$$k_e = \frac{D_0}{4P_0}\left[(1+k_e)^{-.75} + (1+k_e)^{-.5} + (1+g)(1+k_e)^{-.25} + (1+g)\right] + g$$

Where:
k_e = market required rate of return (annual effective rate)

And, as indicated above, the Commission also introduced the concept of the "ratemaking rate of return," which is derived by a formula which adjusts the rate produced by the 442 Effective Rate Model.

This staff report reviews the Commission's analysis of Order No. 422 on the ratemaking rate of return issue and makes some modifications to that analysis. In the process, we hope that the issues related to the ratemaking rate of return concept and its application become clearer.

B. Definitions

Many terms are being used in this proceeding that are similar in appearance and close in meaning. It is easy to understand how a reader may get confused. The purpose of this section is to put the various terms in perspective and thereby to make the reading easier. Unless otherwise specified, these concepts are used in reference to common equity capital only.

First, three adjectives often applied to the phrase "rate of return on common equity" are *required, expected* and *earned*. The first two are often used interchangeably. Sometimes the latter two are used together. This can raise ambiguities in a reader's mind.

In market equilibrium, investors' required and expected rates of return are equal, by definition; supply equals demand. The supply side of the market reflects what investors require while the demand side reflects what investors expect. The basis for estimating investors' required rates of return with a discounted cash flow model depends on the assumption of market equilibrium. The DCF model estimates investors' expected rates of return.

In contrast, the earned rate of return is the rate of return actually earned by a company on the book value of its common equity investment. It is an accounting rate of return rather than a market rate of return like the investors' expected and required rates of return.

A second useful distinction is between *nominal* and *effective* rates of return. Generally, these are different ways of expressing the same thing. There are strict mathematical relationships between these rates. The difference between effective and nominal rates is that the former includes the compounding effects of intrayear earnings in the total return for the year. When compounding occurs only once per year, the effective and nominal rates are the same. However, when the compounding is more frequent, the effective rate is higher than the nominal rate.

For preferred stock and debt, the dividends and interest constitute the total returns paid by the company to the investor. As a result, for these types of securities, the difference between the nominal and effective return is only the return obtained by the investor through his own reinvestment of dividends or interest during each year.

In contrast, utility common stock investors receive their return through a combination of dividends and reinvestment of retained earnings. Since some of a utility's earnings are normally retained, the difference between effective and nominal rates for common stock would include two components: (1) The return that the investor obtains from his own intrayear reinvestment of the dividends he receives on a quarterly basis and (2) the return that the utility obtains through its intrayear reinvestment of the portion of its earnings that it retains on the investors' behalf.

The 442 Effective Rate Model produces an estimate of the investors' *effective* required rate of return on common equity since it incorporates these two return components. The 420 Model produces a rate which cannot be characterized as either a nominal or an effective rate as they are defined above. Rather, the 420 Model produces an estimate of investors' effective required rate less that portion of the intrayear return that the investor obtains through his own reinvestment of dividends. In other words, it is the rate that the company has to pay out to the investor (what can properly be referred to as the cost to the company, excluding flotation costs) in order for the investor to have the opportunity to earn his effective required rate. We shall refer to the rate produced by the 420 Model as the "420 nominal rate."

Another set of terms used in reference to rate of return on common equity include *allowed, benchmark* and *ratemaking*. The "allowed" rate of return is the rate that the regulatory commission uses in determining the utility's revenue requirements. For purposes of this report, the final two terms are defined in terms specific to this proceeding. The following definitions are provided from Order No. 442:

"Benchmark rate of return" means the rate of return on common equity that is determined each quarter based on the findings made in the annual proceeding regarding the quarterly indexing procedure and the average cost of common equity and the average ratemaking rate of return on common equity for the jurisdictional operations of public utilities.

"Ratemaking rate of return" means the rate of return on common equity that, when applied to rate base in determining revenue requirements for ratemaking purposes, will give investors the opportunity to obtain the effective required rate of return on common equity and give firms the opportunity to recover flotation costs.

Also, it should be pointed out that the quarterly indexing procedure established by Order No. 442 defines the benchmark rate of return in terms of the ratemaking rate.

Finally, reference should be made to the "cost of capital" to the company or, more specifically, the "cost of common equity." Generally, this has been defined as the sum of the investors' required rate of return and an allowance for the flotation costs involved in new stock issuances. Since the required rate of return can be defined in terms of effective, nominal and "420 nominal" rates, as discussed above, so too can the cost. Order No. 442 established the definition of the cost of common equity in terms of the investors' effective required rate. On rehearing this cost is being defined in terms of the "420 nominal."

C. Order No. 442

As suggested above, in the second annual generic rate of return proceeding, the Commission made two important changes from the first annual proceeding. First, it adopted a different DCF model—the so-called 442 Effective Rate Model. Second, it introduced the concept of the ratemaking rate of return. The objective of the ratemaking rate of return was to determine the rate of return which, if allowed, will give the utility the opportunity to earn enough revenues to provide its investors with the return they require.

In the first change, the 442 Effective Rate Model estimates the investors' effective required rate of return rather than some nominal required rate.[2] Order No. 442 explains that the primary difference between the effective and nominal rates is that the former is always larger because it includes the returns investors expect from reinvestment of intrayear earnings—reinvestment of dividends by the investor and reinvestment of retained earnings by the firm. 51 FR 343 at footnote 13. The order proceeds to note that the effective rate is not the appropriate basis for allowed, or benchmark, rates of return.

According to that order, the appropriate basis for the benchmark rates of return is the ratemaking rate of return. This is the second, and most important, change in Order No. 442. To arrive at the ratemaking rate of return, the investors' effective required rate of return determined by the new model was adjusted to achieve three objectives:

1. Eliminate from the investors' effective required rate of return that portion which relates to their reinvestment of quarterly dividends.

[2] According to Order No. 442, the 420 Model was "intended to estimate the investors' nominal quarterly required rate of return on common equity." 51 FR 343 at 346. As explained above, the 420 Model is better viewed as providing an estimate of a different type of "nominal" rate than the nominal quarterly rate. As a basis for allowed rates of return, the nominal quarterly rate appears to incorporate aspects of the ratemaking rate concept.

GLEASON-000775