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# Public Utility Accounting

A Public Power System's  
Introduction to the Federal Energy  
Regulatory Commission Uniform  
System of Accounts

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This Public Utility Accounting guide was originally written by Brian Farber, with Burns & McDonnell in Kansas City, Missouri.

The manual was updated in 2012 by Jerry McKenzie, with MGT of America, Inc. In updating this publication, Jerry brought to bear his thirty plus years of knowledge of electric utility accounting, as well as specific experience working with both public power systems as well as investor-owned electric utilities.



# **Public Utility Accounting**

## **Chapter 1 Introduction**



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## Purpose of this Guide

The purpose of this guide is to provide the management and staff of public power systems with an overview of generally accepted electric utility accounting practices within the Federal Energy Regulatory Commission (FERC) prescribed Uniform System of Accounts (USOA). The guide discusses why and how this accounting system should be implemented by public power systems. The FERC USOA is similar to most other prescribed systems of accounts and is the most widely used and referenced accounting system by the nation's electric utilities. As such, it serves as the industry standard that provides valuable comparative information, often used for benchmarking and other similar performance measurement and analysis.

The FERC USOA does not preclude a utility from tailoring its accounting system to its needs, but, as mentioned above, provides a standard framework on which each utility's accounting system is to be based. This framework of standard accounting facilitates the financial comparison of utilities at either a summary level or at a significant level of detail. Unique systems of accounts and accounting procedures are often established within the FERC framework by each utility. This design allows them to meet the information requirements of that utility's system and, if appropriate, those of specific local regulatory jurisdictions under which they are regulated. Although this guide is not intended to define all specific detailed accounting practices which may apply to public power utilities, it does provide a general representation of the standard application of the FERC USOA by the industry today.

This guide provides an introductory view of various uses of electric utility financial information, with a detailed review of the FERC USOA and how these information requirements can be met under the FERC system. It also discusses the implementation of the USOA by public power systems. The guide will address the following areas:

- ❖ Origin and purpose of the USOA;
- ❖ Reasons why public power systems should use the USOA; and
- ❖ Structure of and instructions for using the USOA

In addition, the guide serves as an introduction to specific accounting applications under the FERC USOA. Much of the information provided in this guide is available in various utility industry publications and general reference materials. This guide attempts to bring this information together, as it relates to public power systems, in a concise form. A list of some of these sources, which were used in the preparation of this guide, is included in the Sources of Information.

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## Are Utilities Required to Use the FERC Uniform System of Accounts?

Many public utility accountants ask whether all utilities are required to adopt the uniform system of accounts. The simple answer is **no**. Specifically, the FERC says the USOA is applicable to all licensees subject to the Commission's accounting requirements under the Federal Power Act, and to all public utilities subject to the provisions of the Federal Power Act. It is applicable to public utilities that own or operate facilities subject to the Federal Power Act, and to licensees engaged in the generation and sale of electric energy for ultimate distribution to the public. Readers should note that a Public Utility as

defined here means any person who owns or operates facilities subject to the jurisdiction of the Commission under the Federal Power Act (section 201(e) of said act). The USOA also applies to agencies of the United States engaged in the generation and sale of electric energy for ultimate distribution to the public, so far as may be practicable, in accordance with applicable statutes.

It is clear from the FERC's definition that many public power systems that do not have a license agreement with the federal government for energy resources are **not** required to adopt the uniform system of accounts. But other jurisdictions may mandate that a particular electric utility follow FERC's uniform system of accounts. In some cases, either the state statutes or city ordinances mandate that USOA be adopted. Although most public power systems are locally regulated by an elected or appointed board of consumer- owners, in six states they are also regulated by the state public service commission. Some bond covenants used in obtaining external sources of financing commit the electric utility to adopt the FERC Uniform System of Accounts. Consequently, these additional jurisdictions and covenants have the effect of enlarging the number of electric utilities subject to the FERC USOA.

For regulated utilities, the FERC Uniform System of Accounts or the similar National Association of Regulatory Utility Commissioners' (NARUC) Uniform System of Accounts have been adopted in virtually every state with minor exceptions necessary to *meet* particular state requirements. Rural electric cooperatives are required to maintain their accounting records in accordance with the Rural Utility Services (RUS) Uniform System of Accounts, which is similar to that required by the FERC. In fact, except for specific instances in which RUS prescribes other accounting, any changes in the FERC Uniform System of Accounts are considered changes in the RUS system.

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## **Benefits of Using the FERC Uniform System of Accounts**

For those public power systems that are not required to adopt the FERC Uniform System of Accounts, there is the question of the USOA's value to a publicly owned electric utility. This guide, although not all-encompassing, outlines for public power systems some of the significant benefits of using the USOA.

One reason to adopt the FERC system for voluntary compliance is comparability. By using the industry standard chart of accounts, a utility accountant (and management) can effectively compare operating statistics with those of other utilities. These measurements of operating efficiency can be extremely helpful in identifying operational (financial) problems at an early stage. When examining utility costs, it is very beneficial to use the same "language" in defining costs that other utility accountants use. In the absence of this common "language," comparisons of such costs as "administrative and general expenses," can be very misleading.

Nearly all electric utilities are required to complete some form of a standardized annual report to an oversight body, generally at the state level. These forms are often organized in a format consistent with the FERC Uniform System of Accounts. Those electric utilities not using this system of accounts are required to convert their financial data into the FERC format. This can be a very expensive and tedious task with considerable risk that the conversion process will not be completed accurately.

Another issue to consider when evaluating the use of the FERC system is the ability of internal management, as well as external consultants, to use the utility financial data in performing a variety of studies. Computer software that has been developed to assist staff or those from the

outside in performing rate studies, cost-of-service studies, depreciation studies, benchmark (cost) evaluations, and other such studies are generally all based off of the FERC Uniform System of Accounts. Once again, the cost to convert existing data to the FERC system or to develop information required in these studies can be prohibitive.

A final consideration is offered for those electric utilities that will require external financing for construction projects in the future. In the event a bond rating agency is requested to provide a rating, it will be necessary to provide financial information to the rating analyst. As there is the expectation that this information be provided in the traditional FERC format, alternative presentation formats may create a sense of uncertainty, adversely affecting the rating process, resulting in more expensive debt.

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## Capital Versus O&M—Why Does This Matter?

Many times, even those utilities that utilize the FERC Uniform System of Accounts often question why proper, consistent coding even matters. As an introduction to the importance of the FERC Uniform System of Accounts, let's consider the impact of a significant cost misclassified as an operation and maintenance (O&M) cost when in reality it was a cost that should have been capitalized. Why does this matter? Because the error has shifted costs from what should have been an addition to our balance sheet over to an immediate full impact on the income statement. If properly capitalized the impact on the income statement would only be by a certain amount each year, through depreciation (depending upon useful life).

As noted above, if this cost were erroneously charged to an O&M account, the costs would impact the utility's income statement immediately, thereby reducing net income. Asset values would also be understated. Although this is an issue that all utilities should be concerned with, it is particularly important to investor-owned utilities who normally earn an allowed rate of return based upon their investment in assets serving customers. So, this error has not only reduced the utility's net income, a figure certainly a factor in obtaining debt, meeting debt coverage ratios, as well as having a significant impact on stock price (for an investor-owned utility), but asset values have been understated as well, thereby reducing return on investment.

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## Common Example of a Utility's Account Structure

It is a common misunderstanding that a utility's entire account structure is required by FERC. In reality, most public power systems that follow the Uniform System of Accounts record additional data, beyond what FERC requires. Because most municipally-owned electric utilities are also part of other governmental entities, they must also report costs at a level that will meet the needs of the Governmental Accounting Standards Board (GASB).

In fact, the vast majority of the American Public Power Association's membership consists of electric utilities that represent "enterprise funds" within a City's overall jurisdiction. Although these enterprise operations are to operate independently from the City (some with separate Boards, Councils, or Commissions), they sometimes share accounting systems, structures, and designs. This often times results in the electric utility "fitting in" the FERC account within a prescribed structure as defined by the City.

The following represents an example of an account structure for a public power system:

<u>Account Level</u>	<u>Examples</u>
Level 1 – Fund	General Fund, Electric Fund, Water Fund
Level 2 – Dept/Cost Center	Production, Transmission, Distribution
Level 3 – Resource	Labor, M&S, Fuel, Contracts
Level 4 – Activity	FERC Uniform System of Accounts
Level 5 – Location/Project	Specific Plant, Region, or Project

As is depicted in the table above, public power systems tend to capture more information within their accounting systems than just FERC. This is obviously due to the necessity to satisfy the needs of the governmental unit in which they are part along with the need to have comparable industry financial information.

# **Public Utility Accounting**

## **Chapter 2**

### **Accounting Information for Public Power System**



Over the last few decades, the world has experienced a period many refer to as the "Age of Information" or the "Information Revolution." With the rapid technological changes in the computer information processing industry and the increased emphasis on efficiency, competitiveness, and profit in the world business community, more and more financial information is being required and generated. The electric utility industry is no different in terms of the increased desire for financial information.

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## Uses and Users of Electric Utility Accounting Information

The requirements for information to be provided by electric utilities come from many different parties. Every utility has both internal and external information requirements it must meet. Internal users of financial accounting information include utility managers and employees. Externally, the electric utility must meet the information requirements of various regulatory and government agencies, governing boards, national and state industry associations, customers, creditors and bondholders.

Accurate and timely financial accounting information is essential to the effective management of an electric utility. Financial data must be collected, summarized and reported to provide utility management and staff with the information required to make decisions regarding the organization's activities. Managers use financial information to evaluate results and to formulate decisions regarding both immediate and long-term plans for the organization. Financial information accumulated on a detailed functional basis and by responsibility area (organizational, business or budget unit) provides managers with measures of actual performance when compared to budgets. This accounting information often serves as the basis for future plans and budgets, resource requirements and commitments, and strategic plans, goals and objectives.

Many utilities, including some public power systems, as well as investor-owned and electric cooperative utilities, are subject to regulation by federal, state, and local regulatory bodies. This can include:

- 1) The Federal Energy Regulatory Commission (FERC);
- 2) State Public Service, Commerce, or Corporation Commissions;
- 3) Securities and Exchange Commission (SEC);
- 4) Internal Revenue Service (IRS);
- 5) Energy Information Administration (EIA) – former requirement;
- 6) Nuclear Regulatory Commission (NRC); and
- 7) Rural Development Utilities Program.

Each of these agencies places information requirements on the electric utilities within its jurisdiction. The information required varies with the regulatory agency. The FERC and the state commissions primarily regulate the operations of an electric utility as they relate to the utility's general rate levels. Detailed accounting data are necessary for these regulatory commissions to monitor effectively the financial position of the utility, their effectiveness and performance, and to make decisions regarding the utility's rates. Utilities that issue debt and other financial instruments to the public may also be subject to the information reporting requirements of the Securities and Exchange Commission. The SEC requires that pertinent information regarding a financing issue be disclosed. Bond, credit, and security ratings are heavily influenced by the financial information reported. Utilities that are subject to taxation by varying levels of taxing authorities must be able to provide information documenting their tax liability for various income, property, employment, and

receipts taxes. Additionally, utilities with ownership in nuclear generating facilities are subject to the reporting requirements of the Nuclear Regulatory Commission.

Many public power utilities are not rate regulated (except by local authorities) and therefore are not required to follow a prescribed accounting format for their operations. This is referred to as “Home Rule” regulation since local Councils, Boards, or Commissions serve as the regulatory body. With no single mandatory accounting standard to follow, accounting practices and procedures can vary significantly among those utilities. However, in 1977 the Energy Information Administration (EIA), a sub-unit within the U.S. Department of Energy, was established and given the responsibility to collect and report financial and operating information on electric utilities. The EIA used to publish on an annual basis, a summary of financial data for many public power systems "...to provide federal and state governments, industry and the general public with current and historical data that can be used for policy-making and decision-making purposes related to publicly owned electric utility systems." The EIA used to gather this data on its Form EIA-412, which was required to be submitted by all public power systems with 120,000 megawatt hours in annual sales to ultimate consumers or sales for resale for each of the two previous years. Although, the EIA-412 survey was terminated in 2003, most electric utilities continue to track and report this information today.

As mentioned earlier, those involved in the financial markets also are significant users of the financial information provided by electric utilities. Utilities' periodic reports to creditors and bondholders provide a means for financiers and investment security rating agencies to assess the utility's ability not only to repay borrowed funds, but also to provide creditors with a reasonable return on their investments. This involves an assessment by the creditors of the risk of investing in a particular electric utility which is formulated based on the financial data available. The SEC was mentioned previously as a user of utility financial information in the regulation of public financing. In addition, the Rural Development Utilities Programs administered by the U.S. Department of Agriculture, reviews specific financial information before extending loans to those utilities under its program.

Equally important is the information required by electric utility customers. The financial accounting system is the primary information source for the utility's cost-of-service analyses. These studies determine the amount of revenue which must be collected from each of the utility's various classifications of customers to adequately recover the utility's costs. This establishes what is referred to as “revenue requirements” which often provides the basis for establishing the retail rates charged to utility customers. Data supporting the utilities' revenue requirements often are scrutinized by both individual customers and public consumer groups representing the customers' interests. In addition, for municipally (publicly) owned utilities, the customers are also the utility owners. Financial information published by the utility is used by the public to evaluate benefits that municipal ownership of the utility provides. This information is also used to monitor the activities and performance (benchmark) of the utility and the public officials with oversight responsibilities.

All parties having an interest in the financial performance of an electric utility evaluate the available financial information in relation to similar information received from other electric utilities. That is why it is extremely beneficial to have as much standardization as possible in the collection, classification, summarization, and reporting of utility financial information. Generally, the accounting principles promulgated by the accounting profession in the form of statements from the Financial Accounting Standards Board (FASB), statements from the Governmental Accounting Standards Board (GASB), and other accounting professional organizations provide rules and guidelines by which general accounting information is reported by business entities in the United States. However, because of the unique (monopolistic) nature of the electric utility industry and the variety of uses of utility financial information, further detailed guidelines are necessary to provide consistency in the financial accounting information reported by each electric utility.

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## Origin of FERC Uniform System of Accounts

The need for consistency and comparability of financial accounting information from electric utilities was first recognized by regulatory bodies in the 1920s. Because the electric utility industry was developed with individual utilities having monopoly status, regulatory agencies were also established to regulate the electric utilities and the rates charged to customers to ensure that they were fair and reasonable. For the regulators to accomplish this objective, charts of accounts were often prescribed for the utilities under the regulator's jurisdiction. In 1922, the National Association of Regulatory Commissioners (NARUC) recommended uniform account classifications to the various state regulatory commissions. However, for the most part, the various state commissions had developed their own charts of accounts to be used by the electric utilities which they regulated and there was little consistency between the systems of accounts used by the various states.

The Federal Power Commission (FPC) was originally formed by the Federal Power Act of 1920. Its original scope of responsibility was the regulation of hydroelectric projects on navigable streams. This authority was expanded in 1935 such that all electric utilities that sold wholesale power in interstate commerce were placed under the regulatory jurisdiction of the FPC and were subject to rate review by the Commission. The FPC was given additional oversight responsibilities regarding utility operations and administration. A portion of the responsibility granted to the Commission included the authority for the establishment of a system of accounts to be followed by all the utilities it regulated. Since a large number of the existing electric utilities fell under the jurisdiction of the FPC, the issuance of the original Uniform System of Accounts (USOA) in 1937 enhanced the Commission's ability to review the operations of the electric utilities. Because many of the utilities in the various states were subject to this new USOA, the state regulatory commissions began adopting the system as well.

In 1977, the Federal Power Commission was succeeded by the Federal Energy Regulatory Commission (FERC), a sub-unit of the Department of Energy. Most of the responsibilities and authority of the FPC were assumed by the FERC. The USOA issued under the FPC was continued under the FERC jurisdiction. Changes to the USOA have been and continue to be made from time to time. Each revision requires the issuance of a rule making docket, which is followed by public hearings and a comment period. An accounting order must then be issued by the FERC to make the revision effective.

The FERC USOA is generally considered the standard accounting system for the electric utility industry. The USOA is found in its entirety in the Code of Federal Regulations, Title 18 - Conservation of Power and Water Resources, Subchapter C – Accounts, Federal Power Act, Part 101. The USOA includes a brief description of its applicability, definitions of utility terms, the chart of accounts, detailed descriptions of each account, general instructions regarding the use of the system of accounts, the basis for recording various transactions, and instructions specific to accounting for electric plant and for operating expenses. The FERC USOA is widely used by both publicly owned and privately owned electric utilities. It captures expenditure data on a functional-cost or activity basis where unique accounts are defined within the categories of power production, transmission, regional market, distribution, customer accounts, customer service and informational, sales, and administrative and general. Within each of those categories, separate accounts are established for operating expenses versus maintenance expenses. The FERC USOA also provides for classification of expenditures into capital and noncurrent expense categories. The following section of the USOA is provided to illustrate the format of the chart of accounts within the USOA.

<b>UNIFORM SYSTEM OF ACCOUNTS</b>	
<b>4. Distribution Expenses</b>	
<i>Operation</i>	<i>Maintenance</i>
580 Operation supervision and engineering	590 Maintenance supervision and engineering (Major only)
581 Load dispatching (Major only)	591 Maintenance of structures (Major only)
581.1 Line and station expenses (Nonmajor only)	592 Maintenance of station equipment (Major only)
582 Station expenses (Major only)	592.1 Maintenance of structures and equipment (Nonmajor only)
583 Overhead line expenses (Major only)	593 Maintenance of overhead lines (Major only)
584 Underground line expenses (Major only)	594 Maintenance of underground lines (Major only)
585 Street lighting and signal system expenses	594.1 Maintenance of lines (Nonmajor only)
586 Meter expenses	595 Maintenance of line transformers
587 Customer installations expenses	596 Maintenance of street lighting and signal systems
588 Miscellaneous distribution expenses	597 Maintenance of meters
589 Rents	598 Maintenance of miscellaneous distribution plant

The above list provides the prescribed account detail for electric distribution expenses. The accounting detail is defined on an electric utility functional basis. Each account captures the cost associated with a specific operational or maintenance activity. At its core, the FERC structure represents an activity-based accounting system. Monitoring costs at this level provides (internal) utility management, as well as (external) regulatory officials, creditors, investors and other interested parties with valuable operational insight and facilitates the effective management of resources.

The USOA also provides detailed descriptions of the activities for which the financial impacts are to be included in each account. A sample description for one account in the above list of distribution expense accounts, account 586, *Meter expenses*, is shown on the page that follows.

<b>UNIFORM SYSTEM OF ACCOUNTS</b>	
<i>586 Meter Expenses</i>	
<p>This account shall include the cost of labor, materials used and expenses incurred in the operation of customer meters and associated equipment.</p> <p style="text-align: center;"><i>Items</i></p> <p><i>Labor:</i></p> <ol style="list-style-type: none"> <li>1. Supervising meter operation.</li> <li>2. Clerical work on meter history and associated equipment record cards, test cards, and reports.</li> <li>3. Disconnecting and reconnecting, removing and reinstalling, sealing and unsealing meters and other metering equipment in connection with initiating or terminating services including the cost of obtaining meter readings, if incidental to such operation.</li> <li>4. Consolidating meter installations due to elimination of separate meters for different rates of service.</li> <li>5. Changing or relocating meters, instrument transformers, time switches, and other metering equipment.</li> </ol>	<ol style="list-style-type: none"> <li>6. Resetting time controls, checking operation of demand meters and other metering equipment, when done as an independent operation.</li> <li>7. Inspecting and adjusting meter testing equipment.</li> <li>8. Inspecting and testing meters, instrument transformers, time switches, and other metering equipment on premises or in shops excluding inspecting and testing incidental to maintenance.</li> </ol> <p><i>Materials and Expenses:</i></p> <ol style="list-style-type: none"> <li>9. Meter seals and miscellaneous meter supplies.</li> <li>10. Transportation expenses.</li> <li>11. Meals, traveling, and incidental expenses.</li> <li>12. Tool expenses.</li> </ol> <p>NOTE: The cost of the first setting and testing of a meter is chargeable to utility plant account 370, Meters.</p>

The above account description illustrates the level of detailed guidance which the USOA provides. The structure and content of the USOA is reviewed in greater detail in subsequent chapters of this guide.

## The Different Types of Electric Utilities

Before going into detail regarding accounting treatment for Public Power Systems, it is critical that readers recognize and understand that there are various (and vastly different) types of electric utilities. All electric utilities are not structured the same, nor do they operate within the same business model and this can cause confusion for those new to the industry.

In the United States, the electric utility industry is comprised of a variety of entities with different ownership structures, and in some cases operating characteristics. From an ownership standpoint, generally speaking there are utilities with private ownership and those with public ownership. In addition to differences in ownership structure, these utilities can also play a different role within the industry. Although together they collectively generate, transmit and distribute virtually all electricity in the Country, some organizations focus on different aspects of utility service.

A listing and brief description of the various types of electric utility organizations found in the U.S. is outlined below:

- ❖ Investor Owned Utilities (IOU's). Although this is the smallest group in terms of the number of utilities (with just over 200 IOU's in the United States), this group represents the largest segment of the industry in terms of customers served (approximately 68%). Generally, IOU's provide distribution, transmission, and often, but not always, generation services for their customers. These privately owned utilities issue stock to investors, sell bonds, etc. and are typically regulated at the state level. Although the names of the regulatory entities may vary from state to state, the two most common are known as the Public Utilities Commission (PUC) and the Public Service Commission (PSC). These commissions grant an IOU an exclusive service territory and they have control over the retail rates charged by the IOU's for the services provided within their jurisdictions. The commission's role also includes ensuring that the IOU's are responsive to customer requests and that they are properly maintaining utility infrastructure. IOU's are normally required to utilize the FERC Uniform System of Accounts.
- ❖ Rural Electric Cooperatives. There are just over 875 coops in the United States serving about 13% of the customer base. Most coops serve rural communities with large service territories, but with relatively small numbers of customers. This presents a somewhat unique challenge for them in that they must serve a broad area with generally low usage. Only a small number own generation and they traditionally receive a major portion of their funding through low interest loans from various Rural Electric programs. In some cases they are partially regulated by PUC's or PSC's and are governed by a Board of Directors elected by their members. Members are usually small cities, incorporated areas, etc. so their ownership is local. These utilities are often referred to as REC's or REA's (Rural Electric Administration) and most utilize the FERC Uniform System of Accounts.
- ❖ Municipally Owned Utilities (MOU's). There are just over 2,000 community owned utilities in the United States and they serve about 15% of the electric customers. Although some of these are large organizations (such as the Los Angeles Department of Water and Power), that serve millions of customers and some of the largest cities in the Country, the vast majority are quite modest in size. In fact, 1,400 of these utilities serve communities with populations of 10,000 or fewer. Unlike IOU's these utilities are not owned by investors but rather by the local citizens and businesses that they serve. Because these utilities are publicly owned, they are generally exempt from regulation by state regulatory commissions. A few states do subject municipal utilities to some form of regulatory oversight but the vast majority "home rule" prevails. This means the local Council, Board, Commission, etc. serves in the capacity of "regulator". While some municipal utilities are considered to be "full service" providers (meaning that they not only transmit and distribute electricity but they also have generation capability), many are known as "wires only" utilities. This is because they purchase their power needs from others and are responsible for distributing it to the ultimate end user (customer). Most municipal (public owned) systems use the FERC Uniform System of Accounts (or variations of that system), since it represents the industry standard for electric utilities.
- ❖ Power Marketers. Currently there are just over 170 organizations that serve as power marketers or brokers within the utility industry. Often referred to as PMA's (Power Marketing Associations), this group also includes Federal Government entities who built and operate (or license others to operate) many of the hydroelectric generators and a major part of the transmission system in the United States. Federal PMA's generally restrict their sales to wholesale customers, typically publicly owned systems. They sell power to federal and state agencies and a few very large industrial customers. Some states also have local power marketing agencies that are responsible for obtaining (and in some cases selling) the power needs for their members (generally cities or communities). For these entities, there is

somewhat limited regulation by FERC. Most follow the criteria established by the FERC Uniform System of Accounts.

- ❖ Independent Power Producers (IPP). Within the past decade a majority of new power generation facilities have been constructed by what are referred to as Independent Power Producers (IPP's) or a Non-utility generator (NUG). IPP's or NUG's may be privately-held, owned by corporations, cooperatives, power agencies, municipal utilities, investor owned utilities, or combinations of the above. There are about 1,700 IPP projects in the United States.

