BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH

IN THE MATTER OF THE JOINT APPLICATION OF QUESTAR GAS, THE DIVISION OF PUBLIC UTILITIES, AND UTAH CLEAN ENERGY FOR APPROVAL OF THE CONSERVATION ENABLING TARIFF ADJUSTMENT OPTION AND ACCOUNTING ORDERS	Docket No. 05-057-T01 DPU Exhibit 1.0SR

Artie Powell, Ph.D.

Pre-filed Surrebuttal Testimony

Division of Public Utilities

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Artie Powell
Pre-filed Surrebuttal Testimony
Conservation Enabling Tariff
Docket No. 05-057-T01

Q: Will you please state your name, employer, position and business address?

A: My name is Dr. William "Artie" Powell; I am employed by the Utah Division of Public Utilities ("DPU"); I am the manager of the energy section; my business address is 160 E 300 S Salt Lake City, Utah.

Q: Are you the same Dr. Powell whose direct testimony was submitted previously in this proceeding?

A: Yes; my rebuttal testimony is again being filed on behalf of the DPU.

Q: What is the purpose of your rebuttal testimony?

A: The purpose of my rebuttal testimony is to respond to the testimony of the Committee's witness Dr. David Dismukes. The Committee's witness filed two sets of testimony: direct testimony on or about May 18, 2006, and supplemental rebuttal testimony on June 30, 2006. For convenience I will refer to Dr. Dismukes' testimony as respectively either direct or rebuttal testimony.

TESTIMONY SUMMARY

Q: Would you summarize your testimony and recommendations, if any, for the record?

A: Certainly. In direct testimony the Committee's witness Dr. Desmukes offers

several modifications to the Conservation Enabling Tariff (CET) proposed in the Joint Application. Many of these modifications are in reality either part of the Joint Application or are consistent with the intent. I recommend with some slight changes that these modifications be adopted as part of the CET pilot program. One modification, a reduction in Questar Gas' allowed rate of return, however, does not seem appropriate or necessary at this time.

In rebuttal testimony Dr. Desmukes in addressing the Commission's staff's questions, present three alternatives – two alternatives are incentive based mechanism; the third alternative is a partial decoupling or statistical re-coupling mechanism. I demonstrate why these three alternatives are inferior to the CET proposed in the Joint Application.

I also address at length the issue of declining usage and conclude that based on the evidence declining usage is a potentially serious problem for the Company. Of the various mechanisms discussed in testimony by the parties to this case, CET proposed in the Joint Application is the only mechanism that addresses fully the problem of declining usage and removes the barriers for the Company to aggressively pursue DSM.

COMMITTEE PROPOSED MODIFICATIONS

Q: In direct testimony the Committee's witness, Dr. Dismukes, recommends that the Commission "reject the Joint Applicants' CET proposal as not being in

the Public Interest." However, in response to the question "Does the Committee have an alternative recommendation," Dr. Dismukes answers yes and offers what appear to be five modifications to the Joint Applicants' CET proposal. Would you agree that it appears that Dr. Dismukes is recommending modifications that he believes would render the CET pilot program in the public interest?

A: Let's not put too many words in Dr. Dismukes' mouth; he does indicate in this response that "if the Commission believes that decoupling is in the public interest, then my alternative recommendation is that the Joint Applicants be directed to prepare a revised filing that meets the [five modifications]".[1] Presumably, if these five modifications, or at least those deemed appropriate by the Commission are met, the CET pilot would be acceptable to Dr. Dismukes and the Committee.[2]

However, I don't think it is necessary for the Joint Applicants to prepare a new filing, which presumably would begin anew the procedural process and significantly delay the implementation of effective DSM programs well beyond the upcoming heating season. Rather, the Commission could simply order as part of the adoption of the CET proposal those modifications it deems appropriate.

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[1] Pre-filed Direct Testimony of David E. Dismukes, On Behalf of the Committee of Consumer Services, May 18, 2006, Docket No. 05-057-T01, pp. 3-4.

[2] This interpretation of Dr. Dismukes recommendations would be consistent with recommendations that Division has made on various issues and dockets where the Division recommends rejection of the proposal as filed but offers modifications or restrictions that would render the proposal acceptable if the Commission is in general inclined to adopt the proposal.

Q: Do you believe any of the modifications offered by Dr. Dismukes have merit?

A: Yes, with some qualifications I believe a couple of the modifications Dr. Desmukes proposes in his direct testimony would be appropriate to adopt. Other modifications proposed by Dr. Dismukes I believe are either inappropriate or are already intended (and incorporated) by the Joint Application. However, the three alternatives presented by Dr. Desmukes in rebuttal testimony are, in my opinion, inappropriate and I would recommend that the Commission reject these alternatives. I address extensive remarks to these alternatives below.

