BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

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IN THE MATTER OF THE APPLICATION OF PUBLIC SERVICE COMPANY OF COLORADO FOR APPROVAL OF ITS 2011 ELECTRIC RESOURCE PLAN	**)** **)** **)** **)**	**DOCKET NO. 11A-869E**

REBUTTAL TESTIMONY OF TIMOTHY J. SHEESLEY

ON

BEHALF OF

PUBLIC SERVICE COMPANY OF COLORADO

July 16, 2012

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I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. Timothy J. Sheesley, 1800 Larimer Street, Denver, Colorado 80202.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT POSITION?

A. I am employed by Xcel Energy Services, Inc., a wholly-owned subsidiary of Xcel Energy Inc., the parent company of Public Service Company of Colorado. My position is Chief Economist. .My qualifications are included as Attachment A.

Q ON WHOSE BEHALF ARE YOU TESTIFYING?

A. I am testifying on behalf of the Public Service Company of Colorado ("Public Service" or "Company").

Q. HAVE YOU PROVIDED DIRECT TESTIMONY IN THIS DOCKET?

A. No.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. I will discuss why the Commission should reject the recommendation to use more than a single discount rate as proposed by Dr. Bardwell on behalf of

Ratepayers United and Mr. Cox on behalf of Interwest. I will demonstrate how the recommendations of Dr. Bardwell to tie the discount rate to the way the Company recovers its costs would distort the choice of resources and how, if applied, his methodology would disadvantage renewable resources and energy efficiency projects against utility-owned fossil fuel generation.

Q. WHAT ARE THE THREE POINTS YOU WOULD LIKE TO MAKE?

A. First, the same discount rate should be applied whether the cost of a resource is expensed or capitalized so as to not favor one resource over another simply because it is utility-owned. Second, the Company's Weighted Average Cost of Capital ("WACC") is the best discount rate to guide selection of resources. Finally, regardless of which discount rate is applied, inflation is not an appropriate discount rate since individuals prefer consumption today over future consumption even in a zero inflation world.

Q. WHAT DID MR. COX AND DR. BARDWELL PROPOSE REGARDING THE DISCOUNT RATE TO BE USED IN EVALUATING BIDS IN THIS PROCEEDING?

A. Mr. Cox has concerns about applying the weighted average cost of capital discount rate to fuel costs and recommends that the Commission consider the input of other stakeholders about this issue. Mr. Cox gave no additional reasoning or recommendations other than intuition. Dr. Bardwell advocates using different discount rates based on whether a cost is expensed or capitalized. Given the lack of justification for the position of Mr. Cox, I recommend that his position be disregarded based on lack of support. The

rest of my testimony will address Dr. Bardwell's reasoning, as he is the only other stakeholder that provided input on this issue.

Q. WHAT DID DR. BARDWELL PROPOSE AND WHAT WOULD BE THE IMPACT OF ADOPTING HIS PROPOSAL?

A. Dr. Bardwell contended that, "There is no justification for applying Public Service's WACC as the discount rate to future un-financed operational expenses, such as fuel costs, in the selection of the most cost-effective generation resources. As they are passed through directly to customers as they are incurred, capital does not need to be raised in advance to finance these costs." I disagree and believe that there is no justification in applying different discount rates based solely on capitalized versus non-capitalized resource costs for the purpose of resource selection.

If the Commission were to adopt Dr. Bardwell's proposal, resources that are capitalized would be advantaged over resources whose costs are recovered concurrently (expensed) and are not capitalized.

Q. DO YOU AGREE WITH DR. BARDWELL'S CONTENTION THAT CAPITAL COSTS EQUAL FINANCED COSTS?

A. No. The Company often needs to finance operating costs for a period of time until costs are recovered from customers. An example of this is the RESA balance – the Company is financing the negative RESA balance but it is not capitalized. For this reason, I will talk about Dr. Bardwell's proposal as it distinguishes capitalized costs and expensed costs and not attempt to determine exactly which balances are financed.