As can be seen from the descriptions of the different types of electric utilities, there is a great deal of diversity within the industry and all electric utilities are not alike. Although there can be a vast amount of structural and operational differences between utilities, the one common denominator is that most use the FERC Uniform System of Accounts or some variation of that system. It is the industry standard.

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## Accounting for Public Power Systems

Public power systems that do not follow the FERC USOA in the accounting for their organizations often are unable to satisfy the unique and varied information requirements. This is primarily due to the fact that many public power utilities operate as a unit of a municipal, state, county, or other governmental body. With this form of organization, it is common that the accounting for these utilities is performed within the accounting systems and structures of that governmental entity.

In governmental accounting, the primary accounting unit is referred to as a fund. The National Committee on Governmental Accounting defined a fund and pointed out its significance in the following terms:

Governmental accounting systems should be organized and operated on a fund basis. A fund is defined as an independent fiscal and accounting entity with a self-balancing set of accounts recording cash and/or other resources together with all related liabilities, obligations, reserves, and equities which are segregated for the purpose of carrying on specific activities or attaining certain objectives in accordance with special regulations, restrictions, or limitations.

A governmental unit's funds fall into three primary classes: governmental funds, trust and agency funds, and proprietary funds. Governmental funds record activities that are unique to governmental units—those units supported by taxation, grants, and similar revenues. Trust and agency funds record amounts the government is holding as trustee or agent. Proprietary funds record activities that are self-supporting and resemble commercial activities. These activities are also commonly referred to as “business-type” activities. It is the proprietary classification of funds that generally describes the manner in which most public power systems are organized and accounted for.

The National Committee's definition quoted above emphasizes the separate and distinct character of a fund. Specific activities or objectives are attributable to a fund. The fiscal and accounting unit is independent. The set of accounts is self-balancing, and the resources and related liabilities are segregated. However, it should not be interpreted that one governmental organization represents one fund. In a governmental unit, the basic accounting entity is not the entire governmental unit, but

rather, it is the individual fund.

Governmental agencies set up separate funds to record different kinds of activity. Although their general purpose financial statements traditionally aggregate similar type funds, they do not eliminate inter-fund transactions.

The accounting rules prescribed by governmental accounting standards usually require public power activities to be recorded in enterprise funds (one of the proprietary funds). Enterprise funds use the same basic accounting principles as private enterprises. However, those principles do not provide for the unique information needs of the electric utility industry.

This leaves some public power utilities with an accounting system that was formulated based on the needs of the governmental entity, not on the needs of the utility. Often these accounting systems are responsibility-oriented and based on departmental organizations rather than on functional activities. They capture expenditure information by what was purchased and by whom while the FERC USOA captures expenditures based on the functional purpose for which they were incurred. The examples provided in Chapters 4 and 5 illustrate some of the differences between governmental fund accounting and the FERC USOA.

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## Why Public Power Systems Should Use the FERC USOA

Since the FERC USOA and other prescribed systems of accounts generally exist as a result of utility regulation, many public power utilities that are not regulated ask why they should adopt the FERC USOA. These public power systems often are seeking justification for asking their city governments to segregate the accounting for the electric funds under a different accounting system than the governmental or fund accounting system used for all other city departments.

Although the most compelling reason for an electric utility to use the FERC USOA is to meet the requirements of the regulatory jurisdictions under which the utility falls, there are many additional reasons for a public power utility to implement the FERC system. Following is a brief description of several of these specific additional benefits.

- ❖ Consistency. The FERC USOA provides standards for the accounting for the events of a public power organization. Clearly defined accounting for various types of financial transactions facilitates consistent treatment of those events from one occurrence to another and from one period to another by the utility.
- ❖ Capitalization Versus Expense. The FERC USOA provides guidelines which delineate the treatment of various expenditures between capitalization and expense. This is significant to electric utilities because of their relatively large capital investment in plant and other facilities. Proper treatment of expenditures as capital or expense items may also impact the rates that a utility charges its customers. Expenditures related to utility operations that are expensed generally are recovered from the ratepayers in the current revenue requirement. Those expenditures that are capitalized as assets are recovered by the utility through its rates as the assets are depreciated. The FERC USOA provides for the functional analyses of the relationship between plant investment and operation and maintenance expenses.

- ❖ Recoverable Costs. Generally, the standard practice in the electric utility industry is to include all expenses incurred in the operation of a utility in the revenue requirement to be recovered through the utility's rates. Expense items are often referred to as "above the line" and "below the line" items, with the "line" meaning net income from utility operations. Items above the line are included in the revenue requirement. Items below the line normally represent non-operating income and expenses that are not recovered in the rates it charges its customers. The FERC USOA provides a definition of the accounts and the financial activities included in them that determine a utility's cost of service and revenue requirement.
- ❖ External Information Requirements. As discussed earlier in this chapter, there are many external users of financial information from a utility. The FERC USOA provides uniformity in the preparation and presentation of this information between different utilities. Outside organizations and individuals, such as regulatory agencies, rating agencies, investors, industry groups, and customers use this information to evaluate the operations of a utility. These groups expect the information to be comparable between utilities, whether they are public power or investor owned. The American Public Power Association uses such data to compile its annual *Selected Financial and Operating Ratios of Public Power Systems*, which is used by utilities to assess their performance.
- ❖ Internal Management Information. The FERC USOA provides for tracking a greater level of detail in the accounting records than many public power systems have available to them through their local government accounting systems. This added detail gives public power managers more information regarding the costs of operations to support future decision-making. It also provides greater flexibility in reporting this information at varying levels of summarization. The FERC USOA classification of accounts on a functional basis provides a logical organization for operations budgets and the corresponding comparison of actual results.

Although the FERC USOA does provide all of these benefits to a public power utility, the most often cited purpose for utilities to follow the FERC system is the aspect of comparability. With the deregulation of the electric utility industry and the ongoing movement toward segregating the power generation, transmission, and distribution functions of utility service with separate pricing, the utility needs to be able to compare its performance with that of its competition and this requires that the utility keep its accounting records on a basis comparable to the general standards in the industry.

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## Implementation of the FERC USOA

The conversion of the existing chart of accounts used by a public power utility to a new FERC-based chart of accounts is the first step in the implementation of the FERC USOA. The detailed accounting information for municipal electric utilities is often captured on a divisional responsibility, incurred cost basis. The same account numbers are used to account for the same activity within each division or department of the utility. These accounts are defined on the basis of the type of resource or cost element incurred, i.e., labor, supplies, services, etc. In contrast, the FERC Uniform System of Accounts captures expenditure data on a functional, applied-cost basis where unique accounts are defined within functional categories. Each unique account represents a separate functional work area or activity to which the expenditure was applied.

These differences in the definitions of the detail accounts between a public power system's current accounting system and the FERC USOA can make it difficult to accomplish an exact conversion of

accounts and balances from an existing system to the FERC system. Since expenditures are often not currently identified at the level of functional detail provided in the USOA, it may not be feasible to convert historical expenditure data to the complete FERC system. Therefore, switching to the FERC USOA is normally easiest when the implementation is done prospectively, with no attempt to convert historical accounting records.

However, since balance sheets are perpetual, some conversion of the asset, liability, and equity accounts is necessary when implementing a new accounting system. Analysis of the balances in the various balance sheet accounts must be performed by the public power utility to segment existing account balances to the accounts provided in the USOA.

Implementation of the FERC USOA can be a challenge for public power systems. However, if the utility thoroughly educates its employees on the new chart of accounts, a successful implementation can be achieved. The benefits obtained by the utility from using the USOA are more and more evident over time. The difficulties of the transition from the old system to the new system can be a valuable learning experience. Most importantly, the utility learns how to better utilize the information generated from the FERC-based accounting system in the operation and management of its public power system.

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## **FERC USOA—An Activity Based System**

As noted in the previous section, governmental fund accounting is structured to provide resource-based accounting information, whereas the FERC USOA is activity-based. The differences between the two methods are probably best exemplified by comparing how each one answers the question of “*what does it cost when a customer flips on his lights?*” Governmental fund accounting answers the question based upon the resources consumed – how much was spent on labor, benefits, materials and supplies, contractual services, etc.

The FERC Uniform System of Accounts on the other hand answers the question based upon the activities required to serve the customer – how much was spent to generate the electricity, transmit it to the system, distribute it to the customer, read the meter, produce the customer’s bill, and the support costs (payroll, data processing, human resources, general administration) associated with those activities. The FERC USOA breaks each of these functional activities down into sub activities such as, the cost of fuel, load dispatching, station expenses, and overhead versus underground line expenses for example.

Although both types of accounting systems provide valuable information regarding the operations of the utility, the FERC USOA is geared towards providing management with the cost elements associated with its products and services. This activity based approach serves as a valuable tool for understanding, managing and controlling costs and profitability. As such, the FERC USOA is used to support strategic decisions regarding pricing, outsourcing, and the identification and measurement of process improvement initiatives. Granted it is very important to know how much was spent to hire one more employee, but it is probably more important to know what activities are driving the need to hire that employee in the first place.

# **Public Utility Accounting**

## **Chapter 3**

### **FERC Uniform System of Accounts: Instructions**



As stated in the previous chapter, the Federal Energy Regulatory Commission (FERC) Uniform System of Accounts (USOA) is prescribed in the Code of Federal Regulations (CFR), Title 18, Part 101. The USOA not only provides a listing of the nearly 450 defined accounts, but it also includes detailed descriptions of the various financial activities that are to be recorded under each account. In addition, it outlines instructions and definitions for use in applying the system of accounts by electric utility systems. The specific sections of the USOA are:

1. Commission Order of Applicability
2. Definitions
3. General Instructions
4. Electric Plant Instructions
5. Operating Expense Instructions
6. Balance Sheet Chart of Accounts & Descriptions
7. Electric Plant Chart of Accounts & Descriptions
8. Income Chart of Accounts & Descriptions
9. Retained Earnings Chart of Accounts & Descriptions
10. Operating Revenue Chart of Accounts & Descriptions
11. Operation & Maintenance Expense Chart of Accounts & Descriptions

Each of these sections will be discussed further in this and the succeeding two chapters with the exception of the Commission Order of Applicability which references the authority granted by the Federal Power Act to the Commission. This authority was discussed previously in Chapter 2.

It is important to note that the USOA provides for a very detailed accounting by electric utilities. It attempts to prescribe treatment for as many of the various utility activities as possible. Also, it was initially designed primarily for larger utilities. Therefore, not all of the accounts, descriptions, explanations, and instructions will apply to a specific utility. This is particularly true for smaller publicly owned utilities. In fact, in some cases, these small systems go through a process where they convert their accounting records over to an abbreviated FERC-based system. In many cases this can be done with a limited amount of effort.

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## Definitions

The first section in the USOA defines a series of basic terms which are used prevalently in general accounting and the utility industry. A list of the terms for which definitions are provided is shown in the table below. The terms included on the list are used throughout the descriptions of the individual accounts and in the instructions sections of the USOA. There is a wide variety of areas of accounting and utility operations from which the terms originate. A significant number of the terms defined relate to issues of accounting for property, plant and equipment, some of which are fairly specific to the utility industry. Another large group of the terms listed relate to issues concerning the financing and organizational ownership of utilities. The remaining terms are primarily generic accounting concepts.

<b>UNIFORM SYSTEM OF ACCOUNTS</b>	
<i>Definitions</i>	
1. Accounts	21. Nominally outstanding
2. Actually issued	22. Nonproject property
3. Actually outstanding	23. Original cost
4. Amortization	24. Person
5A. Associated (affiliated) companies	25. Premium
5B. Control (controlling, controlled by, under common control with)	26. Project
6. Book cost	27. Project property
7. Commission	28. Property retired
8. Continuing plant inventory record	29. Public utility
9. Cost	30. Regional market
10. Cost of removal	31. Regulatory assets and liabilities
11. Debt expense	32A. Replacing or replacement
12. Depreciation	32B. Research, development and demonstration
13. Discount	33. Retained earnings
14. Investment advances	34. Retirement units
15. Lease, capital	35. Salvage value
16. Lease, operating	36. Service life
17. Licensee	37. Service value
18. Minor items of property	38. State
19. Net salvage value	39. Subsidiary company
20. Nominally issued	40. Utility

The actual definitions for this list of terms are not duplicated here. Many of the definitions provided in the USOA are lengthy and would not contribute to the purpose of this guide. The list is provided to inform the reader that further detailed explanation of these terms may be found in the CFR as they are encountered in using the USOA. Definitions of terms will be discussed throughout this guide as needed.

## General Instructions

The USOA includes a set of rules and explanations on how electric utilities are to apply or follow several basic accounting concepts. The areas covered by these general instructions are listed in the table below. Similar to the list of definitions previously discussed, the list of general instructions covers a diverse range of subjects. These instructions represent guidance on how the utility accounting records are to be organized and maintained. They also specify how certain issues, subject to possible variations in treatment by different utilities, are to be accounted for and reflected in financial statements. Several of the items covered in the instructions are reviewed below.

<b>UNIFORM SYSTEM OF ACCOUNTS</b>	
<i>General Instructions</i>	
1. Classification of utilities 1.1. Major 1.2. Nonmajor 2. Records 3. Numbering system 4. Accounting period 5. Submittal of questions 6. Item lists 7. Extraordinary items 7.1 Prior period items 8. Unaudited items 9. Distribution of pay and expenses of employees 10. Payroll distribution 11. Accounting to be on an accrual basis 12. Records for each plant	13. Accounting for other departments 14. Transactions with associated companies 15. Contingent assets and liabilities 16. Separate accounts or records for each licensed project 17. Long-term debt: premium, discount and expense, and gain or loss on reacquisition 18. Comprehensive interperiod income tax allocation 19. Criteria for classifying leases 20. Accounting for leases 21. Allowances 22. Depreciation accounting 23. Accounting for other comprehensive income 24. Accounting for derivative instruments & hedging 25. Accounting for asset retirement obligations

General instruction number 1, *Classification of utilities*, differentiates between major and non-major utilities, indicating that size is based on the number of annual sales units. How a utility is defined determines whether it is required to use certain accounts (major utilities are required to use more accounts). However, most utilities utilize the accounts defined for the major utilities whether they meet the criteria or not, as this approach provides a greater level of accounting information and financial comparability to other utilities. Likewise, this approach is beneficial to public power utilities that elect to use the USOA since their purpose for using the FERC system is to achieve these benefits.

Each logical section of the FERC USOA provides accounts to be used by major and nonmajor utilities. Indications are included for specific accounts which are to be used by one type of utility or the other.

General instruction number 3, *Numbering system*, outlines the account coding system prescribed in the USOA. The account coding system is generally a three-digit numbering system with different ranges of numbers representing certain types of accounts, as follows:

<u>Account No. Range</u>	<u>Type of Accounts</u>
100 - 199	Assets and other debits
200 - 299	Liabilities and other credits
300 - 399	Plant accounts
400 - 432, 434 - 435	Income accounts
433, 436 - 439	Retained earnings accounts
440 - 459	Revenue accounts
500 - 599	Production, transmission, and distribution expenses
900 - 949	Customer accounts, customer service and informational, sales, and general and administrative expenses

Not every number in these ranges is used to designate an account. Some numbers were skipped for future use and others previously used have been eliminated. Also, although the numbering system is generally based on three-digit numbers, the USOA includes some accounts which have been prescribed with a 1-digit decimal extension, such as account number 426.1, *Donations*.

This system serves as a guideline for assigning accounts in a utility's accounting system. However, the utility may establish additional accounts or build on the three digit numbers prescribed. To meet the various information requirements discussed in Chapter 2 and to provide utility management with the necessary information for decision-making, further breakdown of the individual FERC accounts may be desirable. This is often done by adding decimal positions to the prescribed numbers. Account numbers 501.001, 501.002, and 501.003 would provide additional detail of accounting charges to FERC account 501 *Fuel*, such as type of fuel (coal, oil, etc.) or power plant location (Plant 1, Plant 2, etc.). The key requirement of general instruction number 3 is that utilities keep their financial records such that, at a minimum, they are able to provide information according to the prescribed account numbers. For further insight into the FERC numbering system refer to the "*Understanding the FERC Numbering System*" section within this Chapter.

General instruction number 6, *Item lists*, addresses the application of the item lists included in the account descriptions within the USOA. Many of the account descriptions provided include lists of specific items that are to be included in those accounts. (An example of such a list was provided for the Meter Expenses account 586 in Chapter 2). Although the accounts and corresponding definitions prescribed by FERC in the USOA are fairly comprehensive, they are not exhaustive. Care should be exercised in determining the proper account in which to record an item, basing it not only on the list for a particular account, but also on the text description for the account.

General instructions 9, *Distribution of pay and expenses of employees*, and 10, *Payroll distribution*, require that utilities account for labor costs by charging payroll costs associated with actual time spent on various activities to the accounts established for tracking the cost of those activities. It requires that supporting data for the account distribution of those costs be maintained. This is required to ensure that the proper amounts are classified as operating expense, non-operating expense, capital construction, capital removal, and deferred charges. If direct assignment of labor costs based on the activities performed is impractical, those costs may be distributed to the proper accounts based on a study of time spent on those activities from a representative historical period. The accounting for and distribution of payroll costs will be discussed further in Chapter 6 of this guide.

Instruction number 11, *Accounting to be on accrual basis*, requires that utilities follow "accrual basis accounting" as differentiated from "cash basis accounting". Under cash basis of accounting the total outflow of cash during the period is considered the expense incurred. In contrast, the accrual basis of accounting modifies this approach by adopting the revenue realization principle: Revenue is realized when earned and the matching principle is used to indicate that expenses may be incurred and matched against revenue even though no cash outflow has occurred. Revenues earned and expenses owed before they are paid must be estimated and recorded; revenues received and expenses paid before they are due must be deferred.

The most familiar example of accrual basis accounting is the recognition of depreciation expense. Depreciation expense represents the systematic write-off of expenditures for an asset which is capitalized over the life of that asset. The expense related to an asset is recognized ratably over the asset's life rather than completely at the time of the initial cash outflow. This matches the expenditures to the same periods in which it generates revenues.

As mentioned previously, many public power systems are accounted for under the Governmental Accounting Standards Board (GASB) which requires accrual accounting for enterprise funds. However, some public power systems, especially smaller ones, still use cash basis accounting.

General instruction number 13, *Accounting for other departments*, requires that electric utilities that also operate other utility departments (gas, water, etc.) maintain separate accounts for the specific activities of these other utilities in order to properly reflect the results of operations of each utility department. This instruction is particularly significant to public power systems because they often are located within a municipal government's organization structure with all of its utilities together as one department. Utilities are allowed under this instruction to account for common or general activities which apply to the utility as a whole (not specific electric or gas, etc.) without departmentalizing the dollars associated with them. However, from a rate making standpoint, costs associated with common or general activities are often allocated to the various utility service areas and some utilities actually do use separate accounts for these costs.

General instruction 17, *Long-term debt: premium, discount and expense, and gain or loss on reacquisition*, provides specific accounting treatment for the various aspects of long-term financing issues. It also provides extensive descriptions of optional methods for recognizing the reacquisition of outstanding long-term debt and the associated gains and losses. For small public power systems, the two most significant provisions of this instruction are: (1) that the premiums, discounts, and expenses related to long-term debt must be maintained in separate accounts for each class and series of debt issued, and (2) that the same three items are not to be included as a cost of construction (see *Allowance for Funds Used During Construction* in the *Electric Plant Instructions* later in this chapter).

The other general instructions provide additional specific guidance in the general use of the FERC USOA. However, several of these general instructions likely will not apply to smaller public power systems, e.g. instruction numbers 12, *Records for each plant*, 18, *Comprehensive interperiod tax allocation*, etc. The reader should take time to review these additional instructions in the CFR to gain a basic understanding of their provisions.

## Understanding the FERC Numbering System

The numbering system used within the FERC USOA is comprised of different groupings or ranges of accounts necessary to prepare the two fundamental financial statements of an electric utility – the balance sheet and the income statement. For the balance sheet, account numbers starting with a “1” (the 100 series) represent assets and other debits, while liabilities and other credits begin with a “2” (the 200 series). Income statement accounts begin with a “4” and they range from 400 through 435.

It is important to note that the FERC account structure was designed to consist of two distinct layers of accounts as well. The lower level serves the purpose of supporting, or providing more detail on some of the accounts traditionally shown on the FERC balance sheet or income statement – hence they “roll up” to a higher level account. Not all of the higher level accounts, those traditionally shown as line items on the balance sheet or income statement, have these supporting accounts.

Only two accounts on the FERC balance sheet have a series of supporting accounts and they are account 101 Electric Plant in Service and account 107 Construction Work in Progress. In many utilities, as assets are constructed they go through a process often referred to as “unitization” or the assigning of asset costs to units of property. Under the FERC system, until an asset is actually serving customers (in service or considered to be used and useful), the item is **not** shown on the balance sheet as Account 101 Electric

Plant in Service. Rather it is to be charged to Account 107 Construction Work in Progress, commonly known as CWIP. It is during this unitization process that many utilities assign costs to the 300 series of Electric Plant Accounts. Once an item is deemed to be in service, amounts are simply transferred from the 107 CWIP account to the 101 Electric Plant in Service account. Balances remain in the same 300 accounts originally charged during the unitization process, so in essence, the total amount of the 300 series of accounts supports the total amounts shown in accounts 101 and 107. This lower level of detail (the 300 series of accounts) ultimately provides a breakdown of the Electric Plant in Service by functional level – production plant, transmission plant, distribution plant, general plant, etc.

There are three accounts on the FERC income statement which have supporting accounts. The first is Account 400 Operating revenues. Initially, operating revenues, consisting of sales of electricity, and other operating revenues, are charged to the account range of 440 through 457.2. For instance, sales of electricity to residential customers are recorded in account 440 Residential sales, with sales to other utilities charged to account 447 Sales for resale – both of these items “roll up” to Account 400.

The other two FERC income statement accounts with a supporting series’ are both expense items - Account 401 Operation expense and Account 402 Maintenance expense. The 500 and 900 series of accounts serve in this capacity with each individual account designated within the USOA as to whether it “rolls up” to Operation expenses (401) or Maintenance expenses (402).

Another important characteristic of the numbering system as it impacts the income statement is the use of the first digit of the operation and maintenance support accounts to distinguish between costs directly related to providing electricity and those that are more indirect or considered as support by their nature. Generally speaking, the direct costs all begin with a “5” whereas indirect or support activities are charged to accounts within the 900 series. Furthermore, the support activities can be segregated between internal support for employees, such as payroll or data processing versus those activities that are in support of external customers, such as customer service or billing. Support for internal customers normally are charged to Administrative and General Expense accounts (920 – 935), with external support recorded in accounts 901 - 917.

Grasping the significance of the numbering system that is built into the FERC USOA and the interrelationships of the accounts to each other can greatly enhance a utility accountant’s ability to properly code expenditures.

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## Electric Plant Instructions

As noted previously, the USOA provides a lengthy, detailed description of the prescribed accounting for electric utility plant. A listing of the electric plant instructions is shown in the table below. The descriptions that accompany the instructions in the USOA provide great detail as to the classification of electric utility plant in service and the types of expenditures that are to be included in the costs of electric plant. The instructions also provide additional definitions of terms not previously defined in the definition section of the USOA. An understanding of these terms is necessary in order to understand the prescribed accounting for plant in service.

<b>UNIFORM SYSTEM OF ACCOUNTS</b>	
<i>Electric Plant Instructions</i>	
1. Classification of electric plant at effective date of system of accounts (Major)	3.16 Taxes
2. Electric plant to be recorded at cost	3.17 Allowance for funds used during construction
3. Components of construction cost	3.18 Earnings and expenses during construction
3.1 Contract work	3.19 Training costs
3.2 Labor	3.20 Studies
3.3 Materials and supplies	3.21 Asset retirement costs
3.4 Transportation	4. Overhead construction costs
3.5 Special machine service	5. Electric plant purchased or sold
3.6 Shop service	6. Expenditures on leased property
3.7 Protection	7. Land and land rights
3.8 Injuries and damages	8. Structures and improvements
3.9 Privileges and permits	9. Equipment
3.10 Rents	10. Additions and retirements of electric plant
3.11 Engineering and supervision	11. Work order and property record system required
3.12 General administration capitalized	12. Transfers of property
3.13 Engineering services	13. Common utility plant
3.14 Insurance	14. Transmission and distribution plant
3.15 Law expenditures	15. Hydraulic production plant (Major)
	16. Nuclear fuel records required (Major)

There are at least two major reasons why the FERC has included this level of detail in the instructions for electric plant. First, the utility industry is one of the most capital intensive industries in the economy, and the majority of this capital investment is in plant in service. Therefore, it is essential that a utility have a significant level of detailed information regarding the costs associated with its plant to facilitate prudent management and control of its primary assets.

