

# WATER UTILITY REFERENCE MANUAL

## Utility Plant and Accumulated Depreciation

### Capitalization Policy

Costs are capitalized in the utility plant accounts, rather than being expensed in the current year, if: the service life is more than one year, the dollars are significant, it is used primarily for providing utility service, and it constitutes a distinct unit of property.

Defining what a utility's units of property are, is a way to establish a consistent policy of what is capitalized versus what is expensed. Capitalized plant has more administrative cost associated to it because the utility needs to keep data on the unit of property over its life and beyond.

For general plant only, the costs of small, low-value items are expensed when purchased even though they may have a service life of more than one year. Examples of these items are staplers and calculators used in the office or hand tools used in the field. The dollar limit used to consider an item "low cost" is set by the utility but should be followed consistently as items are purchased. The accounting water staff of the Public Service Commission has approved an upper limit of \$5,000 below which the cost of an item can be expensed.

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## Categories of Plant

Utility plant may be categorized in several different ways; including intangible and tangible, depreciable and non-depreciable, plant under construction or plant in service and contributed and utility invested plant.

- Intangible plant consists primarily of organization expenses incurred during the initial formation of the utility. Almost all plant costs are identified with tangible property and equipment.
- Most utility plant is subject to depreciation, with the exceptions being, intangible plant and land rights. However, intangible plant may be amortized to operating expenses with the approval of the Commission.
- Utility plant under construction is recorded in a temporary account, Construction Work in Progress. Upon completion of the project and when the plant is placed into service, costs are allocated to the primary plant accounts.
- Contributed Plant (Account 101.2) is plant owned and used by the utility, which has an expectation of life in service of more than one year from the date of installation. This plant is financed by donations or contributions in cash, services or property from states or other municipalities or other governmental agencies, individuals, and others for construction purposes. The depreciation of contributed plant is not included as an expense in establishing rates for the utility.

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## Plant Accounting

Specific procedures for accounting for utility plant are listed below.

The total of all primary plant accounts and any subaccounts is listed in the balance sheet of the PSC annual report as Utility Plant in Service.

- Plant additions – Both direct costs and construction overhead costs are charged to the utility plant accounts. Direct costs include utility labor, materials from inventory, payments to outside contractors and suppliers, and vehicle expenses. Construction overhead costs include engineering design fees, supervision and inspection, advertising for bids, payroll fringe benefits, and interest during construction.

Utility plant constructed by a developer and contributed to the utility is recorded the same way as other utility plant, based on detailed costs supplied by the developer. If actual costs are unavailable, the utility should estimate the costs when recording the new plant. These costs are not recovered in rates and are discussed more in the subsection, “Contributions in Aid of Construction”.

- Plant retirements – When a unit of plant is removed from service, the original cost is retired by a debit to accumulated depreciation and a credit to the plant account. If the actual cost is unknown, use an estimate of the original cost based upon information from the general ledger or statistical schedules in PSC annual reports. Below is a table that provides benchmarks for retirement costs for mass units if the utility does not have retirement records.

A gain or loss is not ordinarily recorded upon retirement of a unit of property, with two exceptions: (1) Plant depreciated on a unit basis, and (2) the sale of non-depreciable land for an amount other than the original cost.

- Replacements – The replacement of a unit of property is accounted for as the addition of a new unit and retirement of the old unit. This should also be reflected in statistical schedules of the PSC annual report which show both additions and retirements.

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## Benchmark Retirement Costs for Small Water Utilities Without Property

<u>Years of Installation</u>	<u>Records</u>			
	6" or 8" Mains (per foot)	5/8" to 1" Services (per unit)	5/8" to 1" Meters (per unit)	Fire Hydrants (per unit)
Prior to 1920	\$ 2.00	\$ 20.00	\$ 10.00	\$ 70.00
1920 to 1929	\$ 3.00	\$ 30.00	\$ 15.00	\$ 80.00
1930 to 1939	\$ 4.00	\$ 40.00	\$ 25.00	\$ 100.00
1940 to 1949	\$ 6.00	\$ 60.00	\$ 35.00	\$ 150.00
1950 to 1959	\$ 8.00	\$ 80.00	\$ 40.00	\$ 250.00
1960 to 1969	\$ 10.00	\$ 100.00	\$ 50.00	\$ 500.00
1970 to 1979	\$ 20.00	\$ 200.00	\$ 60.00	\$ 750.00
1980 to 1989	\$ 25.00	\$ 300.00	\$ 70.00	\$ 1,000.00
1990 to 1999	\$ 35 .00	\$ 500.00	\$ 10 0.00	\$ 1,500.00
2000 to 2003	\$ 45 .00	\$ 650 .00	\$ 125 .00	\$ 2,000.00
2004 to 2006	\$ 60 .00	\$ 850.00	\$ 14 0.00	\$ 2,500.00
2007 to 2009	\$ 80.00	\$ 1,250.00	\$ 160.00	\$ 3,000.00

