, N, and O.** Selected crosstabulations for the six publicly-owned *non-generating* utility domains: Western Montana (**J**), Idaho (**K**), Eastern Washington (**L**), Western Washington (**M**), Eastern Oregon (**N**), and Western Oregon (**O**).
- Book 8: Volumes P, Q, R, S, T, and U.** Selected crosstabulations for the six investor-owned utility domains: Western Montana (**P**), Idaho (**Q**), Eastern Washington (**R**), Western Washington (**S**), Eastern Oregon (**T**), and Western Oregon (**U**).
- Book 9: Volumes V, W, X, and Y.** Selected crosstabulations for Bonneville's four Area Offices: Puget Sound (**V**), Lower Columbia (**W**), Upper Columbia (**X**), and Snake River (**Y**).
- Book 10: Volumes Z, AA, AB, and AC.** Selected crosstabulations for the four states served by Bonneville: Washington (**Z**), Oregon (**AA**), Idaho (**AB**), and Western Montana (**AC**).
- Book 11: Volumes AD, AE, and AF.** Selected crosstabulations for the three categories of utilities in the Pacific Northwest: Public Generating (**AD**), Public Non-Generating (**AE**), and Investor-Owned (**AF**).
- Book 12: Volume AG.** A report of a post-survey study of PNWRES92-I non-respondents (conducted in late Spring 1993) and their reason(s) for not completing the original survey.

For additional information, comments, or data requests, contact David Mills: 503-230-7505.

To obtain copies of the reports, contact Kim Andersen, End-Use Research Section (RPEE), Bonneville Power Administration, P.O. Box 3621, Portland, OR 97208-3621: 503-230-5712.

Individually-bound copies of Volume A (Executive Summary, Concordance, and Glossary) may be obtained from Bonneville's Public Information Office: 503-230-3055.

⁶ "Selected crosstabulations" refers to a set of nine survey items of wide interest (Dwelling Type, Ownership Type, Year-of-Construction, Dwelling Size, Primary Space-Heating Fuel, Primary Water-Heating Fuel, Household Income for 1991, Utility Type, and Space-Heating Fuels: Systems and Equipment) that were crosstabulated among themselves and thus yielded 36 two-way tables for each of the several views displayed in **Volumes F through AF**.

1992 Pacific Northwest Residential Energy Survey Phase I

VOLUME A

Executive Summary Project Concordance Glossary

**Prepared for
Bonneville Power Administration
Portland, Oregon**

**by
Applied Management & Planning Group
Los Angeles**

Contract No.: DE-AC79-92BP25174

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EXECUTIVE SUMMARY

This Executive Summary outlines the general processes employed in and the major findings from the conduct of Phase I of the Pacific Northwest Residential Energy Survey (PNWRES92-I) during the last quarter of 1992. This study was Bonneville's third comprehensive residential survey of the region, conducted to provide data on energy usage, conservation awareness and behaviors, and associated consumer characteristics for use in forecasting and planning.

The summary is divided into four sections:

BACKGROUND sets the stage with respect to the need for the survey, relates it to previous work, outlines the implementation processes, and summarizes the data products.

PROFILING THE RESPONDENTS summarizes the survey results under these six categories:

Demographics
Housing Units
Room Inventory
Appliance Inventory
Air-Conditioning/Heating/
Water-Heating
Opinion

REPORTS AND CROSS-TABULATIONS describes the various individual documents.

BONNEVILLE POWER PLUS provides a short description of an Excel-spreadsheet-based software program that contains all of the tabulated material in a format that encourages browsing among the tables and charts, with special feature that they can be copied directly into other Windows-based documents.

BACKGROUND

A necessary element in Bonneville's forecasting and conservation planning is information about consumers' energy use and factors affecting energy consumption. Energy-use data from residential surveys conducted in 1979 and 1983 have been used extensively by Bonneville, the Pacific Northwest Utilities Conference Committee, the Northwest Power Planning Council, and several of the region's utilities.

Since 1983, both increased fuel prices and conservation programs have affected consumer behavior and have thus made it necessary to update the residential database used for energy forecasting. To improve the accuracy of these forecasts in the 1990s, more detailed information was required concerning the use of residential energy in the Pacific Northwest. The result was Bonneville's planning and implementing its third regional residential survey, PNWRES92-I.