Second, the purpose for the extensive requirements prescribed for accounting for electric plant is the regulation of utility rates. Many regulated utilities have their rates determined based on an allowed level of return on rate base. The return on rate base represents the utility's allowed level of margins resulting from the revenues derived from its utility service rates, less all of its expenses of operations. The major component of a utility's rate base is the original cost of its plant in service less accumulated depreciation on that plant. Therefore, the accounting for electric plant has a direct bearing on the establishment of a regulated utility's rates.

These detailed accounting instructions prescribed in the USOA provide utilities and regulators with guidelines as to how the cost of plant in service is accounted for on the utility's books. The instructions provide guidance in several different areas of accounting for electric plant including proper recognition of the original cost of the property plus the costs of plant additions, improvements, and replacements. It also includes the proper accounting treatment of electric plant which is retired from plant in service, including the corresponding accumulated depreciation reserve and cost of removal.

The actual text of the instructions for accounting for electric plant is quite extensive within the USOA. Several of the more pertinent instructions are described below. The reader is referred to the USOA for detailed explanations of the electric plant instructions not covered in the following paragraphs.

Electric plant instruction number 2, *Electric plant to be recorded at cost*, requires that all electric plant be recorded on the utility's records at the cost at which it was originally placed in utility service. Electric plant acquired by a utility from another utility must be recorded at the cost to the original utility. Any

plant which is initially placed in service by the utility must be recorded at the cost to that utility. In addition, this instruction requires that any non-refundable contributions received by the utility toward the cost of electric plant must be credited to the same accounts to which the costs of that plant are charged.

A description of the various types of expenditures that are to be included in the cost of electric plant is given in electric plant instruction number 3, *Components of construction cost*. As can be seen in the table on the previous page, there are 21 categories of expenditures that are to be included as components of the cost of construction of electric plant. Many of the items included on the list of components, such as engineering, administration, and insurance, are considered overhead costs. Overhead costs represent expenditures that are necessary for support of the electric plant construction activity. However, they do not represent direct costs of constructing an item of plant. The assignment of overhead costs to construction is discussed in Chapter 7.

One of the more confusing elements of construction cost is defined in part 17 of electric plant instruction 3, *Allowance for funds used during construction*. The allowance for funds used during construction (AFUDC) provides for capitalizing the cost of financing electric plant while it is under construction. Generally accepted accounting principles dictate that all costs associated with creating and readying an asset for service are to be capitalized in the cost of that asset. Due to the complexity and magnitude of some electric plant facilities, the construction of these assets often requires extended periods of time. Often, a utility has significant investment tied up in electric plant facilities under construction. There is a cost to the utility associated with the invested funds either in the form of interest on borrowed funds or lost income on equity funds. AFUDC includes the net cost for the construction period of borrowed funds used for construction purposes and a reasonable rate on other funds when so used that is allocated to the cost of construction of electric plant. Instruction 3.17 defines the formula and elements for calculating the AFUDC. It should be noted that this instruction is oriented toward investor-owned utilities. However, it can be applied to publicly owned systems as well.

Electric plant instruction number 4, *Overhead construction costs*, requires that all overhead costs in support of electric plant construction be charged to each individual plant job or unit. Overheads such as engineering, supervision, general office salaries and expenses, insurance and taxes should be charged to specific electric plant as possible. However, since the nature of overheads is that they cannot be attributed directly to specific construction projects, some methodology for allocation of these costs is necessary. Instruction 4 indicates that periodically studies should be conducted to determine the portion of supervisory employees' time spent in support of capital projects. The result of such a study is to be used as the basis for making a reasonable allocation of overheads incurred during a specific time period to each electric plant unit under construction during that time period. This allocation should provide an equitable distribution of those costs.

Electric plant instruction number 5, *Electric plant purchased or sold*, details the accounts to be used when plant is purchased or sold. In particular, it identifies the accounting for any differences between the original cost of plant acquired from another utility and the acquisition price.

Electric plant instructions numbers 7, *Land and land rights*, 8, *Structures and improvements*, and 9, *Equipment*, define specific costs associated with these three categories of electric plant that are to be included in the cost of each of these items in the electric plant accounts. Instruction 7 includes a list of 24 expenditure items to be included in the cost of land, and instruction 8 includes a list of 66 items to be included in the cost of structures. Although these descriptions are not expected to be all inclusive, the information contained in these three instructions provides thorough guidance as to the prescribed accounting for these categories of the electric plant.

Plant instruction number 10, *Additions and retirements of electric plant*, defines the procedures to be followed in accounting for changes in the recorded cost of electric plant in service caused by the addition or retirement of items of electric plant. The instruction indicates that all items of electric property are considered as either retirement units or minor items of property. These two terms were defined previously in the definitions section of the USOA. The text of this instruction provides guidance as to the proper accounting for the original cost of plant and the associated accumulated depreciation when either a retirement unit or a minor item of property is added to plant in service or retired from plant in service.

Related to the issue of accounting for additions and retirements is the procedures for accumulating costs while additions and retirements are in progress. Electric plant instruction number 11, *Work order and property record system required*, indicates that each activity or project for either the construction or the retirement of electric plant in service must have unique work order or job orders established for collection of costs and salvage values associated with each project. Instruction 11 requires the utility to have a system to keep track of these work orders and the costs therein that identifies the total cost for each work order, the sources of those costs, and the electric plant accounts to which the plant is either charged or credited. In addition, the utility is required to have a system for accumulating all of its electric plant in service by electric plant account so as to show the amounts of the annual additions and retirements and the number and cost of the various units of property currently in service.

The FERC USOA recognizes the inherent importance of accounting for electric plant. The prescribed methodology for plant accounting is complex, but the information it provides is extremely important in the management of an electric utility. A simplified discussion and illustration of the accounting for a capital construction project of electric plant in service is presented in Chapter 7 of this guide.

## Operating Expense Instructions

The third group of instructions provided under the FERC USOA, are the operating expense instructions. These instructions are identified in the table below.

<b>UNIFORM SYSTEM OF ACCOUNTS</b>	
<i>Operating Expense Instructions</i>	
1. Supervision and Engineering (Major Utilities)	3. Rents
2. Maintenance	4. Training Costs

There are only four operating expense instructions because of the specificity of the descriptions of the various operating expense accounts. These instructions describe the proper accounting treatment of miscellaneous activities that are appropriately included in multiple accounts within the FERC USOA depending on the functional area to which they relate. They are provided as general instructions so that their provisions are not repeated under each detail account to which they apply.

Operating expense instruction number 1, *Supervision and engineering*, requires that all payroll and personal expenses of employees and outside contractors who are involved in supervising and directing the operation and maintenance of a particular utility function, must be charged to the supervision and engineering account for that utility function. For example the expense detail account number 580 is

the supervision and engineering expense account for the electric distribution operations function. Item lists of labor activities and types of expenses that are to be included in the supervision and engineering accounts are defined under this instruction.

The second operating expense instruction, *Maintenance*, provides for the inclusion of all labor, materials, overheads and any other expenses incurred in performing maintenance work to the various operating expense maintenance accounts defined in the FERC USOA. Instruction number 2 also includes a list of the work operations that are generally associated with utility plant. Other activities that are specific to certain types of plant are defined under the applicable detail account. Another significant provision of this instruction is the treatment of the salvage value of materials, recovered as part of maintenance activities, as an offset against the cost of the maintenance activity to the maintenance detail expense account.

Operating expense instruction number 3, *Rents*, defines specifically what costs associated with leased property are to be included in the rents accounts under the various functional expense categories. This instruction also requires that rent income received from the subletting of property leased by a utility be accounted for as rent revenue, in operating revenue, that operations and maintenance costs associated with leased property be accounted for the same as if the property were owned by the utility, and that any capital additions to leased property be treated as defined in electric plant instruction number 6, *Expenditures on leased property*.

Operating expense instruction number 4, *Training costs*, provides for all expenses related to training in the areas of plant operations and maintenance for facilities under construction to be charged to the appropriate functional operations and maintenance expense accounts. However, when the training costs are incurred to facilitate the utilization of plant facilities not currently used by the utility, they are to be treated as defined in category 19 of electric plant instruction number 3, *Components of construction cost*.

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## Capitalization Policies

It should be noted that the FERC USOA is silent regarding capitalization policies or thresholds. For those that are unfamiliar with capitalization policies, they define circumstances (usually dollar threshold amounts) when something that would normally be capitalized and recorded as an asset on the balance sheet, would be fully expensed in the current accounting period. As noted earlier, when something is capitalized the full amount is included on the balance sheet as an asset but only a portion of the cost is charged on the income statement through depreciation (the amount dependent upon useful life). Although capitalization policies are common amongst municipal utilities, the dollar threshold amounts are not consistent.

This issue is raised here as it is important to recognize the impact of capitalization policies on utility financial statements. Those with relatively high capitalization thresholds (compared to others) will show less net income in the current period as well as lower overall asset values. A lack of consistency between utilities can make benchmarking and other similar analysis extremely difficult or results potentially misleading. Utility accountants, management and staff must remember to take this into consideration whenever comparisons of this nature are made.

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## Sample Utility

In Chapter 4 of this guide, the structure of the FERC USOA for the balance sheet accounts, the assets, liabilities, and capitalization for electric utilities is reviewed. As part of this review, a discussion of the electric plant detail accounts is provided. Chapter 5 discusses the structure of the income and expense chart of accounts under the USOA. This includes a review of the revenue detail, operation and maintenance expense detail, and the administrative and general expense detail accounts.

In order to illustrate the use of the USOA, financial accounting data for a sample utility will be used. The examples included are not all-inclusive and do not represent how every public power system should follow the USOA. The examples are used to point out important considerations in implementation of the USOA and to provide an illustration of how a utility that does not use the FERC system might compare under the USOA.

For purposes of the discussion in this guide, it is assumed that the Sample Public Power Utility has the following characteristics:

- ❖ 6,500 total customers, 5,500 residential customers
- ❖ \$9.0 million in annual revenues
- ❖ \$16.6 million in total assets
- ❖ \$0.8 million annual capital budget
- ❖ 160,000 MWh in annual sales
- ❖ System energy requirements 1/3 generated, 2/3 purchased

Example trial balances and financial statements for the Sample Public Power Utility are referenced in Chapters 4 and 5 to illustrate the application of the FERC USOA.



# **Public Utility Accounting**

## **Chapter 4**

### **FERC Uniform System of Accounts: Balance Sheet Accounts**



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## Balance Sheet

The Federal Energy Regulatory Commission (FERC) Uniform System of Accounts (USOA) provides a detailed chart of accounts for the assets, liabilities, and owners' equity of electric utilities. These are the components of a utility's balance sheet. The balance sheet is one of the required financial statements issued by a utility. It shows the financial condition of the utility as of the specific point in time identified in the statement. The balance sheet summarizes the basic accounting equation:

*Assets equals Liabilities plus Owners' Equity*

Stated another way:

*Assets minus Liabilities equals Owners' Equity*

Following are definitions of these primary components of the balance sheet:

**Assets**—The rights and resources that have future benefit in use; they can be expressed in monetary terms and are the results of enterprise transactions.

**Liabilities**—Obligations that must be satisfied through the disbursement of assets or the rendering of services.

**Owners' Equity**—Ownership claims against the net assets of the enterprise that are residual in nature and do not require eventual liquidation.

The third component listed above, owners' equity, is a nebulous concept as it relates to public power systems. Because public power utilities are usually owned by a governmental entity, such as a municipality, the net amount of the utility's assets less its liabilities represents an asset of that governmental unit. Therefore, the ownership or equity investment in the utility belongs to the citizens of that unit.

A balance sheet trial balance for the Sample Public Power Utility, introduced in Chapter 3, is shown on the table on the following page. This trial balance includes the non-uniform account numbers and definitions which might be used by a similar public power utility before implementing the FERC USOA. As illustrated on the trial balance, the three account categories described above are identified.

**BALANCE SHEET  
TRIAL BALANCE**

**Sample Public Power Utility**

**Non-Uniform System**

Account	Existing Description	Amount
Assets		
10100	Investment Pool – Operating	\$1,880,000
10102	Investment Pool - Bond Sinking Fund	37,000
10300	Petty Cash	1,000
11120	Allowance for Doubtful Accounts	(5,000)
11190	Accounts Receivable – Customer Sales	900,000
11191	Accounts Receivable – Other	125,000
11300	Interest Receivable	429,000
11700	Unbilled Utility Accounts Receivable	755,000
13000	Due from Other City Funds	0
13500	Fuel Stock – Coal	173,000
13601	Stores Expense Undistributed	831,000
14310	Prepays	6,000
15100	Electric Plant In Service	23,845,000
15200	Advances to Other Funds	44,000
15600	Completed Construction Not Classified	0
15900	Construction Work In Progress	0
16000	Accumulated Depreciation	(12,377,000)
	Total Assets	<b>\$16,644,000</b>
Liabilities		
20200	Accounts Payable	\$191,000
20205	Withholdings Payable	20,000
20250	Sales Tax Payable – Utilities	40,000
20435	Accrued Interest Expense	11,000
20800	Due to City Funds	83,000
22400	Accrued Vacation Payable	90,000
23500	Bonds Payable	2,200,000
	Total Liabilities	<b>\$2,635,000</b>
Fund Equity		
25100	Reserve for Sinking Fund	\$400,000
26200	Contributed Capital	45,000
27000	Unappropriated Retained Earnings	13,089,000
27000	Current Net Income	475,000
	Total Fund Equity	<b>\$14,009,000</b>
	Total Liabilities and Fund Equity	<b>\$16,644,000</b>

Note that on the table above that the owners' equity portion of the trial balance is titled "Fund" Equity. Recall the previous discussion in Chapter 2 regarding government or fund accounting systems in which it explains that public power utilities have a different kind of ownership as they are normally a part of a governmental unit.

However, the concept is the same: the net of the assets and the liabilities represents the residual equity or value of the utility entity.

The balance sheet trial balance on the previous page indicates that the Sample Public Power Utility has total assets of \$16,644,000, total liabilities of \$2,635,000, and total fund equity of \$14,009,000. In the table, net income of \$475,000 (discussed in Chapter 5) must be added to the balance sheet to make the accounting equation balance. Net income at the end of each fiscal period becomes an addition to the retained earnings on the balance sheet because it represents new equity created during the period.

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## Assets and Other Debits

The assets are always shown first on the balance sheet. The primary classifications of assets as defined by the USOA are:

- ❖ Utility Plant;
- ❖ Other Property and Investments;
- ❖ Current and Accrued Assets; and
- ❖ Deferred Debits.

### Utility Plant

The table on the page that follows lists the utility plant accounts defined in the USOA. These accounts are those in the range from 101 to 120.6. *Utility Plant* is the first asset category defined in the USOA and it is normally shown first on the utility's balance sheet. The utility industry is unique in this regard as most other industries list their long-term assets such as plant and equipment last on their balance sheet. This difference is due to the capital intensive nature of the utility industry with the most significant portion of that capital being invested in utility plant.

<b>UNIFORM SYSTEM OF ACCOUNTS</b>	
<i>1. Utility Plant</i>	
101 Electric plant in service (Major only)	114 Electric plant acquisition adjustments
101.1 Property under capital leases	115 Accumulated provision for amortization electric plant acquisition adjustments (Major only)
102 Electric plant purchased or sold	116 Other electric plant adjustments
103 Experimental electric plant unclassified (Major only)	118 Other utility plant
103.1 Electric plant in process of reclassification (Nonmajor only)	119 Accumulated provision for depreciation and amortization of other utility plant
104 Electric plant leased to others	120.1 Nuclear fuel in process of refinement, conversion, enrichment and fabrication (Major only)
105 Electric plant held for future use	120.2 Nuclear fuel materials and assemblies— Stock account (Major only)
106 Completed construction not classified— Electric (Major only)	120.3 Nuclear fuel assemblies in reactor (Major only)
107 Construction work in progress—Electric	120.4 Spent nuclear fuel (Major only)
108 Accumulated provision for depreciation of electric utility plant (Major only)	120.5 Accumulated provision for amortization of nuclear fuel assemblies (Major only)
109 Reserved	120.6 Nuclear fuel under capital leases (Major only)
110 Accumulated provision for depreciation and amortization of electric utility plant (Nonmajor only)	
111 Accumulated provision for amortization of electric utility plant (Major only)	
112 Reserved	
113 Reserved	

The *Utility Plant* classification includes assets such as property, plant, and equipment that are used in the utility's operations. These assets are categorized as either electric plant or as other plant. Electric plant covers all assets that are used in the generation, transmission, and distribution of electricity. It also includes plant and equipment that is used to support utility operations. Items such as computers, transportation equipment, office furniture, etc. fall into this category. General plant items are often considered as "common" plant, assets that could be shared with other types of utilities, (such as the water department) within the utility department organization. Plant assets are further categorized in different asset accounts depending on whether those assets are under construction or completed, owned or leased, and in service or leased to others or held for future use.

The other major component under the *Utility Plant* classification of the FERC USOA is the provision for depreciation and amortization of property, plant and equipment. Depreciation and amortization represent the systematic write-off of the cost of the utility plant over the applicable lives of those assets. Depreciation relates to tangible assets and amortization is for the intangible assets. The depreciation and amortization amounts recognized are also separated between electric plant and other plant as are the plant investments.

Each of the USOA accounts listed are defined in detail in the Code of Federal Regulations (CFR, Title 18, Part 101). This detail includes descriptions of some financial transactions relating to utility plant which are to be recorded in each account. Also, the electric plant instructions reviewed in Chapter 3 provide guidance in the proper accounting for utility plant. One of the most important aspects of the prescribed treatment of utility plant by the FERC USOA is the requirement in the second electric plant instruction that all electric plant acquired as an operating unit or system be recorded at its *original cost*. This means that the plant is to be recorded at the cost to initially

place it in service, even if by a different owner. If the operating unit or system was acquired from another utility, the new owner must record it at the original owner's cost and recognize the difference from the amount of the purchase as an acquisition adjustment. This feature is also unique to the utility industry. Organizations in other industries record assets at their cost to acquire them and place them into service.

The USOA also defines subsidiary account breakdowns for certain accounts within its structure. Utility plant detail accounts are used to maintain more detailed records regarding the various classifications of plant. The detail plant accounts, which range from 301 to 399.1, are listed by functional areas on the next few pages. As for all accounts, the USOA provides descriptive information regarding what is to be included in each plant account with lists of specific asset items and components under each account description. These detail descriptions and listings of items are supplemented by the information provided in the electric plant instructions described in Chapter 3.

Accounting for utility plant under the FERC USOA is very detailed due to the significant impact that plant in service can have on the ratemaking process. The USOA is fairly specific in its definition of the level of detailed records which are to be maintained as to plant in service, how items capitalized are to be treated related to maintenance performed and improvements made during the assets lives, as well as, how the plant is to be recorded when it is retired from service. All items of property are defined, in whole or in parts, as *units of property* (retirement units). All assets added to or retired from service must be accounted for in the utility's detailed plant records by retirement units within the plant detail accounts. Although the USOA provides the utilities some latitude in defining their retirement units, it provides a definition of the minimum breakdown that must be kept as retirement units. These retirement units are listed, by the detail plant accounts, in the CFR, Title 18, Part 116.

<b>UNIFORM SYSTEM OF ACCOUNTS</b>	
<i>1. Intangible Plant</i>	
301 Organization	303 Miscellaneous intangible plant
302 Franchises and consents	

<b>UNIFORM SYSTEM OF ACCOUNTS</b>	
<i>2. Production Plant</i>	
<p style="text-align: center;"><i>A. Steam Production</i></p> <p>310 Land and land rights.                      311 Structures and improvements.                      312 Boiler plant equipment.                      313 Engines and engine-driven generators.                      314 Turbogenerator units.                      315 Accessory electric equipment.                      316 Miscellaneous power plant equipment.                      317 Asset retirement costs for steam production plant</p> <p style="text-align: center;"><i>B. Nuclear Production</i></p> <p>320 Land and land rights (Major only).                      321 Structures and improvements (Major only).                      322 Reactor plant equipment (Major only).                      323 Turbogenerator units (Major only).                      324 Accessory electric equipment (Major only).                      325 Miscellaneous power plant equipment (Major only).                      326 Asset retirement costs for nuclear production plant (Major only).</p>	<p style="text-align: center;"><i>C. Hydraulic Production</i></p> <p>330 Land and land rights.                      331 Structures and improvements.                      332 Reservoirs, dams, and waterways.                      333 Water wheels, turbines and generators.                      334 Accessory electric equipment.                      335 Miscellaneous power plant equipment.                      336 Roads, railroads and bridges.                      337 Asset retirement costs for hydraulic plant</p> <p style="text-align: center;"><i>D. Other Production</i></p> <p>340 Land and land rights.                      341 Structures and improvements.                      342 Fuel holders, producers, and accessories.                      343 Prime movers.                      344 Generators.                      345 Accessory electric equipment.                      346 Miscellaneous power plant equipment.                      347 Asset retirement costs for other prod. Plant</p>
<b>UNIFORM SYSTEM OF ACCOUNTS</b>	
<i>Transmission and Distribution Plant</i>	
<p style="text-align: center;"><i>3. Transmission Plant</i></p> <p>350 Land and land rights.                      351 [Reserved].                      352 Structures and improvements.                      353 Station equipment.                      354 Towers and fixtures.                      355 Poles and fixtures.                      356 Overhead conductors and devices.                      357 Underground conduit.                      358 Underground conductors and devices.                      359 Roads and trails.                      359.1 Asset retirement costs for transmission plant</p>	<p style="text-align: center;"><i>4. Distribution Plant</i></p> <p>360 Land and land rights.                      361 Structures and improvements.                      362 Station equipment.                      363 Storage battery equipment.                      364 Poles, towers and fixtures.                      365 Overhead conductors and devices.                      366 Underground conduit.                      367 Underground conductors and devices.                      368 Line transformers.                      369 Services.                      370 Meters                      371 Installation on customers' premises.                      372 Leased property on customers' premises.                      373 Street lighting and signal systems.                      374 Asset retirement costs for distribution plant.</p>
<b>UNIFORM SYSTEM OF ACCOUNTS</b>	
<i>5. Regional Transmission and Market Operation Plant</i>	
<p>380 Land and land rights.                      381 Structures and improvements.                      382 Computer hardware.                      383 Computer software.                      384 Communication equipment.</p>	<p>385 Miscellaneous regional transmission and market operation plant.                      386 Asset retirement costs for regional transmission and market operation plant.                      387 Reserved.</p>

<b>UNIFORM SYSTEM OF ACCOUNTS</b>	
<i>6. General Plant</i>	
389 Land and land rights.	395 Laboratory equipment.
390 Structures and improvements.	396 Power operated equipment.
391 Office furniture and equipment.	397 Communication equipment.
392 Transportation equipment.	398 Miscellaneous equipment.
393 Stores equipment.	399 Other tangible property.
394 Tools, shop and garage equipment.	399.1 Asset retirement costs for general plant.

The accounting for utility plant is complex. This brief discussion provides a basic introduction to the level of detail that is required by the USOA.

### **Other Property and Investments**

The second classification of assets included on the balance sheet of an electric utility is *Other Property and Investments*. The table below presents the accounts defined in the USOA in this classification which includes accounts in the range of 121 to 129. These accounts generally include assets that are long-term in nature similar to utility plant. Accounts are provided for nonutility property and the related depreciation and amortization account. Nonutility property includes assets that may be categorized as property, plant, and equipment. These assets are often held for investment purposes. Likewise, this classification includes long-term investments in other companies and equity in affiliated companies. Accounts are also provided for recording cash investments that have been established and segregated for specific long-term purposes such as bond sinking funds and plant renewals and replacements.

<b>UNIFORM SYSTEM OF ACCOUNTS</b>	
<i>2. Other Property and Investments</i>	
121 Nonutility property.	124 Other investments.
122 Accumulated provision for depreciation and amortization of nonutility property.	125 Sinking funds (Major only).
123 Investment in associated companies (Major only).	126 Depreciation fund (Major only).
123.1 Investment in subsidiary companies (Major only).	127 Amortization fund – Federal (Major only).
	128 Other special funds (Major only).
	129 Special funds (Nonmajor only).

Public power utilities will primarily use this classification for the recording of these specific-purpose funds. For those utilities that are part of a municipal government organization, non-utility property and other types of general investments are likely to be considered activities of the other city departments such as the city finance department.