Q: Which of the modifications proposed by the Committee do you believe to be appropriate?

A: In my mind Modifications 1 and 3 are related and should, with some minor changes, be adopted by the Commission as part of the CET pilot. Modification 5 is intended by the Joint Application and is not really a new proposed modification to the CET pilot; also, much of what Dr. Dismukes proposes in Modification 4 is intended by the Joint Application. That leaves Modification 2 dealing with the cost of equity capital – I do not believe it is appropriate (or necessary) at this time to order an adjustment to Questar Gas'Questar Gas' authorized return on equity.

Modification 1: CET and DSM Timing

Q: Let's focus on Modifications 1 and 3 for a few moments. Dr. Dismukes proposes in Modification 1 that the Commission should not adopt any decoupling until after "properly designed DSM programs are in place and

functioning for sufficient time that impacts upon ratepayers and the utility can be measured."[3] You indicated that this modification with some changes would be appropriate for the Commission to adopt. What changes would you recommend?

A: I believe the intent or effect sought in this modification is an assurance that the Company will aggressively pursue cost effective DSM programs. However, if the Commission were to order the Company to undertake or proceed with DSM without appropriate compensation would, in my opinion, set-up conflicting incentives and guarantee failure of the pilot and DSM programs. As one expert states,

> Regulators should not expect a utility to undertake pro-actively energy-efficiency initiatives when shareholder interests deteriorate. A collision course leading to unintended consequences seems inevitable under standard ratemaking from requiring a utility, whose earnings directly relate to the level of sales, to play an independent active role in reducing its sales.[4]

Some of the conflicting incentives (or unintended consequences) might be enhancing the Company's incentives to promote sales; or encouraging the Company to exaggerate the decatherm savings and costs associated with DSM programs.

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[3] Dismukes, Direct Testimony, p. 4.

[4] Ken Costello, "Briefing Paper: Revenue Decoupling for Natural Gas Utilities," The National Regulatory Research Institute, April 2006, p.20.

On the other hand, expecting and requiring the Company to aggressively pursue DSM is a reasonable expectation and certainly was intended by the Division in joining the Joint Application. Therefore, in light of the potential for conflicting consequences, I would recommend that the Commission initiate the CET pilot and defined set of DSM programs simultaneously. In other words, the Commission's order adopting and implementing the CET (with any applicable modifications) could be made contingent on the Commission's future acceptance of specific DSM projects presented by the DSM Advisory Group. Given the delay in these proceedings and the fact that the DSM Advisory group has been meeting on an informal basis, the presentation of specific projects by the group should not be unduly delayed.

Modification 3: A Defined 3-Year Set of DSM Programs

Q: Are you then agreeing with Dr. Dismukes' Modification 3, that the Advisory group should put forward "A complete listing of DSM programs, estimated costs, and estimated savings and participation levels for the CET pilot period."?

A: There is one change I would make to what I believe Dr. Dismukes is advocating. I would leave enough room for flexibility in the DSM programs over the pilot period to take advantage of any technological changes or unanticipated outcomes. For example, suppose two programs are initially undertaken by the Company as a result of Commission approval. For ease, call them program one and program two. Suppose the cost benefits for program two are much greater than anticipated

relative to program one as well as any other programs being considered. The Advisory Group may want to recommend to the Commission that more emphasis be placed on program two going forward than was originally anticipated. Or suppose two years into the pilot technology changes and a new DSM program rises to the top in terms of its benefit/cost ratio. The Advisory Group may then want to recommend this new DSM program to the Commission for approval in lieu of another previously approved program.

With this flexibility I believe Dr. Dismukes recommendation is consistent with the Joint Application – I, for one, had anticipated that the DSM Advisory group would present the information Dr. Dismukes refers to, namely estimated costs, savings and participation levels as part of its request for approval of any DSM programs.

Modification 4: Reporting Requirements and Evaluation Metrics

Q: Modification 4 proposed by Dr. Dismukes would require the Company to "define clear reporting requirements and evaluation metrics including annual DSM savings goals."[5] Do you agree with Dr. Dismukes recommendation?

A: I believe that the intent of Dr. Dismukes recommended modification is embedded in the Joint Application. For example, on page 8 the Joint Application states, "As

[5] Dismukes, p. 4.

part of the pilot program, the Division will review the results of the Conservation Enabling tariff at the end of each quarter for the first year and annually, or more frequently as needed, thereafter, and will submit reports to the Commission that include an analysis of each year's results."[6] Additionally, I testified earlier in this proceeding that the division could audit the accounts of customers to ensure that the CET program was working in the manner intended by the Joint Applicants and that [forecasted] results of operations provided by the Company could be used to assess the earnings impact of the CET pilot on the Company.[7] I also testified that the customers would be chosen at random – this is the only way short of conducting a census of all 800,000 customers that will ensure valid statistical or analytical results. The number of customers to be audited would be based on valid statistical sampling principles, but would ultimately be determined by the Commission.

