CHAPARRAL CITY WATER COMPANY, INC.

DOCKET NO. W-02113A-04-0616

DIRECT TESTIMONY

OF

BEN JOHNSON, PH.D.

ON BEHALF OF

THE

RESIDENTIAL UTILITY CONSUMER OFFICE

AUGUST 30, 2007

TABLE OF CONTENTS

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On Behalf of

The Residential Utility Consumer Office

Before the

Arizona Corporation Commission

Docket No. W-02113A-04-0616

Introduction

Q. Would you please state your name and address?

A. Ben Johnson, 3854-2 Killearn Court, Tallahassee, Florida.

Q. What is your present occupation?

A. I am a consulting economist and president of Ben Johnson Associates, Inc.®, an economic research firm specializing in public utility regulation.

Q. Have you prepared an appendix that describes your qualifications in regulatory and utility economics?

A. Yes. Appendix A, attached to my testimony, will serve this purpose.

Q. What is your purpose in making your appearance at this hearing?

A. Our firm has been retained by the Residential Utility Consumer Office ("RUCO") to

assist with RUCO's participation in this proceeding, with respect to the appropriate rate of return to be applied to Chaparral City Water Company's (Chaparral City or Company) fair value rate base.

Following this introduction, my testimony has four sections. In the first section, I briefly summarize the background of this proceeding. In the second section, I discuss rate regulation and the concept of a fair value rate base. In the third section, I continue this discussion, focusing more specifically on the concept of a fair rate of return as it is appropriately applied in the context of a fair value rate base. I include a discussion of the Commission's long-standing approach to calculating a fair return for application to a fair value rate base, and some alternatives to that approach. In the fourth and final section, I summarize my conclusions and recommendations.

Background

Q. Could you now briefly summarize the background of this proceeding?

A. This proceeding began on August 24, 2004 when Chaparral City Water filed an application for a rate increase. The Commission held a hearing on May 31 through June 8, 2005, and issued Decision No. 68176 on September 30, 2005 granting a rate increase to the Company. In its order, the Commission adopted an Original Cost Rate Base (OCRB) and a Reconstruction Cost New less Depreciation (RCND) Rate Base of $17,030,765 and $23,649,830, respectively. [Decision No. 68176, p. 9] With regard to Fair Value Rate Base (FVRB), the Commission found that “the average of the adjusted OCRB and RCND provides a reasonable measurement of the current value of the

Company's property dedicated to public service". [Id.] Based upon a 50/50 weighting, the Commission determined the Company's FVRB to be $20,340,298. [Id.]

Relying on Staff's cost of equity recommendation, the Commission determined Chaparral City's weighted average cost of capital (WACC) to be 7.6%. [Id., p. 26] In accordance with established precedent, the Commission multiplied the WACC by OCRB to determine the Company's operating income of $1,294,338. [Id., pp. 26-28] The Commission then divided operating income by FVRB to arrive at a fair rate of return of 6.36%. [Id., p. 28] The fair rate of return was then applied to the FVRB to determine operating income for rate making purposes.

Q. What was the Company's reaction to the Commission's decision?

A. Chaparral City submitted an Application for Rehearing of Decision No. 68176, alleging that the Commission's order was "contrary to law, arbitrary and unsupported by the evidence". [See, Remand Hearing Procedural Order, June 7, 2007, p. 1] The Company's Application for Rehearing was denied by operation of law. [Id.] Chaparral City subsequently filed an appeal with the Arizona Court of Appeals.

Q. Did the Court of Appeals address the Commission's methodology for determining a fair rate of return?

A. Yes. First, the court recognized that the Arizona Constitution gives the Commission "exclusive and plenary" authority to prescribe rates for public utilities within the state. [Chaparral City Water Company v. ACC, 1 CA-CC 05-0002, Memorandum Decision, p. 5] However, the court also noted that the state Constitution requires the Commission to

ascertain the "fair value" of the utility's property. [Id., p. 6]. Article 15, Section 14 of the Arizona Constitution states:

> The corporation commission shall, to aid it in the proper discharge of its duties, ascertain the fair value of the property within the state of every public service corporation doing business therein; and every public service corporation doing business within the state shall furnish to the commission all evidence in its possession, and all assistance in its power, requested by the commission in aid of the determination of the value of the property within the state of such public service corporation.

The court stated that this provision has been interpreted as requiring the Commission to determine the fair value of the utility's property, and to use that finding as the rate base in setting rates. [Id., citing Simms v. Round Valley Light & Power Co., 294 P. 2nd at 382] The court noted that the Arizona Constitution does not define fair value, but stated that it is "generally recognized as being based on both original cost and reproduction cost". [Id., p. 4, f.n. 4]

On appeal, the Company argued that operating income should be determined by multiplying the FVRB by the rate of return, and that "the rate of return is generally equal to a utility's weighted cost of capital". [See, Id., p. 7] The Commission responded by asserting that it was not bound to use the weighted average cost of capital as the rate of return to be applied to FVRB. The court agreed, stating:

> If the Commission determines that the cost of capital analysis is not the appropriate methodology to determine the rate of return to be applied to the FVRB, the Commission has the discretion to determine the appropriate methodology. [Id., p. 13]

The court also noted that "rates of return vary, depending upon the type of rate base used". [Id., p. 7, f.n. 5] However, the court found that the Commission's method for determining operating income ignored FVRB, in violation of the Arizona Constitution.

> Here, the Commission determined Chaparral City's operating income based on the OCRB and then mathematically calculated a corresponding rate of return had the income been based on the FVRB. Under this method, Chaparral City's operating income, and therefore its revenue requirements and rates, were based not on the fair value of its property, but on its OCRB, which does not comport with the Arizona Constitution. [Id., p. 12]

Accordingly, the court remanded the matter to the Commission for further determination.

Fair Value Rate Regulation

Q. Can you briefly discuss the history of the concept of "fair value" in the context of rate regulation?

A. During the early history of public utility regulation, federal and state commissions focused on the task of determining the "fair value" of a utility's property, which they used in determining reasonable rate levels for utility services. The fair value system of rate regulation (as distinguished from the more recent original cost-based system of rate base regulation) was endorsed by the United States Supreme Court in 1898. In *Smyth v. Ames,* the Supreme Court held:

> What the company is entitled to ask is a fair return upon the value of that

> which it employs for the public convenience. On the other hand, what the public is entitled to demand is that no more be exacted from it for the use of a public highway than the services rendered by it are reasonably worth. [*Smyth v. Ames*, 169 U.S. 466 (1898).]

The focus on fair value, and its corresponding emphasis on reproduction cost and the current worth of the utility's property was due, at least in part, to distrust of the book cost information provided by utilities. At the time, standardized accounting did not exist. Questionable bookkeeping was almost certainly in the minds of the Justices when they chose to protect a property's "value" from confiscation, rather than relying upon the actual amounts invested in the property in determining whether or not confiscation was occurring. [See Goodman, Leonard, *The Process of Ratemaking*, 1998, p. 757.]

Q. Were there any problems with the Supreme Court's "fair value" doctrine?

A. Yes. Appropriately implemented, this is a reasonable basis for protecting customers from monopoly power, while also ensuring fair treatment of the utility's stockholders. When the fair value concept was applied in practice, however, some difficulties were discovered – due at least in part with the way the concept was being implemented. As one scholar has noted, this doctrine, with its reliance on the "the probable earning capacity of the property under particular rates prescribed by statute," can easily create a vicious circle, where valuation is dependent upon capitalization of earnings that are being set in a rate case, and those earnings depend in large part on the regulatory commission's finding of fair value.