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## Work Orders and Continuing Property Records

Class AB utilities are required to record utility plant additions and retirements on work orders. Some utilities also use work orders to track repairs, such as main breaks. The sum of all outstanding construction work orders will agree with the balance in Account 107, Construction Work in Progress. When construction work orders are closed, entries are made to the general ledger and continuing property records. A completed work order may include: authorization for the project, plans and specifications, records of expenditures such as voucher numbers or check numbers and classification of expenditures including: maintenance, removal costs of capitalized assets, property units added and retired, and the cost accounting of those property units to determine original cost, also known as retirement costs.

Costs are itemized by property units in continuing property records (CPRs). The CPRs are maintained correctly, when the sum of costs assigned to property units agrees with the plant account balance. The integrity of CPRs is assured by periodic inventories of property or cyclical field verification of mass property units. In each account, the CPR indicates property units, quantities, actual or initially estimated original costs, ages, and locations. Maps are used to disclose locations and dates of installation for mass property.

Examples of CPRs are a card file or database file for meters, water mains segregated by size and type of pipe and year of installation, and a description of a building, including location, type of construction, additions and retirements. Each vintage or year of a CPR is a summary of that utility's additions and retirements to its assets for that year.

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## Developing Continuing Property Records (CPR)

If the utility wants to develop a CPR it can begin by doing an inventory of its property. Location properties are those significant assets that can be easily identified at a location, like the equipment in a well house, pumping station or tower. Mass units are characterized as similar equipment that are retired based on an average retirement cost for a particular vintage. Mass units are mains, hydrants and services and are usually inventoried using an accurate map.

The third type of asset composes the general plant accounts and includes office, stores, tools, laboratory, power operated and communication equipment. General plant equipment is usually subject to a capitalization policy that establishes a minimum value to capitalize the asset. If general plant accounts (except transportation and power operated equipment) are amortized then the utility no longer needs to keep track of the asset for depreciation and retirement purposes.

Location property and general plant are inventoried by a physical visit of the asset to develop a unique description of the asset, determine the year it was installed, a note of its location and establish its original cost. Mass units are inventoried by counting the units of property on an accurate map.

At the time a utility grows such that it exceeds 4,000 customers, then it may need to make estimates when original documents are not available in order to set up CPR records. Once CPRs are set up, actual costs are recorded each year providing the date, installation and the actual original costs.

When determining the age of the distribution system and the year of installation is not known then the utility can estimate the assets' age. For example a town probably knows when a water utility began and can associate that vintage to an inventory of the assets (typically mains, hydrants and services) in the core (oldest) area of the community, naming the vintage "1950 and older". The age of the remaining assets (main) can be estimated in blocks of ten, five or one year increments that represents how the community developed over time.

If the original cost is not known for these assets, an estimate of the retirement cost, also known as unit cost, can be made by allocating all of the dollars in the plant account to the inventoried assets. The PSC has a spreadsheet that can be used to initially establish the CPR records.

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## Location Property Initial CPR Set-up Spreadsheet Example