### **Current and Accrued Assets**

Current assets follow the long-term assets on the utility balance sheet. Current assets are cash and other liquid assets that can reasonably be expected to be converted to cash, sold or consumed within one year or the normal operating cycle, whichever is longer. This normally includes cash, short-term investments, receivables, inventories, and prepaid expenses. The table below shows the accounts in the USOA for current and accrued assets with numbers ranging from 130 to 176.

<b>UNIFORM SYSTEM OF ACCOUNTS</b>	
<i>3. Current and Accrued Assets</i>	
130 Cash and working funds (Nonmajor only).	153 Residuals (Major only).
131 Cash (Major only).	154 Plant materials and operating supplies.
132 Interest special deposits (Major only).	155 Merchandise (Major only).
133 Dividend special deposits (Major only).	156 Other materials and supplies (Major only).
134 Other special deposits (Major only).	157 Nuclear materials held for sale (Major only).
135 Working funds (Major only).	158.1 Allowance inventory.
136 Temporary cash investments.	158.2 Allowances withheld.
141 Notes receivable.	163 Stores expense undistributed (Major only).
142 Customer accounts receivable.	165 Prepayments.
143 Other accounts receivable.	171 Interest and dividends receivable (Major only).
144 Accumulated provision for uncollectible accounts - credit.	172 Rents receivable (Major only).
145 Notes receivable from associated companies.	173 Accrued utility revenues (Major only).
146 Accounts receivable from associated companies	174 Miscellaneous current and accrued assets.
151 Fuel stock (Major only).	175 Derivative instrument assets.
152 Fuel stock expenses undistributed (Major only).	176 Derivative instrument asset - Hedges

As was indicated previously, the current assets and the other asset classifications are secondary to the utility plant classification due to the magnitude of a utility's investment in plant. It was also mentioned that this is unique to the utility industry. An important account in *Current and Accrued Assets* is fuel stock. This inventory account is crucial to the accounting for generation expense.

### **Deferred Debits**

The final classification of assets on the balance sheet is the deferred debits. Deferred debits include various costs which are accumulated for later accounting treatment. Figure 4-8 provides the deferred debit accounts defined in the USOA. These accounts range from 181 through 190.

<b>UNIFORM SYSTEM OF ACCOUNTS</b>	
<i>4. Deferred Debits</i>	
181 Unamortized debt expense.	186 Miscellaneous deferred debits.
182.1 Extraordinary property losses.	187 Deferred losses from disposition of utility plant.
182.2 Unrecovered plant and regulatory study costs.	188 Research, development, and demonstration expenditures (Major only).
182.3 Other regulatory assets.	189 Unamortized loss on reacquired debt.
183 Preliminary survey and investigation charges (Major only).	190 Accumulated deferred income taxes.
184 Clearing accounts (Major only).	
185 Temporary facilities (Major only).	

The prime example of a deferred debit is *Clearing accounts*. Specific clearing accounts can be established to record all costs associated with particular events or activities. Then, at a later time such as month end, those costs accumulated in each clearing account are transferred to an array of other asset and expense accounts based on some defined allocation methodology. For example, a clearing account may be created for accumulating the costs of owning and operating a vehicle fleet utilized by the electric utility. Those costs might include gas, oil, maintenance, depreciation, and repairs. At the end of each month, the costs accumulated in the clearing account would be cleared by transferring

them to a work in progress (capital) account or the operations and maintenance expense accounts (discussed in Chapter 5) which represent the functional activities the vehicles were used to accomplish. The costs might be allocated to those activities based on the ratio of the miles driven for each activity to the total of all miles driven.

## Liabilities and Owners' Equity

The other half of the balance sheet provides the detail of the capitalization of an entity in support of its assets in the form of liabilities and owners' equity. The FERC USOA identifies the following classifications for this part of the balance sheet:

- ❖ Proprietary Capital;
- ❖ Long-term Debt;
- ❖ Other Noncurrent Liabilities;
- ❖ Current and Accrued Liabilities; and
- ❖ Deferred Credits.

### Proprietary Capital

Proprietary capital is the equity of the entity. For an investor-owned utility, this equity is represented by the capital paid in by its shareholders plus the undistributed earnings from the operations of the utility that accumulate over time. For a public power utility, since there are no shareholders, the equity is limited to undistributed earnings accumulated from its operations.

The table below lists the proprietary capital accounts, numbers 201 to 219, from the USOA. Note that most of the accounts are related to common and preferred stocks. The accumulated earnings are identified only as appropriated or unappropriated. Since public power utilities do not have private ownership, the stock accounts would not be used. Therefore, the only proprietary capital most public power systems would normally have would be in the retained earnings accounts.

<b>UNIFORM SYSTEM OF ACCOUNTS</b>	
<i>5. Proprietary Capital</i>	
201 Common stock issued	211 Miscellaneous paid-in capital.
202 Common stock subscribed (Major only).	212 Installments received on capital stock.
203 Common stock liability for conversion (Major only).	213 Discount on capital stock.
204 Preferred stock issued.	214 Capital stock expense.
205 Preferred stock subscribed (Major only).	215 Appropriated retained earnings.
206 Preferred stock liability for conversion (Major only).	215.1 Appropriated retained earnings—Amortization reserve, federal.
207 Premium on capital stock (Major only).	216 Unappropriated retained earnings.
208 Donations received from stockholders (Major only).	216.1 Unappropriated undistributed subsidiary earnings (Major only).
209 Reduction in par or stated value of capital stock (Major only).	217 Reacquired capital stock.
210 Gain on resale or cancellation or reacquired capital stock (Major only).	218 Noncorporate proprietorship (Nonmajor only).
	219 Accumulated other comprehensive income.

## **Long-term Debt**

The long-term debt accounts of the USOA that range from 221 to 226 are shown in the table below. These accounts provide for recording of the principal of bond indebtedness issued by the utility. Bond issuance premiums and discounts also fall into this classification. Although there are provisions for additional forms of long-term debt, the revenue bonds or first mortgage bonds are the most often used debt financing vehicle by public power systems. General instruction 17, discussed in Chapter 3, requires that each debt issue be recorded in separate accounts by series.

<b>UNIFORM SYSTEM OF ACCOUNTS</b>	
<i>Liabilities and Other Credits</i>	
<i>6. Long-term Debt</i>	<i>7. Other Noncurrent Liabilities</i>
221 Bonds.	227 Obligations under capital lease-non-current.
222 Reacquired bonds (Major only).	228.1 Accumulated provision for property insurance.
223 Advances from associated companies.	228.2 Accumulated provision for injuries and damages.
224 Other long-term debt.	228.3 Accumulated provision for pensions and benefits.
225 Unamortized premium on long-term debt.	228.4 Accumulated misc. operating provisions.
226 Unamortized discount on long-term debt - debit.	229 Accumulated prov. for rate refunds
	230 Asset retirement obligations.

## **Other Noncurrent Liabilities**

The FERC USOA provides a brief series of account numbers from 227 through 230, as listed in the table above, for various special other noncurrent liabilities. These accounts are primarily for recording estimates of future liabilities in several categories. Account 228 is defined in the USOA to have four sub-accounts from 228.1 to 228.4. These accounts are to be used to accumulate expense provisions for items such as losses to property and personal injuries not covered by insurance, and not expected to be paid in one year. The USOA provides a special instruction that the 228 accounts are to be used only when authority is granted to recover the amounts recorded therein through the utility's rates. Use of account 229 is also subject to utility rate provisions as it is to be used for establishing reserves for refunds of revenues collected based on rates which include amounts subject to refund. Another noncurrent liability account, 227, is intended to provide for the special provisions of accounting for capital leases. General instruction numbers 19 and 20 discussed in Chapter 3 describe the use of this special account.

## **Current and Accrued Liabilities**

Current liabilities follow the capitalization and long-term liabilities on the utility balance sheet. Current liabilities include obligations that can reasonably be expected to be liquidated or converted to other current liabilities within one year or the normal operating cycle, whichever is longer. This normally includes accounts payable, current debt instruments or the current portion of long-term debt, and liabilities for items such as customer deposits, interest costs, and taxes. The table below shows the accounts in the USOA for current and accrued liabilities that range from 231 to 245.

<b>UNIFORM SYSTEM OF ACCOUNTS</b>	
<i>8. Current and Accrued Liabilities</i>	
231 Notes payable.	239 Matured long-term debt (Major only).
232 Accounts payable.	240 Matured interest (Major only).
233 Notes payable to associated companies.	241 Tax collections payable (Major only).
234 Accounts payable to associated companies.	242 Miscellaneous current and accrued liabilities.
235 Customer deposits.	243 Obligations under capital leases-current.
236 Taxes accrued.	244 Derivatives instrument liabilities.
237 Interest accrued.	245 Derivative instrument liabilities-Hedges.
238 Dividends declared (Major only).	

### **Deferred Credits**

The final classification of liabilities on the balance sheet is the deferred credits. Deferred credits include various obligations for which the utility is liable, but are not expected to be paid within one year. The table below provides the deferred credit accounts defined in the USOA. These accounts are in the range of 251 through 283. The accounts in this classification primarily relate to deferred tax obligations due to differences in the timing of recognition of certain items for income tax return presentation versus financial statement presentation.

The account in this classification which is most likely to be used by public power utilities is account 252, *Customer advances for construction*. This is a liability for monies contributed by customers, (as a deposit for utility construction) that are refundable, either wholly or partially. Any nonrefundable balance must be credited to the proper plant account corresponding to the type of plant constructed. This type of security on the investment in facilities is used by larger utilities and some public power systems follow this practice as well.

<b>UNIFORM SYSTEM OF ACCOUNTS</b>	
<i>9. Deferred Credits</i>	
251 Reserved.	257 Unamortized gain on reacquired debt.
252 Customer advances for construction.	281 Accumulated deferred income taxes-accelerated amortization property.
253 Other deferred credits.	282 Accumulated deferred income taxes-other property.
254 Other regulatory liabilities.	283 Accumulated deferred income taxes-Other.
255 Accumulated deferred investment tax credits.	
256 Deferred gains from disposition of utility plant.	

## **A USOA Balance Sheet**

At the beginning of this Chapter a balance sheet trial balance for the Sample Public Power Utility was presented. This trial balance lists the non-uniform accounts which might be used by a small public power utility for keeping track of its assets, liabilities, and owners' equity. Now that the accounts defined in the FERC USOA for the balance sheet classifications have been introduced, the table on the following page is provided to demonstrate how the Sample Public Power Utility's balance sheet trial balance might compare. Notice how few of the accounts from the USOA are used by this utility. This indicates that the USOA provides for a significantly greater level of detail in recording the financial activity of a utility. Also, note that on the table below the FERC account numbers have been expanded to five digits by adding zeroes to the right as a subaccount number. This allows the utility to maintain additional detailed accounting information beyond what is required by the USOA.

**BALANCE SHEET TRIAL BALANCE - ACCOUNT CONVERSION**  
**Sample Public Power Utility**

Non-Uniform System		FERC Uniform System of Accounts		Amount
Account	Existing Description	Account	FERC Description	
<b>Assets</b>				
10100	Invest Pool – Operating	13600	Temporary Cash Investments	\$1,880,000
10102	Invest Pod - Bond Sinking Fund	13400	Other Special Deposits	37,000
10303	Petty Cash	13500	Working Funds	1,000
11120	Allowance for Doubtful Accounts	14400	Accumulated Provision for Uncollectible Accounts – Credit	(5,000)
11190	Accounts Receivable - Customer Sales	14200	Customer Accounts Receivable	900,000
11191	Accounts Receivable – Other	14300	Other Accounts Receivable	125,000
11300	Interest Receivable	17100	Interest and Dividends Receivable	429,000
11700	Unbilled Utility Accounts Receivable	17300	Accrued Utility Revenues	755,000
13000	Due from Other City Funds	14610	Accounts Receivable from Associated	0
13500	Fuel Stock – Coal	15100	Fuel Stock	173,000
13601	Stores Expense Undistributed	16300	Stores Expense Undistributed	831,000
14310	Prepays	16500	Prepayments	6,000
15100	Electric Plant In Service	10100	Electric Plant In Service	23,845,000
15200	Advances to Other Funds	14500	Notes Receivable from Associated Companies	44,000
15600	Completed Construction Not Classified	10600	Completed Construction Not Classified -	0
15900	Construction Work In Progress	10700	Construction Work In Progress - Electric	0
16000	Accumulated Depreciation	10800	Accumulated Provision for Depreciation of Electric Plant	(12,377,000)
			Total Assets	\$16,644,000
<b>Liabilities</b>				
20200	Accounts Payable	23200	Accounts Payable	\$191,000
20205	Withholdings Payable	24200	Miscellaneous Current and Accrued Liabilities	20,000
20250	Sales Tax Payable – Utilities	24100	Tax Collections Payable	40,000
20435	Accrued Interest Expense	23700	Interest Accrued	11,000
20800	Due to City Funds	23400	Accounts Payable to Other City Funds	83,000
22400	Accrued Vacation Payable	24200	Miscellaneous Current and Accrued Liabilities	90,000
23500	Bonds Payable	22100	Bonds	2,200,000
			Total Liabilities	\$2,635,000
<b>Fnd Equity</b>				
25100	Reserve for Sinking Fund	25300	Other Deferred Credits	\$400,000
24200	Contributed Capital	20700	Premium on Capital Stock	45,000
27000	Unappropriated Retained Earnings	21600	Unappropriated Retained Earnings	13,089,000
27030	Current Net Income	21600	Current Net Income	475,000
			Total Fund Equity	\$14,039,000
			Total Liabilities and Fund Equity	\$16,644,000

A formal balance sheet format similar to one used by many utilities, is presented on the following page. It includes notations for each line item of the USOA accounts. Although the FERC USOA does not require a specific format for the balance sheet, most utilities present their balance sheet similar to this format.

**BALANCE SHEET**  
**Sample Public Power Utility**

<b>Assets and Other Debits:</b>	<b>FERC USOA Accounts</b>	<b>Amount</b>
Utility Plant		
Electric Utility Plant In Service	101-106, 116, 118, 120.1-120.4, 120.6	\$ 23,845,000
Less: Accumulated Depreciation	108-111, 114, 115, 119, 120.5	(12,377,000)
Net Plant in Service		\$ 11,468,000
Construction Work In Progress	107	-
Net Electric Utility Plant		\$ 11,468,000
Other Property and Investments	121-129	\$ -
Current and Accrued Assets		
Cash and Short-term Investments	130-136	\$ 1,918,000
Receivables		
Notes	141	-
Customers, Less Doubtful Accounts	142, 144	895,000
Interfund	145, 146	44,000
Other	143, 171-173	1,309,000
Inventories		
Fuel	151-152	173,000
Materials and Supplies	153-157, 163	831,000
Allowances	158	-
Prepayments	165	6,000
Total Current and Accrued Assets		\$ 5,176,000
Other Assets	181-190	\$ -
Total Assets and Other Debits		\$ 16,644,000
<b>Liabilities and Other Credits</b>		
Capitalization		
Equity		
Paid-in Capital	201-214, 217, 218	\$ -
Retained Earnings	215, 216 (Includes current net income \$475k)-	13,609,000
Long-term Debt	221-226	2,200,000
Total Capitalization		15,809,000
Other Noncurrent Liabilities	227-229	-
Current and Accrued Liabilities		
Payables		
Notes	231	\$ -
Accounts	232	191,000
Interfund	233, 234	83,000
Customer Deposits	235	-
Accrued Taxes	236	-
Accrued Interest	237	11,000
Dividends Declared	238	-
Current Maturities of Long-term Debt	239	-
Tax Collections Payable	241	-
Other	242, 243	150,000
Total Current and Accrued Liabilities		\$ 435,000
Other Liabilities	252-283	\$ 400,000
Total Liabilities and Other Credits		16,644,000



# **Public Utility Accounting**

## **Chapter 5**

### **FERC Uniform System of Accounts: Income Statement Accounts**



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## Income Statement

In Chapter 4, the balance sheet accounts defined in the Federal Energy Regulatory Commission (FERC) Uniform System of Accounts (USOA) for use by electric utilities were presented. This chapter will present the USOA accounts associated with the utility income statement.

Similar to the balance sheet, the income statement is one of the required financial statements issued periodically by utilities. It reports the net operating results of the utility over a specified period of time, usually in the form of net income. The USOA defines accounts for utility revenues and expenses. These are the components used to derive the utility's net income on the income statement. Following are definitions of these primary components of the income statement:

**Revenues** - Increases in net assets arising from services rendered or products sold.

**Expenses** - Asset costs that expire in an attempt to obtain revenues.

**Income** - Excess of the revenues over expenses for a given period of time.

An income statement trial balance for the Sample Public Power Utility is provided over the next two pages. Similarly to the balance sheet trial balance shown in Chapter 4, the trial balance presented here reflects the account assignment which might be in use by a public power utility which does not follow the FERC system today. The pages present the account breakdown of the utility's revenues and expenses, with the expense detail shown by department. The Sample Public Power Utility has total revenues of \$9,284,000 and total expenses of \$8,809,000, resulting in net income of \$475,000. This net income corresponds with the amount of net income as discussed in Chapter 4 covering the balance sheet. At the fiscal year end, the net income amount is transferred to retained earnings, resulting in both the balance sheet and income statement trial balances being “in balance.”

**INCOME STATEMENT TRIAL BALANCE**  
**Sample Public Power Utility**

**Non-Uniform System**

<b>Account</b>	<b>Existing Description</b>	<b>Amount</b>
Revenues-		
35000	Residential Sales	<b>\$2,337,000</b>
35001	Commercial Sales	<b>2,931,000</b>
35002	Industrial Sales	<b>3,124,000</b>
35009	City Department Sales	<b>229,000</b>
35010	Interdepartmental Sales	<b>324,000</b>
36210	Interest on Pooled Operating Cash	<b>152,000</b>
37000	Customer Forfeited Discounts	<b>25,000</b>
37003	Sale of Assets	<b>1,000</b>
37050	Bad Debts Recoveries	<b>1,000</b>
37058	Misc. Sales – Other	<b>150,000</b>
37065	Reconnection Charges	<b>8,000</b>
37090	Other Revenue	<b>2,000</b>
	Total Revenues	<b>\$9,284,000</b>
Expenses -		
7008	Dept. 11 - Electric Production Supervision and Engineering	<b>\$453,000</b>
7100	Vehicle Expense	<b>2,000</b>
7600	Fuel – Coal	<b>46,000</b>
7601	Fuel – Gas	<b>2,626,000</b>
7620	Station Expenses – Boiler Plant	<b>10,000</b>
7625	Station Expenses – Cooling Tower	<b>140,000</b>
7655	Supplies	<b>1,000</b>
7656	Plant – Water	<b>108,000</b>
7657	Plant – Steam	<b>6,000</b>
7659	Plant – Sewer	<b>26,000</b>
7775	Coal Handling Costs	<b>2,000</b>
8050	Buildings	<b>1,000</b>
8101	Boiler Plant	<b>220,000</b>
8102	Electric Plant	<b>172,000</b>
8640	Small Tools and Equipment	<b>4,000</b>
8650	Supplies	<b>1,000</b>
8900	Maintenance - Miscellaneous	<b>7,000</b>
9000	Depreciation	<b>325,000</b>
9050	Purchased Power	<b>2,183,000</b>
	Total Department 11	<b>\$6,333,000</b>
Expenses-		
7008	Dept. 13 - Electric Distribution Supervision and Engineering	<b>\$35,000</b>
7100	Vehicle Expense	<b>15,000</b>
7640	Customer Service Expense	<b>11,000</b>
7655	Supplies	<b>1,000</b>
7660	Safety Equipment	<b>5,000</b>
7700	Miscellaneous Operation Costs	<b>2,000</b>
8000	Supervision and Engineering	<b>35,000</b>
8050	Buildings	<b>4,000</b>
8620	Station Equipment	<b>1,000</b>
8621	Overhead Lines	<b>130,000</b>
8622	Underground Lines	<b>46,000</b>
8630	Street Lighting and Signal Systems	<b>36,000</b>
8635	Meters	<b>32,000</b>
8640	Line Transformers	<b>6,000</b>
8645	Tools and Equipment	<b>16,000</b>
8900	Miscellaneous	<b>2,000</b>
8950	PCB Testing and Disposal	<b>17,000</b>
9000	Depreciation	<b>298,000</b>
	Total Department 13	<b>\$692,000</b>

**INCOME STATEMENT TRIAL BALANCE**  
**Sample Public Power Utility**

**Non-Uniform System**

Account	Existing Description	Amount
Expenses -	Dept. 14 – Customer Accounts	
7600	Customer Account Costs	\$64,000
7650	Uncollectible Accounts	3,000
	Total Department 14	\$67,000
Expenses-	Dept. 15 – Administration and General	
7005	PERA	\$62,000
7006	Social Security	63,000
7007	Health and Life Insurance	117,000
7009	Medicare	15,000
7028	Administrative and General	285,000
7029	Data Processing Service	78,000
7030	Office Supplies and Expenses	1,000
7033	Administration – Subscriptions and Memberships	7,000
7034	Travel, Conferences and Schools	2,000
7036	Fire and Extended Coverage Insurance	48,000
7037	Worker's Compensation	27,000
7038	Communications	5,000
7039	Legal Fees	1,000
7040	Transfer to City	489,000
7041	General Liability Insurance	46,000
7042	Vehicle Insurance	4,000
7044	Boiler and Machinery Insurance	44,000
7050	Vacation, Sick and Other Pay	178,000
7055	Cost of Sales – Private Customer	68,000
7058	Cost of Sales - Other	1,000
7060	Miscellaneous General Expenses	1,000
7080	Permits, Fees and Leases	9,000
7085	Obsoletes/Surplus Inventory	4,000
8450	Office furniture and Equipment	1,000
8800	Building	1,000
9001	Interest Expense - Bonds	144,000
9005	Consultant Fees	14,000
9065	Bond Discount	2,000
	Total Department 15	\$1,717,000
Expenses-	Dept. 16 – Capital Outlays	
5005	Buildings	\$5,000
5010	Machinery and Equipment	27,000
5015	Vehicles	16,000
5020	Tools and Work Equipment	22,000
5025	Office Furniture and Equipment	2,000
5050	Improvements – Computer Mapping	4,000
5100	Construction Work In Progress	28,000
5302	Meters and Regulators	30,000
5305	Overhead Conductors and Devices	56,000
5306	Underground Conductors and Devices	151,000
5307	Downtown Mall Project - PUC	15,000
5308	South Substation	146,000
5309	Boiler Plant Improvements	40,000
5350	Line Transformers and Switches	75,000
5355	69 KV Transmission Line (East)	5,000
5356	69 KV Transmission Line (West)	14,000
5360	Northside Substation	157,000
5391	Capitalization of Fixed Assets	(793,000)
	Total Department 16	\$0

The primary classifications of revenues and expenses on the income statement as defined in the USOA include the following:

- ❖ Utility Operating Income;
- ❖ Other Income and Deductions;
- ❖ Interest Charges; and
- ❖ Extraordinary Items.

## **Utility Operating Income**

The *Utility Operating Income* portion of the FERC USOA identifies both the revenue and expense accounts which relate to a utility's basic operations to provide electric service to its customers. The *Utility Operating Income* accounts are netted together on the income statement to calculate the net operating income of the utility's operations. For utilities which are rate regulated, the net operating income on the utility income statement serves as the delineation between expenses which are generally allowed by regulators to be recovered by the utility through its retail rates and those expenses which are not. The recovery of these costs is based on the direct relation of the costs to the utility's ability to provide electric utility service to the customers. This is referred to as the above- and below-the-line concept. Expenses included in the accounts under the *Utility Operating Income* classification are considered to be above-the-line. Those expenses which fall in accounts in the other income statement classifications are considered to be below-the-line. Many public power systems follow this same concept in establishing the rates charged to their customers.

On the following page, the accounts in the range from 400 through 414 are listed, with their titles as prescribed in the USOA. These accounts make up the *Utility Operating Income* classification. Each of the accounts from 408 through 411 are defined with one-digit sub-accounts which allows for multiple sub-categories within the three-digit primary accounts.

It is important to note the disparity in the specificity of the accounts defined in this *Utility Operating Income* section of the USOA. Operating revenues, operation expenses, and maintenance expenses represent very broad categories of financial events for utilities whereas accounts such as account 412, *Revenues from electric plant leased to others*, are very specific. This will become more evident as the discussion of these accounts continues.