> Early in the history of the fair-value doctrine, critics of the Supreme Court's decisions objected that the value of public utility properties,

> though acceptable for purposes of tax assessment or as a measure of compensation for a compulsory taking, cannot qualify as a valid rate base since this value necessarily depends on the earnings that the company will be permitted to derive therefrom - the very question at issue in a rate case. [Bonbright, James C., *Principles of Public Utility Rates*, 1988, p. 216.]

It was not just the potential circularity of the fair value approach to rate base regulation that drew criticism. Detractors also criticized the vagueness of the Supreme Court's instructions and the resulting difficulty in applying the doctrine in actual practice:

> The "fair value" method consists of an examination by the commission of evidence relating to reproduction cost and prudent investment, together with evidence of intangible values and observed condition of the property, the application of judgment whose processes defy analysis or description, and the selection of a final value figure which bears no derivative relation to any figure in evidence and no ascertainable relation to any functional purpose of ratemaking. [Kahn, Alfred, *The Economics of Regulation*, 1988, pp. 37-38, citing Lyon and Abramson, *Government and Economic Life* (1940).]

As well, problems were encountered when utilities traded property back and forth at ever escalating "values." The fundamental purpose of price regulation could potentially be defeated if the utility sold its property for a very high price and the buyer was allowed to recover the same percentage return on this higher value that had previously been received on a lower rate base value. Depending on how the "fair return" was computed, the very act of selling a utility's property at an inflated valuation would create evidence to justify higher rates, and thus a higher income stream, which in turn would make the inflated purchase price seem attractive to the buyer.

At the extreme, if the "fair return" is computed independently of the "fair value,"

the sale of utility properties at higher and higher inflated prices would eventually defeat the entire purpose of rate regulation. Absent a successful effort to solve the problem by ensuring that the "fair return" is truly "fair" to both customers and stockholders, the fair value method of regulation can easily lead to a spiral of ever-increasing property valuations, and correspondingly increasing rate levels.

Unless this problem is solved, utility rates can eventually escalate to a level approaching pure monopoly levels, defeating the core purpose of rate regulation, and greatly deviating from the goal of simulating the results of an effectively competitive market.

Q. In other jurisdictions have regulators tended to move away from the fair value methodology, in favor of some alternative approach?

A. Yes. The fair value method of ratemaking remained prominent during the first half of the twentieth century, but regulators in most jurisdictions increasingly shifted their focus to original cost information, which proved to be more reliable, easier to interpret, and less susceptible to problems. By 1944, the Supreme Court confirmed this trend, freeing state and federal regulators in most jurisdictions from any requirement to use a specific "fair value" formula when setting public utility rates. [*Federal Power Commission v. Hope Natural Gas Co.*, 320 U.S. 591 (1944)]

Q. Other than Arizona, are you aware of any states that continue to use the fair value methodology?

A. Aside from Arizona, I am not personally aware of any other states that currently use the

fair value approach. While the details can vary between rate cases and between jurisdictions, today the general approach followed by regulators is remarkably consistent across all, or nearly all, other jurisdictions. Regulators generally develop the rate base based on the original cost of the utility's property – in fact, they almost always rely on essentially the same set of accounting information, taken primarily from the left side of the utility's balance sheet.

While the provisions of the Arizona Constitution precludes this Commission from abandoning the fair value methodology, the unanimity, or near-unanimity of current practice in other jurisdictions (both state and federal) is certainly something to think about. At a minimum, it suggests that where a fair value rate base is employed, great care must be taken to avoid the potential for circularity, and to ensure that customers are treated fairly, and monopoly profits are precluded. More specifically, it is imperative to ensure that the return that is applied to the fair value rate base is, in fact a "fair" return – one that is fair to customers as well as stockholders, one that does not provide a windfall to utility stockholders, and one that does not defeat the core purpose of protecting customers from monopoly power.

Fair Rate of Return

Q. You have mentioned some United States Supreme Court decisions concerning rate base regulation. Were legal standards also established for determining a fair rate of return?

A. Yes. The comparability standard for determining the fair rate of return for a utility,

including the cost of equity capital, has been repeatedly upheld in Supreme Court decisions. In the landmark case, *Bluefield Water Works & Improvement Company v. Public Service Commission*, 262 U.S. 679, 692-93 (1923), the Supreme Court set forth the criteria for determining a fair rate of return for a utility:

> A public utility is entitled to such rates as will permit it to earn a return... equal to that generally being made... on investments in other business undertakings which are attended by corresponding risks and uncertainties; but it has no constitutional right to profits such as are realized or anticipated in highly profitable enterprises or speculative ventures. The return should be reasonably sufficient to assure confidence in the financial soundness of the utility and should be adequate, under efficient and economic management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties.

In *Hope*, guidelines were established to judge reasonableness of return. The Supreme Court held that:

> . . . it is important that there be enough revenue not only for the operating expenses but also for the capital costs of the business. These include service on the debt and dividends on the stock. By that standard the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital. [*Hope*, pp. 601-602.]

Q. Have regulators in most other jurisdictions settled on a common approach to determining the "capital costs of the business"?

A. Yes. In most – perhaps all – other state and federal jurisdictions it has long been accepted that the fair rate of return is that percentage figure which, when applied to the rate base, will yield in dollars the net operating income which the utility should have the

opportunity to earn. Stated another way, the key issue to be resolved is how much money the firm should be given an opportunity to earn – and the details of the rate base and rate of return calculations are vitally important intermediate steps on the way to resolving this key issue.

Similarly, it is generally agreed that the amount of dollars that the utility should be given an opportunity to earn should be largely, if not entirely, determined by a competitive market standard. In essence, the utility should be allowed to recover its actual cost of capital – a dollar amount that is approximately equivalent to the amounts being earned by other firm's on their investments of comparable magnitude, adjusted for any differences in risk.

In practice, this is another way of saying that the dollar amount which results from multiplying the rate of return by the rate base should be just sufficient to pay the jurisdictional portion of the utility's actual, prudently incurred interest costs and preferred stock dividends, and to provide a reasonable return on the portion of its common equity investment which is devoted to the public service in the jurisdiction in question.

In most jurisdictions, the mechanics of this process has become highly routinized. Regulators almost universally determine an appropriate rate of return by looking at the right side of the balance sheet to determine where the capital which is used to fund the assets shown on the left side of the balance sheet is coming from, and what this capital costs. The utility's capital structure (e.g., debt/equity ratio) is analyzed, along with the cost associated with each component of the capital structure.

This analysis includes not only the level of corporate debt but its time(s) to maturity, and the interest payments and other costs associated with the debt. In order to

determine an appropriate return on equity or profit level, regulators typically rely heavily on data concerning the historical performance of the stock market, along with other data, in an effort to arrive at a profit level (equity cost) reasonably consistent with those of comparable investments in other sectors of the economy.

Throughout this process, the focus is on accounting data (e.g. actual amounts owed to bond holders, actual amounts of equity invested in the firm), but considerable effort is made to ensure that the final result is fair to both stockholders and customers. Among other things, one of the techniques used is to verify that the resulting allowed return on equity is comparable to the returns that investors can expect to receive if they were to invest in an unregulated, competitive firm, or another utility – adjusted for any differences in risk. This is commonly referred to as the "weighted average cost of capital", with the understanding that the specific computations are closely tied to the firm's accounting records (balance sheet) while also taking into account data from the financial markets which is helpful in ensuring that the final "end result" is appropriate and consistent with the underlying competitive market standard.

Q. In its Appellate Reply Brief, the Company argued that "the determination of a utility's rate base and the estimate of the cost of capital are entirely independent of each other." Do you agree?

A. No – or at least they should not be purely independent in a properly functioning regulatory regime. As I explained earlier, the value of a utility's property is partly a function of the dollar amount of income that it generates. Thus, if the value and return concepts are developed independently, there is no assurance that the purpose of regulation will be

achieved, or that the return will be fair to both customers and stockholders.