A team of Bonneville staff members from the Office of Energy Resources designed the data collection as a telephone survey. The Applied Management & Planning Group (AMPG), Los Angeles, California, was selected to implement the survey, summarize the data, and prepare the primary documentation. Interviewing Services of America (ISA), Van Nuys, California, was subcontracted by AMPG to conduct the telephone interviews.

PNWRES92-I used random digit dialing (RDD) and computer-assisted telephone interviewing (CATI). The sample was stratified into 15 sampling domains defined by six geographic areas⁷ and three utility types.⁸ Interviews were conducted from September 3, 1992, to December 9, 1992. A total of 20,170 interviews were completed across the 15 domains. Population total weights were created for each domain by the dividing estimated⁹ occupied housing counts by the number of interviews in the survey in that domain.

As indicated in the **Concordance** (pages 18-19), the survey's full documentation is divided among 33 different volumes, each of which is designed to support the survey process or to address particular

⁷ Western Montana, Idaho, Eastern Washington, Western Washington, Eastern Oregon, Western Oregon.

⁸ Public generating, public non-generating, and investor-owned. Because no public generating utilities operated in Western Montana, Eastern Oregon, or Idaho when PNWRES92-I was conducted, three of the utility/geographic cells were empty, and the sampling design contained a total of 15 domains.

⁹ Counts were taken from Bonneville's Financial and Operations (F&O) database for all utilities and adjusted by using state and sub-state vacancy rates as measured by the 1990 census. These calculations were done both at the sampling domain level and at the level of Bonneville's four area offices, yielding two sets of weights.

special interests in the region. For example, **Volume E** provides item-by-item crosstabulations of interviewees' responses for each of the four states, while **Volume K** is devoted to crosstabulations of nine special questions for public non-generating

utilities in Idaho. This Executive Summary, however, focuses on region-level estimates for a few selected items of general interest. This information appears in the section, **Profiling the Respondents**, starting on page 11.

PROFILING THE RESPONDENTS

This profile consists of a selection of PNWRES92-1 variables and their region-wide estimates.¹⁰ The details are grouped into 6 subsets: **Demographics, Housing Units, Rooms, Appliances, Space-Heating/Water-Heating/Air-Conditioning, and Opinion.**

Demographics

Of the individuals considered *most knowledgeable* about energy in their households:

57% were female

30% had graduated from college, while 7% had not finished high school

36% lived in households with two people, while 16% lived alone

80% lived in households with no children under 6 years old

68% had no children aged 6 to 17 years

77% lived with no one aged 65 or older

7% had income less than \$10,000

2% had income greater than \$100,000

61% would authorize release of their utility billing information

Median family income for 1991 was slightly larger than \$30,000.

¹⁰ More specifically, the quantifications used here are derived from the domain-weighted frequencies that appear in **Volume C: Item-by-Item Results: Region and Domains.**

PROFILING THE RESPONDENTS (continued)

Housing Units

In describing their housing units, respondents reported that:

72% of the households lived in single-family dwellings

22% of the housing units were constructed before 1950

74% of the respondents owned their homes

39% had moved into their homes since 1989

When Our Homes were Built

Of the Region's estimated 3.55 million homes, two-thirds were built between 1950 and 1985

	Pre-1950 (7.15%)	50-59 (3.7%)	60-69 (11.4%)	70-78 (19.5%)	79-85 (11.7%)	86-92 (10.8%)	Don't Know/ Refused (15.3%)
Single Family (71.5%)	19.6%	8.9%	9.0%	13.0%	7.5%	6.2%	7.3%
Multi-Family (15.0%)	1.7%	0.6%	1.1%	2.0%	1.3%	1.8%	6.6%
Manufactured (12.3%)	0.1%	0.2%	1.3%	4.4%	2.9%	2.1%	1.3%
Other (0.5%)	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%

Note: Rounding has an effect on sums.

21% of their dwellings had vaulted ceilings

37% of their dwellings were built on foundations with crawl space

25% did not know the floor area of their dwellings.

Of the 75% those who did know the floor area:

17% reported less than 92.9 square meters (1,000 square feet), while 28% reported more than 186 square meters (2,000 square feet).

26% had basements

Median dwelling size was 171 square meters (1,857 square feet).