<b>UNIFORM SYSTEM OF ACCOUNTS</b>	
<i>1. Utility Operating Income</i>	
400 Operating revenues.	410 Reserved.
401 Operation expense.	410.1 Provisions for deferred income taxes, utility operating income.
402 Maintenance expense.	411 Reserved.
403 Depreciation expense.	411.1 Provision for deferred income taxes-Credit, utility operating income.
404 Amortization of limited-term electric plant.	411.3 Reserved.
405 Amortization of other electric plant.	411.4 Investment tax credit adjustments, utility operations.
406 Amortization of electric plant acquisition adjustments.	411.6 Gains from disposition of utility plant.
407 Amortization of property losses, unrecovered plant and regulatory study costs.	411.7 Losses from disposition of utility plant.
407.3 Regulatory debits.	411.8 Gains from disposition of allowances.
407.4 Regulatory credits.	411.9 Losses from disposition of allowances.
408 Reserved.	412 Revenues from electric plant leased to others.
408.1 Taxes other than income taxes, utility operating income.	413 Expenses of electric plant leased to others.
409 Reserved.	414 Other utility operating income.
409.1 Income taxes, utility operating income.	

## Operating Revenues

The first account listed in the table above is account 400, *Operating Revenues*. As the title of this account implies, it is used to accumulate the dollars earned through the provision of normal electric utility service and the performance of electric utility functions. As was mentioned above, this is a broad definition which does not, by itself, provide any level of detailed information about the revenues of an electric utility. However, similar to the detail provided for accounting for utility plant as discussed in Chapter 4, the USOA also provides a subsidiary account breakdown of utility operating revenues. Figure 5-2 shows this detail account definition for revenues.

The table on the following page presents two categories of revenues: *Sales of Electricity* and *Other Operating Revenues*. The accounts for sales of electricity are in the range from 440 to 449.1 and provide a breakdown of the revenues according to the common classifications of customers served by utilities, i.e. residential, commercial, etc. Therefore, these accounts are to include the revenues earned for the actual provision of electricity to the end-use customer. The amounts recorded in these accounts should represent the product of the applicable utility rates per unit of electricity and the number of electricity units, either energy in kilowatt hours (kWh) or demand in kilowatts (kW). They also include other amounts billed to the customer related to the recovery of the costs of providing electric service, such as customer service and facilities charges, when the amounts of those charges are defined in the rate schedules. The items included in accounts 450 through 457.2 for *Other Operating Revenues* represent various other types of revenues realized by an electric utility in the course of its operations that do not result from the direct sale of electricity. Examples of items in this category include bill payment discounts missed by customers, rental income received on utility property, sales of water and water power, and compensation for transmission service for electricity of other parties.

<b>UNIFORM SYSTEM OF ACCOUNTS</b>	
<i>Operating Revenues</i>	
<i>1. Sales of Electricity</i>	<i>2. Other Operating Revenues</i>
440 Residential sales.	450 Forfeited discounts.
442 Commercial and industrial sales.	451 Miscellaneous service revenues.
444 Public street and highway lighting.	453 Sales of water and water power.
445 Other sales to public authorities (Major only).	454 Rent from electric property.
446 Sales to railroads and railways (Major only).	455 Interdepartmental rents.
447 Sales for resale.	456 Other electric revenues.
448 Interdepartmental sales.	456.1 Revenues from transmission of electricity.
449 Other sales (Nonmajor only).	457.1 Regional transmission service revenues.
449.1 Provisions for rate refunds.	457.2 Miscellaneous revenues.

### Operation and Maintenance Expenses

The two accounts which follow operating revenues on the list under *Utility Operating Income* on the table on the previous page are accounts 401, *Operation expense* and 402, *Maintenance expense*. Operation expenses are the expenditures required on an ongoing basis to support the day-to-day operational activities of the utility. Maintenance expenses are the expenditures related to the upkeep of the capital plant, property, and equipment to ensure its capability to continue its intended function in support of the ongoing operations of the utility.

The USOA also provides ranges of detail accounts which are subsidiary to the operations and maintenance accounts. Both the operation and the maintenance expense account numbers fall within the ranges of 500 to 598 and 901 to 935. However, the accounts in these ranges are organized in the FERC USOA on a utility function basis. Therefore, the operation and the maintenance detail accounts for each function fall in subsets of the ranges previously mentioned.

These functional areas and the corresponding account ranges are as follows:

<u>Function</u>	<u>Operations Accounts</u>	<u>Maintenance Accounts</u>
Steam Power Generation	500-509	510-515
Nuclear Power Generation	517-525	528-532
Hydraulic Power Generation	535-540.1	541-545.1
Other Power Generation	546-550.1	551-554.1
Other Power Supply	555-557	
Transmission	560-567.1	568-574
Regional Market Expenses	575.1-575.8	576.1-576.5
Distribution	580-589	590-598
Customer Accounts	901-905	
Customer Service & Info.	906-910	
Sales	911-917	
Administrative & General	920-933	935

The 500 series accounts include all of the direct electric operations and maintenance expenses and the 900 series accounts provide for the utility customer service and administration activities. There are no maintenance accounts associated with the other power supply, customer accounts, customer service, and sales functions because the USOA assumes that no utility plant is associated with these activities. Detail account listings for each of the above electric utility functional areas are listed on the next few pages.

As can be seen from the detailed listings, expenses associated with the generation of electricity are separated into four categories based on the general technologies for producing power, i.e. steam (fossil), nuclear, hydro, and other (generally combustion technologies but this represents an area that is expanding with newer technologies). The accounts listed under operations and under maintenance in each of these functional classifications are similar. However, the USOA assigns unique account numbers to each not only to allow for separate accounting of each technological area, but also to tailor the account descriptions to include appropriate terminology and special nuances for each. In regard to the accounts for power production, many small public power utilities will only need to use the last group of accounts because they purchase all of their system energy requirements. Those utilities that have only small amounts of generating capacity, usually natural gas or oil-fired peaking units, also use the accounts in the *Other Power Generation* category. Although the steam (fossil), nuclear, and hydro categories apply to some public power systems, those accounts are less likely to be used by smaller utilities than the *Other Power Generation* and *Other Power Supply Expenses* accounts.

<b>UNIFORM SYSTEM OF ACCOUNTS</b>	
<i>1. Power Production Expenses – Steam Power Generation</i>	
<i>Operation</i>	<i>Maintenance</i>
500 Operation supervision and engineering.	510 Maintenance supervision and engineering (Major only).
501 Fuel.	511 Maintenance of structures (Major only).
502 Steam expenses (Major only).	512 Maintenance of boiler plant (Major only).
503 Steam from other sources.	513 Maintenance of electric plant (Major only).
504 Steam transferred - Credit.	514 Maintenance of miscellaneous steam plant (Major only).
505 Electric expenses (Major only).	515 Maintenance of steam production plant (Nonmajor only).
506 Miscellaneous steam power expenses (Major only).	
507 Rents.	
508 Operation supplies and expenses (Nonmajor only).	
509 Allowances.	

<b>UNIFORM SYSTEM OF ACCOUNTS</b>	
<i>1. Power Production Expenses – Nuclear Power Generation</i>	
<i>Operation</i>	<i>Maintenance</i>
517 Operation supervision and engineering (Major only).	528 Maintenance supervision and engineering (Major only).
518 Nuclear fuel expense (Major only).	529 Maintenance of structures (Major only).
519 Coolants and water (Major only).	530 Maintenance of reactor plant equipment (Major only).
520 Steam expenses (Major only).	531 Maintenance of electric plant (Major only).
521 Steam from other sources (Major only).	532 Maintenance of miscellaneous nuclear plant (Major only).
522 Steam transferred – Credit (Major only).	
523 Electric expenses (Major only).	
524 Miscellaneous nuclear power expenses (Major only).	
525 Rents (Major only).	

<b>UNIFORM SYSTEM OF ACCOUNTS</b>	
<i>1. Power Production Expenses – Hydraulic Power Generation</i>	
<i>Operation</i>	<i>Maintenance</i>
535 Operation supervision and engineering.	541 Maintenance supervision and engineering (Major only).
536 Water for power.	542 Maintenance of structures (Major only).
537 Hydraulic expenses (Major only).	543 Maintenance of reservoirs, dams and waterways (Major only).
538 Electric expenses (Major only).	544 Maintenance of electric plant (Major only).
539 Miscellaneous hydraulic power generation expenses (Major only).	545 Maintenance of miscellaneous hydraulic plant (Major only).
540 Rents.	545.1 Maintenance of hydraulic production plant (Nonmajor only).
540.1 Operation supplies and expenses (Nonmajor only).	

<b>UNIFORM SYSTEM OF ACCOUNTS</b>	
<i>1. Power Production Expenses – Other Power Generation</i>	
<i>Operation</i>	<i>Maintenance</i>
546 Operation supervision and engineering.	551 Maintenance supervision and engineering (Major only).
547 Fuel.	552 Maintenance of structures (Major only).
548 Generation expenses (Major only).	553 Maintenance of generating and electric plant (Major only).
549 Miscellaneous other power generation expenses (Major only).	554 Maintenance of miscellaneous other power generation plant (Major only).
550 Rents.	554.1 Maintenance of other power production plant (Nonmajor only).
550.1 Operation supplies and expenses (Nonmajor only).	

<b>UNIFORM SYSTEM OF ACCOUNTS</b>	
<i>1. Power Production Expenses – Other Power Supply Expenses</i>	
<i>Operation</i>	
555 Purchased power.	557 Other expenses
556 System control and load dispatching (Major only).	

Detailed within the tables that follow are the USOA accounts in the transmission, regional market, and distribution functional areas. There is a significant amount of duplication between the operation and maintenance accounts defined for transmission and those defined for distribution. This is because many of the activities in these two utility functions are similar. For example, transmission operation account 563, *Overhead line expenses*, and distribution operation account 583, *Overhead line expenses*, include the same types of activities except that they apply to different utility functions. The transmission function includes all plant from the point of generation or receipt of power supply to the entrance to the distribution system. The distribution system includes all other plant required for delivery of power to customers. There also are similarities within each of the two functions between the operation accounts and the maintenance accounts. For example, distribution operation account 583, *Overhead line expenses*, and distribution maintenance account 593, *Maintenance of overhead lines*, represent different types of activities but all apply to the distribution system. Most of the distribution accounts apply to all public power utilities. The same is true for the transmission expenses of those utilities that have transmission facilities.

<b>UNIFORM SYSTEM OF ACCOUNTS</b>	
<i>2. Transmission Expenses</i>	
<i>Operation</i>	<i>Maintenance</i>
560 Operation supervision and engineering.	568 Maintenance supervision and engineering (Major only).
561.1 Load dispatch – Reliability.	569 Maintenance of structures (Major only).
561.2 Load dispatch – Monitor and operate transmission system.	569.1 Maintenance of computer hardware.
561.3 Load dispatch – Transmission service and scheduling.	569.2 Maintenance of computer software.
561.4 Scheduling, system control and dispatch services.	569.3 Maintenance of communication equipment.
561.5 Reliability planning and standards development.	569.4 Maintenance of miscellaneous regional transmission plant.
561.6 Transmission service studies.	570 Maintenance of station equipment (Major only).
561.7 Generation interconnection studies.	571 Maintenance of overhead lines (Major only).
561.8 Reliability planning and standards development services.	572 Maintenance of underground lines (Major only).
562 Station expenses (Major only).	573 Maintenance of miscellaneous transmission plant (Major only).
563 Overhead line expense (Major only).	574 Maintenance of transmission plant (Nonmajor only).
564 Underground line expenses (Major only).	
565 Transmission of electricity by others (Major only).	
566 Misc. transmission expenses (Major only).	
567 Rents.	
567.1 Operation supplies & expenses (Nonmajor).	

<b>UNIFORM SYSTEM OF ACCOUNTS</b>	
<i>3. Regional Market Expenses</i>	
<i>Operation</i>	<i>Maintenance</i>
575.1 Operation supervision.	576.1 Maintenance of structures and improvements.
575.2 Day-ahead and real time market administration.	576.2 Maintenance of computer hardware.
575.3 Transmission rights market administration.	576.3 Maintenance of computer software.
575.4 Capacity market administration.	576.4 Maintenance of communication equipment.
575.5 Ancillary services market administration.	576.5 Maintenance of miscellaneous market operation plant.
575.6 Market monitoring and compliance.	
575.7 Market facilitation, monitoring and compliance services.	
575.8 Rents.	

<b>UNIFORM SYSTEM OF ACCOUNTS</b>	
<i>4. Distribution Expenses</i>	
<i>Operation</i>	<i>Maintenance</i>
580 Operation supervision and engineering.	590 Maintenance supervision and engineering (Major only).
581 Load dispatching (Major only).	591 Maintenance of structures (Major only).
581.1 Line and station expenses (Nonmajor).	592 Maintenance of station equip. (Major only).
582 Station expenses (Major only).	592.1 Maintenance of structures and equipment (Nonmajor only).
583 Overhead line expenses (Major only).	593 Maintenance of overhead lines (Major only).
584 Underground line expenses (Major only).	594 Maintenance of underground lines (Major only).
585 Street lighting and signal system expenses.	594.1 Maintenance of lines (Nonmajor only).
586 Meter expenses.	595 Maintenance of line transformers.
587 Customer installations expenses.	596 Maint. of street lighting & signal systems.
588 Miscellaneous distribution expenses.	597 Maintenance of meters.
589 Rents.	598 Maintenance of misc. distribution plant.

The functional categories of expenses included in the accounts listed in the tables below are more administration oriented and the activities covered by these accounts are generally not considered to be part of the production and delivery of electricity. However, these customer service and administrative expenses are part of the overall operations required by the utility to serve its customers. The accounts in the *Customer accounts expenses* function represent common customer service administrative activities. However, the *Customer service and informational expenses* and *Sales expenses* categories are not used as frequently by public utilities similar to the Sample Public Power Utility. These accounts provide for costs associated with promotion and advertising of the utility programs and the use of electricity. The *Administrative and General Expenses* function includes a variety of costs which are incurred by a utility which support all facets of its operations.

<b>UNIFORM SYSTEM OF ACCOUNTS</b>	
<i>5. Customer Accounts Expenses Operation</i>	908 Customer assistance expenses (Major only).
901 Supervision (Major only).	909 Informational and instructional advertising expenses (Major only)
902 Meter reading expenses.	910 Miscellaneous customer service and informational expenses (Major only).
903 Customer records and collection expenses.	<i>7. Sales Expenses</i>
904 Uncollectible accounts.	<i>Operation</i>
905 Miscellaneous customer accounts expenses (Major only).	911 Supervision (Major only).
<i>6. Customer Service and Informational Expenses Operation</i>	912 Demonstrating and selling expenses (Major only).
906 Cust. service and informational expenses (Nonmajor only).	913 Advertising expenses (Major only).
907 Supervision (Major only).	916 Miscellaneous sales expenses (Major only).
	917 Sales expenses (Nonmajor only).

<b>UNIFORM SYSTEM OF ACCOUNTS</b>			
<i>8. Administrative and General Expenses</i>			
	<i>Operation</i>		
920	Administrative and general salaries.	928	Regulatory commission expenses.
921	Office supplies and expenses.	929	Duplicate charges - Credit.
922	Administrative expenses transferred -	930.1	General advertising expenses.
923	Outside services employed.	930.2	Miscellaneous general expenses.
924	Property insurance.	931	Rents.
925	Injuries and damages.	933	Transportation expenses (Nonmajor only).
926	Employee pensions and benefits.		<i>Maintenance</i>
927	Franchise requirements.	935	Maintenance of general plant.

### **Other Utility Operating Income and Expenses**

The remainder of the accounts defined in the USOA, under the *Utility Operating Income* classification don't have additional subsidiary detail accounts, as do the operating revenues, operation expenses and maintenance expenses.

Accounts 403 through 407 provide for various depreciation and amortization expenses for the periodic write-offs of capital and various deferred assets associated with utility property. Account 408 is defined to accumulate expenses associated with various taxes paid by a utility, other than income taxes.

The accounts from 400 through 408 are the primary ones in the *Utility Operating Income* classification which will be used by small public power systems. The 409 through 411.4 accounts relate to accounting for current and deferred income taxes which normally would not be applicable to public power systems. Accounts 411.6 through 411.9 track the gains and losses on the disposition of plant and allowances. Accounts 412 and 413 are defined for special revenues and expenses related to the leasing of electric utility plant to others. Again, these accounts along with account 414, for miscellaneous income, are not used frequently by public power systems.

### **Other Income and Deductions**

The second classification area on the utility income statement is *Other Income and Deductions*. The table on the following page lists the accounts defined in the USOA for this classification. Like the *Utility Operating Income* section, this section includes both revenues and expenses. However, this classification provides for the accounting of the net profit or loss on activities of the utility which are not pursued as a part of the normal operations of providing electric utility service to customers. Nonutility activities include things such as selling merchandise like appliances and light bulbs, performing contract services, and rental income from leasing of nonutility property. This category also includes other forms of income such as investment income and other expenses that are not usually accepted as required operating expenses by regulators, such as charitable donations and civic and political involvement of the utility. Finally, this classification includes accounts

for recognizing the current and deferred income tax implications of the added net income earned from the non-operating activities of the utility.

The *Other Income and Deductions* classification includes accounts for many issues affecting public power systems. In particular, these accounts provide for the accounting of various interdepartmental or inter-fund activities between the electric department and the other municipal departments. An example is the use of electric department employees to perform work for the parks department. In considering the use of the accounts in this classification, public power utilities should review the previous discussion of the above and below-the-line concept. In the definition of that concept, the expenses provided for in the accounts within this category would be below-the-line and therefore, not included in the utility's revenue requirement.

<b>UNIFORM SYSTEM OF ACCOUNTS</b>	
<i>2. Other Income and Deductions</i>	
<i>Other Income</i>	426 Reserved.
415 Revenues from merchandising, jobbing, and contract work.	426.1 Donations.
416 Costs and expenses of merchandising, jobbing, and contract work.	426.2 Life insurance.
417 Revenues from nonutility operations.	426.3 Penalties.
417.1 Expenses of nonutility operations.	426.4 Expenditures for certain civic, political and related activities.
418 Nonoperating rental income.	426.5 Other deductions.
418.1 Equity in earnings of subsidiary companies (Major only).	<i>Taxes Applicable to Other Inc &amp; Ded</i>
419 Interest and dividend income.	408.2 Taxes other than income taxes, other income and deductions.
419.1 Allowance for other funds used during construction.	409.2 Income tax, other income and deductions.
421 Miscellaneous nonoperating income.	409.3 Income taxes, extraordinary items.
421.1 Gain on disposition of property.	410.2 Provision for deferred income taxes, other income and deductions.
<i>Other Income Deductions</i>	411.2 Provision for deferred income taxes-Credit, other income and deductions.
421.2 Loss on disposition of property.	411.5 Investment tax credit adjustments, non-utility operations.
425 Miscellaneous amortization.	420 Investment tax credits.

## **Interest Charges**

On the income statement, *Interest charges* follow the *Other Income and Deductions* classification section. The accounts as defined in the USOA relating to interest are listed on the following page. This section includes all interest costs on both long-term and short-term debt issued to finance the capital activities and the on-going operations of the utility. It also includes the amortization expenses of gains and losses on reacquired debt and other expenses incurred associated with debt financing. For most utilities, including public power systems, the interest on long-term debt makes up the majority of the total expenses in this classification.

<b>UNIFORM SYSTEM OF ACCOUNTS</b>	
<i>3. Interest Charges</i>	
427 Interest on long-term debt.	430 Interest on debt to associated
428 Amortization of debt discount and expense.	431 Other interest expense.
428.1 Amortization of loss on reacquired debt.	432 Allowance for borrowed funds used during construction – Credit.
429 Amortization of premium on debt-Cr.	
429.1 Amortization of gain on reacquired debt-Cr.	

Interest charges account 432, Allowance for borrowed funds used during construction – Credit, (AFUDC) is used to account for the offset of interest which is capitalized to construction projects. The concept of AFUDC was introduced in Chapter 3, under the *Electric Plant Instructions* section. Any amount credited to this account reflects a reduction in the long-term debt interest expense deducted in current net income. However, many small public power utilities do not use this account because they are not often involved in long-term construction projects in which AFUDC can become a significant component of the overall project cost.

### **Extraordinary Items**

The final area defined by the USOA for inclusion on the income statement is *Extraordinary Items*. There are only two accounts in this classification as shown in the table below, one for income and one for expenses.

<b>UNIFORM SYSTEM OF ACCOUNTS</b>	
<i>4. Extraordinary Items</i>	
434 Extraordinary income.	435 Extraordinary deductions.

An extraordinary item is defined in accounting as follows:

*Extraordinary Items* are events and transactions that are distinguished by their unusual nature **and** by the infrequency of their occurrence. Thus, **both** of the following criteria should be met to classify an event or transaction as an extraordinary item:

- (a) **Unusual nature**—the underlying event or transaction should possess a high degree of abnormality and be of a type clearly unrelated to, or only incidentally related to, the ordinary and typical activities of the entity, taking into account the environment in which the entity operates.
- (b) **Infrequency of Occurrence**—the underlying event or transaction should be of a type that would not reasonably be expected to recur in the foreseeable future, taking into account the environment in which the entity operates.

The USOA further defines an extraordinary item as one which would significantly distort the current year's income computed before *Extraordinary Items*, if reported other than as an extraordinary item. Under the USOA, the amount of such an item should be greater than approximately five percent of the net income (before the effect of the item) to be classified as extraordinary. Due to these highly restrictive definitions, public power systems rarely recognize an event as an extraordinary item.

## **A USOA Income Statement**

The next three pages present an income statement trial balance for the Sample Public Power Utility. This trial balance showed a non-uniform account structure for revenues and expenses which is similar to that used by a public power system that does not use the FERC systems of accounts. The tables show the comparison of the income statement accounts under the USOA with the sample account structure.