Q. DOES DR. BARDWELL MAKE ANY OTHER BROAD ASSUMPTION ERROR?

A. Yes, in coming to his conclusion that renewable energy would be less expensive than fossil-fuel generated energy under his discount rate proposal, he must be assuming that the cost of renewable energy is capitalized by the Company and that there is little expensed costs going forward. The truth is exactly opposite. The Company has been buying renewable energy (except for a very small ownership state in Ponnequin) under Power Purchase Agreements (PPAs) and 100% of the cost of those resources are expensed and recovered through adjustment clauses, just like the natural gas used in power plants for generation. In addition, to the extent we own generation resources, we finance all of the fixed capital investments we make regardless of the type of generation resource. The variable costs have generally been passed through or expensed, while the fixed costs associated with Company-owned generation, have been capitalized and are recovered in rates over the life of the asset. Dr. Bardwell's proposal would make the method of cost recovery the principal determinant of what discount rate is appropriate rather than a neutral question and would skew resource selection. While I think Dr. Bardwell was trying to skew the resource selection in favor of renewables and energy efficiency, the result of applying his methodology would actually have a different result and skew the resource selection in favor of utility owned resources, including fossil-fired resources. Avoiding this skewing of resource selection based on cost recovery method is justification alone for using a

single weighted average cost of capital as the discount rate applied to all of the nominal cost streams.

Q. WHICH COSTS ARE CAPITALIZED?

A. Company-owned assets such as generation plant, distribution plant, transmission plant, and fuel inventories are generally capitalized.

Q. WHICH COSTS ARE NOT CAPITALIZED?

A. The Company expenses other cost streams like fuel costs, Demand Side Management costs, purchase power costs, Solar*Rewards[1], and O&M costs as they are incurred. The Company recovers some of these costs in adjustment clauses and some in base rates.

Q. WHAT IS THE PURPOSE OF THE DISCOUNT RATE IN THE RESOURCE PLAN?

A. Different resource options have different cash flows and all are long-lived assets. A discount rate allows resources to be compared to each other so that the Commission can determine if one resource is more or less expensive than another resource on a net present value basis. It is necessary to adjust costs associated with a given alternative to account for the time value of money by using a discount rate when comparing resource alternatives. The discount rate reflects the rate at which an entity is indifferent between paying a dollar in an earlier period or a dollar escalated by the discount rate in a later period. The Company uses the after tax weighted average costs of capital as

[1] The Commission has allowed current cost recovery of Solar Rewards up to a 2% bill impact in the RESA. They have also allowed the Company interest on funds advanced above this level.

the discount rate to derive the net present value of revenue requirements. This is the standard discount rate based on financial theory and reflects a long-standing Commission practice. The WACC is the only discount rate that makes the Company indifferent between making an expenditure today and making a different expenditure at any given time in the future.

Q. IS IT STILL APPROPRIATE TO USE THE WACC AS THE DISCOUNT RATE IF THE COMPANY IS NOT FINANCING THE FUTURE EXPENSE?

A. Yes. Using WACC allows different resources to be compared to each other with no bias between whether resources are company-owned or owned by someone else with payments from the Company to the other party properly recorded as an expense in the Company's books and records.

Q. WHICH COSTS DO ELECTRICITY CUSTOMERS PAY IN FUTURE YEARS?

A. Electricity customers will pay future electricity rates to recover revenue requirements based on the Commission approved resource plan. These revenue requirements will include both the costs that capitalized and the costs that are not capitalized.

Q. WHAT IS YOUR UNDERSTANDING OF HOW DIFFERENT RESOURCE COSTS WOULD BE DISCOUNTED UNDER DR. BARDWELL'S PROPOSAL?

A. Dr. Bardwell proposes the costs that will be capitalized be discounted at the Company's WACC and that costs that are not expected to be capitalized when incurred be discounted at the much lower forecasted rate of inflation.

Dr. Bardwell refers to using the inflation rate to net present value as net-zero discounting of future costs.

Q. WHY SHOULD DR. BARDWELL'S PROPOSAL BE REJECTED?

A. Dr. Bardwell's proposal should be rejected on a theoretical basis because it is in conflict with economic theory on net present valuing. Dr. Bardwell is essentially suggesting that certain resource costs payable in the future are to be favored over others simply by virtue of whether those costs would ultimately be capitalized or expensed by the Company when incurred. In fact as I discuss in more detail below, the effect of Dr. Bardwell's recommendation is to advantage those resources that are capitalized over those that are expensed. My concern is that while customers may prefer some resources over other for a variety of reasons, it is unreasonable to contend that they prefer capitalized costs over non-capitalized costs. That is a particular customer may prefer wind over coal resources at the same cost. However, there is no evidence that the same customer would prefer coal over wind resources because the coal resource is capitalized by the Company while the cost of the wind resource is just passed through as an expense. Instead, economic theory would tell us that, all things being equal, customers will prefer future lower (nominal) electricity rates over higher electricity rates, without regard to the percentage of costs underlying the rate that are expensed or capitalized.