### Initial Spreading of Plant Account Dollars to Inventory

#### Development of Location Property Original Costs August, 1997

##### Account 325, Electric Pumping Equipment

LOCATION/UNIT DESCRIPTION	YEAR	\$/YEAR	\$/LOCATION	\$/ACCOUNT
<b><u>Well #1: Treatment Plant</u></b>				
Electrical Panels	1939	\$869		
American Turbine Pump, 1500 gpm	1993	\$4,808		
Fairbanks Morris, Model 361089, 50 hp	1939	\$541	\$6,218	
<b><u>Well #2: Lakeside</u></b>				
Cutler Hammer Panel	1939	\$869		
Worthington Pump, 1500 gpm	1985	\$2,000		
U.S. Motor, 60 hp, S/N 152720	1985	\$2,500	\$5,369	
<b><u>Well #3: Downtown</u></b>				
Square D Electrical Panel	1949	\$2,714		
Layne Pump, 1400 gpm	1949	\$3,410		
US Motor, 150 hp, S/N NA	1949	\$835	\$6,959	
<b><u>Treatment Plant:</u></b>				
Federal Pacific Panel, S/N M7878	1957	\$2,147		
<b><u>High Service Pump #1</u></b>				
Layne Pump, 1400 gpm, S/N 38216	1957	\$1,552		
Allis Chalmers motor, 100 hp, S/N 1-51-58-12977-1-1	1957	\$2,469		
<b><u>High Service Pump #2</u></b>				
Layne Pump, 1050 gpm, S/N 38217	1957	\$1,164		
Allis Chalmers motor, 75 hp, S/N 1-5337-97262-1	1957	\$1,400		
<b><u>High Service Pump #3</u></b>				
Layne Pump, 1050 gpm, S/N 38218	1957	\$1,164		
US Motor, 75 hp	1996	\$5,155		
<b><u>High Service Pump #4</u></b>				
Layne Pump, 1400 gpm, S/N 73880	1973	\$17,291		
G.E. Motor, 100 hp, S/N BJJ221140	1973	\$13,883	\$46,225	
<b>Total</b>				<b>\$64,771</b>
<b>1996 Annual Report</b>				<b>\$64,771</b>
<b>Difference</b>				<b>\$0</b>

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## Location Property Initial CPR Set-up Spreadsheet Notes

1. The sum of the original costs of each asset should reconcile to the total dollars recorded to that account in the Uniform System of Accounts.
2. The goal is to spread all of the dollars in the plant account to the inventoried equipment. The accounting purpose is to have a retirement cost (unit costs) when the equipment is replaced or no longer useful.
  - a. If all of the equipment in a plant account is retired there should be no dollars in that account.
  - b. This system of plant accounts supports depreciation and determining the life of its equipment.
3. Inventory equipment by location.
4. Separate equipment by plant account.
5. Equipment should have an adequate description so someone years later can find it.
6. When there is similar equipment like two US Motor 100 horsepower, include in the description a unique identifier like a serial number. If there is no serial number, a numerical tag placed on the equipment can become the unique identifier.
7. If you do not know the year installed – you can make an educated estimate.
8. If there are records that support the original cost of equipment, use that if it is convenient.
9. Estimate the original cost of the remaining equipment that does not have supporting documents.
10. Spread all of the dollars in the plant account to all of the equipment found in that plant account.

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## Mass Unit Property Initial CPR Set-up Spreadsheet Ex

Spreading Plant Account Dollars to 6-Inch Main Inventory

**Any Utility** Unit Type: Main-DI  
**Distribution Mains (Account 343) - DUCTILE ICON (DI)**  
**Unit Size: 6"**

<u>Year</u>	<u>Referenced</u>	<u>Units(+,-)</u>	<u>Total Units</u>	<u>Dollars(+,-)</u>	<u>Unit Cost</u>	<u>Total Amt</u>
1950	PSC Inventory	5000	5000	\$33,159.42	\$6.63	\$33,159.42
1960	PSC Inventory	6000	11000	\$61,013.33	\$10.17	\$94,172.75
1970	PSC Inventory	7000	18000	\$89,751.49	\$12.82	\$183,924.24
1980	PSC Inventory	8000	26000	\$238,158.31	\$29.77	\$422,082.54
1990	PSC Inventory	9000	35000	\$374,038.23	\$41.56	\$796,120.77
2000	PSC Inventory	10000	45000	\$504,023.15	\$50.40	\$1,300,143.92
2010	PSC Inventory	11000	56000	\$945,117.09	\$85.92	\$2,245,261.01
2011	PSC Inventory	1250	57250	\$110,162.95	\$88.13	\$2,355,423.96
2012	PSC Inventory	1500	58750	\$144,575.06	\$96.38	\$2,499,999.02

## Mass Property Initial CPR Set-up Spreadsheet Notes

1. The sum of the original costs of each asset should reconcile to the total dollars recorded to that account in the Uniform System of Accounts.
2. The goal is to spread all of the dollars in the mass plant account to the inventoried equipment. The accounting purpose is to have a retirement cost when the equipment is replaced and no longer useful.
3. Mass property includes: mains, hydrants and services. Meters could be included but because of their short life, 20 years, utilities usually have records of meter retirement costs.
4. Property units for mass property accounts are categorized by size and material. For example you can have a unit of property for 6-inch ductile iron main and another unit of property for 6-inch plastic main.
5. Inventory mass unit equipment by maps, preferably digital maps.
  - a. Maps provide the location requirement for mass property units.
  - b. Maps should have the year the unit was installed.
  - c. If the year installed is not known the utility can estimate the year that a neighborhood was installed.
  - d. Estimated years of installation can be made in blocks of years. For example vintages can include; 1950 and prior, 5 or 10 year increments.