**INCOME STATEMENT TRIAL BALANCE - ACCOUNT CONVERSION**  
**Sample Public Power Utility**

Page 1 of 3

Non-Uniform System		FERC Uniform System of Accounts		
Account	Existing Description	Account	FERC Description	Amount
<b>Revenues</b>				
35000	Residential Sales	44000	Residential Sales	\$2,337,000
35001	Commercial Sales	44200	Commercial and Industrial Sales	2,931,000
35002	Industrial Sales	44200	Commercial and Industrial Sales	3,124,000
35009	City Department Sales	44500	Other Sales to Public Authorities	229,000
35010	Interdepartmental Sales	44800	Interdepartmental Sales	324,000
36210	Interest on Pooled Operating Cash	41900	Interest and Dividend Income	152,000
37000	Customer Forfeited Discounts	45000	Forfeited Discounts	25,000
37003	Sale of Assets	42110	Gains on Dispositions of Utility Plant	1,000
37050	Bad Debts Recoveries	90400	Uncollectible Accounts	1,000
37058	Misc. Sales - Other	42100	Miscellaneous Non-operating Income	150,000
37065	Reconnection Charges	45100	Miscellaneous Service Revenues	8,000
37090	Other Revenue	45600	Other Electric Revenue	2,000
			Total Revenues	\$9,284,000
<b>Expenses Department 11 – Electric</b>				
7008	Supervision and Engineering	50000	Operation Supervision and Engineering	\$453,000
7100	Vehicle Expense	50600	Miscellaneous Steam Power Expense	2,000
7600	Fuel – Coal	50100	Fuel – Steam Generation	46,000
7601	Fuel – Gas	54700	Fuel – Other Generation	2,626,000
7620	Station Expenses – Boiler Plant	50200	Steam Expense	10,000
7625	Station Expenses – Cooling Tower	50500	Electric Expense	140,000
7655	Supplies	50600	Miscellaneous Steam Power Expense	1,000
7656	Plant – Water	50600	Miscellaneous Steam Power Expense	108,000
7657	Plant – Steam	50300	Steam from Other Sources	6,000
7659	Plant – Sewer	50600	Miscellaneous Steam Power Expense	26,000
7775	Coal Handling Costs	50100	Fuel – Steam Generation	2,000
8050	Buildings	55200	Maintenance of Structures	1,000
8101	Boiler Plant	51200	Maintenance of Boiler Plant	220,000
8102	Electric Plant	51300	Maintenance of Electric Plant	172,000
8640	Small Tools and Equipment	50600	Miscellaneous Steam Power Expense	4,000
8650	Supplies	51400	Maintenance of Miscellaneous Steam	1,000
8900	Maintenance – Miscellaneous	51400	Maintenance of Miscellaneous Steam	7,000
9000	Depreciation	40300	Depreciation Expense	325,000
9050	Purchased Power	55500	Purchased Power	2,183,000
			Total Department 11	\$6,333,000

**INCOME STATEMENT TRIAL BALANCE - ACCOUNT CONVERSION****Sample Public Power Utility****Page 2 of 3**

Non-Uniform System		FERC Uniform System of Accounts		
Account	Existing Description	Account	FERC Description	Amount
Department 13 – Electric Distribution				
Expenses				
7008	Supervision and Engineering	58000	Operation Supervision and Engineering	\$35,000
7100	Vehicle Expense	58800	Miscellaneous Distribution Expense	15,000
7640	Customer Service Expense	58700	Customer Installations Expense	11,000
7655	Supplies	58800	Miscellaneous Distribution Expense	1,000
7660	Safety Equipment	58300	Overhead Line Expense	5,000
7700	Miscellaneous Operation Costs	58800	Miscellaneous Distribution Expense	2,000
8000	Supervision and Engineering	59000	Operation Supervision and Engineering	35,000
8050	Buildings	59100	Maintenance of Structures	4,000
8620	Station Equipment	59200	Maintenance of Station Equipment	1,000
8621	Overhead Lines	59300	Maintenance of Overhead Lines	130,000
8622	Underground Lines	59400	Maintenance of Underground Lines	46,000
8630	Street Lighting and Signal	59600	Maintenance of Street Lights and Signal	36,000
8635	Meters	59700	Maintenance of Meters	32,000
8640	Line transformers	59500	Maintenance of Line Transformers	6,000
8645	Tools and Equipment	59800	Maintenance of General Distribution	16,000
8900	Miscellaneous	59800	Maintenance of General Distribution	2,000
8950	PCB Testing and Disposal	59800	Maintenance of General Distribution	17,000
9000	Depreciation	40300	Depreciation Expense	298,000
			Total Department 13	<u>\$692,000</u>
Expenses	Department 14 – Customer			
7600	Customer Account Costs	90300	Customer Records and Collection	\$64,000
7650	Uncollectible Accounts	90400	Uncollectible Accounts	3,000
			Total Department 14	<u>\$67,000</u>
Expenses	Department 15 –Admin/General			
7005	PERA	92600	Employee Pensions and Benefits	\$62,000
7006	Social Security	40810	Taxes Other Than Income Taxes	63,000
7007	Health and Life Insurance	92600	Employee Pensions and Benefits	117,000
7009	Medicare	40800	Taxes Other Than Income Taxes	15,000
7028	Administrative and General	93020	Miscellaneous General Expenses	285,000
7029	Data Processing	92300	Outside Services Employed	78,000
7030	Office Supplies and Expenses	92100	Office Supplies and Expenses	1,000
7033	Admin. – Subscr/Memberships	92100	Office supplies and Expenses	7,000
7034	Travel, Conferences and Schools	92100	Office Supplies and Expenses	2,000
7036	Fire and Extended Coverage	92400	Property Insurance	48,000
7037	Worker's Compensation	92600	Employee Pensions and Benefits	27,000
7038	Communications	93020	Miscellaneous General Expenses	5,000

**INCOME STATEMENT TRIAL BALANCE - ACCOUNT CONVERSION****Sample Public Power Utility****Page 3 of 3**

Non-Uniform System		FERC Uniform System of Accounts		
Account	Existing Description	Account	FERC Description	Amount
Department 15 – A&G				
Expenses continued				
7039	Legal Fees	92300	Outside Services Employed	\$1,000
7040	Transfer to City	92700	Franchise Requirements	489,000
7041	General Liability Insurance	92400	Property Insurance	46,000
7042	Vehicle Insurance	92400	Property Insurance	4,000
7044	Boiler and Machinery Insurance	92400	Property Insurance	44,000
7050	Vacation, Sick and Other Pay	92000	Administrative and General Salaries	178,000
7055	Cost of Sales - Private Customer	42100	Miscellaneous Nonoperating Income	68,000
7058	Cost of Sales – Other	42100	Miscellaneous Nonoperating Income	1,000
7060	Miscellaneous General Expenses	93020	Miscellaneous General Expenses - Other	1,000
7080	Permits, Fees and Leases	93100	Rents – Administrative and General	9,000
7085	Obsolete/Surplus Inventory	42120	Loss on Disposition of Property	4,000
8450	Office Furniture and Equipment	93500	Maintenance of General Plant	1,000
8800	Building	93500	Maintenance of General Plant	1,000
9001	Interest Expense Bonds	42700	Interest on Long-term Debt	144,000
9005	Consultant Fees	92300	Outside Services Employed	14,000
9065	Bond Discount	42800	Amortization of Debt Discount and	2,000
Total Department 15				<u>\$1,717,000</u>
Expenses Department 16 – Capital				
5005	Buildings	10700	CWIP	\$5,000
5010	Machinery and Equipment	10700	CWIP	27,000
5015	Vehicles	10700	CWIP	16,000
5020	Tools and Work Equipment	10700	CWIP	22,000
5025	Office Furniture and Equipment	10700	CWIP	2,000
5050	Improvements – Computer	10700	CWIP	4,000
5100	Construction Work In Progress	10700	CWIP	28,000
5302	Meters and Regulators	10700	CWIP	30,000
5305	Overhead Conductors and	10700	CWIP	56,000
5306	Underground Conductors and	10700	CWIP	151,000
5307	Downtown Mall Project – PUC	10700	CWIP	15,000
5308	South Substation	10700	CWIP	146,000
5309	Boiler Plant Improvements	10700	CWIP	40,000
5350	Line Transformers and Switches	10700	CWIP	75,000
5355	69 KV Transmission Line (East)	10700	CWIP	5,000
5356	69 KV Transmission Line (West)	10700	CWIP	14,000
5360	Northside Substation	10700	CWIP	157,000
5391	Capitalization of Fixed Assets	10700	CWIP	(793,000)
Total Department 16				<u>\$0</u>
Total Expenses				<u>\$8,809,000</u>
Net Income				<u>\$475,000</u>

Note that several accounts from the sample trial balance are reclassified when converted to the FERC USOA system. For example, account 36210, *Interest on Pooled Operating Cash*, is listed under *Revenues* in the Sample Public Power Utility's current account structure. However it is assigned to account 41900, *Interest and Dividend Income*, in the USOA as part of the *Other Income and Deductions* classification. Similarly, *Bad debt - recoveries*, account 37050, is also listed as a revenue item, but is a reduction to expense account 90400 under the USOA. Probably the most significant illustration of this kind of misclassification is that the capital outlays are included as expenses rather than as construction work in progress in balance sheet account 10700.

For many public power systems, such as the Sample Public Power Utility, the detailed accounting for expenditures is captured by division or department responsibility area, using what is termed as an 'incurred cost' basis. As shown above, the same account numbers are used to account for the same activity within each organizational area. For example, account 7008, *Supervision and Engineering*, is used in both the Electric Production Department and the Electric Distribution Department. These accounts are defined on the basis of the type of resource or cost element incurred, i.e., labor, supplies, services, etc.

In contrast, the FERC USOA captures expenditure data on a functional, 'applied cost' basis where unique accounts are defined within the functional categories as illustrated above. Each unique account represents a separate functional work area or activity to which the expenditure was applied. The systems of accounts used by the Sample Public Power Utility identify expenditures by what is purchased and by whom; the FERC system identifies expenditures by the purpose for which they are incurred.

The table on the next page provides a more formal income statement presentation often used by utilities in published financial reports. This table also includes an identification of the FERC USOA accounts which are summarized on each line of the income statement.

**INCOME STATEMENT****Sample Public Power Utility**

	<b>FERC USOA Accounts</b>	<b>Year End Amt.</b>
<b>Utility Operating Income:</b>		
Revenues:		
Sales of Electricity	400: 440 - 449	\$ 8,945,000
Other Operating Revenues	400: 450 - 456	35,000
Total Operating Revenue		<u>\$ 8,980,000</u>
Operating Expenses:		
Fuel Used For Generation	401: 501, 547	\$ 2,674,000
Power Purchased	401: 555 - 557	2,183,000
Other Operating Expenses	401: 500, 502 - 508, 517 - 525, 535- 540, 546 - 550, 560 - 567, 580 - 589, 901 - 933	1,768,000
Maintenance	402: All	728,000
Depreciation	403 - 407	623,000
General Taxes	408	78,000
Income Taxes(or Payments In-Lieu-Of)	409 - 411 or 927	489,000
Total Operating Expenses		<u>\$ 8,543,000</u>
Other Operating Income	412 - 414	\$ -
Net Operating Income (Loss)		<u>\$ 437,000</u>
<b>Other Income and Deductions:</b>		
Interest Income	419	\$ 152,000
Allowance for Equity Funds Used During Constr.	419.1	-
Other - Net	408.2, 409.2, 410.2, 411.5, 420, 415 - 418, 421 - 426.5	32,000
Net Other Income and Deductions		<u>\$ 184,000</u>
Net Income Before Interest Charges		<u>\$ 621,000</u>
<b>Interest Charges:</b>		
Interest on Long-term Debt	427	\$ 144,000
Other Interest Charges	428 - 431	2,000
Allowance for Funds Used During Construction	432	-
Total Interest Charges		<u>\$ 146,000</u>
Net Income (Loss)		<u><u>\$ 475,000</u></u>

# **Public Utility Accounting**

## **Chapter 6**

### **Introduction to Accounting Applications: FERC Uniform System of Accounts**



The first five chapters of this guide discussed the need for a standardized system of accounting for electric utilities and reviewed the content of the Federal Energy Regulatory Commission (FERC) Uniform System of Accounts (USOA). This chapter will introduce several basic accounting applications and illustrate the use of the USOA for those applications.

In the arena of automated or computerized accounting systems, a group of related processes performed in those systems is sometimes referred to as an application. These processes provide the means by which information is entered, formulated, formatted, recorded, and in some cases, forwarded to other systems. For many organizations, each application area is actually processed in a separate computer software system (sometimes referred to as feeder systems), with only the accounting information being passed on to the general accounting systems.

Each individual system normally exists primarily to record, accumulate, summarize and report information relating to its specific area, with the secondary purpose of providing accounting data. For example, a human resources/payroll system accumulates and maintains information pertaining to all of the employees of the utility. This would include personal information regarding each employee, and additional information about their family, benefits status, educational background, experience, work history (job titles), current pay rate, compensation history, etc. This information is used by human resources personnel to manage the work force and the utility's employee benefits plans. It is not needed in the utility's general accounting system. However, the pay and benefits data is used to produce the utility's payroll. Since the payment of the periodic payroll does have accounting impacts, the resulting payroll cost information must be provided to the general accounting system to be properly reflected in the utility's financial statements.

For electric utilities, every application has its own set of unique, FERC-based financial accounting information which it produces to support the general accounting function. It is the accounting impacts of the processes performed in these applications for electric utilities that will be illustrated in this chapter. The various accounting applications often used by electric utilities include:

- ❖ Human Resources/Payroll
- ❖ Accounts Payable
- ❖ Materials and Supplies Inventory
- ❖ Transportation/Power Operated Equipment Usage
- ❖ Customer Billing/Accounts Receivable
- ❖ Work Order/Plant Accounting
- ❖ General Journal Entries

Since this guide is intended as an introduction to the FERC USOA, not all of these accounting applications are covered here. Three selected applications from the list above are reviewed in the following sections. The reviews of the applications presented here are not intended to cover comprehensively all aspects of the accounting activity within those applications. Simple examples are included to illustrate basic principles of FERC accounting for each application.

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## Human Resources/Payroll

Payrolls are normally generated by a human resources/payroll system, using a personnel database that includes salary information for all employees. The hours worked by employees and the associated payroll costs are distributed to the proper accounts corresponding to the activities on which those hours were spent.

The payroll process produces paychecks issued to the employees based on the total hours worked by each employee multiplied by their hourly salary. The payroll process also provides an account distribution of those labor costs, summarized by account, for the entire payroll.

## **Accounting for Labor Costs**

The proper accounting for labor costs by electric utilities is addressed throughout the FERC USOA. The General, Electric Plant, and Operating Expense Instructions sections discussed in Chapter 3 of this guide provide certain specific requirements for recording labor costs. General instructions numbers 9, *Distribution of pay and expenses of employees*, and 10, *Payroll Distribution*, were briefly reviewed in a previous chapter. These two instructions stress the importance of proper categorization of labor costs among the various expense and asset classifications on the utility's financial statements. The reason for this is that payroll costs represent significant expenditures for a utility and the impact that the accounting treatment of these expenditures has on a utility's retail rates can be substantial. Treatment of a labor expenditure as an expense item or as an asset item determines whether that expenditure is completely recovered by the utility in its current period rates or recovered ratably over a period of years. Electric plant instruction 3, *Components of construction costs*, includes a description of the type of labor for which the costs are to be included in capitalized construction costs. In addition, operating expense instructions numbers 1, *Supervision and engineering*, 2, *Maintenance*, and 4, *Training costs*, include accounting for specific types of labor activities.

Further definition of the proper accounting assignment of labor charges for operations and maintenance activities, as well as those that are to be capitalized, is included in the detailed descriptions provided for each detail account in the USOA. To the extent possible, labor hour costs are to be charged directly to the accounts to which the activities performed correspond. The detail account definitions are specific as to the activities to be included in each account.

Each functional area of expense (electric transmission operation, electric distribution maintenance, etc.) includes a *Supervision and engineering* account. The proper use of these accounts is defined in both the detail account descriptions and the first operating expense instruction. Each of these accounts is to include only labor for the general supervision or direction of the applicable functional area. Supervision of a specific activity within that area is to be charged directly to the account corresponding to that activity.

Labor activities which do not relate to the functional operating areas as defined in those accounts are provided for in the administrative and general expense accounts. This generally includes the salaries of management and administrative personnel, which are chargeable to general utility operations but not to specific operating functions.

There are times when an activity performed by utility employees is correctly chargeable to more than one account. The costs associated with these activities require allocation to the proper accounts based on some prescribed factors. These labor costs can be accumulated in a special deferred asset account and then transferred to the various appropriate accounts based on defined percentages or other statistically based factors. For example, labor hours spent by employees in receiving safety training could be charged to any of the various functional accounts to which the employees charge their regular productive hours. This is logical because the training received allows the employees to perform these productive activities more safely and efficiently. Therefore, the pay for these hours for safety training may be allocated to the different productive activity accounts based on the percentage of productive hours charged to each account relative to the total of all productive hours.

## **Labor Accounting Illustration**

To illustrate these points, three sample weekly time sheets for employees of the Sample Public Power Utility are shown on the page that follows. Listed below are the assumed hourly salaries for the three individuals for whom time sheets are shown on the page.

Al Foreman	\$17.00/Hour
Bob Manager	\$24.00/Hour
Charlie Supervisor	\$19.00/Hour

The tables provide the labor cost distribution for this group of employees for a one week period. This labor cost distribution shows that these employees charged their labor for the week to a total of seven different accounts. They expended labor hours in supervision of both specific activities and of general functional operating areas, e.g. Al Foreman charged labor to account 58300, *Overhead line expenses*, for hours spent supervising line patrol activities and to account 58000, *Operation supervision and engineering*, for functional supervision activities. Likewise, Charlie Supervisor charged labor to account 59300, *Maintenance of overhead lines*, for time spent supervising tree trimming work and to account 59000, *Maintenance supervision and engineering*, for general distribution maintenance supervision. Also, Bob Manager charged most of his labor hours for the week to detail account 92000, *Administrative and general salaries*, for time spent on general utility administration which was not chargeable to other specific operating activities.

TIME SHEET - SAMPLE PUBLIC POWER UTILITY						
Employee Name: Al Foreman						
Work Description	Account	Week of August 1				
		M	T	W	TH	F
<i>Supervision of Patrolling of Lines</i>	58300	6		5	4	5
<i>Investigating Service Complaints</i>	58700			3	3	1
<i>Distribution Operating Supervision</i>	58000	2	8		1	2
<b>Totals</b>		<u>8</u>	<u>8</u>	<u>8</u>	<u>8</u>	<u>8</u>

  

TIME SHEET - SAMPLE PUBLIC POWER UTILITY						
Employee Name: Bob Manager						
Work Description	Account	Week of August 1				
		M	T	W	TH	F
<i>Utility Administration</i>	92000	8	8		4	6
<i>Distribution Supervision Clearing</i>	18401			6	4	2
<i>Investigate Service Complaints</i>	58700			2		
<b>Totals</b>		<u>8</u>	<u>8</u>	<u>8</u>	<u>8</u>	<u>8</u>

  

TIME SHEET - SAMPLE PUBLIC POWER UTILITY						
Employee Name: Charlie Supervisor						
Work Description	Account	Week of August 1				
		M	T	W	TH	F
<i>Distribution Maintenance Supervision</i>	59000		8	3	5	4
<i>Distribution Supervision Clearing</i>	18401	6		5	3	2
<i>Supervision of Tree Trimming</i>	59300	2				2
<b>Totals</b>		<u>8</u>	<u>8</u>	<u>8</u>	<u>8</u>	<u>8</u>

A labor cost distribution summary for this group of employees for the period is shown in the table below. Final dollar amounts charged to accounts have been determined by applying each individual employee's hourly rate to the hours per their timesheets.

### LABOR COST DISTRIBUTION - Week of August 1 Sample Public Power Utility

Account	Description	Hours	Amount
18401	Clearing accounts - Distribution supervision	28	\$ 592
58000	Operation supervision and engineering	13	221
58300	Overhead line expenses	20	340
58700	Customer installation expenses	9	167
59000	Maintenance supervision and engineering	20	380
59300	Maintenance of overhead lines	4	76
92000	Administrative and general salaries	26	624
<b>Totals</b>		<b>120</b>	<b>\$ 2,400</b>

### Labor Loadings

Another important aspect of the processing and accounting for payroll is the labor loadings. Labor loadings are the systematic allocation of payroll costs associated with various categories of non-productive labor, and certain other expenses which represent indirect compensation in the form of benefits to employees. Nonproductive labor costs include vacations, sick, and holiday pay, and lost time pay due to inclement weather and transportation and equipment failure. Employee benefits include items paid by the utility on behalf of the employees such as unemployment and social security taxes, pension plans, and group insurance. Since the nonproductive labor costs and the employee benefits costs can't be directly associated with specific operating and capital activities, they are allocated to the accounts that the productive labor is charged to, as an added cost (loading) to those accounts.

When employee benefits costs are allocated, only the portion allocated to capital activities is charged to the same accounts that productive labor is charged to; the portion allocated to operating activities is charged to specifically defined accounts, not to the accounts corresponding to the productive activities. For example, social security taxes paid by the utility on the wages it pays for labor hours spent on capital projects are assigned to those same projects. However, the social security taxes associated with wages for operating activities are assigned to account 408.1, *Taxes other than income taxes, utility operating income* rather than to operating and maintenance expense accounts. These loadings are frequently applied as a percentage of the direct labor cost of the productive labor charged to each account. This percentage is normally based on the ratio of historical costs of these nonproductive labor hours plus the employee benefits to the total productive labor costs for some past period.

The table below illustrates the impact of labor loadings on the accounting distribution of labor costs. It shows the addition of the loadings to the summary labor cost distribution presented on the prior page. The loading for nonproductive labor was assumed to be equal to 15 percent of the bare labor costs and the loading for employee benefits was assumed at the rate of 10 percent of the bare labor charges. Thus, the total amount charged to the individual accounts includes an additional 25 percent in labor loadings above the direct cost of labor:

**LOADED LABOR COST DISTRIBUTION - Week of August 1**  
**Sample Public Power Utility**

Account	Description	Hours	Amount	Loadings		Loaded Amount
				Nonprod Labor 15%	Empl. Bene. 10%	
18401	Clearing accts - Distr. supervision	28	\$ 592	\$ 89	\$ 59	\$ 740
58000	Operation supervision and eng.	13	221	33	22	276
58300	Overhead line expenses	20	340	51	34	425
58700	Customer installation expenses	9	167	25	17	209
59000	Maintenance supervision and eng.	20	380	57	38	475
59300	Maintenance of overhead lines	4	76	11	8	95
92000	Administrative and general salaries	26	624	94	62	780
<b>Totals</b>		<b>120</b>	<b>\$2,400</b>	<b>\$ 360</b>	<b>\$ 240</b>	<b>\$ 3,000</b>

In order to further explain the accounting for loading amounts associated with nonproductive labor, the costs of vacation pay provides a good example. The amount of vacation pay factored into the calculation of the loading rate is usually based on the total historical amount of vacation hours taken by all employees, adjusted for changes in the employment base and the levels of vacation earned by the current employees. Through the loading process, the costs of the vacation pay expected to be issued are charged to the various expense and capital accounts with the actual productive labor charges. Therefore, the costs of the vacation pay are recognized without regard to, when the vacation is actually taken by the employees. This represents a cost "accrual" basis of accounting for vacation (see general instruction number 11, *Accounting to be on accrual basis*, discussed in Chapter 3). When the cost is charged through the loadings, a corresponding liability is set up in FERC account 242, *Miscellaneous current and accrued liabilities*, to reflect the value of vacation pay accrued but not actually paid to employees yet. When the employees actually take vacation and reflect vacation hours on their time sheets, the pay issued for those hours is charged against the liability account, thus reducing the outstanding vacation pay due.

### Labor Clearing Accounts

From the previous examples, the reader can see that two of the employees of the Sample Public Power Utility also charged a portion of their labor hours to account 18401 which is defined for this illustration as a clearing account for distribution supervision activities. This account can be used to illustrate the process of clearing labor costs (and any other types of accumulated costs) to multiple expense accounts. Since this clearing account was defined to account for "Distribution supervision", it is assumed that these costs will be allocated between distribution accounts 58000, *Operation supervision and engineering*, and 59000, *Maintenance supervision and engineering*. Also, it was assumed that the \$740.00 in loaded labor costs to this clearing account (see the Loaded Labor Cost Distribution table above) are to be allocated based on the ratio of the direct hours charged to accounts 58000 and 59000, individually, to the total hours charged to both accounts. From the labor distribution data from the table, these ratios are determined to be 13/33 and 20/33, for accounts 58000 and 59000, respectively. Application of these ratios to the total charges to account 18401 results in allocations of \$291.52 to account 58000 and \$448.48 to account 59000. The total charges to account 18401 would be cleared to zero and the \$740.00 balance

would be transferred to the two expense accounts as calculated. This clearing process normally is done as part of the monthly accounting closing routine.

The labor loading percentages and clearing account allocation factors used in these examples were selected for illustrative purposes only. There are many alternative methods and bases for performing these processes. Each public power utility should determine which methods are most appropriate for its system.

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## **Materials and Supplies Inventory**

The materials and supplies inventory normally includes records of the number and value of various parts, components, and materials on hand which are needed to construct and maintain electric plant and other general use facilities used in the operations of the utility. Utilities may also keep inventory records for miscellaneous office supplies. The inventory records are necessary because utilities must purchase the materials and supplies in advance in order to have the items available when needed.

### **Accounting for Materials and Supplies**

Since it is normally not known at the time materials items are purchased what activity they will be used for, the costs cannot be charged to the proper expense or capital accounts until the items are issued from the materials storeroom. Therefore, the accumulated cost of items on hand represents an asset of the utility. The inventory value is maintained on the utility accounting records in asset account 154, *Plant materials and operating supplies*.

When utilities purchase various inventory items, the quantity and costs associated with those items are added to the inventory amounts and values for each unique item in the inventory records. The inventory for specific items is decreased when quantities of items are issued out of the materials and supplies on hand. The FERC USOA allows utilities to maintain the inventory value for each item using the cumulative average cost, first-in-first-out, or any other costing method considered generally accepted accounting practice. However, most utilities keep inventory values at average cost. Under this method, the accumulated total cost of all units on hand of an individual item is divided by the total number of units on hand to calculate the average cost per unit of that item. Therefore, when items are issued from the inventory, the inventory value for each specific item is reduced by the quantity issued for each item multiplied by the current inventory average cost for the item. This inventory reduction represents the transfer of corresponding amounts to the various operating, maintenance, and construction accounts relating to the activities for which the materials are issued.

### **Materials Inventory Illustration**

The table on the page that follows presents a sample excerpt of a Materials Inventory Summary for the Sample Public Power Utility. The table shows beginning of period inventory records for four unique items of material commonly used by electric utilities. It then lists several purchases of additional units of these same items and illustrates the impacts on the inventory values and number of units on hand in the inventory records for each of the four items due to the addition of the purchased units. Note how the price per unit for each item has changed from the beginning inventory to the ending

inventory. This reflects the impact of the purchase price of the additional units on the average cost of the inventory on hand for each item.