Q. WHY SHOULD DR. BARDWELL'S PROPOSAL BE REJECTED ON A PRACTICAL BASIS?

A. Dr. Bardwell's proposal leads to the inappropriate result of favoring resources that are capitalized over resources that are not capitalized. Dr. Bardwell's proposal could result in a situation where more expensive future resources are favored over cheaper future resources based solely on whether the costs are capitalized or expensed

Q. CAN YOU EXPLAIN HOW THIS MATH WORKS?

A. Yes. Since resources that are financed and capitalized are discounted at a higher rate, they will have a lower present value and appear cheaper. Similarly, non-capitalized resources will look relatively more expensive, since they are discounted at a lower rate and have a higher present value. In the table below, we compare three hypothetical potential resources. They are a new company-owned nuclear plant that costs $105 million per year in 2017, an identically sized new company-owned natural gas plant that costs $100 million per year 2017, and an identical sized DSM or renewable resource that costs $95 million in 2017. Since the nuclear plant has higher costs, it will result in highest rates in 2017. The natural gas plant will result in the next highest rates, while the DSM or renewable resource will yield the lowest rates. In our example, $90 million of the costs associated with the nuclear plant are capitalized, and $15 million of the costs are O&M, fuel or other non-capitalized costs. The costs for the natural gas plant consist of $50 million in capitalized costs and $50 million in O&M, fuel and other non-capitalized costs.

Net Present Value (NPV) of Resource Costs Using Two Discount Rates

Nuclear Plant	Resource Cost $MM/Year 2017	5-Year Discount Factor	NPV Rev. Req. $MM/Year 2012
Financed and Capitalized	$90	0.6930	$62
Non-Capitalized Costs	$15	0.8689	$13
Total Costs	$105		$75

Natural Gas Plant	Resource Cost $MM/Year 2017	5-Year Discount Factor	NPV Rev. Req. $MM/Year 2012
Financed and Capitalized	$50	0.6930	$35
Non-Capitalized Costs	$50	0.8689	$43
Total Costs	$100		$78

DSM or renewable resource	Resource Cost $MM/Year 2017	5-Year Discount Factor	NPV Rev. Req. $MM/Year 2012
Financed and Capitalized	$0	0.6930	$0
Non-Capitalized Costs	$95	0.8689	$83
Total Costs	$95		$83

Using Dr. Bardwell's method, the capitalized costs would be discounted using a 7.609% discount rate and the non-capitalized costs would be discounted using a 2.85% discount rate. If we are in 2012 and 2017 is 5 years away, $1 in capitalized costs would have a net present value of 69.30% and $1 in non-capitalized costs would have a net present value of 86.89%.[2] Looking at the table, the present value of resource cost of the nuclear plant would be $75 million -- based on $90 X 69.3% + $15 X 86.89%. The present value of the resource cost of the gas plant would be $78 million -- based on $50 X 69.3% + $50 X 86.89%. As a result, the more expensive nuclear plant would be

[2] The equations for discounting for five years in this case are 69.3%=1/(1+7.609%)^5 and 86.89%=1/(1+2.85%)^5

favored over the cheaper natural gas plant based on 2017 costs under Dr. Bardwell's proposal.

Q. DR. BARDWELL CONTENDS, ON PAGE 10 OF HIS TESTIMONY THAT NET-ZERO DISCOUNTING WOULD FAVOR DEMAND-SIDE MEASURES AND RENEWABLE RESOURCES. HOW WOULD NET-ZERO DISOUNTING WORK FOR DSM?

A. DSM costs and the costs of purchasing renewable energy are not capitalized and would be disadvantaged using Dr. Bardwell's proposal. Looking at the table above, we have modeled a new DSM program that has resource costs of $95 million dollars in 2017. The entire non-capitalized program costs would be discounted at 2.85% using Dr. Bardwell's proposal. The result would be a net present value revenue requirement for DSM or renewable resource of $83 million -- based on $95 X 86.89%. Thus DSM could be viewed as more expensive than either a natural gas plant or a nuclear plant, even though the DSM programs result in the lowest cost to customers of the three options in 2017 based on lower nominal revenue requirements. This is clearly a poor policy outcome and exactly what is avoided by using a consistent discount rate for all competing resources in resource planning.

