

# Buyer Beware: Line Losses a tricky Line Item in Power Contracts

Make no mistake, you as an end-use customer will pay for line losses. They differ by each utility (see map on page 2), but you will be billed for losses incurred in the power delivery system. It can mean an additional 2, 4 or even 6 percent on top of your actual consumption.

Understanding that most customers will choose a different retail electricity provider, or even switch from their current supplier for a price differential as small as 3-5%, the treatment of line losses in the proposal stage can make similar proposals look like apples and oranges.

A retail electricity provider can treat line losses in two manners.

## 1) Up The Price

The most transparent approach is to include the multiplier for losses in the price per MWh. So, if the price for your actual consumption is \$90 per MWh and the line losses in your region is 5%, a REP may propose a price of \$94.5 per MW. The price is grossed up to include the line losses.

## 2) Up The Consumption

Another approach is to leave the price per MW at \$90, but gross up the consumption by a multiplier that equals the line losses. This is usually done in a qualifying state-

ment somewhere in the proposal and contract that may refer to an adder to consumption. It's easy to miss this approach so customers should be diligent.

## Line losses explained.

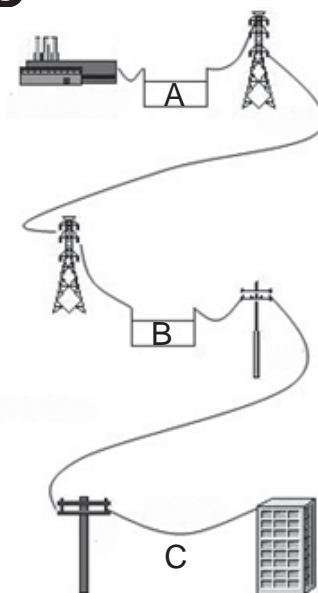
High voltage power lines move power from generators over the US transmission system. The primary source of line losses is friction caused by moving electrons. Heat and load also have an impact.

The higher the voltage, the lower the resistance and the lower the losses. As a result, a factory that uses 6,900 volts will experience less losses than a small business that uses 120 volts.

When power leaves a generation plant it is stepped up by a trans-



***If you dig hard enough you will find the contract language that includes line losses.***



## Voltage Levels and their typical loss rate:

**A: Transmission Level (>69kV): 1% to 2%**

**B: Primary (>2kV and <69kV): 3% to 5%**

**C: Secondary (<2.2kV): 6% to 10%**

former to high voltage and sent through the grid. It then reaches a substation where the voltage is reduced for more localized distribution. Before it reaches the end user it is stepped down again.

## How much electricity is lost during transmission?

Assuming a 5% line loss factor for a grid, a power plant that generates 100 MW, the customers at the end of the grid will only receive 95MW. Line losses are calculated based on each individual system operational constraints. Line loss rates are published by each utility for each

# Line Losses (cont'd)

voltage class and are approved by each state's regulatory commission.

## Contract Review

Few customers devote 100% of their time to energy procurement. According to a 2005 survey of more than 300 business people who recommend, research, implement or approve energy contracts, approximately 79% said they devote less than 20% of their time to the process. But all retail electricity providers devote 100% of their time to landing business from customers like you. Additionally, many corporate legal teams review contracts from a legal perspective only and leave the commercial issues up to others. Therefore, the onus to find equal ground for comparison falls entirely on the power procurement team.

## Line Losses on Bills

There are several ways that line losses are charged to customers. It's important to know how losses will be accounted for in your bill.

### 1) Losses as a multiple of usage

In this method, losses are accounted for as a multiple of your usage. In this method, your metered usage is grossed up to account for the amount of energy placed on the grid by your supplier/generator.

**Formula:**  
(meter usage X loss rate ) x contract price

### 2) Losses as a multiple of energy price

In this method, losses are accounted for as a multiple of your energy price.

Although mathematically equivalent to "Losses as a multiple of usage," the net effects are worth describing. In this method, your metered usage is shown on your bill while the price is grossed up to account for cost of losses.

**Formula:**  
meter usage X (contract price x loss rate)

### 3) Usage with losses included in the energy price.

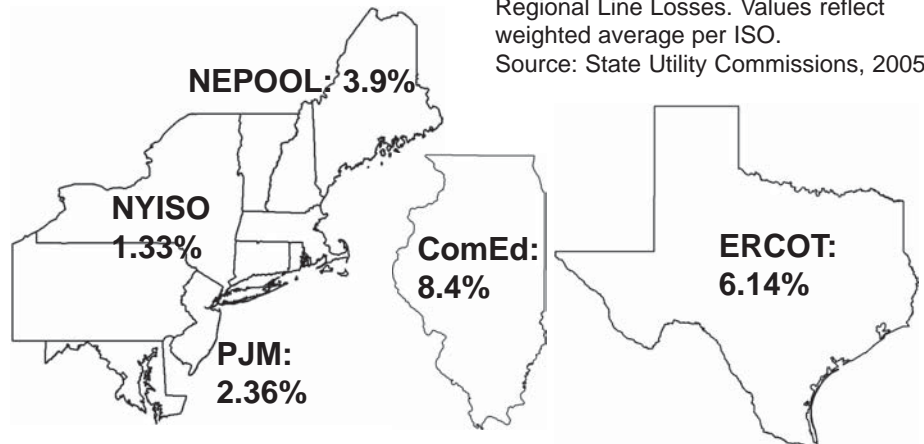
In this method, the most common approach in the retail electricity market and the one utilized by SUEZ Energy Resources, losses are considered to be included in the energy price.

**Formula:**  
metered usage X contract price

### Summary

Don't wait for the bills to arrive to discover what the true cost of competing proposals. Get to the bottom line early.

**Calculations (Assumed Loss Rate: 10%)**  
**Method 1: (100MW X 1.1) X \$90 = \$990**  
**Method 2: 100MW X (\$90 X 1.1) = \$990**  
**Method 3: 100MW X \$99 = \$990**



**Proposal for Electricity Supply**

\$52.5 per MW  
(price includes line losses of 5%)

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Once you know what to look for, it's relatively easy to compare competing bids for electricity supply and spot the subtle, yet powerful differences.

**Proposal for Electricity Supply**

\$50 per MW

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Adder of 5% for line losses will be applied.