

*Mission Statement:*

*The UTC protects consumers by ensuring that utility and transportation services are fairly priced, available, reliable, and safe.*



# Washington Utilities and Transportation Commission

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## Principles of Depreciation: An Introduction to Depreciation Concepts used in Public Utility Ratemaking.

Prepared for: The Kyrgyz Republic SEA

**Mr. Thomas Spinks, Regulatory Consultant**  
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# What is Depreciation?



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Depreciation is the recognition of the decrease in value that a long-lived asset suffers over its useful life.

It is a fact of life for all industries, not just regulated utilities.

# Depreciation vs. Amortization



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- Property is depreciated over its useful service life in roughly equal amounts per year.
  - Amortization is the allocation of a dollar amount over an arbitrary period of time.
  - Depreciation is used for tangible property.
  - Amortization is used for intangibles such as rights-of-way, depreciation reserve deficiencies, licenses, and fees requiring large initial expenditures.

# Why is depreciation important?

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Public utilities invest in assets which are used to provide utility service. Funds are raised and borrowed to construct power plants, transmission and distribution lines, and all of the other plant and equipment necessary to provide utility service to customers. Public utility commissions set the allowable prices that the company can charge the customer. In determining the allowable rate to charge, a commission has to determine the expenses of the utility and the amount of rate base for the utility to which the authorized rate of return will be applied. One of the largest single category of public utility expense is the depreciation expense and the largest determinant of rate base is the amount of depreciation expense that has already been recovered.

# Important Court Decisions for the Regulated Utilities

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- In determining reasonable rates for supplying public service, it is proper to include in operating expenses, an allowance for the consumption of long-lived assets in order to maintain the integrity of the investment in the service rendered.
- The purpose of depreciation is to provide for recovery of current investment, not to provide replacement for future investment.
- The value of the property to be recovered is based on its original cost.
- The property to be depreciated must be “used and useful” in providing utility service.

# Definitions of Depreciation



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Depreciation and amortization record the decline in service capacity of property. Depreciation cost accounting is the measurement of this decline and the allocation of the property's original cost over its service life. At the same time a record is kept in a "depreciation reserve" account of the cumulative depreciation costs recovered in rates. The reserve represents the return of the investment and provides an ongoing record of the deduction from rate base valuation. Depreciation cost accounting is generally within a regulatory agency's discretion.

# Definitions cont'



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- Depreciation, as applied to depreciable utility plant, means the loss in service value not restored by current maintenance, incurred in connection with the consumption of utility plant in the course of service from causes which are known to be in current operation and against which the utility is not protected by insurance. Among the causes to be given consideration are wear and tear, action of the elements, decay, inadequacy, obsolescence, changes in the art, changes in demand and requirements of public authorities. – NARUC 1958

# Summary of Basic Concepts



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- Depreciation is a cost that is common to regulated businesses.
  - Tangible property is depreciated, Intangible property is amortized.
  - Court decisions established the right of regulated businesses to recover depreciation expense in utility rates, the use of original cost in calculating expense, and the inclusion of only property that is used and useful in providing utility service.
  - Depreciation measures the decline in service capacity or loss in service value of the property.



# Elements Of A Depreciation Rate

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Methods – straight line and accelerated

Procedures – Broad group, Vintage group,  
Equal life group and unit depreciation

Techniques – Whole life, Remaining life

# Methods of Determining Depreciation

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- Straight-Line depreciation – Under the most common form of depreciation, an equal amount of depreciation expense is allocated each year of the service life.
- Accelerated depreciation – For federal income tax purposes, the government has often allowed accelerated depreciation of certain assets to promote investment.

# Procedure - Group or Unit Depreciation



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- Except for buildings and major pieces of equipment, it has long been recognized that service lives are more predictable as a group average, rather than an expectation attached to a particular unit. This experience derives from the insurance business, where a stable statistical ratio normally appears with large group data, which allows the calculation of an average prospective life to be made with reasonable accuracy.

# Depreciation Techniques



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- Whole life – The rate is calculated using the average service life of the property.
  - Remaining Life – The rate is calculated using the remaining life of the property which is the average service life minus the average age of the property.

# Depreciation Formulae

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- Whole Life

$$\text{Rate} = \frac{1 - \text{Net Salvage}\%}{\text{Average Service life}}$$

- Remaining Life

$$\text{Rate} = \frac{1 - \text{Net Salvage}\% - \text{DR}}{\text{Remaining Life}}$$

DR is the depreciation reserve

# Average Service Life



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- Service lives are estimated by consideration of what has happened in the past, modified by informed judgment as to what is likely to happen in the future. Technically, and as a matter of formal regulation, it is “the period of time between the installation of the unit in question and its retirement for accounting purposes.”

# Determining Service lives



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- Actuarial method – If the company's books contain the service age of retired property as the retirements occur, an actuarial type analysis is possible.
  - Simulated Plant Record method – For this procedure, the needed data are total additions and total retirements each year for as many historic years as the company's book provide.

These methods produce a mathematical calculation of the historic realized average service life which may or may not be representative of the future expected life of the plant.

# The Role of Salvage



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- The “service value” of property is the difference between the original cost of plant and the estimated net salvage to be recovered when the plant retires.
  - Net salvage is the difference between Gross salvage and Cost of Removal.
  - Gross salvage is the value of the plant to be received upon disposal.
  - Cost of Removal is the cost incurred in retiring the plant.



# Summary of Depreciation Calculation

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- A depreciation method, technique and procedure must first be selected.
- An average service life must be determined for the property group or a service life determined for the property unit.
- A net salvage amount at the end of the life of the property must be determined.

# How to Calculate Depreciation Expense

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- Original cost = \$10,000
- Service life = 5 years
- Net Salvage = 10% or \$1,000
- Method is straight line
- Procedure is unit depreciation
- Technique is whole life

# Calculating the Rate



- Whole Life

$$\text{Rate} = \frac{1 - \text{Net Salvage}\%}{\text{Average Service life}} = \frac{1 - 10\%}{5 \text{ years}} = 18\%$$

# Annual Accrual and Reserve Balance



YEAR	Annual Expense	Depreciation Reserve	
1	1,800	1,800	
2	1,800	3,600	
3	1,800	5,400	
4	1,800	7,200	
5	1,800	9,000	