Properly considered, the allowed return in percentage terms and the rate base should be developed in a consistent manner, so that the final end result is appropriate and reasonable. In most jurisdictions, regulators have shifted to a methodology that relies exclusively (or nearly so) on original cost data for developing the rate base. In turn, they develop the allowed rate of return based upon a weighted average cost of capital analysis that is specifically designed to maintain consistency with the original cost rate base – and to ensure that the overall final result provides the utility with an opportunity to earn (in dollars) an amount that is comparable to that which is earned by other utilities and unregulated firms, adjusted for any differences in risk.

I believe this accounting-oriented approach is a reasonable one which has generally been fair to both customers and stockholders. To better appreciate why I reach this conclusion, consider a simple thought experiment. Image a situation in which a regulatory commission suddenly decides, or is required, to adopt a new rate base methodology which results in a valuation that is twice as large as the original cost approach which had previously been used for many years. Under these circumstances, it would obviously be necessary to rethink the rate of return calculations. Unless the allowed rate of return in percentage terms is simultaneously slashed to a level that is somewhere in the vicinity of half the percentage rate that was previously being approved, the utility will suddenly experience a substantial increase in its income. If the same percentage rate were continued to be applied to the newly derived rate base amount, the end result would be to double the utility's income – resulting in a newly authorized income level that is approximately twice the level that would have previously been found to be

fair and reasonable, and a level that is roughly twice that being earned by other utilities and unregulated firms facing a comparable level of risk.

The final result of changing rate base valuation methods without rethinking the rate of return methodology would be a huge windfall for stockholders – one that is clearly not justified, assuming the prior methodology had generated an income level that was fair and reasonable. The fair return in dollar terms cannot suddenly double merely because regulators adopt a different rate base valuation methodology.

Clearly, the total dollars paid by customers to stockholders must be given some consideration, and the method used in developing a fair rate of return should be consistent with (not completely independent of) the methodology used in valuing the rate base. To maintain consistency with the core purpose of regulation, as well as applicable standard established by the United States Supreme Court, this Commission should recognize that the fair rate of return will appropriately change, depending on the methodology used in developing the rate base.[1]

Q. Can you provide additional support for your conclusion that value and return are not independent of each other?

A. Yes. Economists have long recognized that value and return are interrelated concepts, which cannot be viewed independently. The interrelationships between value and return are not only intertwined (not independent of each other), but they are often quite complex, and they interact with each other in several ways.

For example, the percentage return that an owner can expect (or buyers will

1 In fact, the Court of Appeals recognized that the rate of return can vary based on the type of rate base used. [Chaparral City Water v. ACC, f.n. 5, p. 5]

require) to receive from an office building, apartment complex, or other real estate investment will partly depend on the method used in estimating the value of the building. Is the "value" of the building estimated based on reproduction cost, replacement cost, historical cost, or some other methodology? For any given level of anticipated rental income, the computed percentage rate of return will vary, depending on how the denominator is computed – what measure of "value" is being used.

But, that is not the only way in which rates of return and values are intertwined. Consider, for instance, the concept of "market value". In a real estate context, when speaking of the "value" of a particular piece of investment property, the reference is frequently to the current fair market value, which is the price that would be paid by a willing buyer to a willing seller, where neither party is under any undue pressure to complete the transaction. The market value of property is heavily influenced by the income or cash flow the property is currently generating, as well as the future stream of income or cash flow which is anticipated – along with changes in the market value which can be anticipated in the future. Thus, not only is market value not independent of the return, it is a direct function of the return (among other things).

For instance, the market value of an office building will be largely determined by the return (in dollars) which can be obtained by renting it (assuming that is the highest and best use of the property). In the case of an office building or other rental property, the most important factor controlling the market value is simply the anticipated future level of rents (aside from the anticipated price at which the property could be sold in the future – which is also typically a function of the rent). Thinking about this example, it becomes clear that income stream from rent (in dollars) is an important consideration that

helps to determine the market value of investment properties.

In turn, the anticipated percentage rate of return is largely a function of the market value. In essence, the percentage rate of return is simply the ratio computed by dividing the anticipated, levelized stream of future cash flows by the value; hence, the percentage return is dependent on (not independent of) the value. The calculated percentage will differ depending on whether the market value is high or low. Over time, however, rates of return will tend to move toward an equilibrium level, consistent with the applicable level of risk.

If returns are unusually high, rents will be driven down (as the supply of office buildings increases), or market values will be driven up as more investors enter the market, seeking to benefit from the unusually high returns. Or, both may occur -- income may decline and values may increase, until the returns move back to a more normal level.

Similarly, if returns are unusually low, they will eventually improve, as a result of a gradual tightening of the rental market, as existing office buildings are converted to other uses and relatively few new buildings are constructed. As well, if returns are not adequate, property values may decline – or at least not keep pace with the overall rate of inflation, so that over time, the rates of return move back toward a more normal, equilibrium level.

From this example, it should be clear that in competitive markets values and returns are not independent of each other, and in fact they are closely intertwined in multiple, subtle ways. If an office building's design, location, and other factors are desirable enough to allow relatively high rents to be charged, and thus a high dollar level of return to be earned, then the building's market value will be relatively high. In contrast,

if the building is a less attractive investment, with low rents or high expenses, then the market value of the building will be tend to be relatively low. In general, the market value of investment property is determined largely by the return (in dollars) which can be expected on that property, the riskiness associated with that expected return, and the analogous returns being earned by other investors and generally available elsewhere in the economy.

Accordingly, for a given level of riskiness, an investment yielding relatively high returns will have a high economic or market value, while an investment yielding relatively low returns will have lower returns. These general interrelationships between value and return apply throughout the economy. However, the relationships are rarely simple in actual practice, so that careful analysis is often required to understand how these general principles are working in specific situations.

Q. A fair value cost valuation tends to be higher than an original cost valuation, because it reflects the impact of inflation and other factors which tend to contribute to an upward growth in value over time. Does this difference have any implications for the percentage rate of return which is appropriate in the context of original cost or replacement cost property values?

A. Yes. Economists have long recognized that inflation and other factors which increase the value of an investment will significantly impact an investment's expected return. In turn, these factors affect the present value of the investment. To fully understand this relationship, it is necessary to realize that growth in the value of an investment is a component of the total return achieved by the investor. Indeed, for many so-called growth

stocks which pay little or no dividends, virtually the entire return received by the investor results from growth in the market value of the stock (capital gains). The same principle applies to the value of rental property in areas where real estate prices (and/or rents) are escalating – investors will take into account the anticipated growth in the value of their investment – similar to the way growth stocks are evaluated.

Similarly, if the income being generated by a particular investment is expected to grow over time (e.g. rents are increasing), that will tend to push up the current market value of an investment. Investors will accept a lower current return from an investment, if they have reason to believe the return will increase over time.

The current market value of an investment is determined by the net effect of multiple factors, including the current annual income or return (in dollars), expected changes in that income or return, and expected changes in the value of the investment. Thus, real estate investors in areas where demand is growing will often purchase property with an extremely low or negative current cash return, because they anticipate profiting from future growth.

Similarly, investors might construct a new office building, despite the fact that the rent payments during the first few years will actually be less than their direct expenses (interest, utilities, taxes, etc.), indicating a negative current level of return – if they expect rents, and/or the value of the property, to increase sufficiently in the future. Investors take into account all aspects of anticipated returns, including past and future trends in market rents, as well as anticipated growth in the value of the building. If the growth expectations are strong enough, investors will accept extremely low or negative returns during the early years, because they anticipate earning an adequate return over the entire

life cycle of their investment.

