Depreciation-Vermont

NARUC Energy Regulatory Partnership Program

The Georgian National Energy and Water Regulatory Commission
and
The Vermont Public Service Board

by

Ronald W. Behrns

Vermont Department of Public Service

December 17, 2008

Overview

- Principles, Concepts, and Components
- Establishing Utility Asset Data Base
- Elements of a Depreciation Rate
- Determining Service Lives
- Formulas and Calculations

Principles, Concepts, and Components

- **Depreciation—what is it?**

- Depreciation is an expense allowance for using up, wear and tear, deterioration, or obsolescence of tangible assets that allow a company to recover the cost of such assets from rate payers

Principles, Concepts, and Components

- **Depreciation-why is it important?**
- From a rate making perspective
  - Allows company to recover original cost of asset from rate payers
  - Provides cash flow

Principles, Concepts, and Components

- **Depreciation-why is it important?**
- **From an accounting perspective**
- **The cost principle-**
  - -requires depreciation expense to be based on the historical or original cost of the asset
- **The matching principle-**
  - Allows the company to match the expense of an asset to the income that the asset helps the company earn

- **Depreciation Methods**

- There are several methods that can be grouped into two categories:
  - straight line depreciation and
  - accelerated depreciation

Principles, Concepts, and Components

- **Depreciation**
  - begins when the property is placed into service
  - ends when the property is retired from service
- **Key Concept – zero net plant value at end of life**

MSOffice1 , 12/1/2008

Principles, Concepts, and Components

- **COMPONENTS of a depreciation rate**
  - **Asset original cost**
  - **Salvage value at retirement**
  - **Cost of removal**

Principles, Concepts, and Components

- **Depreciation--Fundamentals**
  - **Zero net plant at end of life** is rarely achieved
  - Typically the largest non-fuel expense
  - The higher the depreciation rate, the greater the revenue requirement
  - The greater the revenue requirement, the higher the charges to ratepayers

Principles, Concepts, and Components

- **Depreciation--Fundamentals**
  - Depreciation = Cash
  - Cash inflows
  - Money in hand

Establishing Utility Asset Data Base

- There are many parts and pieces to a comprehensive Asset Data Base
  - The Asset Data Base should be integrated with all of the other business processes and other information systems in the company that are related to the acquisition, management, maintenance and use of the company's assets-especially plant and equipment

Establishing Utility Asset Data Base

- Uniform System of Accounts
  - Provides the framework for planning, recording, classifying, reporting, analyzing and summarizing financial transactions in an orderly, systematic fashion
  - Provides the basic framework for an Asset Data Base, based on accounts, for functionally classifying different types of property

Establishing Utility Asset Data Base

- Capital Budgeting Process
  - Provides a means to optimize the utilization of a company's capital
  - Identifies cost effective capital spending projects and the year in which they are planned to go into service
  - Summarizes detailed engineering, planning and design elements related to specific projects

Establishing Utility Asset Data Base

- Engineering and Design Processes
  - Provides the basis for the actual procurement of specific materials, labor and other items needed for the construction and or acquisition of plant additions

Establishing Utility Asset Data Base

- Work Order Control Process
  - Provides a means to manage and keep track of costs of specific units of plant that are associated with a capital spending project
  - Provides the basic building block for aggregating capital expenditures together to identify retirement units

Establishing Utility Asset Data Base

- Property Records
  - Are used to keep track of actual plant and planned changes to plant
  - Are fundamental records in an **Asset Data Base** that support engineering and design, the accounting general ledger and balance sheet, service provisioning, plant maintenance and capital planning
  - Existing property records in the Asset Data Base are updated at the end of an annual reporting period for retirements, salvage, cost of removal and depreciation
  - A new **Property Record** is created and added to the Asset Data Base at the end of an annual reporting period for the new vintage of plant additions

Establishing Utility Asset Data Base

- Property records for the Asset Data Base include the following detailed information
  - Account, class of plant, asset group
  - Actual cost and units of new plant
  - Month and year place in service
  - Estimated and actual or imputed service life
  - Estimated and actual salvage
  - Estimated and actual cost of removal
  - Estimated and actual or imputed retirements
  - Depreciation rate by account and asset group
  - Depreciation reserve by account

Elements of a Depreciation Rate

- Original cost of the asset
- Salvage value of asset at retirement
- Cost to remove the asset from service
- Useful and Absolute Physical Life
- Accumulated depreciation (reserve)

Elements of a Depreciation Rate

- Continued
- Book value
- Group Depreciation/Mass Accounts
  A method of amalgamating assets into a pool, or group, which is used as a depreciation cost base
- Individual Asset/Identified Accounts

Elements of a Depreciation Rate

- Determining what assets to keep track of and how to cost them is quite different than trying to determine how much of the value of a particular asset has been used up for a particular reporting period to generate revenue
- How do you determine how much of your assets have been used up, i.e. how do you determine the amount of depreciation for the reporting period?