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6. The above table and corresponding unit costs can be determined using a spreadsheet that uses a price index called the Handy Whitman Index. The index provides a time value to the unit costs and the excel spreadsheet provides an iterative process to determine a unit cost. Contact the PSC for a copy of this spreadsheet.

## Asset Management

At least once a year, completed work orders should be classified according to the Uniform System of Accounts. Maintenance costs are recorded to expense accounts, cost of removal and salvage is recorded to accumulated depreciation and various investments in facilities are recorded to the appropriate plant accounts. Additions and retirements need to be summarized for each plant account.

A Continuing Property Records system is an early form of asset management, a system to maximize the value of a utility's assets. A CPR and work order system provide a uniform way to track expenditures associated with maintenance, construction of new plant and the removal and retirement of old plant. The work order system feeds into the Continuing Property Records and provides the linkage of the original cost and age to a utility's assets. The CPR combined with the operation and maintenance activity of a utility is the information needed to optimize assets.

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## Why Continuing Property Records

In addition to the benefits of asset management a CPR is used in depreciation studies to ensure the utility recovers its investment over the life of the asset.

When a utility needs to increase its rates it will apply to the Public Service Commission. The final component of a utility revenue requirement is the return on Net Investment Rate Base (NIRB). NIRB is defined as gross utility financed plant less accumulated depreciation, less the regulatory liability for pre-2003 depreciation on contributed plant, plus utility materials and supplies. The rate of return expresses the utility's return on investment as a percentage of the NIRB.

Determination of rate base and rate of return are two of the most important and challenging aspects of establishing an appropriate revenue requirement. No other area of rate setting has received as much attention or been the subject of as much litigation. Continuing Property Records is the Public Service Commission's tool that allows easy verification of the utility's assets.

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## Preliminary Survey and Investigation Charges

Costs incurred for periodic or recurring general studies by professional consultants which do not pertain to a particular construction project are expensed when they are incurred.

Payments made to professional consultants for specific projects are charged to Account 183, Preliminary Survey and Investigation Charges. When construction begins, the accumulated cost is reclassified to Construction Work in Progress, Account 107, as a project overhead cost.

When construction is completed, direct construction and related overhead costs are allocated to utility plant in service and maintenance work done as part of the project is charged to maintenance expenses.

If the project is abandoned, please contact the PSC for assistance. Typically, the preliminary costs are charged to Account 435, Miscellaneous Debits to Surplus, or to the appropriate operating expense account.

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## Accumulated Depreciation

Accumulated depreciation is also referred to as depreciation reserve; however, establishment of a fund for ultimate replacement of plant assets is not required. Although inclusion of depreciation expense in customers' rates increases cash flow for the utility, the cash is not required by the PSC to be segregated into a special fund.

Accumulated depreciation is credited for depreciation accruals and salvage and debited for plant retirements and the cost of removing retired items from service. Salvage and cost of removal are explained below. (See depreciation expense discussion in the Expenses Section.)

Salvage is the amount received for plant retirements such as insurance recoveries which result from damage to utility property, the sale as scrap of a meter held in inventory, and the trade-in value of meters and vehicles. Salvage is credited to accumulated depreciation, even if it is realized in a year subsequent to retirement of the associated plant units.

All costs of removing plant from service are debited to accumulated depreciation. These costs include demolition of a building and transporting materials to another location, disposal of equipment, and capping a well to prevent contamination of the aquifer as required by the Wisconsin Department of Natural Resources. Generally, the large cost of dismantling an elevated water tower is not provided for in depreciation rates. It may be addressed on a case-by-case basis by contacting the PSC staff.

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## Amortization of General Plant Accounts

Utilities may opt to amortize general plant accounts instead of depreciating them. This includes Accounts 391, 393, 394, 395, 397, and 398.

Amortization of general plant accounts can result in cost savings because it eliminates the need to track, inventory, and retire a large amount of small items. For each of the eligible accounts, all items purchased in a given year are amortized over a fixed time period by a charge to Account 403, Depreciation Expense, and a credit to Accumulated Depreciation.

When the group of items is fully amortized, the entire group is retired from Plant in Service. Individual retirements are not recorded. Additional information on this amortization method can be obtained from the Division of Water, Compliance and Consumer Affairs.