Q. Are there certain economic principles the Commission should bear in mind in determining the percentage rate of return which would be fair and reasonable to apply to a fair value rate base which relies, in part, on reproduction cost data?

A. Yes. As with any investment, one component of the total return received by utility investors is growth in the value of their investment. If the value used for rate base purposes is exclusively tied to original cost, investors are in a fundamentally different situation than if the rate base grows over time, as a result of increases in the replacement cost. As with the competitive market examples we've been discussing, the current rate of return should logically be lower if the value of the rate base is increasing over time (and thus, income is growing over time, as the replacement cost increases).

The fair value approach is more complex than the original cost approach because it involves both the fair value rate base and the fair rate of return as variables to be determined in the rate proceeding. In other regulatory jurisdictions, where regulators rely upon the original cost method of rate base valuation, they focus their attention on determining an appropriate rate of return to use with that valuation methodology. In those jurisdictions regulators can achieve the goals of regulation, and investors can be provided with a fair and adequate return (in dollars), without necessarily having to go through the exercise of analyzing replacement costs, or determining the current fair market value of the utility's property.

In this regard, it is important to realize that there is widespread agreement concerning the economic purpose of rate regulation, as well as the basic standards which

should be used in judging how well the goal of regulation is being achieved.

Most theorists agree that the primary objective of regulation was, and still is, to produce results in the utility sectors of the economy which parallel those that would be obtained under conditions of competition. The results of maximum efficiency and equity, existent under competition, have long been a primary justification of America's free enterprise or market-directed economy. Most economists recognize that competition does not predominate in our economy; yet most accept the results of competition as an ideal toward which we should strive. It is only natural that in the utility sector of the economy, where government controls the market results, the standard established for regulation has traditionally been the results which would be achieved under competition.

Whether explicitly or implicitly, regulators have generally accepted this competitive standard, concluding that appropriate rate levels will provide a well-managed utility the opportunity to recover all of its necessary costs, including an adequate return on the capital employed, and they will prevent the firm from earning excessive returns – the type of returns that are normal for unregulated firms with a substantial degree of monopoly power. Under this competitive standard, a specific utility may recover less than its full costs or more than its full costs in the short run, but over a longer period of time the utility's total costs can generally be expected to approximately equal its total revenues, where the definition of “costs” includes a normal return on the actual capital invested in the firm.

Succinctly stated, the general economic goal of utility rate regulation is to provide an opportunity for an efficiently managed utility to recover its full costs, including a fair (or normal) return on its capital – but it is generally precluded from earning profits in

excess of a normal return. When rates are adopted in accordance with this objective, the result will be an equitable and efficient balance between the interests of the utility and its investors, and the interests of the utility's customers. Such a balance occurs naturally in the world of competition, and is clearly a desirable goal for regulation in the public interest.

Q. The Company implies that the "fair rate of return" for application to a fair value rate base should be the same percentage figure that would be applied to an original cost rate base. Do you agree?

A. No. The same percentage figure cannot be appropriate for application both to the original cost and to the replacement cost of the utility's property – unless these two cost measures happen to be nearly the same. If regulation is going to achieve reasonable consistency with the competitive market standard, at least over the long term, investors in utilities should be provided an opportunity to earn an equivalent amount to what they could earn by investing a comparable amount in a competitive enterprise (adjusting for any differences in risk).

Given the validity of this competitive market standard, the appropriate compensation to utility investors as a whole cannot vary widely, merely on the basis of differences whether the rate base is computed using original cost, reproduction cost, or some other methodology (e.g. current fair market value).

In its Appellate Reply Brief, the Company argued that "the rate of return was applied to the wrong rate base," implying that the Commission should apply the weighted average cost of capital, derived using the standard methodology used in other

jurisdictions for application to an original cost rate base, but applying that same percentage figure to the fair value rate base. For the reasons I have just stated, this would clearly not be appropriate.

Q. Are you suggesting that the exact same income must be provided to any given utility in any given year, regardless of whether a fair value rate base or an original cost rate base is used?

A. No, I'm not suggesting that. To the contrary, differences can exist for a specific utility during a specific time period – provided the end result over a the long term is still reasonable, on average, for both investors and customers. For instance, there could be significant differences in the time pattern of the returns provided to investors depending on the rate base valuation methodology. Lower returns might be provided to a given investment pursuant to the methodology which allows value to increase over time, since higher dollar returns will eventually be provided, as the value increases over time. This is similar to what happens in competitive markets, where growth companies initially tend to generate negative returns, or very low returns, but if they are successful, their returns eventually grow to much higher levels, thereby ensuring an adequate income over the long term.

When viewed in this way, it is apparent that a valid finding of the fair rate of return will depend in part on the method used in calculating the rate base. This key premise is consistent with the statement of the Appellate Court that "[r]ates of return vary, depending upon the types of rate base used".

If an original cost rate base is used, the fair rate of return will generally be

computed based upon a composite, or weighted average, of the utility's cost of debt, preferred stock, and equity, with each of these cost rates being calculated with reference to amounts recorded in the utility's accounting records – all of which is directly comparable to the original cost valuation concept.

To the extent an appropriate percentage figure is developed using this process – one that would meet the competitive market standard if applied to an original cost rate base – there is no reason to assume that the same percentage figure can appropriately be applied to a fair value rate base which is grows over time, and is intended to reflect current values (including the impact of inflation). To the contrary, if the fair value rate base is higher than the original cost rate base, and that value is expected to continue to escalate in the future (e.g. due to inflation), a lower percentage rate would be appropriately applied to the fair value rate base. The direction of the difference is obvious – the only question to be pondered is how much lower.

Consider, for example, the utility's interest cost. If the utility has borrowed $500, with an embedded interest cost of 8%, then the utility's interest costs will average $40 per year, and it should be given an opportunity to recover that cost, regardless of how the rate base is calculated.

If an original cost approach is used in calculating the rate base and the firm has no other sources of income or non-utility operations, this result will typically be achieved by applying a weighted average cost of capital to the rate base, such that the utility is given an opportunity to recover this $40 per year of interest expense – no more and no less. If a growing rate base valuation is used, the utility should still be given an opportunity to recover it's actual interest costs – and there is no obvious reason why it should be allowed

to recover more than its actual interest expense. In any event, for any given level of capital costs, those costs can be recovered using a lower percentage figure if the rate base valuation is growing over time (e.g. due to inflation).

Q. In its Appellate Brief, RUCO argued that it would not be fair to apply a typical cost of capital to the fair value rate base because this would result in a "double counting" of inflation. In its Appellate Reply Brief, the Company responded by arguing that "This argument erroneously assumes the only reason [the] current value of property is higher than the property's original cost is inflation." Would you please comment?

A. RUCO's argument requires no such assumption. To the extent inflation is one of the factors influencing the fair value rate base (and it certainly is), the concern about potential double counting arises. That concern is valid regardless of whether or not inflation is the only factor contributing to the difference between original cost and reproduction cost.

The significance or magnitude of the concern will certainly increase, as the significance of inflation increases, but there is no need to assume that inflation is the only factor contributing to the increase in fair value – or even for inflation to be the most important factor.

But, in practice, inflation actually is a major factor which helps to explain why replacement cost tends to exceed original cost, thereby increasing the fair value amount. In fact, the RCND study is developed by applying plant-specific inflation indices to utility-specific account balances. Therefore, in actual practice, industry-specific inflation rates are one of the most important factors causing the fair value to exceed original cost.

Alternative Fair Rate of Return Methodologies

Q. Can you describe the Commission's traditional approach to calculating the allowed operating income and revenue requirement?