### MATERIALS INVENTORY SUMMARY - Before Issues Sample Public Power Utility

#### BEGINNING INVENTORY:

Item	Description	Units	Unit of Measure	Price per unit	Total Cost
101	Poles, Wood, Class 1, 50 ft.	60	Ea.	\$235.00	\$ 14,100
111	Brackets, Armless, Steel 18 inch	125	Ea.	34.75	4,344
112	Crossarm, Wood, 8 ft.	30	Ea.	57.20	1,716
120	Conductor, No. 2 ACSR	55,000	M/Ft.	101.45	5,580
<b>Totals</b>					<b>\$ 25,740</b>

#### PURCHASES:

Item	Description	Units	Unit of Measure	Price per unit	Total Cost
101	Poles, Wood, Class 1, 50 ft.	35	Ea.	\$250.00	\$ 8,750
111	Brackets, Armless, Steel 18 inch	20	Ea.	30.00	600
112	Crossarm, Wood, 8 ft.	15	Ea.	55.00	825
111	Brackets, Armless, Steel 18 inch	10	Ea.	35.00	350
120	Conductor, No. 2 ACSR	24,000	M/Ft.	104.00	2,496
120	Conductor, No. 2 ACSR	19,000	M/Ft.	110.00	2,090
111	Brackets, Armless, Steel 18 inch	10	Ea.	36.00	360
<b>Totals</b>					<b>\$ 15,471</b>

#### ENDING INVENTORY (before issues):

Item	Description	Units	Unit of Measure	Price per unit	Total Cost
101	Poles, Wood, Class 1, 50 ft.	95	Ea.	\$240.53	\$ 22,850
111	Brackets, Armless, Steel 18 inch	165	Ea.	34.27	5,654
112	Crossarm, Wood, 8 ft.	45	Ea.	56.47	2,541
120	Conductor, No. 2 ACSR	98,000	M/Ft.	103.73	10,166
<b>Totals</b>					<b>\$ 41,211</b>

Electric materials are usually issued out of a materials storeroom as they are required for various construction and maintenance projects. When they are issued, a record is made of how many units of each item are disbursed and to which project or account they are to be charged. This record serves as the source of information for updating the inventory records and provides for an account distribution to be passed to the general accounting records for materials and supplies issued from inventory. On the next page, three sample materials issue tickets for projects of the Sample Public Power Utility are presented for illustrative purposes.

**MATERIAL ISSUE TICKET - SAMPLE PUBLIC POWER UTILITY***Employee Name: Dave Lineman*

Description	Item	Account	Qty. Issued	Qty. Returned	Qty. Salvaged
50 Ft. Wood Pole	101	10701	14		
8 Ft. Wood Crossarms	112	10701	14		

**MATERIAL ISSUE TICKET - SAMPLE PUBLIC POWER UTILITY***Employee Name: Ernie Electrician*

Description	Item	Account	Qty. Issued	Qty. Returned	Qty. Salvaged
8 Ft. Wood Crossarms	112	59310	10		
Conductor	120	59310	5,000		
Conductor	120	59320	2,000		

**MATERIAL ISSUE TICKET - SAMPLE PUBLIC POWER UTILITY***Employee Name: Dave Lineman*

Description	Item	Account	Qty. Issued	Qty. Returned	Qty. Salvaged
50 Ft. Wood Pole	101	10701	1		
Conductor	120	10701	25,000		
8 Ft. Wood Crossarms	112	10701	4		
Galvanized Brackets	111	10701	40		

The table below shows the impact of the materials issue tickets on the inventory records. The ending inventory before issues is the same as what was presented previously. It is followed by a list of the total issued items and their associated value. At the bottom of the table, the revised ending inventory illustrates the change in the inventory records after deducting the materials issued. Note that the average inventory value for each item is the same before and after deducting the materials issues even though the total inventory value decreased. This is because the materials were issued at the existing average cost for each item.

### Sample Public Power Utility

**ENDING INVENTORY (before issues):**

Item	Description	Units	Unit of Measure	Price per unit	Total Cost
101	Poles, Wood, Class 1, 50 ft.	95	Ea.	\$240.53	\$ 22,850
111	Brackets, Armless, Steel 18 inch	165	Ea.	34.27	5,654
112	Crossarm, Wood, 8 ft.	45	Ea.	56.47	2,541
120	Conductor, No. 2 ACSR	98,000	M/Ft.	103.73	10,166
<b>Totals</b>					<b>\$ 41,211</b>

**ISSUES:**

Item	Description	Units	Unit of Measure	Price per unit	Total Cost
101	Poles, Wood, Class 1, 50 ft.	15	Ea.	\$240.53	\$ 3,608
111	Brackets, Armless, Steel 18 inch	40	Ea.	34.27	1,371
112	Crossarm, Wood, 8 ft.	28	Ea.	56.47	1,581
120	Conductor, No. 2 ACSR	32,000	M/Ft.	103.73	3,320
<b>Totals</b>					<b>\$ 9,879</b>

**ENDING INVENTORY (after issues):**

Item	Description	Units	Unit of Measure	Price per unit	Total Cost
101	Poles, Wood, Class 1, 50 ft.	80	Ea.	\$240.53	\$ 19,242
111	Brackets, Armless, Steel 18 inch	125	Ea.	34.27	4,283
112	Crossarm, Wood, 8 ft.	17	Ea.	56.47	960
120	Conductor, No. 2 ACSR	66,000	M/Ft.	103.73	6,846
<b>Totals</b>					<b>\$ 31,332</b>

The table below provides the materials issue cost distribution for accounting for these materials issues. It summarizes the costs of the materials issued by the expense and capital accounts to which the materials were charged. The total cost of materials charged to the various accounts matches the total cost of the materials issued and deducted from the inventory values.

### MATERIALS ISSUES COST DISTRIBUTION - Week of August 1 Sample Public Power Utility

Account	Description	Amount
10701	Construction work in progress - project 01	\$ 8,588
59310	Maintenance of overhead lines - repairs	1,084
59320	Maintenance of overhead lines - relocate	207
<b>Totals</b>		<b>\$ 9,879</b>

### Materials Loadings

Similar to payroll costs, materials costs charged to the various capital, expense, and deferred charges accounts are normally subject to loadings for other related costs which cannot easily be charged directly to specific activities and accounts. These loadings normally include at least two categories of costs: exempt materials and stores expenses.

Exempt materials, by definition, are 'exempt' from receiving loadings. This is because they are, in fact, loadings (or overhead costs) themselves. Electric utilities use thousands of unique materials, parts, equipment and supplies in their ongoing operations. These items can range from small nuts and bolts to large transformers. The management of the inventories of this vast number of items is a large task. Therefore, due to the comparably insignificant value of smaller items such as screws, washers, nuts and bolts, which are stored in the physical inventory, the accumulated costs and unit counts for those items may not be maintained on an individual basis. Their value is accounted for, in total, separately from the other inventory, usually in a separate sub account under account 154. The accumulated value of these items is then allocated to the accounts to which the materials issues are charged. This loading of the cost of exempt materials is a cost effective substitute to keeping track of every different item, and it does not result in any significant inaccuracies in the accounting for the materials.

The second type of materials loading is stores expenses. Stores expenses include the costs associated with owning, managing, and maintaining an inventory. There are labor costs associated with receiving items purchased, stocking them, and issuing them. Storage facilities which are costly to own and operate include land, buildings, fences, shelving, lighting and air conditioning and other expenses. Other equipment such as forklifts, elevators, booms, and computers may also be required. Some utilities allocate a portion of their purchasing and accounting staff costs to the stores expenses to reflect their participation in the acquisition and accounting of materials and supplies. Since these costs relate to the materials inventory but are not attributable to specific activities, they are normally allocated as a loading on the materials issued to the various accounts charged. They are accumulated in FERC account 163, *Stores expense undistributed*.

The loadings for exempt materials and stores expenses are usually calculated as percentages of the total costs accumulated in each category to the total value of materials issued during a historical period. These percentages are then applied to the issued materials cost to determine the amount of the loadings. The table below extends the materials issues cost distribution presented earlier to include these loadings. For illustrative purposes, loading rates of 5 and 15 percent were assumed for exempt materials and stores expenses, respectively.

**LOADED MATERIALS ISSUES COST DISTRIBUTION - Week of August 1**  
**Sample Public Power Utility**

Account	Description	Amount	M&S Loadings		Loaded Amount
			Exempt Mat'l 5%	Stores Exp. 15%	
10701	Construction work in progress - project 01	\$ 8,588	\$ 429	\$ 1,288	\$ 10,306
59310	Maintenance of overhead lines - repairs	1,084	54	163	1,301
59320	Maintenance of overhead lines - relocate	207	10	31	248
<b>Totals</b>		<b>\$ 9,879</b>	<b>\$ 494</b>	<b>\$ 1,482</b>	<b>\$ 11,855</b>

## Transportation and Power Operated Equipment Usage

Accounting for the costs associated with operating and maintaining transportation and power operated equipment poses problems somewhat similar to those for materials inventory. Transportation equipment includes cars, trucks, vans, and trailers, among other modes of transportation. Power operated equipment includes equipment used in construction and maintenance work such as trenchers, cranes, backhoes, compressors, etc.

### Accounting for Transportation and Equipment Costs

The FERC USOA requires that the cost associated with the use of transportation and power operated equipment be allocated appropriately to the various activity accounts for which the equipment is used. The difficulty with this requirement is that it is not possible to determine how much of the operating cost of the equipment is directly expended while in use. For example, assume that a line truck that is used for distribution maintenance activities is filled up with gasoline that cost \$15. Before the truck requires another fill-up it is driven to transport a line crew to four different job locations. The question arises as to how to account for the cost of the gas. It could be charged to the first job on which the truck is used or it could be charged to a general or miscellaneous expense account and not allocated to specific activities/accounts. Another option is to divide the cost between the accounts for all four of the jobs on which the vehicle was used.

The first option, to charge the gas cost completely either to the first job worked on by the line crew or to a general expense account, is undesirable because the costs are not matched properly with the activities for which the expenditures were incurred and that benefit from the expenditures. The second option provides the desired result as it does match the costs to the appropriate activities. However, this option presents the following additional considerations:

- ❖ The activities on which the vehicle or equipment will be used are not known at the time of the expenditure.

- ❖ The expenditure could benefit many different activities to which it would have to be allocated.
- ❖ There are expenditures made over the course of the life of a vehicle or item of equipment that have varying lengths of benefits.

These additional considerations cause the direct allocation of the expenditures for each equipment asset to be extremely cumbersome. Therefore, many electric utilities account for their equipment usage through clearing accounts. Clearing accounts provide the means for the utility to accumulate related costs which cannot be readily charged directly to specific capital and expense accounts and then to transfer or clear them to appropriate accounts at a later time using some logical method of allocation. Account 184 is defined in the FERC USOA as the clearing account to be used. Utilities will establish subaccounts within account 184 for each specific type of cost that they desire to accumulate for clearing. An example of the use of clearing accounts was discussed earlier in this chapter in the discussion of accounting for payroll.

Clearing accounts for transportation and power operated equipment may be set up by vehicle or by type of vehicle. If a utility has a large number of equipment items, it may choose to accumulate the operation and maintenance costs by classifications, such as, cars, light trucks, heavy trucks, trailers, etc. The costs that are accumulated in these accounts will include gas, oil, tires, batteries, repairs, scheduled maintenance, engine overhauls, insurance, taxes, licenses, and any other expenditure incurred in the ongoing use of the equipment. Some utilities also charge the depreciation expense associated with the transportation and power operated equipment to these clearing accounts so that the capital cost of the assets is allocated to the end-use accounts.

Clearing of costs accumulated in these accounts to the accounts for which the equipment was used is done periodically, usually monthly. The basis for the clearing of the costs is normally statistical information regarding the level of usage for the equipment during the total period and for each activity. For transportation vehicles, this is most often miles driven. Use of power operated equipment is usually measured in hours. The miles and hours of use for each equipment item (or classification, consistent with the definition of the clearing accounts used) must be recorded to facilitate this clearing process. This is usually done on transportation usage forms provided to employees or as additional entries on the time sheets.

The clearing process can be as simple as dividing the costs accumulated in the clearing accounts during the period for each vehicle or classification of equipment by the corresponding total miles driven or hours used during the period and then multiplying that rate per unit of usage by the usage charged to each activity. For example, if a truck is driven 2,000 miles during a month and the total costs of gas, oil, maintenance, repairs, etc. accumulated during the month is \$1,000, each mile would be charged at a rate of \$0.50 per mile ( $\$1,000 / 2,000$  miles). If the truck was used for three different activities, the mileage associated with each activity (totaling 2,000) would be multiplied by \$0.50 to determine the transportation expense to that activity. In this way, the total \$1,000 would be allocated to the three accounts related to the three activities and the clearing account balance would be reduced to zero (see previous clearing account discussion).

There is a problem inherent in the clearing methodology just described. For transportation and power operated equipment, operation and maintenance expenditures are not level over time. Therefore, there is likely to be major fluctuations from period to period in the amount of expenditures accumulated in the clearing accounts. The result is that use of an item one month may be charged at a significantly different rate than it was in a prior month for a similar level of

usage. If a truck has an engine overhaul once every five years, the utility would not want to allocate the entire cost of that work to the activities for which the truck was used in the period that it was returned to use. This also would hinder the matching of the expenditures to all of the activities which benefit from it.

The transportation clearing process provides more reasonable results if charge rates are determined for each vehicle or classification of equipment based on accumulated costs and usage over a longer historical period of time. A new charge rate for each clearing account could be calculated every month based on a twelve-month rolling average of costs and usage. Another option would be to calculate the charge rates once each year based on 24 or 36 months of actual historical data. Any clearing rate calculation can be used that provides an equitable match of the expenditures associated with the equipment to the functions or activities for which the equipment is used.

### **Transportation Accounting Illustration**

The table below provides a sample calculation of transportation and power operated equipment operation and maintenance charge rates for the Sample Public Power Utility. The expenditures are assumed to be for a rolling twelve-month average and are listed by type and totaled for each classification of equipment. Total mileage and hours of use for all vehicles and equipment in each class are shown. At the bottom of the table are the calculated charge rates which would be applied to the usage of the equipment from each classification to determine the allocation of related operation and maintenance costs to be charged to the various capital and expense accounts for the current month.

#### **TRANSPORTATION EQUIPMENT COST BY CLASS TWELVE MONTHS ENDING AUGUST Sample Public Power Utility**

Description	Cars 4	Trucks 12	Vans 2	Trailors 5	Hvy Equip 22
Gasoline and oil	\$ 5,760	\$ 28,800	\$ 3,840	\$ -	\$ 5,500
Wipers, batteries, tires	1,000	3,400	500	800	7,000
Repairs	2,400	12,000	2,400	400	34,000
Scheduled maintenance	1,600	7,200	1,600	550	2,500
Major overhaul	1,500	4,100	-	-	25,000
Insurance	3,200	9,000	1,600	900	11,500
Depreciation	6,000	40,000	5,000	1,000	100,000
<b>Totals</b>	<b>\$ 21,460</b>	<b>\$104,500</b>	<b>\$ 14,940</b>	<b>\$ 3,650</b>	<b>\$185,500</b>
Equipment Usage:					
Unit of measure	Miles	Miles	Miles	Hours	Hours
Number of units	60,000	216,000	40,000	5,000	26,400
<b>12 month average cost per unit of use</b>	<b>\$0.358</b>	<b>\$0.484</b>	<b>\$0.374</b>	<b>\$0.730</b>	<b>\$7.027</b>

# **Public Utility Accounting**

## **Chapter 7**

### **Introduction to Accounting for Utility Property: FERC Uniform System of Accounts**



This utility accounting guide would not be complete without a discussion of the accounting for utility property, plant and equipment. The importance of the proper accounting for utility plant, as defined in the Federal Energy Regulatory Commission (FERC) Uniform System of Accounts (USOA), was discussed previously in Chapter 4 of this guide. To reiterate, two of the major reasons for the FERC's emphasis on accounting for utility plant are the magnitude of the capital investment in plant by electric utilities and the significance of the value of plant in service in determining the rate of return earned by utilities.

Due to the significance of utility plant in the operations of an electric utility and on the utility's finances, the USOA provides specific direction on how utilities are to account for their plant. The electric plant instructions from the FERC were introduced in Chapter 3. These instructions cover 16 topics related to proper accounting treatment of various events associated with utility plant. Also included in the USOA are definitions of selected utility terms which were also introduced in Chapter 3. Several of the definitions provided serve as background information to support the detailed guidance defined in the electric plant instructions. In Chapter 4, the structure of the detail plant accounts was reviewed. The descriptions provided in the USOA for the various plant accounts define the proper account assignment and treatment of various events related to utility plant. The FERC system also prescribes (in the Code of Federal Regulations, Title 18, Part 116) the minimum acceptable level of retirement units for which plant cost data must be maintained by a utility in its plant records. Retirement units will be discussed later in this chapter. All of this extensive consideration of and direction for accounting for utility plant by the FERC causes it to be one of the most complex and confusing aspects of utility accounting.

This chapter presents an overview of the accounting for electric plant within the requirements of the FERC USOA. A simple example of work order accounting is also presented to illustrate this complex feature of the FERC USOA.

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## Work Order Accounting

The electric plant instructions of the USOA dictate that a utility maintain a system of records that details separately the accumulation of costs associated with construction and retirement of electric plant, in the form of work orders or job orders. Work orders and job orders normally represent temporary codes established to track costs and activities associated with specific projects, which are typically capital in nature, only for the duration of each project.

No system for work orders and job orders is prescribed in the USOA. An electric utility is free to implement a work order system and a work order numbering scheme that best meets its needs. However, minimum record keeping requirements for such systems are defined by the FERC. For example, a work order system must maintain information associated with each work order as to the:

- ❖ Nature of the additions and/or retirements of electric plant;
- ❖ Total cost;
- ❖ Sources of costs; and
- ❖ Electric plant accounts to which additions/retirements are charged or credited.

The difference between work orders and job orders is not specifically defined in the USOA. However, a dollar value such as \$10,000 might be used as a cutoff with larger dollar projects being accounted for

on work orders, and smaller jobs accounted for on job orders. Job orders usually represent smaller capital projects which are recurring in nature and plant accounting is done for the projects as a group under a "blanket" work order. Although the remainder of this discussion will refer only to work orders, the concepts presented also apply generally to job orders and blanket work orders as well.

The USOA requires separate accounting for the costs of construction and retirement activities. Construction work includes the costs associated with the construction or acquisition of utility property, plant, and equipment, and other assets, and is accounted for in FERC account 107, *Construction work in progress-Electric*. Retirement work represents the costs incurred in the removal of utility assets from service and the net salvage value realized from the final disposition of those assets, and is accounted for in account 108, *Accumulated provision for depreciation and amortization of electric utility plant*. Unique work orders should be established for each capital project. The FERC system does allow retirements of electric plant to be included with the same work order as related construction; but all costs relating to the retirement must be kept separate from those relating to the construction. Therefore, it may be easier to use entirely separate work orders. In summary, a capital construction work order is required when new plant or other asset is first constructed or acquired. A retirement work order is required when existing plant is permanently removed from service. And both a construction work order and a retirement work order are needed when existing plant is replaced or upgraded.

Normally, when the need for a capital construction project is identified by an electric utility, an engineer defines the project, creates an estimate of the costs to complete the project, and obtains a work order number from the utility's accounting area. The engineer determines the information required to be recorded, as it relates to the new work order. Once the necessary corporate approvals are obtained and the project is ready to begin, all costs incurred with the project are charged to that work order number.

An illustration of a sample work order will be used in this chapter to develop various concepts regarding accounting for utility property. Assume that a project is identified by the Sample Public Power Utility to extend an overhead secondary distribution line to serve a new customer. Two new project numbers were established: 2153 for the construction work and 5153 for the related retirement of existing property.

### **Components of Construction Cost**

Electric plant instruction number 3, *Components of construction cost*, defines the various categories of expenditures incurred by a utility that are to be included as components of the cost of construction of electric plant in work orders established under account 107. In reviewing these components of construction cost, it can be seen that there is a wide variety of cost components which are to be included. The underlying accounting concept supporting this definition of construction costs is that all costs associated with constructing an asset and preparing it for use, are to be included in the cost of that asset.

The more significant items of cost included on the list in plant instruction number 3 are labor, materials and supplies, and transportation, as these items normally make up the majority of the direct costs of construction projects. These costs may be incurred internally by the utility in the form of employee compensation, issuance of materials from the utility's storeroom, and use of utility-owned trucks, vehicles and equipment. Examples of how these types of costs are charged and accounted for were presented in Chapter 6. A work order number could be used as a charge account on the time sheets and material issue tickets, as illustrated in Chapter 6, for the accounting of internal labor hours and internal storeroom material issues. The corresponding cost

loadings on internal labor and materials as described and illustrated in Chapter 6 would also be charged to the work order. Alternately, these costs could be incurred as external payments, such as for contract labor and services, direct purchases of materials or equipment for the project, or rental of transportation and equipment owned by others. These expenditures would be paid by the accounts payable function and charged directly to the project work order. Contract labor and equipment and direct purchases of materials and supplies are charged to the applicable work order at the time an invoice or other purchase authorization is processed for disbursement.

The table below provides a material listing for the Sample Public Power Utility's project to extend overhead distribution facilities. This table shows not only the description and number of items of material issued for the project, but also the labor costs associated with using the material. (Remember, that this is an illustration. Small items of materials required to complete such a project have been omitted for simplicity.) Note that the materials list indicates only labor cost data for the removal of materials taken out of service. No materials costs would be incurred for the retirement of property.

### MATERIAL LISTING Sample Public Power Utility

#### Construction Work Order - 2153 Retirement Work Order - 5153

Description	Units	Price Per Unit	Material Cost	Labor Per Unit	Labor Cost
<b>Material Installed:</b>					
30 Foot Pole	2	\$ 70.00	\$ 140.00	\$ 115.00	\$ 230.00
1/0 TX Conductor	300	0.56	168.00	1.00	300.00
10" Anchor	1	16.00	16.00	50.00	50.00
25 kVA Transformer 7200v/120/240	1			175.00	175.00
<b>Totals</b>			<b>\$ 324.00</b>		<b>\$ 755.00</b>
<b>Material Removed:</b>					
15 kVA Conv. 7200 Transformer 120/240	1				\$ 50.00
100 A Cutout	1				20.00
9 kV Arrestor	1				20.00
<b>Totals</b>					<b>\$ 90.00</b>

Various other costs that might be incurred in relation to a construction project and charged directly to a capital work order are included in the components described in plant instruction number 3. This includes items listed such as *Special machine service* and *Shop service*. Other types of costs to be included in the cost of construction represent indirect costs that do not add to the physical construction of plant, but are necessary in support of the project. These include items such as (environmental assessment) *Studies, privileges and permits*, (site security) *Protection*,

*insurance*, and *training costs* (of staff) related to the operation and maintenance of the property under construction.

For work order 2153 of the Sample Public Power Utility, assume that these indirect costs total \$121.

The list of components of construction costs also includes several other indirect costs which are allocations of overhead costs to construction work orders. *Engineering and supervision*, *General administration capitalized*, and *Allowance for funds used during construction* are the primary work order overheads. These cost components are discussed in detail in the following sections.

## **Overheads Capitalized**

*Engineering and supervision* represents the portion of the pay and expenses of the engineers, various technical staff, superintendents, and their assistants that is deemed to be applicable to construction projects. Likewise, *General administration capitalized* represents the portion of the pay and expenses of the officers and general administrative staff of the utility that is deemed to be applicable to construction projects.

The activities of the engineering and administration staff for a utility, by nature, affect many different events of the utility. For example, the accounts payable staff processes payments on behalf of the utility for various items from construction materials to janitorial supplies; from computers to coffee; and from trucks to pencils. The labor and expenses of the accounts payable department are generally not charged directly to individual construction work orders or operating activities because only small increments of time are spent handling each payment. It would be very difficult and time consuming to assign the associated labor and expenses of processing each payment to the project or activity to which the payments related.

In order to meet the objective of including all costs associated with a construction project in the total cost of the resulting property, it is therefore appropriate to transfer or capitalize a portion of the overhead costs to individual work orders.

Electric plant instruction number 4, *Overhead construction costs*, was discussed in Chapter 3. This instruction requires that where overheads cannot be charged directly to individual work orders, periodic studies are to be conducted to assess the portion of engineering, supervisory, and other administrative employees' time that is spent in support of construction. In the example of the accounts payable function, once or twice a year, the accounts payable staff will keep track of how their time is spent over some period of time such as a week or a complete pay period. This record keeping is not done on an individual project/activity basis due to the burden this would cause. However, to satisfy this requirement and the related requirement in general instruction number 9, *Distribution of pay and expenses of employees* (discussed in Chapter 3), the time analysis performed by the staff identifies labor hours spent on activities related to construction projects versus operating activities. The result of this time study provides the utility with a basis for determining the amount of utility overheads that should be added to construction.