PROFILING THE RESPONDENTS (continued)

Rooms

When asked about the numbers of types of rooms in their homes, respondents reported:

99.9% of the households had at least one bathroom, while 57% had more than one bathroom

99.9% had kitchens, but 1 in 1,000 had none

99.7% had at least one bedroom, while 65% had 3 or more bedrooms

99.9% had living rooms

60% had utility or work rooms

62% had dining rooms

34% had family rooms

25% had dens, studies, libraries, or sewing rooms

The "average" Pacific Northwest home had 2.86 bedrooms and 1.73 bathrooms.

PROFILING THE RESPONDENTS (continued)

Appliances

Regarding the types and numbers of appliances in their homes, the following percentages of respondents reported that they had at least one of the indicated types of appliances:

In terms of the *numbers of each type of appliance*, there was one reversal within the "possession" sequence given above:

The average number of televisions per household was 1.81, while the average number of refrigerators was 1.18.

PROFILING THE RESPONDENTS (continued)

Air-Conditioning, Space-Heating, and Water-Heating

Few respondents knew nothing about or refused to comment on their use of various domestic fuels for space-conditioning and water-heating. Thus, these summary percentages are estimates based upon an estimated 3.55 million households.

Air-conditioning System:

no air-conditioning
76%

window or wall
units
8%

central electric
system
7%

heat pump
6%

evaporative cooler
2%

central gas system
1%

Our Water/Space Heat Fuels

Primary Space-Heating Fuel:

electricity
46%

natural gas
24%

wood or presto logs
16%

fuel oil, propane, or bottled gas
11%

Primary Water-Heating Fuel:

electricity
76%

natural gas
17%

wood or presto logs
0.2%

fuel oil, propane, or bottled gas
1%

PROFILING THE RESPONDENTS (continued)

Opinion

Asked to rate the seriousness of five socio-economic issues in their own state on a scale of 1 to 5, with 1 being "Not At All Serious" and 5 being "Extremely Serious," the following percentages of respondents gave "Extremely Serious" ratings to the issues:

Scarcity of Energy

13%

Cost of Energy

21%

Environmental

Pollution

29%

Crime

35%

Unemployment

38%

Our Opinions

13% rated Scarcity of Energy as "Extremely Serious,"
while 38% rated Unemployment as "Extremely Serious"

Scarcity of Energy	17%	21%	27%	15%	13%
Cost of Energy	6%	15%	33%	20%	21%
Environmental Pollution	9%	12%	27%	19%	29%
Crime	5%	11%	24%	23%	35%
Unemployment	4%	9%	22%	23%	38%

Scale (1 - 5)
<< Not At All serious Extremely Serious >>

Asked about their exposure to several conservation-based programs:

54% had seen or heard about low interest weatherization loans

38% had seen or heard about utility or state weatherization programs

28% had seen or heard about efficient appliance programs.

16% had had their homes weatherized by the state or utility since moving in

Asked about the level of the energy efficiency of their homes:

26% replied that it was "as efficient as it can be"

31% replied that "little improvement can be made"

25% replied that "moderate improvement can be made"

10% replied that "a lot of improvement can be made"

6% replied that "a great deal of improvement can be made"

**Thus, 57% indicated that little or no energy efficiency improvement
could be made in their homes**

REPORTS AND CROSSTABULATIONS

Numerous reports and crosstabulations are available from this study. There are 33 printed volumes in the primary documentation; they are also accessible from menu-driven software (**Bonneville Power Plus**). **Volume A** includes this Executive Summary, the Concordance, and the Glossary. **Volume B** includes the Report on Methodology and the Technical Appendices. **Volumes C** through **AF** show tables and charts from the study.

Item-by-item crosstabulations are provided for the 15 sampling domains within the region (**Volume C**), the three utility types within the four Area Offices (**Volume D**), and the three utility types within the four states (**Volume E**).

Selected crosstabulations examine nine survey items: type of dwelling,

ownership type, years of construction, size (in square feet), type of space-heating fuel, type of water-heating fuel, household income, utility type, and type of space-heating equipment. These items are tabled separately for the region (**Volume F**), the 15 sampling domains (**Volumes G-U**), the four Area Offices (**Volumes V-Y**), the four states (**Volumes Z-AC**), and the three utility types (**Volumes AD-AF**). Each table is accompanied by a bar chart based on the weighted data.

Volume AG is a report on the non-respondents.

The **Concordance** (pages 18-19) provides an index to the various tables and reports of the study.