A. As it did with Chaparral City Water Company, the Commission traditionally starts with the weighted average cost of capital and rate base developed using the utility's accounting data. Thus, it has traditionally started with the same rate base and cost of capital calculations used by most, if not all, other regulatory commissions. Then, however, it has taken the resulting allowed operating income and divided that dollar amount by the FVRB, to obtain a lower percentage figure. The latter figure was used as the fair rate of return for application to the FVRB.

This rate of return effectively produced the same allowed operating income and revenue requirement as would be developed in other jurisdictions, while developing the final calculations using the fair value rate base.

Q. Is this the approach that was rejected by the Appellate Court?

A. Yes. As I explained at the start of my testimony, the court noted that the Arizona Constitution requires the Commission to use the fair value of the utility's property as the rate base in setting rates. The court also noted that the "purpose of the fair value requirement is to provide a fair return on the fair value of the property that a public utility devotes to public use." [Decision No. 68176, p. 6, citing Ariz. Corp. Comm'n v. Ariz. Water Co., 85 Ariz. 198, 203]

In its Appellate Reply Brief, the Company argued that under the methodology

previously used by the Commission, "the fair value of the Company's utility plant had nothing to do with determining its revenue requirement." The Appellate Court agreed, stating:

> [T] Arizona Constitution and prior case law compel the conclusion that the method employed by the Commission to determine the operating income in this case did not comport with constitutional requirements. [Id., p. 11]

More specifically, the court held that under the Commission's traditional approach, as described above, "Chaparral City's operating income, and therefore its revenue requirements and rates, were based not on the fair value of its property, but on its OCRB, which does not comport with the Arizona Constitution." [Id., p. 12]

The court further concluded that rates cannot be based on the investment made in plant, "but must be based on the fair value of the utility's property". [Id., p. 13] The process by which the Commission divides the OCRB operating income by FVRB and then multiplies the result by FVRB was described by the court as a "superfluous mathematical exercise" and "inconsistent with Arizona law." [Id., p. 14]

Q. Have other parties proposed any methodologies which would ensure that the fair value is not a "superfluous mathematical exercise" -- so that the fair value determination actually impacts the revenue requirement and final rates?

A. Yes. One alternative is the approach used by the Company in its July 6, 2007 Amended Notice, in which it took the weighted average cost of capital which would normally be

applied to OCRB, and it simply multiplied that percentage figure by the FVRB. [See, Chaparral City Water Company's Amended Notice of Filing Revised Schedules of Rates and Charges for Utility Service, Remand Schedule A-1] If the Commission were to adopt the Company's proposed alternative, it would result in allowed operating income of $1,545,863 (7.6% X $20,340,298).

A second alternative was presented by Staff in testimony involving another Arizona utility, in Docket No. G-04204A-06-0463. In that testimony, filed subsequent to the Appellate Court's decision, Staff argued that "the differential between fair value rate base and original cost rate base is not financed with investor-supplied funds...." [Surrebuttal Testimony of David C. Parcel, p. 9] Following this line of reasoning, Staff argued that "it is logical and appropriate to assume that this excess has no cost." [Id.] Staff further explains:

> As a result, the cost of capital, through the capital structure, can be modified to account for a level of cost-free capital in an equal dollar amount to the excess of fair value rate base over the original cost rate base. Such a procedure would still provide for a return being earned on all investor-supplied funds and thus be consistent with financial and regulatory standards. [Id.]

As shown in the table below, if the same methodology were applied in this proceeding it would result in operating income of $1,323,019.

ACC Staff Proposed Methodology:

Cost of Capital	Amount	Weight	Cost	Weighted Cost
Debt	$8,363,309	35.5%	5.10%	1.81%
Equity	$11,901,727	50.5%	9.30%	4.70%
Appreciation Above OCRB	$3,309,533	14.0%	0.00%	0.00%
Total	$23,574,569	100.0%		6.50%
FVRB				$20,340,298
Resulting Allowed Operating Income:				$1,323,019

Q. Is there another methodology available, that also ensures that the fair value is not a "superfluous mathematical exercise" and which ensures that the fair value rate base determination impacts the revenue requirement and final rates?

A. Yes. As I explained earlier, the allowed return in percentage terms and the rate base should be developed in a consistent manner. In jurisdictions where the rate base is entirely based on original cost data, it is common practice to apply a rate of return which is based upon the weighted average cost of capital, derived in large part using accounting data (e.g. debt and equity amounts; embedded interest rates). In contrast, where the rate of return will be applied to the current value of the utility's property, a somewhat lower return would be fair – one that provides the utility with an opportunity to recover its actual capital costs, without overcompensating for inflation.

A rate of return that is fair to both customers and stockholders can be derived from the weighted average cost of capital by simply subtracting an amount related to the rate of inflation. For example, assume the weighted average cost of capital is 7.50%, and the relevant inflation rate is 2.5%, then a fair return on the fair value rate base would be

5.00%, or thereabouts.

Since the dollar magnitude of the fair value rate base is larger than an original cost rate base, reflecting past growth in the value of the utility's property, and since the future income stream can reasonably be expected to increase in the future, due to inflation and other factors which tend to push up property values as time passes, a 5.00% return on fair value is likely to provide investors with as large a total return (over time) as a 7.50% return applied to an original cost rate base. The exact amounts received by investors may differ somewhat, and they certainly will differ during any specific year, but the key point is that investors will have as strong an opportunity to recover their capital costs and to earn a competitive return through the application of a 5.00% return on fair value as with a 7.50% return on original cost. The regulatory goal of simulating the effects of competitive markets can be achieved either way.

It is worth noting that this methodology can soundly be applied to a rate base amount which reflects current property values; it would not necessarily yield a reasonable result if it were applied to a rate base amount that was equal to reproduction costs – because the latter figure tends to overstate the impact of inflation, and it does not accurately measure changes in property values over time. The Commission found in Decision No. 68176, "the average of the adjusted OCRB and RCND provides a reasonable measurement of the current value of the Company's property dedicated to public service". [Decision 68176, p. 9]

It's more appropriate to estimate current value using a blend of original cost and replacement cost, because RCND standing alone would tend to significantly overestimate market value, because it does not adequately take into account the impact of changes in

technology, changes in the mix of inputs used in the production process, and other factors which have the net effect of ameliorating the impact of price increases, thereby slowing the rate of growth in the value of existing assets, and slowing the actual rate of inflation.

Q. Can you explain in greater detail why a fair rate of return applied to a fair value rate base is less than the return which would normally be applied to an original cost rate base?

A. If the return is going to be fair to customers as well as to stockholders, it must be lower than the weighted average cost of capital. As I explained earlier, the same percentage figure cannot be appropriate for application to both the original cost and to the replacement cost of the utility's property, unless these two cost measures happen to be nearly the same.

Another way of seeing why this conclusion is valid is to note that the competitive market standard is widely accepted as the appropriate standard for utility regulation in nearly all jurisdictions, regardless of whether they use original cost or fair value in developing their rate base calculations. Utilities in Arizona and other states are all competing for investment capital that is being provided in a national market. If the same percentage rates of return were applied to fair value rate bases in Arizona as are applied to original cost rate bases in all other jurisdictions, it is self evident that Arizona investors would be overcompensated.

If the weighed average cost of capital were applied to the fair value rate base, Arizona utilities would be provided with an opportunity to earn windfall profits, in comparison with the treatment of utilities in other states, where firms are only given the

opportunity to earn a normal, competitive return (as required by the United States Supreme Court in the Hope Natural Gas case).

While the Arizona Constitution requires use of a fair value rate base, and that may influence the specific rate of compensation provided to any specific utility during any specific year, it is not necessary or appropriate to provide Arizona utilities with earnings that consistently exceed those earned, on average, by utilities in other states (or which consistently exceed the earnings of the average unregulated firm which operates in competitive markets, adjusted for differences in risk). Yet just such a consistent differential would occur if the same rate of return were applied to fair value in Arizona and to original cost in other jurisdictions.