There are alternative methods that can be used to allocate overhead costs to construction. An extension of the work order example will provide an illustration of one logical approach. Assume that the Sample Public Power Utility has annual payroll and expenses for the engineering and administration staff of \$180,000 (account totals for FERC 920 and 921). Based on the time study performed last year, it was determined that 35 percent of the labor of these staff was attributed to capital construction projects. Therefore, overheads of \$63,000 ( $\$180,000 \times 0.35$ ) can be

allocated to construction. The capital expenditures for the current year total \$730,000. Therefore, an overhead charge rate of 8.63 (\$63,000/\$730,000) percent can be calculated. This represents the rate that overheads are applied to individual construction work orders that will result in spreading the total \$63,000 of overheads to be capitalized among all of the current active work orders.

From the material listing for construction work order 2153 shown above, the direct costs of construction for work order 2153 are \$1,079 (\$324 in material and \$755 in labor). The addition of the indirect costs of \$121 brings the total cost of the project before allocation of overheads to \$1,200. Applying the overhead charge rate of 8.63 percent, results in an addition of \$104 to the cost of the project and a revised total of \$1,304. This example assumes that the project is started and completed within one accounting period. Project work orders which have durations of multiple accounting periods will be allocated these overheads at the end of each period based on the new charges incurred to the work orders during the period. The figures used to calculate the overhead charge rate were assumed to be annual numbers for the Sample Public Power Utility. Therefore, if the amount of annual capital expenditures and the overhead rate are constant, the total overheads applied to the active work orders during the 12 month period will match the amount determined to be charged to capital, \$63,000.

### **Allowance For Funds Used During Construction**

The USOA defines the allowance for funds used during construction (AFUDC) as an additional component of construction cost. AFUDC provides for the capitalization of the cost to a utility of financing construction projects. This is consistent with the accounting principle of including all costs associated with construction of an asset in the recorded cost of the asset. Although a specific financing is often not associated with specific projects, AFUDC is allowed by the FERC to recognize that the availability of capital for construction purposes does impose costs on the utility that should be included in the cost of the asset constructed. This concept assumes that a utility's capital for construction and operations is commingled and thus allows for the determination of the amount of financing costs that may be charged to capital, based on the utility's total capitalization. Therefore, the portion of the financing cost to be capitalized as AFUDC must be imputed.

The FERC USOA includes (in electric plant instruction number 3.17) a formula for calculating AFUDC. AFUDC recorded by utilities cannot exceed that amount calculated using the defined formula. Following are the formula and its elements as defined in the USOA:

$A_i$	=	$s(S/W)+d(D/D+P+C)(1-S/W)$
$A_e$	=	$[1-S/W][p(P/D+P+C)+c(C/D+P+C)]$
$A_i$	=	Gross allowance for borrowed funds used during construction rate.
$A_e$	=	Allowance for other funds used during construction rate.
$S$	=	Average short-term debt.
$s$	=	Short-term debt interest rate.
$D$	=	Long-term debt.
$d$	=	Long-term debt interest rate.
$P$	=	Preferred stock.
$p$	=	Preferred stock cost rate.
$C$	=	Common equity.
$c$	=	Common equity cost rate.
$W$	=	Average balance in construction work in progress plus nuclear fuel in process of refinement, conversion, enrichment and fabrication.

The FERC instruction requires that the rates for AFUDC be calculated annually. The USOA provides more detail as to how each of the elements in the formula, are to be determined.

AFUDC is defined to include costs of all financing, including long-term debt, short-term debt and common equity. It includes the costs of borrowed funds used for construction purposes, and a reasonable rate on other funds. Other funds generally refer to the equity funds that a utility may have. No allowance for funds used during construction charge is allowed on expenditures for construction projects which have been abandoned.

Since AFUDC represents a portion of the current interest costs of the utility that is transferred to construction, it effectively increases the net income of the utility. The result is that these costs are not realized in the current period but are deferred in the cost of the plant and charged to expense through depreciation over the life of the asset.

Public power systems generally do not have common equity and would not have this component of the AFUDC calculation. However, these utilities may have substantial interest costs on combined long- and short-term debt. The formula above can be used by public power systems to calculate an annual AFUDC rate for their systems, omitting the components referring to common equity or other funds.

The application of the AFUDC rates to actual construction expenditures to determine the amounts to be recognized for AFUDC is not clearly defined in the USOA. However, there are a few general rules that most utilities follow in the application of the AFUDC rate:

- ❖ AFUDC is applied only to projects with durations of greater than 30 days.
- ❖ AFUDC is applied to construction only, not to the purchases of assets.
- ❖ AFUDC is applied to accumulated construction expenditures as of the beginning of the month.
- ❖ If it is applied to current month expenditures, only one half of the regular rate is applied to consider that expenditures were not outstanding for the entire month.
- ❖ If construction is delayed or postponed for substantial lengths of time, AFUDC is discontinued until construction resumes.

The example work order for the Sample Public Power Utility is not a candidate for the application of AFUDC as it is a project of short duration, assumed to be less than 30 days. To illustrate the application of AFUDC, assume that another project of the Sample Public Power Utility is the construction of a new substation. This project is work order number 3246 and had expenditures incurred during the first three months of the project of \$10,000, \$40,000 and \$15,000. Assume also that its calculated annual AFUDC rate is 8 percent and that the utility elects to record AFUDC on current month charges at half of the normal AFUDC rate. The table below shows the calculated AFUDC to be recorded to work order number 3246 for each month.

**ALLOWANCE FOR FUNDS USED DURING CONSTRUCTION**  
**Work Order 3246**  
**Sample Public Power Utility**

Month	Current Expenditures	Prior Exp. Before AFUDC	AFUDC Current Exp. (Note 1)	AFUDC Prior Exp. (Note 2)	Total AFUDC	Total Project Costs
1	\$ 10,000	\$ -	\$ 33	\$ -	\$ 33	\$ 10,033
2	40,000	10,000	133	67	200	50,233
3	15,000	50,000	50	333	383	65,616

*Note 1- Annual AFUDC rate of 8 percent calculated for one half of a month.*

*Note 2- Annual AFUDC rate of 8 percent calculated for a full month.*

## **Retirement Work Orders**

Retirement work orders are used to accumulate in account 108, the costs of removal of plant in service and the corresponding salvage value realized from the disposition of utility property. Since nothing is created with a plant retirement, most of the various components of construction cost described for construction work orders do not apply to retirement work orders. The FERC USOA defines cost of removal to include the costs of demolishing, dismantling, tearing down or otherwise removing electric plant, including the costs of transportation and handling. Therefore, retirement work orders normally have labor costs and, sometimes, associated transportation and equipment costs. These costs are charged to retirement work orders in the same manner as they are charged to construction work orders.

Retirements of electric plant when related to new construction can also often result in the salvaging of materials or equipment which may be re-used by the utility or sold for use by others. If materials are recovered which can be used for other construction, they may be returned to the materials storeroom inventory. The USOA defines salvage as the amount received for property retired, less any expenses of the sale, or the amount at which the material can be placed in inventory.

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## **Work Order Unitization**

When construction and retirement projects are completed, the amounts of the accumulated expenditures in the corresponding work orders are transferred from FERC account 107, *Construction work-in-progress-Electric* to account 106, *Completed construction not classified-Electric*, pending the unitization of the work orders. Unitization refers to the closing of the accumulated expenditures in the completed work orders to the subsidiary electric plant accounts presented in Chapter 4, by retirement units.

The USOA defines a *Retirement unit* as an item of electric plant for which, when removed from service, the book cost of the item is deducted from the appropriate electric plant account. It further delineates a retirement unit from *Minor items of property*, which are all of the associated components and parts which make up a retirement unit. In the Code of Federal Regulations, Title 18, Part 116, the FERC provides basic instructions regarding the classification of items of plant as retirement units and lists the minimum definitions of retirement units within each electric plant account. Electric plant instruction number 11, *Work order and property record system required*, in Part 101, requires that a utility maintain a system of records that accumulates and tracks the costs and numbers of the various retirement units in service and the annual additions and retirements of each unique item of property. The USOA also defines the detailed information that must be maintained in the *Continuing plant inventory record* system (commonly referred to as a CPR system). To be included in these records for each different retirement unit are the description of the unit, its location, when it was placed in service, the original cost of the unit, and the plant account to which it is classified. En masse cataloging for retirement units that are relatively low cost or too numerous to track separately, should include the category description, the quantity by vintage year, and the average cost for the category.

When a construction work order is unitized or closed, the costs accumulated in the work order are broken down and allocated to the various retirement units of property that were created from the project. Normally, the engineer who initiated the project provides notification of when the project is complete and how many units of each type of retirement unit were constructed. The various direct costs such as labor costs based on hours worked and materials used, are assigned directly to those units. Since the indirect costs and overheads cannot be associated with individual units directly, these items are allocated to the various retirement units on some logical basis. For example, the engineering and administrative overheads charged to the project can be allocated to the various retirement units based on the percentages of the total payroll assigned directly to each unit, or they may be allocated based on the percentages of the total project costs, excluding overheads, assigned to each unit.

To illustrate the unitization process, the Sample Public Power Utility work order number 2153 for the overhead line extension can be used. The total accumulated costs in the construction work order included \$755 of labor and \$324 of material costs. In addition, there was \$121 of various indirect costs plus engineering and administrative overheads of \$104 capitalized on the project. The total of the accumulated costs in the work order was \$1,304. The engineer on the project identified four unique retirement units for the project. The table on the next page summarizes the unitization of work order 2153. In this case, each item of material from the material listing is defined as a retirement unit. (Again, remember that this is an illustration and that other minor items of property would normally be required for the construction but have been omitted for simplicity.) Therefore, the material listing for the construction work order identifies the direct charges, including materials and labor, by the four retirement units, which are carried forward to the unitization summary. Note that for the item of conductor, 300 feet of material was charged to the work order, and there are three retirement units. This indicates that the Sample Public Power Utility has defined 100 feet of conductor as one retirement unit.

**WORK ORDER UNITIZATION SUMMARY**  
**Construction Work Order 2153**  
**Sample Public Power Utility**

Retirement Units	Qty.	Labor Cost	Mat'l Cost	Indirect Cost	Total B4 Ovrhd	Eng & Admn Ovrhd	Total Cost	Cost Per Unit	Plant Acct.
30 Foot Pole	2	\$ 230	\$ 140	\$ 109	\$ 479	\$ 41	\$ 520	\$ 260	364
1/0 Cond. 100 ft.	3	300	168	-	468	40	508	169	365
10" Anchor	1	50	16	12	78	8	86	86	364
25 kVA Transf.	1	175	-	-	175	15	190	190	368
<b>Totals</b>		<b>\$ 755</b>	<b>\$ 324</b>	<b>\$ 121</b>	<b>\$ 1,200</b>	<b>\$ 104</b>	<b>\$ 1,304</b>		

The indirect costs have been attributed by the project engineer to be related only to the installation of the pole and the anchor. Therefore, the \$121 is to be allocated between those two units. Based on the nature of the indirect charges, the utility accountant determines that these costs should be allocated between the units based on the percentage of the costs of the materials assigned to each unit to the total material costs charged to both units. The result of this is that \$109 ( $\$121 * (\$140 / \$156)$ ) will be allocated to the poles and \$12 to the anchor ( $\$121 * (\$16 / \$156)$ ).

The engineering and administrative overheads of \$104 are to be allocated to all four of the retirement units based on the percentages of the total of all other costs, direct and indirect, allocated to each unit to the total costs of the project, excluding the overheads. The calculation of the allocation of the overheads is shown on the work order unitization summary shown above.

When work order unitizations, or closings, are completed, the quantities of each type of retirement unit, the values determined to be associated with those units, and the appropriate FERC plant account are recorded in the continuing plant inventory record system. A substantial amount of other descriptive information regarding each unit is also entered into the system to enable the utility to track closely the property on its system, as required by the FERC. At the same time, the balances of the closed work orders are transferred from USOA account 106, *Completed construction not classified-Electric*, to either account 101, *Electric plant in service* or account 118, *Other utility plant*, depending on the nature of the asset.

Many public power systems with FERC based plant records perform the unitization or closing of their work order immediately upon the removal of plant from service rather than delaying the analysis. This effectively eliminates the need to transfer completed construction in and out of the 106 account. In these cases, capital work orders can be closed directly to account 101 from account 107. Small public power systems seldom have capital projects for which the unitization is complex enough that it cannot be closed immediately. However, on those occasions, the 106 account is used.

## Property Retirements

Retirement work orders are also closed upon completion. When utility plant is removed from service, the unitization of the original construction is reversed. The original cost of the plant is deducted from FERC accounts 101 and 118 as appropriate and the costs and quantity of the retirement units removed from service are deducted from the appropriate plant accounts and unit counts in the continuing plant inventory record system.

Where the closing of retirements is confusing is in regard to depreciation. As indicated previously, retirement work orders fall within FERC account 108, *Accumulated provision for depreciation and amortization of electric utility plant*. Depreciation is the systematic write-off of the book cost of plant in service over the useful life of the property. The purpose of depreciation is to allocate the expenditures associated with constructing plant assets to expense evenly over the accounting periods in which the assets will produce corresponding revenues.

Under accounting depreciation rules, depreciation rates also are to include consideration of the net salvage value (if the salvage value exceeds the cost of removal) or net cost of removal (if the cost of removal exceeds the salvage value). Like the original cost, the cost of removal and salvage value should be spread evenly over the life of the asset as together they represent net additions or reductions to the total costs of the utility owning that plant. However, at the time depreciation is begun for a unit of property, only estimates of the salvage value and cost of removal can be included. Therefore, when depreciation rates are established for recording depreciation on property by a utility, they are based on the original cost of the property plus estimates of the costs anticipated to remove the property from service less estimates of the salvage value that will be realized upon disposal.

Consider as an example an asset that is still in service at the end of its original estimated useful life. It had an estimated cost of removal exceeding the expected salvage value. Because the plant's estimated service life is passed, it is fully depreciated, i.e. its original cost has been fully expensed through depreciation. However, since the cost of removal is included in the depreciation rates, the plant asset actually has a negative book value (original cost less accumulated depreciation). The accumulated depreciation on the asset exceeds its original cost by the amount of the net cost of removal. When the asset is removed from service and retired, the cost of removal in the retirement work order is charged to the accumulated depreciation account and the salvage value recorded on the retirement work order is credited to the accumulated depreciation account.

When property is retired the book cost associated with the asset on the utility's records is reversed from electric plant by crediting that value to the plant account for which the asset is included. The asset's book cost is also deducted from the accumulated depreciation account. According to electric plant instruction number 10, *Additions and retirement of electric plant*:

*If the retirement unit is of a depreciable class, the book cost of the unit retired and credited to electric plant shall be charged to the accumulated provision for depreciation applicable to such property. The cost of removal and the salvage shall be charged or credited, as appropriate, to such depreciation account.*

An example will illustrate the concepts of accounting for plant retirements. Assume that the Sample Public Power Utility has a diesel generator that is being removed from service. The generator's original cost was \$780,000 and it had an expected salvage value of \$20,000 at the end of its useful life of 40 years.

However, the removal of the generator from service and the preparation for salvage was estimated to cost the utility \$40,000, due primarily to environmental requirements. The annual depreciation rate was determined to be 2.5 percent ( $[\$780,000 \text{ cost} - \$20,000 \text{ salvage} + \$40,000 \text{ cost of removal}] / 40 \text{ year life}$ ), or \$20,000. After 30 years, the utility determined that it needed to replace the diesel with greater generating capacity. However, the utility was able to sell the generator for \$200,000 rather than for the original estimate of \$20,000. The removal cost estimate of \$40,000 turned out to be accurate.

The utility reversed the \$780,000 original cost from its plant in service and the accumulated depreciation on its books and in its continuing plant inventory records. It also charged the cost of removal and credited the salvage value to the accumulated depreciation.

The accounting for utility property is complicated. Much has been written and is available to public power systems for use in enhancing their plant accounting procedures. However, the Code of Federal Regulations, Title 18 is still the most logical starting point for public systems in developing an understanding of the need for detail plant accounting systems and how to move toward implementation of such a system.



# **Public Utility Accounting**

## **Chapter 8**

### **Introduction to Basic Rate Design**



It is the intent that this section of the manual will provide the reader with a general introduction to rate design for electric utilities. There are several well written publications available on this topic, as well as a few instructional courses offered that are devoted exclusively to utility rate structures, methodology and determination. This Chapter will only touch on the basics, focusing more on general concepts and current practices within utility rate design. Those interested in a more in-depth discussion should contact the *American Public Power Association* or visit the *APPA Academy* website.

## Objectives of Rate Design

Although there are a multitude of factors that must be considered when developing electric utility rates, those listed below are often considered to be the primary objectives of rate design:

- ❖ Cost recovery;
- ❖ Cost of service based;
- ❖ Minimize risk through revenue stability;
- ❖ Defendable;
- ❖ Legal;
- ❖ Fair/equitable; and
- ❖ Easily understood.

As mentioned previously, there are many things that influence the design of electric utility rates, but possibly the most important of these is cost recovery. Even though this sounds very simple and obvious, due to the fact that a great deal of the revenue stream for an electric utility is dependent upon weather conditions, it can be quite challenging for utility management and staff.

Since cost recovery is of paramount concern, most utilities establish rates on what is commonly referred to as a “cost of service” basis. The determination of cost of service, or the calculation of “revenue requirements”, is done at a customer class level. This process requires that all of the costs associated with a given grouping of customers (that share like characteristics) be pooled together and divided by the pooled usage of that same customer base. It is a common misconception, for those new to the utility industry, that rates are strictly based upon actual specific customer costs. Although it is true that most electric utility rates are based upon actual costs, it must be understood that rates are determined using average costs. For instance, a utility may have a coal-fired power plant, a gas-fired power plant, and ownership in a nuclear power plant, each of which cost different amounts to produce a kilowatt of electricity. Traditional rate design will average these production costs. Another example of this average costing concept is the recovery of storm damage costs. Normally, all customers pay a portion of these costs rather than only those customers directly impacted by the storm.

Minimizing risk through revenue stability is another objective critical to electric utility rate design. Structuring rates in a manner that protects the utility from significant fluctuations in weather patterns is very important and instrumental to revenue stability.

In addition, a utility’s rates must meet the criteria of being defendable, legal under pertinent state and federal laws, fair and equitable, and yet easily understandable. This is a daunting challenge given that some of these factors are quite subjective. It is also extremely difficult to translate a very complex utility business into rates that are easily understood by all.

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## Key Rate Design and Funding Concepts

Which rate design objectives are at the core of maintaining the financial stability and overall health or “fiscal fitness” of an electric utility? Obviously, in order to remain as a viable business enterprise, the utility needs to recover its costs. Not only must customer class revenue requirements be properly determined, but rates must be structured in a manner that will minimize risk to the utility with regards to fluctuations in cost and revenue streams. This means costs must be carefully analyzed to determine whether, by nature, they are fixed, variable, or some combination thereof.

The utility rate accountant should structure rates in a manner that adequately deals with issues such as variations in weather conditions and the volatility of fuel prices. It is quite common for electric utilities to generate the majority of its revenue in the summer months (cooling days), yet costs do not occur with the same pattern due to the fixed versus variable nature of expenditures as was mentioned earlier.

Therefore, in many ways, the key to attaining fiscal fitness is very much dependent upon a clear understanding of the utility’s cost composition, the fixed/variable nature of those costs, and what drives them.

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## Understanding Costs

In order to effectively set electric rates to meet the objectives outlined above and keep the utility in a solid financial condition, it is paramount that the utility’s costs be clearly understood. The composition of utility cost structures and the factors that influence or drive those costs must be recognized.

What are the major components of cost commonly found within an electric utility?

Based upon national averages, most utilities have four primary cost components:

- ❖ Fuel and/or purchased power;
- ❖ Debt service and/or capital improvement;
- ❖ Operation and maintenance costs other than fuel and purchased power; and
- ❖ Transfers, payments in-lieu of taxes or similar items.

The single largest component of cost for most utilities is for fuel and/or purchased power costs. National averages indicate that these costs comprise roughly 60% - 70% of the total operational costs of the utility. Whether a utility is primarily generating its customer’s electricity requirements themselves, or purchasing them from other utilities, this cost still represents a significant cost contributor and plays a major role in rate design. Also, this cost can fluctuate considerably due to changes in weather conditions and volatile fuel prices.

Representing between 10% - 20% of total costs, debt service and/or capital improvement costs are the second largest component of total cost for most electric utilities. Unlike most businesses, an electric

utility must build, operate, and maintain generally very expensive capital assets. This fact, coupled with long construction periods for those assets often results in debt service and other capital related costs being fairly significant.

Operation and maintenance costs other than fuel and purchased power comprise an additional 10% - 15% of the costs the average utility needs to recover through its rate structures. This includes salaries and other personnel related costs, materials and supplies, and other consumables.

Finally, national averages reveal that somewhere between 5% - 15% of the costs to be recovered are associated with transfers from the utility fund, payments in-lieu of taxes, and other similar costs. Generally speaking, this category represents funds collected through electric rates charged to customers whereby the revenue is passed on to the local governmental entity. As mentioned, these costs can take on many different forms such as administrative transfers, franchise fees, or in-lieu of payments.

Understanding the nature of the costs to be recovered allows the utility rate accountant to better match rate mechanisms to those costs which, in turn, not only helps to ensure their ultimate recovery, but also to minimize as much risk as possible to protect the utility during volatile times. The next section addresses some of the rate mechanisms commonly utilized today, along with a discussion regarding the matching of rates to a utility's cost structure.

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## Common Rate Mechanisms

Although there are many different rate mechanisms commonly used today, most fit into one of two main categories – base rates and pass-through rates. Base rate traditionally include:

- ❖ Energy charges;
- ❖ Demand charges; and
- ❖ Customer charges.

Energy charges are often viewed as being designed to collect the variable costs associated with providing power to customers. Rates will vary in price between various customer classes (residential, commercial, industrial, etc.) and they are typically billed on a kilowatt-hour basis. There are many different methods of assessing these charges. Some will employ what are referred to as “declining block” or “inclining block” structures. In a declining block structure the rate per kilowatt-hour decreases after certain blocks of consumption. For example a certain amount of cents per kilowatt-hour for the first 500 kilowatt-hours with the rate dropping for kilowatt-hours 501 to 1,000 with a further decrease after 1,000, and so on. Inclining block structures work just the opposite, with the cost per kilowatt-hour going up with each new block. Other utilities will set energy charges based upon a uniform or flat rate (rates that do not vary on a per kilowatt-hour basis), but possibly with different rates for different customer classes. Time of use rates are yet another form of energy charges. Under time of use pricing there are multiple rates for different blocks of hours within a day (24 hour period). These rates are designed to encourage consumers to shift their consumption patterns to aid in minimizing the total peak demands on the utility's system.

Demand charges can be complex and confusing to explain. A simplistic definition of demand charges is that they are generally assessed to larger customers (those with higher peak demands for power) and are generally considered as an attempt to recover the utility's fixed costs of providing the desired level

of power to a customer. Demand charges are normally charged based upon the peak demand for a customer, measured based upon the maximum kilowatt (not kilowatt-hour) use during a given time period (usually in 15 or 30 minute intervals).

Traditionally, customer charges are designed to recover the fixed costs associated with metering, customer billing, records and collections, etc. and they are normally assessed as a fixed amount per customer, per month.

Pass-through rates represent the other main category of electric rates. Unlike base rates which are usually set and remain constant for quite some time (a year or more), pass-through rates are designed to change monthly to match variations in certain cost elements within the electric utility – normally fuel and purchased power (and certain transmission costs). Although rates of this nature go by many different names, such as fuel adjustment clauses, power cost adjustments, fuel cost adjustment, etc. they basically represent riders that allow the utility to pass along fluctuations in fuel and purchased power costs to their customers on a more timely basis (commonly a one month lag).

Although there are many other rate methods used within the industry, those described above provide a general introduction to those that are the most common. As mentioned previously, the intent of this guide is only to introduce basic rate making concepts and methodologies to the reader. More detailed information is readily available through other manuals, publications and instructional courses that are devoted specifically to electric utility rate design. Those desiring more information are encouraged to contact the *American Public Power Association* or visit the *APPA Academy* website.

# **Public Utility Accounting**

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