BONNEVILLE POWER PLUS

As part of its contracted work, AMPG developed a personal computer system to support the PNWRES92-I reports. Called **Bonneville Power Plus**, this system operates under Windows 3.1 and uses Microsoft's Excel 4.0 and Word for Windows 2.0c programs. The files consist primarily of a spreadsheet-based system of tabulations which are accessed through a menu-driven format. In addition to the data tables, **Bonneville Power Plus** provides menu-

accessible charts of the weighted data. Although the files used directly by **Bonneville Power Plus** are protected from being overwritten, each table and chart can be saved from the display screen to new files; from there they can be modified and used in any Windows application.

Documentation for **Bonneville Power Plus** is contained in **Volume B: Technical Appendices**.

CONCORDANCE

This **Concordance** is a "road map" to the material generated as primary documentation to PNWRES92-I.

Its basis is the set of 33 reports, **Volume A** through **Volume AG**, produced at the conclusion of the data-collecting activity.

These volumes are collected and published in a series of 12 **books** whose contents are indicated in the rectangle displayed in the **Concordance's** lower right corner. The **books** are available through the channels indicated at the end of the Preface.

Text

A-B

C-E

(Item-by-Item)

Volume A:
Executive Summary
Project Concordance
Glossary

Volume B:
Report of Methodology
Technical Appendix

Item-by-Item
Crosstabulations

Volume C:
Pacific Northwest
Region
by Domain

Volume D:
Pacific Northwest
Region by
Area Office

Volume E:
Pacific Northwest
Region
by State

Concordance

Tables

↓ ↓ ↓ ↓ ↓ ↓
F **G-U** **V-Y** **Z-AC** **AD-AF** **AG**
 (Region) (Domains) (Area Offices) (States) (Utilities) (Non-Respondent Survey)

Selected
Crosstabulations

Volume F:

Pacific
Northwest
Region

Selected
Crosstabulations
for Domains:

G: Eastern Washington (PG)
 H: Western Washington (PG)
 I: Western Oregon (PG)
 J: Western Montana (PN)
 K: Idaho (PN)
 L: Eastern Washington (PN)
 M: Western Washington (PN)
 N: Eastern Oregon (PN)
 O: Western Oregon (PN)
 P: Western Montana (IO)
 Q: Idaho (IO)
 R: Eastern Washington (IO)
 S: Western Washington (IO)
 T: Eastern Oregon (IO)
 U: Western Oregon (IO)

Selected
Crosstabulations
for Area Offices:

V: Puget Sound
 W: Lower Columbia
 X: Upper Columbia
 Y: Snake River

Selected
Crosstabulations
for States:

Z: Washington
 AA: Oregon
 AB: Idaho
 AC: Montana

Selected
Crosstabulations
for Utility Types:

AD: Public Generating
 AE: Public Non-Generating
 AF: Investor Owned

Volume AG:

Study of
Non Respondents

Book 1: Volumes A and B
 Book 2: Volume C
 Book 3: Volume D
 Book 4: Volume E
 Book 5: Volume F
 Book 6: Volumes G, H, and I
 Book 7: Volumes J, K, L, M, N, and O
 Book 8: Volumes P, Q, R, S, T, and U
 Book 9: Volumes V, W, X, and Y
 Book 10: Volumes Z, AA, AB, and AC
 Book 11: Volumes AD, AE, and AF
 Book 12: Volume AG

Key: PG: Public Generating Utility PN: Public Nongenerating Utility IO: Investor Owned

GLOSSARY

Acronyms, Initialisms, and Jargon

AMPG (See **Applied Management & Planning Group**)

BPA (See **Bonneville Power Administration**)

BPP (See **Bonneville Power Plus**)

CATI (See **Computer-Aided Telephone Interviewing**)

Crosstabs, Crosstabulations (See **Crosstabulation Tables**)

FSCF (See **Flagged Successful Completion File**)

ISA (See **Interviewing Services of America**)

OHUs (See **Occupied Housing Units**)

PNWRES92-I (See **Pacific Northwest Residential Energy Survey - Phase I**)

RDD (See **Random Digit Dialing**)

SAS (See **SAS**)

TCDF (See **Telephone Call Disposition File**)

TRIF (See **Telephone Respondent Information File**)

TDF (See **Telephone Data File**)

TSCF (See **Telephone Successful Completion File**)

General Terminology

Applied Management & Planning Group (AMPG) is a small business enterprise contracted by the **Bonneville Power Administration** to conduct the **Pacific Northwest Residential Energy Survey, Phase I (PNWRES92-I)**. AMPG is located in West Los Angeles, California.