Aside from differences in risk, the long term average compensation provided to utility investors in Arizona should be roughly equivalent to that paid to investors in other enterprises – assuming comparable levels of risk. Investors in Arizona and in other states should all be given a reasonable opportunity to earn a normal return – a return which is consistent with competitive market levels.

I made that last statement in terms of the long term average, because there could be differences in timing, due to differences in the rate base valuation methodology. The return on investment provided in a fair value rate jurisdiction might be somewhat lower in the initial years, and higher in the later years of any given investment, relative to the timing of the returns received in an original cost jurisdiction, just as investors in growth stocks receive more of their return in later years, as dividends increase, or upon sale of the stock. While the year-to-year pattern of cash flows might differ somewhat depending on the specific rate base methodology, the overall long term average level of

compensation paid to investors should be very similar, regardless of whether the rate base is based upon original cost, or fair value.

Consistent with this line of reasoning, it is clear that the appropriate magnitude of the difference between the appropriate rate of return in an original cost jurisdiction and the fair rate of return in a fair value jurisdiction is closely related to the rate of growth in the utility's fair value rate base relative to the original cost of its property. The more rapidly fair value is growing relative to original cost, the less need there is to immediately provide a high level of current income in the form of high percentage return for application to the fair value rate base. This is exactly what we observe in the stock market, where investors are satisfied with relatively lower levels of current income and dividends in growth industries, where the value of the stock and the anticipated future level of dividends are expected to grow over time.

Q. You mentioned earlier that reproduction cost tends to overstate the current value of property. Can you please briefly elaborate on this point?

A. Yes. Reproduction cost provides an estimate of the material, labor, overhead and other costs that would be incurred today if the existing property were installed today, using the same design, the same technology, and the same choice of materials as the original. Reproduction cost ignores all the changes and improvements in materials, technology and construction techniques that have occurred since the property was originally constructed. It assumes that the property will be constructed and placed in service using the same materials and processes that were originally used.

Needless to say, no one would actually reproduce an existing system, since this

would not be a prudent course of action. For instance, given current knowledge of the actual location and mix of customers, it would be feasible, and more cost effective, to build a system with a different design – one that more closely fits the actual needs of customers, as they have actually evolved over time.

Similarly, anyone wanting to build a new system in the most cost effective manner possible would take advantage of new technologies, which weren't available, or weren't as well established, or weren't as cost effective at the time the existing system was designed and built. Similarly, anyone building a system from scratch would install a different mix of plant and equipment, using different construction techniques, in order to take into the optimal mix of inputs based on current relative price levels. If a steel water main was installed along a particular route 20 years ago, an RCND study will calculate the cost of placing a new steel main along that same route. Yet, given current price levels and technology, it might be more logical and cost effective to install a plastic main, running along a shorter, more efficient route. Years ago, it might have been necessary to use backhoes and a lot of manual labor to dig trenches and install pipes; today it might be feasible to accomplish the same goal using high tech construction equipment which is much faster, less labor-intensive, and ultimately less costly.

Investors recognize these realities, and thus the current fair market value of an existing system will normally be substantially less than reproduction cost As I explained earlier, "fair" or "current" value can be considered the price that would be paid by a willing buyer to a willing seller, where neither party is under any undue pressure to complete the transaction. In a competitive market, a buyer will typically not pay more for property than the amount to build or acquire similar assets that are functionally

equivalent to that property.

Thus, the current value is not going to exceed the amount necessary to replace the original property taking into account current relative price levels, technologies, and available efficiencies. This value considers the impact of inflation relative to the original cost of the property, but unlike reproduction cost, it does not systematically overstate value, nor does it overstate the impact of inflation.

Q. What inflation factor should the Commission use to determine a fair rate of return for application to a fair value rate base?

A. This is a matter of judgment; the Commission can exercise sound discretion in determining the most appropriate inflation factor to subtract from the weighted average cost of capital.

In making this decision, I recommend that the Commission review and consider several of the data series that are publicly available. In particular, I recommend the Commission consider the data published by the Bureau of Labor Statistics for the annual rate of change in the Gross Domestic Product Deflator, as well as annual changes in consumer prices and various measures of producer prices. The following table summarizes historical changes in each of these inflation measures.

Shown are average annual changes in the Gross Domestic Product Implicit Price Deflator (GDP Deflator); the familiar Consumer Price Index or CPI for "all consumer items"; the Producer Price Index, or PPI, for "all commodities"; the analogous PPI for "finished goods"; and, the PPI for Materials and Components for Construction. The length of time for which these series are available varies from index to index. For

example, the GDP Deflator, the CPI-All Items and the PPI-All Commodities are available from 1929 to date. The PPI-Finished Goods and the PPI-Materials and Components for Construction date back to 1947. However, I believe the more recent historical data is more relevant in this present context, and so I have only included data for the period from 1975 through 2006.

The annual change in any one measure of inflation can vary widely from one year to the next; as well there are variations between the various data series. However, by calculating averages over extended time periods, it is readily apparent that the average rate of inflation tends to fluctuate in a much tighter range, and that the differences between these various inflation measures are not extreme.

Date Range	Gross Domestic Product Inplicit Price Deflator	CPI Consumers, All Items	PPI All Commodities	PPI Finished Goods	PPI Materials and Components for Construction
1975-2004	3.9%	4.6%	3.5%	3.6%	3.8%
1977-2006	3.6%	4.3%	3.4%	3.3%	3.7%
1980-2004	3.2%	3.9%	2.6%	2.7%	2.8%
1982-2006	2.8%	3.2%	2.1%	2.1%	2.7%
1985-2004	2.4%	3.0%	1.8%	1.8%	2.3%
1987-2006	2.5%	3.1%	2.6%	2.2%	2.8%
1990-2004	2.2%	2.9%	1.8%	1.8%	2.2%
1992-2006	2.2%	2.7%	2.4%	1.9%	2.8%
1995-2004	1.9%	2.5%	2.0%	1.7%	2.0%
1997-2006	2.2%	2.5%	2.6%	2.0%	2.8%
2000-2004	2.3%	2.5%	3.2%	2.2%	2.3%
2002-2006	2.6%	2.6%	4.2%	2.7%	4.6%

In the table above, I calculated averages for 12 different time periods. The averages include time periods of 30 years, 25 years, 20 years, 15 years, 10 years, and 5

years ending in 2004 and 2006. As shown, these averages range from as low as 1.71% for the PPI-Finished Goods during 1995-2004, to 4.6% for the PPI-Materials and Components for Construction during 2002-2006. I believe this provides a reasonable overall range of inflation rates for the Commission to consider in establishing the fair rate of return to apply to Chaparral's fair value rate base.

Q. All of this data is historical. Should the Commission also consider expectations regarding future levels of inflation?

A. Yes, although the most logical starting point is to consider historical inflation data. The historical data series are some of the best, most detailed and most objective information available for estimating future inflation rates – and this information is certainly relevant – investors will often assume the future will be similar to the past, while also realizing that some differences will occur, due to changes in monetary policy, fluctuations in the business cycle, and other changes over time. However, expected future inflation rates are also of vital importance in this context, so it is appropriate to consider a forward looking view of inflation, as well as considering the inflation which contributed to increases in the current value of the utility's property.

Q. Are you aware of any published data series that are indicative of the future inflation rate expectations of investors?

A. Yes. A useful measure of investor inflation expectations can be derived by comparing the yields on Treasury Inflation-Protected Securities (TIPS) and other securities issued by the Treasury Department with similar liquidity and duration. TIPS are bonds issued by the

U.S. Treasury which are sometimes called “linkers”, because they are “linked” to the actual rate of inflation.