Q. WHAT WOULD BE THE IMPACT ON PURCHASE POWER AGREEMENTS OF APPLYING DR. BARDWELL'S PROPSAL?

A. The costs incurred by the Company under PPAs are also not capitalized. As a result, they would be treated the same as DSM, Solar*Rewards, fuel and O&M under Dr. Bardwell's methodology. The result would be that, all things being equal, company-owned resources would be favored over PPAs of

identical or lower costs -- based solely on the application of lower discount factors to the stream of PPA expenses.

Q. WHAT ABOUT THE THEORY OF USING THE RATE OF INFLATION AS A PROXY FOR A CUSTOMER BASED DISCOUNT RATE?

A. Resource planning allows for choices of Company-owned or third-party resources in various future years. As a result, the Company's weighted average cost of capital serves as an appropriate discount rate. A true customer based discount rate is undeterminable, given that it would be based on the sum total of all electric customers' individual discount rates. Furthermore, while we don't know what a customer based discount rate would be, economic theory tells us that it is very likely to be higher than the rate of inflation. If a person lived forever and had no risk other than inflation, then an inflation based discount rate might make that person indifferent between paying a dollar in some future period and a discounted amount today based on inflation. Of course, no one lives forever and the world is a risky place. Each customer may view this time preference for current versus future cash flows differently from each other and possibly with variability over their lives. A wide variation in individual discount rates has been observed in studies. In one case, personal discount rates for Kentucky tobacco farmers ranged from 1% to 40% for all age groups and averaged 8.98% for farmers between the ages of 25 and 35.[3] Of course, Colorado electricity customers are not Kentucky tobacco farmers, but this example does serve the purpose of

[3] Pushkarskaya, Helen N. and Marshall, Maria I., Personal Discount Rates: Evidence from the Tobacco Buyout Program (December 20, 2007). Available at SSRN: http://ssrn.com/abstract=1078822 or http://dx.doi.org/10.2139/ssrn.1078822

showing that personal discount rates can have great variability and are most likely well above the rate of inflation.

Q. WHAT IS YOUR CONCLUSION WITH RESPECT TO THE RECOMMENDATIONS OF DR. BARDWELL AND MR. COX WITH RESPECT TO DISCOUNTING?

A. The recommendations of Dr. Bardwell and Mr. Cox to use more than one discount rate should be rejected. Regardless of which discount rate is selected, the same rate should be applied to all cost streams. There is no theoretical basis to suggest resource planners should prefer capitalized electricity costs over non-capitalized electricity costs. Furthermore, adopting this method would distort resource selection favoring Company-owned resources over PPAs and DSM simply because the Company would capitalize the cost to construct the plant. Using the long-standing method of discounting all revenue requirements based on WACC avoids these issues.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes.

Attachment A

Statement of Qualifications

Timothy J. Sheesley

I received a Bachelor of Economics degree in 1987 and a Masters of Economics degree in 1989 both from the University of Colorado at Boulder, a Banking Certificate from the American Banking Association in 1992, and a Masters of Business Administration degree with academic honors in Accounting and Finance from Regis University in Denver in 2005. Before joining Public Service Company of Colorado in 1997, I worked as an economist for the Denver Regional Council of Governments and the Federal Reserve Bank of Kansas City and as a professional researcher at the Center for Economic Analysis at the University of Colorado.

I have numerous publications in energy, regional and agricultural economics and have been quoted by the Wall Street Journal, Bloomberg News Service, Business Week Magazine, Christian Science Monitor, Denver Post, Rocky Mountain News, Denver Business Journal and several other newspapers, radio and television media.

I have extensive experience running sophisticated multi-sector econometric and financial models. I have contributed to numerous Federal Open Market Committee briefings and taught upper division "Money and Banking" at William Jewell College in Liberty, Missouri, and "Microeconomics" at the University of Colorado at Boulder.

I serve on the Western Blue Chip Economic Forecast Panel, the University of Colorado Business Outlook Forum Steering Committee, the Global Colorado

Initiative Sustainable Economic Development Committee, and am member of the Economic Club of Colorado.

I have also served as an economic advisor on the governor's Colorado Revenue Estimating Advisory Committee, the Colorado Transportation Commission Strategic Transportation Project, the Denver Regional Council of Governments Economics Advisory Task Force, the Smart Growth Leadership Group, Metro Denver Network, the Pueblo Economic Development Economic Committee, and am a former participant in 50 for Colorado.