Area Offices are four geographic-based entities (**Lower Columbia, Puget Sound, Snake River, and Upper Columbia**) which oversee the field operations of the **Bonneville Power Administration**.

Bonneville Power Administration (BPA) is one of the U.S. Department of Energy's five power marketing agencies. **BPA** supplies

power wholesale to utilities. Located in Portland, Oregon, BPA's main service territory includes Washington, Oregon, Idaho, Western Montana, and portions of surrounding states. **Bonneville** contracted the conduct of **PNWRES92-I** in order to support the forecasting of future energy needs in the Pacific Northwest. (See **States**)

Bonneville Power Plus (BPP) is a software system which allows personal computer access to the tables and reports of **PNWRES92-I** through a Microsoft Windows-based system.

Computer-Aided Telephone Interviewing (CATI) employs interactive computing systems to assist interviewers and their supervisors in performing the basic data-collection task of telephone interview surveys.

Concordance, as used here, is a specific text-and-graphics display which provides an index to **PNWRES92-I**'s volumes of tables and reports; it appears in each of the 33 volumes.

Crosstabulation Tables show combined frequency distributions of two or more variables. In **PNWRES92-I**, item-by-item crosstabulation tables were produced for the 15 sampling domains, for the three utility types within **Bonneville's** four **Area Offices**, and for the three utility types within the four states. Crosstabulation tables also were produced to examine nine specific survey items: type of dwelling; ownership type; year of construction; size (in square feet); type of space-heating fuel; type of water-heating fuel; household income; utility type; and type of space-heating equipment. These are presented for the region, the 15 sampling domains, the four area offices, the four states, and the three utility types. (See **Frequencies**)

Data are those elements of information that are either

- (a) quantified by their basic nature (e.g., floor area or annual income) or
- (b) capable of being quantified (e.g., type of dwelling or strength of an opinion).

For the most part, the word "data" is used in these documents to refer to the values collected during the conduct of **PNWRES92-I**.

Domain is used in sampling and survey practice to designate a particular subset of a population that is of special interest. In **PNWRES92-I**, the domains (also called sampling domains) refer to the 15 strata of the initial survey design. These domains were determined by stratifying the target population of Pacific Northwest households according to three utility types (investor-owned, public generating and public non-generating) *and* six geographical areas (Idaho; Western Montana; the 19 Oregon counties west of the Cascade ridge; the 17 Oregon counties east of the Cascade ridge; the 19 Washington counties west of the Cascade ridge; and the 20 Washington counties east of the Cascade ridge). Three of the possible domains were empty (in late 1992, there were no public generating utilities in Eastern Oregon, Idaho or Montana); therefore, there were 15 active sampling domains in the survey itself. (See **New Domains**)

Dwelling (See **Housing Unit**)

Fieldwork is a term used to cover the data-collection aspects of a survey. For **PNWRES92-I**, the fieldwork consisted of telephoning residences in the Pacific Northwest to conduct the survey and recording the responses. The effort lasted approximately 14 weeks during the fourth quarter of 1992 and was conducted using **ISA's** CATI system. During fieldwork, a record of every call that was made was entered into one of five telephone-record files. (See **CATI**, **ISA**, **Telephone Call Outcome Files**)

Foundation refers to the survey's Question 26 in which respondents were queried regarding their dwellings' type of foundation. When respondents tried to give multiple responses, interviewers probed for the foundation of the largest area of the dwelling. The primary foundation types were concrete slab, crawl space, and basement.

Flagged Successful Completion File (FSCF) contained results of interviews which were completed but did not pass quality control (due to conflicting or illogical responses). ISA staff cleaned data and, when necessary, recontacted respondents to remove as many files as possible from the FSCF and place them in the **Telephone Successful Completions File**. (See **TSCF, Telephone Call Outcome Files**)

Frequencies are counts of individual values attained by a variable. (See **Crosstabulation Tables, Raw Data, Weighted Data**)

Fuel Type is one of the following commodities: electricity, wood, natural gas, fuel oil, propane/bottled gas, kerosene, and coal. Respondents were asked to name the fuel used most in their homes to heat space and water.