TIPS are issued twice a year, in January and July. The principal amount that is paid back to the holder upon maturity is periodically increased, based on the CPI-All Consumer Items. Like most government bonds, the TIPS coupon rate (percentage return) is constant, but these particular securities are unique because they generate an increasing flow of interest payments. TIPs pay interest twice a year, based upon a fixed rate that is multiplied by the inflation-adjusted principal. The end result is that investors are protected against inflation both with respect to the value of their investment, and with respect to the income they receive.

Thus, for example, if the interest rate on a TIP Security is 5%, its cost is $100, and cumulative total amount of inflation from the time of issuance until maturity is 20%, the value of the investment would increase to $120 at maturity. The 5% interest rate would be applied to the increasing principal amount, eventually reaching the level of 5% of $120 – approximately 20% more than the initial payment level.

At maturity, the securities are redeemed at the greater of their inflation-adjusted principal or the original par amount at the time they were issued. TIPS provide yet another example that illustrates one of the key points in my testimony – that the percentage rate of return earned by an investment that grows in value over time will normally be lower than the analogous return paid on an investment that does not grow over time. The fact that these securities offer significantly different percentage returns is further proof of this fundamental point. But, these securities are also of interest because they provide useful insights into investor expectations concerning inflation.

It is well established in the academic literature that the difference between the yield on a TIP and the yield on a comparable government security that is not linked to inflation can be used to estimate investors' future inflation expectations. For example, on January 18, 2007, the 10-Year Treasury yielded 4.75% while the 10-Year TIP yielded 2.47%, leaving a spread of 2.28%. This differential, or spread, is one measure of the expected annual rate of inflation over the next 10 years, as of January 18, 2007.

In the following table, I present average daily yields on 10 year TIPs and average yields on analogous bonds, for the years 2001 through 2007. I have also calculated the average differences in the yields for the two types of securities. As shown, the average differences range from a low of 1.70% in 2001, to a high of 2.90% in 2004. Averaging the annual averages results in an overall expected future inflation rate of 2.34% over the most recent 6.5 years.

Year	Value TIPS	Value Bond	Difference
2001	3.32	5.02	1.70
2002	2.84	4.61	1.78
2003	1.81	4.01	2.21
2004	1.37	4.27	2.90
2005	1.53	4.29	2.76
2006	2.25	4.79	2.54
2007	2.31	4.80	2.49
Average	2.20	4.54	2.34

Conclusions and Recommendations

Q. What methodology do you recommend the Commission use to establish a fair rate of return in this proceeding?

A. First and foremost, I recommend the Commission reject the Company's proposal to simply apply the same rate of return to the fair value rate base that would normally be applied to an original cost rate base. As I have explained, this would not be fair to customers, and it would undermine the core purpose of regulation, which is to protect customers from monopoly power.

In my opinion, either of the other two approaches I have described in my testimony would be superior to the Company's proposal. The Staff approach appears to provide a fairly reasonable result, at least when applied in this proceeding. On balance, however, I believe the third method I describe – subtracting an inflation factor from the weighted average cost of capital – is the best alternative. Hence, I recommend the Commission adopt this approach – or at least give it considerable weight, along with the Staff approach, in arriving at its final judgment concerning the fair rate of return to use in this proceeding.

Q. If the Commission adopts your recommendation, what would be a reasonable inflation rate to be used as an offset to the weighted average cost of capital?

A. As this is a case of first impression, I recommend the Commission choose an inflation rate that is conservative – one that falls toward the low end of the historical data, and the recent level of investor expectations concerning future inflation rates. More specifically,

I recommend the Commission use an inflation factor of 2.0% in developing the fair rate of return in this proceeding.

Q. What is the result of applying a 2.0% reduction to the weighted average cost of capital?

A. As shown in the table below, applying a 2.0% adjustment factor to the weighted average cost of capital results in a fair rate of return of 5.60% (rounded). This is .80% lower than the return that was developed earlier in this proceeding, using the Commission's traditional methodology. Applying this fair rate of return to Chaparral's fair value rate base results in an allowed operating income level of $1,132,278.

Alternative Methodology

Cost of Capital	Amount	Weight	Cost	Weighted Cost
Debt	$8,363,309.00	41.27%	5.10%	2.10%
Equity	$11,901,727.00	58.73%	9.30%	5.46%
Total	$20,265,036.00			7.57%
Inflation factor:				2.00%
Fair Rate of Return				5.57%
Fair Rate of Return (Rounded)				5.60%
Resulting Allowed Operating Income:				$1,132,278

Q. Does this conclude your direct testimony, prefiled on August 30, 2007?

A. Yes, it does.

Appendix A

Qualifications

Present Occupation

Q. What is your present occupation?

A. I am a consulting economist and President of Ben Johnson Associates, Inc.®, a firm of economic and analytic consultants specializing in the area of public utility regulation.

Educational Background

Q. What is your educational background?

A. I graduated with honors from the University of South Florida with a Bachelor of Arts degree in Economics in March 1974. I earned a Master of Science degree in Economics at Florida State University in September 1977. The title of my Master's Thesis is a "A Critique of Economic Theory as Applied to the Regulated Firm." Finally, I graduated from Florida State University in April 1982 with the Ph.D. degree in Economics. The title of my doctoral dissertation is "Executive Compensation, Size, Profit, and Cost in the Electric Utility Industry."

Clients

Q. What types of clients employ your firm?

A Much of our work is performed on behalf of public agencies at every level of government involved in utility regulation. These agencies include state regulatory commissions, public counsels, attorneys general, and local governments, among others.

We are also employed by various private organizations and firms, both regulated and unregulated. The diversity of our clientele is illustrated below.

Regulatory Commissions

Alabama Public Service Commission—Public Staff for Utility Consumer Protection
Alaska Public Utilities Commission
Arizona Corporation Commission
Arkansas Public Service Commission
Connecticut Department of Public Utility Control
District of Columbia Public Service Commission
Idaho Public Utilities Commission
Idaho State Tax Commission
Iowa Department of Revenue and Finance
Kansas State Corporation Commission
Maine Public Utilities Commission
Minnesota Department of Public Service
Missouri Public Service Commission
National Association of State Utility Consumer Advocates
Nevada Public Service Commission
New Hampshire Public Utilities Commission
North Carolina Utilities Commission—Public Staff
Oklahoma Corporation Commission
Ontario Ministry of Culture and Communications
Staff of the Delaware Public Service Commission
Staff of the Georgia Public Service Commission
Texas Public Utilities Commission
Virginia State Corporation Commission
Washington Utilities and Transportation Commission
West Virginia Public Service Commission—Division of Consumer Advocate
Wisconsin Public Service Commission

Wyoming Public Service Commission

Public Counsels

Arizona Residential Utility Consumers Office
Colorado Office of Consumer Counsel
Colorado Office of Consumer Services
Connecticut Consumer Counsel
District of Columbia Office of People's Counsel
Florida Public Counsel
Georgia Consumers' Utility Counsel
Hawaii Division of Consumer Advocacy
Illinois Small Business Utility Advocate Office
Indiana Office of the Utility Consumer Counselor
Iowa Consumer Advocate
Maryland Office of People's Counsel
Minnesota Office of Consumer Services
Missouri Public Counsel
New Hampshire Consumer Counsel
Ohio Consumer Counsel
Pennsylvania Office of Consumer Advocate
Utah Department of Business Regulation—Committee of Consumer Services

Attorneys General

Arkansas Attorney General
Florida Attorney General—Antitrust Division
Idaho Attorney General
Kentucky Attorney General
Michigan Attorney General
Minnesota Attorney General
Nevada Attorney General's Office of Advocate for Customers of Public Utilities
South Carolina Attorney General

Utah Attorney General

Virginia Attorney General

Washington Attorney General

Local Governments

City of Austin, TX

City of Corpus Christi, TX

City of Dallas, TX

City of El Paso, TX

City of Galveston, TX

City of Norfolk, VA

City of Phoenix, AZ

City of Richmond, VA

City of San Antonio, TX

City of Tucson, AZ

County of Augusta, VA

County of Henrico, VA

County of York, VA

Town of Ashland, VA

Town of Blacksburg, VA

Town of Pecos City, TX

Other Government Agencies

Canada—Department of Communications

Hillsborough County Property Appraiser

Provincial Governments of Canada

Sarasota County Property Appraiser

State of Florida—Department of General Services

United States Department of Justice—Antitrust Division

Utah State Tax Commission

Regulated Firms

Alabama Power Company

Americall LDC, Inc.