Amortization Ranges				
Municipal Water Utilities				
05-US-106				
		Years	Percent	
Account 391 , Office Furniture and Equipment		15 - 20	5.0 - 6.7%	
Account 391.1, Computers and Other Electronic		3 - 6	16.7 - 33.3%	
	Equipment,			
Account 393, Store Equipment		15 - 20	5.0 - 6.7%	
Account 394, Tools, Shop and Garage Equipment		15 - 20	5.0 - 6.7%	
Account 395, Laboratory Equipment		15 - 20	5.0 - 6.7%	
Account 397, Communication Equipment		5 - 10	10.0 - 20.0%	
Account 397.1, SCADA Equipment		10 - 12	8.3 - 10.0%	
Account 398, Miscellaneous Equipment		15 - 20	5.0 - 6.7%	

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## Computer and SCADA Equipment

This category of plant includes office computer equipment and SCADA (System Control and Data Acquisition) equipment. Both are recorded in subaccounts of primary plant accounts, and both of these subaccounts are listed on separate lines in PSC annual reports. Relatively short service lives due to rapid obsolescence are reflected in the depreciation rates for this equipment.

Office computer equipment is charged to Computer Equipment, which is Account 391.1. Items such as the following should be charged to this account: processing units, terminals, printers, modems, disk drives, software programs, and furniture which have a service life similar to the equipment itself.

SCADA equipment consists of computers and related automation used in the control of plant operations. It includes computer equipment with relatively short service lives and remote terminal units with longer service lives. SCADA Equipment is charged to Account 397.1.

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## Meters

A meter included in the cost of utility plant can be in stock/on hand, installed at its original location, or reinstalled at a subsequent location. The purchase cost of meters and initial cost of installation are charged to Account 346, Meters, at the time of purchase.

When a meter is retired, the original purchase cost plus initial installation cost is retired from Account 346. The cost of removing and resetting meters is charged to operating expenses, as listed below.

1. Class AB utilities: Account 663, Meter Expenses.
2. Class C utilities: Account 640, Operation Labor.
3. Class D utilities: Account 600, Salaries and Wages.

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## Hydrants

The cost of hydrants in stock is charged to the materials and supplies inventory, which is Account 154. The cost of installing a hydrant and connecting the hydrant lead and gate valve is charged to Account 348, Hydrants. When a hydrant is retired, the original installed cost is debited to accumulated depreciation and credited to Account 348, Hydrants.

Insurance proceeds for a damaged hydrant are considered salvage if the hydrant is retired and subsequently replaced, and are therefore credited to accumulated depreciation. Insurance proceeds for a damaged hydrant which is repaired rather than being replaced are credited to the maintenance expense account which was charged with the cost of repairs.

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## Pumps

The cost of buildings and equipment used in a well pump house or booster pumping station are accounted for as listed below. A large utility may also choose to allocate some costs on a functional basis to Accounts 311 and 312 for source of supply plant or Accounts 331 and 332 for water treatment plant.

**Account 321** - Structures and Improvements, is charged with the cost of buildings, mechanical systems for heating and lighting, an electrical substation adjacent to the building, fences, access roads and driveways.

**Account 323** - Other Power Production Equipment, is charged with the cost of equipment for generating electricity during a power outage. This account is charged with the cost of gas (natural or L.P.), gasoline, combustion turbine, or diesel engine power generating equipment.

**Account 325** - Electric Pumping Equipment, is charged with pumping equipment driven by electric power; including pumps, motors, electrical control panels, station meters, and piping connected to the pumps.

**Account 326** - Diesel Pumping Equipment, is charged with pumping equipment driven exclusively by diesel engines; including pumps, electrical control panels, station meters, and piping connected to the pumps.

**Account 328** - Other Pumping Equipment, is charged with the cost of engines used in combination with direct drive pumps per the Uniform System of Accounts.

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## Capitalized Interest Expense

A water utility may capitalize interest expense from the money it needs to build a large project in which construction lasts at least several months and is typically funded through the issuance of long term debt. Capitalized interest expense is a construction overhead which is allocated to primary plant accounts proportionate to direct construction costs charged to each account. Capitalized interest is referred to as allowance for funds used during construction (AFUDC) or interest during construction (IDC).

The applicable AFUDC is computed from the time bids are taken until construction is completed. For borrowed funds, the net amount to be capitalized is accrued interest expense, less the amount of interest earned from temporary investment of construction funds over the same time period as the construction. The net amount is recorded by debiting Construction Work In Progress, Account 107 and crediting Account 432, Interest Charged to Construction as AFUDC.