Group Quarters, according to the U.S. Bureau of the Census, "... are living arrangements for institutional inmates or for other groups containing nine or more persons not related to the person in charge...."¹¹

Household, according to the U.S. Bureau of the Census, "... consists of all persons who occupy a housing unit. By definition, the count of households is the same as the

count of occupied housing units."¹¹ (See **Occupied Housing Units**)

Housing Unit, according to the U.S. Bureau of the Census, "... is a house, an apartment, a group of rooms, or a single room occupied or intended for occupancy as separate living quarters. Separate living quarters are those in which occupants do not live and eat with any other persons in the structure and that have direct access from the outside of the building or through a common hall that is used or intended for use by the occupants of another unit or by the general public. The occupants may be a single family, one person living alone, two or more families living together, or any other group of related or unrelated persons who share living arrangements (except as ... group quarters)."¹¹ (See **Group Quarters**)

Interviewing Services of America (ISA) conducted the fieldwork for **PNWRES92-I** as a subcontractor to AMPCI. ISA is located in Van Nuys, California. (See **CATI, Fieldwork**)

Lower Columbia Area Office is located in Portland, Oregon.

Methodology covers all activities related to the planning, design, data collection, analysis, and reporting of **PNWRES92-I**.

New Domains is a term coined during the processing of **PNWRES92-I** data. It was created to accommodate respondents whose data could reasonably place them in a different domain than expected by their telephone number. Thus, at the design stage, each possible telephone number was placed in one of the 15 "Design Domains." During fieldwork, respondents reported their actual domains when they were queried about their utility; these were used to determine each respondent's **New Domain**. Those respondents who were not queried about their utility were allocated to

¹¹ Definitions adapted from *Supplement to the American Housing Survey for Selected Metropolitan Areas in 1988*, H171/88, U.S. Department of Commerce, Bureau of the Census, Washington, DC, 1993.

their **New Domains** according to their confirmed ZIP code.

Occupied Housing Units (OHUs), according to the U.S. Bureau of the Census, is the set of housing units that are " ... classified as occupied if a person or group of persons is living in [them] at the time of the interview or if the occupants are only temporarily absent, for example, on vacation.... By definition of the count of occupied housing units is the same as the count of households."¹¹

Quad-Weekly Reports refers to a series of documents, prepared for **BPA** and generated every four weeks by **AMPG**, which describe the progress-to-date for **PNWRES92-I** and projects and activities to be completed in the ensuing four weeks.

Pacific Northwest Residential Energy Survey - Phase I (PNWRES92-I) is the subject of this family of reports. It was a telephone survey that was conducted to obtain data on the energy use of residences in the Pacific Northwest. A total of 20,170 surveys were completed. The results of the study will allow the **Bonneville Power Administration** and other members of the Pacific Northwest's energy-planning community to forecast residential energy use in the region and to plan for appropriate conservation programs.

Pretest is a small-scale tryout of a survey's instrument and field methods. The pretest allows for changes and improvements to be made in the survey instrument and the methodologies prior to launching the full effort.

Puget Sound Area Office is located in Seattle, Washington.

Random Digit Dialing (RDD) is the process of dialing randomly-generated telephone numbers. Properly conducted, RDD planning yields a sample such that

every telephone number within the desired population has the same probability of being selected.

Raw Data are data generated during the conduct of a survey's fieldwork. With respect to **PNWRES92-I**, these data are maintained in **SAS** datasets in **BPA**'s mainframe computer. The term also applies to the display of counts contained in the upper tables of **Volumes C-AG**. (See **Weighted Data**)

Residence (See **Housing Unit**)

Response Rate is the ratio of the number of respondents who completed the survey to the number of eligible residential telephone numbers which were dialed.

Return Rate is the ratio of the number of respondents who completed the survey to the total number of telephone numbers which were dialed.

Rounding, for this study, is the process of converting fractional numbers to whole numbers. Weighted estimates in **PNWRES92-I** are published as integers (i.e., they are rounded to the nearest whole number). (See **Weighted Data**)

Rounding Error is an error resulting from rounding.

Sample, as used in surveys, is a subset of a population under study. The population for **PNWRES92-I** was all housing units located in the Pacific Northwest which, at the time of the survey, had telephone service; the sample is the set of 20,170 household for whom completed surveys were obtained.