BC Rail

CommuniGroup

Florida Association of Concerned Telephone Companies, Inc.

LDDS Communications, Inc.

Louisiana/Mississippi Resellers Association

Madison County Telephone Company

Montana Power Company

Mountain View Telephone Company

Nevada Power Company

Network I, Inc.

North Carolina Long Distance Association

Northern Lights Public Utility

Otter Tail Power Company

Pan-Alberta Gas, Ltd.

Resort Village Utility, Inc.

South Carolina Long Distance Association

Stanton Telephone

Teleconnect Company

Tennessee Resellers' Association

Westel Telecommunications

Yelcot Telephone Company, Inc.

Other Private Organizations

Arizona Center for Law in the Public Interest
Black United Fund of New Jersey
Casco Bank and Trust
Coalition of Boise Water Customers
Colorado Energy Advocacy Office
East Maine Medical Center
Georgia Legal Services Program
Harris Corporation
Helca Mining Company
Idaho Small Timber Companies
Independent Energy Producers of Idaho
Interstate Securities Corporation
J.R. Simplot Company
Merrill Trust Company
MICRON Semiconductor, Inc.
Native American Rights Fund
PenBay Memorial Hospital
Rosebud Enterprises, Inc.
Skokomish Indian Tribe
State Farm Insurance Company
Twin Falls Canal Company
World Center for Birds of Prey

Prior Experience

Q. Before becoming a consultant, what was your employment experience?

A. From August 1975 to September 1977, I held the position of Senior Utility Analyst with Office of Public Counsel in Florida. From September 1974 until August 1975, I

held the position of Economic Analyst with the same office. Prior to that time, I was employed by the law firm of Holland and Knight as a corporate legal assistant.

Q. In how many formal utility regulatory proceedings have you been involved?

A. As a result of my experience with the Florida Public Counsel and my work as a consulting economist, I have been actively involved in approximately 400 different formal regulatory proceedings concerning electric, telephone, natural gas, railroad, and water and sewer utilities.

Q. Have you done any independent research and analysis in the field of regulatory economics?

A. Yes, I have undertaken extensive research and analysis of various aspects of utility regulation. Many of the resulting reports were prepared for the internal use of the Florida Public Counsel. Others were prepared for use by the staff of the Florida Legislature and for submission to the Arizona Corporation Commission, the Florida Public Service Commission, the Canadian Department of Communications, and the Provincial Governments of Canada, among others. In addition, as I already mentioned, my Master's thesis concerned the theory of the regulated firm.

Q. Have you testified previously as an expert witness in the area of public utility regulation?

A. Yes. I have provided expert testimony on more than 250 occasions in proceedings before state courts, federal courts, and regulatory commissions throughout the United States and in Canada. I have presented or have pending expert testimony before 35 state commissions, the Interstate Commerce Commission, the Federal Communications

Commission, the District of Columbia Public Service Commission, the Alberta, Canada Public Utilities Board, and the Ontario Ministry of Culture and Communication.

Q. What types of companies have you analyzed?

A. My work has involved more than 425 different telephone companies, covering the entire spectrum from AT&T Communications to Stanton Telephone, and more than 55 different electric utilities ranging in size from Texas Utilities Company to Savannah Electric and Power Company. I have also analyzed more than 30 other regulated firms, including water, sewer, natural gas, and railroad companies.

Teaching and Publications

Q. Have you ever lectured on the subject of regulatory economics?

A. Yes, I have lectured to undergraduate classes in economics at Florida State University on various subjects related to public utility regulation and economic theory. I have also addressed conferences and seminars sponsored by such institutions as the National Association of Regulatory Utility Commissioners (NARUC), the Marquette University College of Business Administration, the Utah Division of Public Utilities and the University of Utah, the Competitive Telecommunications Association (COMPTEL), the International Association of Assessing Officers (IAAO), the Michigan State University Institute of Public Utilities, the National Association of State Utility Consumer Advocates (NASUCA), the Rural Electrification Administration (REA), North Carolina State University, and the National Society of Rate of Return Analysts.

Q. Have you published any articles concerning public utility regulation?

A. Yes, I have authored or co-authored the following articles and comments:

"Attrition: A Problem for Public Utilities—Comment." *Public Utilities Fortnightly*, March 2, 1978, pp. 32-33.

"The Attrition Problem: Underlying Causes and Regulatory Solutions." *Public Utilities Fortnightly*, March 2, 1978, pp. 17-20.

"The Dilemma in Mixing Competition with Regulation." *Public Utilities Fortnightly*, February 15, 1979, pp. 15-19.

"Cost Allocations: Limits, Problems, and Alternatives." *Public Utilities Fortnightly*, December 4, 1980, pp. 33-36.

"AT&T is Wrong." *The New York Times*, February 13, 1982, p. 19.

"Deregulation and Divestiture in a Changing Telecommunications Industry," with Sharon D. Thomas. *Public Utilities Fortnightly*, October 14, 1982, pp. 17-22.

"Is the Debt-Equity Spread Always Positive?" *Public Utilities Fortnightly*, November 25, 1982, pp. 7-8.

"Working Capital: An Evaluation of Alternative Approaches." *Electric Rate-Making*, December 1982/January 1983, pp. 36-39.

"The Staggers Rail Act of 1980: Deregulation Gone Awry," with Sharon D. Thomas. *West Virginia Law Review,* Coal Issue 1983, pp. 725-738.

"Bypassing the FCC: An Alternative Approach to Access Charges." *Public Utilities Fortnightly*, March 7, 1985, pp. 18-23.

"On the Results of the Telephone Network's Demise—Comment," with Sharon D. Thomas. *Public Utilities Fortnightly*, May 1, 1986, pp. 6-7.

"Universal Local Access Service Tariffs: An Alternative Approach to Access Charges." In *Public Utility Regulation in an Environment of Change,* edited by Patrick C. Mann and Harry M. Trebing, pp. 63-75. Proceedings of the Institute of Public Utilities Seventeenth Annual Conference. East Lansing, Michigan: Michigan State University Public Utilities Institute, 1987.

With E. Ray Canterbery. Review of *The Economics of Telecommunications: Theory and Policy* by John T. Wenders. *Southern Economic Journal* 54.2 (October 1987).

"The Marginal Costs of Subscriber Loops," A Paper Published in the Proceedings of the Symposia on Marginal Cost Techniques for Telephone Services. The National Regulatory Research Institute, July 15-19, 1990 and August 12-16, 1990.

With E. Ray Canterbery and Don Reading. "Cost Savings from Nuclear Regulatory Reform: An Econometric Model." *Southern Economic Journal*, January 1996.

Professional Memberships

Q. Do you belong to any professional societies?

A. Yes. I am a member of the American Economic Association.