Elements of a Depreciation Rate

- **Depreciation Engineers** and **Depreciation Accountants** working together develop
  - COMPOSITE DEPRECIATION RATES FOR EACH ACCOUNT that are periodically adjusted based on an analysis of the **Accumulated Depreciation Reserve**
- In short it is a lot of averaging together of a lot of different components that is intended to approximate how much of the value of the assets has been used up for the reporting period

Determining Service Lives

- Service life estimates are based on ***JUDGEMENT*** that consider a number of factors
- Statistical analysis of information
- Other factors to be considered
  - Examination of company policies regarding retirements (repair or replace)
  - Examination of emerging technology trends and future changes
  - Estimated growth and anticipated changes in service offerings
  - Comparison of selected average life with average life and survivor curve estimates from other similar companies

Determining Service Lives

- Statistical methods for determining service lives
  - **Actual Mortality** - actual retirement experience used to develop survivor curves that are subsequently conformed to best-fit Iowa-Type survivor curves
  - **Simulated Plant Balance** - comparing book balances with simulated surviving plant balances to determine average service life and survivor curve combinations
  - **Computed Mortality** - a statistical approach of aging annual retirements from entries recorded in the property records based on trials using a specified Iowa type curve that incorporates the results of the simulated plant balance method

Determining Service Lives

- Ideally service life should be based on actual historical mortality information by vintage (retirements and survivor's)
- Or use a statistical approach to examine plant balances and or survivors to estimate service life and remaining service life

Determining Service Lives

- Continued
- Or use the estimated average service life of other similarly situated companies or
- Use Capital Recovery Schedules

Formulas and Calculations

- Calculation of **Composite Depreciation Rates**
- A depreciation rate is developed for each account or for each grouping of similar assets
- **Group Method** as opposed to **Unit Method** of determining depreciation

Formulas and Calculations

- Calculation of Composite Depreciation Rates (continued)
  - The composite rate is basically a weighted average of all of the individual items and or “groups" of items within an account for all vintages
  - The composite rate is developed from a “Depreciation Study” that determines the remaining life of the existing plant

Formulas and Calculations

- Calculation of **Composite Depreciation Rates**
- The calculation includes:
  - Original cost
  - Calculated Accrued Reserve
  - Allocated Book Reserve
  - Future Required Accruals
  - Remaining Life
  - Annual Accrual

ACCOUNT 364 POLES; TOWERS AND FIXTURES
CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2005

SURVIVOR CURVE .. IOWA 30-RO.5 Service Life 30 years
NET SALVAGE PERCE -25

Line No.	YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUT. BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)	USED LIFE (8)	USED LIFE (9)	REMAINING LIFE (10)
		$	$	$	$	Years	$	Years	%	%
		Property Records	(Col 2 * 1.25) * Col 9	Judgement	Col 2 less Col 4	Iowa Curves	Col 5 / Col 6	30 less Col 6	Col 8 / 30	Col 6 / 30
1	47-'85	$ 13,253,498	$ 9,498,351	$ 12,643,118	$ 3,923,755		$ 267,933			
2	1986	940,107	453,954	612,723	562,410	18.41	30,549	11.59	38.6%	61.4%
3	1987	1,236,063	568,126	766,826	778,253	18.97	41,025	11.03	36.8%	63.2%
17	2002	4,734,663	426,120	575,154	5,343,175	27.84	191,924	2.16	7.2%	92.8%
18	2003	2,605,075	168,353	227,234	3,029,110	28.45	106,471	1.55	5.2%	94.8%
19	2004	1,894,345	73,406	99,080	2,268,851	29.07	78,048	0.93	3.1%	96.9%
20	2005	3,552,139	45,734	61,729	4,378,445	29.69	147,472	0.31	1.0%	99.0%
21	Sub To	$ 38,509,707	$ 8,382,294	$ 11,313,978	$ 36,823,157		$ 1,471,862			
22	Accour	$ 51,763,205	$ 17,880,645	$ 23,957,096	$ 40,746,912	23.40	$ 1,739,795	6.60	22.0%	78.0%
							Percentage Col 7 / Col 5			
23	COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, percentage						3.36%			
	CCOMPOSITE REMAINING SERVICE LIFE years					29.76				

Formulas and Calculations

- Calculations Explained

Depreciation

- Open discussion
- Questions and Answers