Sampling Domain. (See **Domain**)

Sampling Error, for **PNWRES92-I**, was defined to be the maximum standard error of an estimated binomial parameter. This

maximum is attained by setting the parameter to the value of 0.5.

PNWRES92-I's stated precision requirement called for each domain's binomial parameter to be estimated with as small a standard error as possible, adhering to the requirement that domains involving publicly-owned utilities would have standard errors half as large as those involving investor-owned utilities. Given an initial planned total sample size of some 20,000 completed interviews, this resulted in sample sizes of about 1,900 for publicly-owned utilities and 475 for investor-owned utilities. Thus, the maximum standard errors were 0.011 and 0.023, respectively, for the two types of utilities. (See **Survey Design**)

SAS is a commercial software system for data management and analysis with the capabilities of information storage and retrieval, data modification and programming, report writing, statistical analysis, and file handling. It is a product of SAS Institute, Inc., located in Cary, North Carolina.

Snake River Area Office is located in Walla Walla, Washington.

States, for the purposes of reporting this study, are those in the Pacific Northwest: Oregon, Washington, Idaho and Western Montana. Data from the surrounding states were incorporated into **PNWRES92-I** datasets in the following manner: responses from California and parts of Nevada were allocated to Western or Eastern Oregon, while responses from Nevada, Utah, and Wyoming were allocated to Idaho or to Western Montana according to their adjacencies.

Surveyhard is the computerized version of the survey instrument designed for use on **ISA's CATI** system. (See **CATI, Survey Instrument**)

Survey Design is a set of strategies and procedures for conducting a survey. The sample design for **PNWRES92-I** was a stratified random sample, conducted with **CATI** technology. In each of the nine public utility domains, a sample size of 1,905 housing units was sought. In each of the six private utility domains, a sample size of 476 housing units was sought. (See **Sampling Error**)

Survey Instrument is the script devised and used by the surveyors to elicit data.

Telephone Call Disposition File (TCDF) is the largest of five data files designed to track the number of telephone calls placed during fieldwork. This file contains the disposition of all telephone calls, including disconnections, fax machines, non-residential numbers, etc. It also includes the attempts made to potential respondents. (See **Telephone Call Outcome Files**)

Telephone Call Outcome Files are five files designed to document the outcome of every telephone call placed during the survey. The five files were the **Telephone Calls Disposition File (TCDF)**; the **Telephone Respondent Information File (TRIF)**, the **Telephone Data File (TDF)**, the **Telephone Successful Completions File (TSCF)**, and the **Flagged Successful Completions File (FSCF)**. (See **Telephone Call Disposition File, Telephone Respondent Information File, Telephone Data File, Telephone Successful Completions File, Flagged Successful Completions File**).

Telephone Respondent Information File (TRIF) provides a record of all respondents who expressed a willingness to begin the survey were included in the TRIF. This file primarily logged respondents who refused to complete after a certain question or who did not qualify to complete the survey due to the screening questions. (See **Telephone Call Outcome Files**)

Telephone Data File (TDF) contains records of interviews which were begun and in which respondents passed the screening questions but still for some reason did not complete the survey. (See **Telephone Call Outcome Files**)

Telephone Successful Completions File (TSCF) contains all completed surveys. (See **Telephone Call Outcome Files**)

Upper Columbia Area Office is located in Spokane, Washington.

Utility is an organization which sells energy to the general public. For the purpose of this study, three types of Pacific Northwest electric utilities were designated: public generating (PG), public non-generating (PN), and investor-owned (IO).

Weekly Reports is a series of documents sent to **BPA** by **AMPG** every week to report on the progress of **PNWRES92-I**. Information was reported by task and

included descriptions of work completed for the previous week and projections for work to be completed during the upcoming week.

Weights are values associated with respondents' raw data. They are used to estimate population and sub-population totals by "weighting up" the raw data. For **PNWRES92-I**, the designed weighting system was based upon regional and sub-regional counts of **Occupied Housing Units (OHUs)** that were derived from 1990 U.S. Census data and upon the sample frequencies in the **New Domains**. A second set of weights was developed for **BPA's** four **Area Offices**. (See **OHUs**, **Area Office**, **New Domains**)

Weighted Data are data which have been derived by applying a set of weights to the raw data. The weighted **PNWRES92-I** data are displayed in the lower tables in **Volumes C-AG**. (See **Raw Data**, **Weights**)

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