While I did not specify the frequency of these audits, I anticipated that the Division would conduct the audits on an annual basis and include the results in that quarter's report. These audits could, if required by the Commission, be conducted on a semi-annual basis; more frequent audits would, I believe, be

[6] "Joint Application of Questar Gas Company, the Division of Public Utilities, and Utah Clean Energy, for Approval of the Conservation Enabling Tariff Adjustment Option and Accounting Orders," Before the Public Service Commission of Utah, Docket No. 05-057-T01, pp. 8-9.

[7] See "Direct Testimony of Dr. William A. Powell, Division of Public Utilities," Docket No. 05-057-T01, January 23, 2006, p. 16.

unnecessary and unproductive.

Furthermore, on page 12, referring to future DSM programs, the Joint Application states, "All programs and other related costs must pass the cost effectiveness criteria established by the Utah Public Service Commission and be subject to approval by the Commission."[8] This language, in my mind, was specifically chosen to allow the Commission to determine which metrics it believes are most appropriate. My understanding is that there are four basic measures or metrics that are commonly used to evaluate DSM programs: the Ratepayer Impact Measure or RIM test; the Total Resource Cost or TRC test; the Participation test; and the Program Administration Cost test.[9] Again, I would recommend that the DSM Advisory group present results for all four tests to the Commission and let the Commission decide which test or tests to rely upon in approving specific DSM programs.[10]

Modification 5: Opting Out of the CET Pilot Program

Q: Dr. Dismukes proposes in Modification 5 the condition that, "The Company should be required to participate in the CET program and maintain its DSM commitments during the entire pilot period." And, "If the Company wishes

[8] Joint Application, p. 12.

[9] See, "California Standard Practice Manual: Economic Analysis of Demand-Side Programs and Projects", http://www.energy.ca.gov/greenbuilding/documents/background/07-J_CPUC_STANDARD_PRACTICE_MANUAL.PDF.

[10] Part of the DSM Advisory group's proposals, as well as other parties comments, may include evidence on which of the metrics it prefers.

to withdraw from the pilot program, it must petition the Commission and show that the cost to ratepayers of maintaining the program outweigh its potential benefits."[11] Do you agree with this proposed modification?

A: In part yes; however, I believe there is an inherent contradiction as the modification is stated by Dr. Dismukes. The latter part of Dr. Dismukes modification is consistent with the intent of the Joint Application. For example, on page 9 the Joint Application states, "At any time during the Pilot Program, any party can recommend to the Commission that the Pilot Program be modified or discontinued." Therefore, assuming the Commission orders a pilot program, any party, including the Company, would have to petition the Commission to modify or change or withdraw from the program as Dr. Dismukes acknowledges.

According to Dr. Dismukes proposal, the Company's withdrawal from the program would be based on a showing that the costs outweigh the benefits to ratepayers.[12] However, if this showing were to be substantiated, it would be a contradiction to insist that the Company continue its DSM commitments for the remainder of the pilot period. Therefore, I would suggest a rewording of the proposal along the following lines:

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[11] Dismukes, Direct testimony, p. 5.

[12] This may be one reason for discontinuance of the pilot program. But more generally, I would suggest that any evidentiary showing that the program was no longer in the public interest would be sufficient to discontinue the program.

> If the Company or other parties wish to modify or discontinue the pilot program for any reason, it must petition the Commission. Otherwise, the Company is required to participate in the CET program and maintain its DSM commitments (as approved by the Commission) during the entire pilot period.

Modification 2: Cost of Capital Adjustment

Q: Dr. Dismukes' Modification 2 proposes that "A cost of capital adjustment should be incorporated into the CET program that accounts for its inherent risk shifting." Do you think this modification is appropriate?

A: No.

Q: In direct testimony you indicated that the proposed rate reduction included a decrease in the return on equity. This would seem to be consistent with Dr. Dismukes' proposed modification. Could you review your testimony and explain the basis of your objection to Dr. Dismukes' proposed reduction in the rate of return?

A: In direct testimony I indicated that the proposed rate reduction specified in the Joint Application of $10.2 million was in part based on a reduced rate of return on equity capital. Questar Gas' current authorized return is 11.2%; the Joint Applicants agreed to use a return of 10.5% to establish a baseline revenue requirement. The Joint Application was filed on December 16, 2005. At the time of the filing, it was anticipated that the rate decrease would go into effect January 1, 2006.

Also, at the time of the filing, based on the information available, in the absence of the $10.2 million rate reduction the Division believed that Questar would earn approximately 11% for 2005. As I explained in direct testimony, while the Division believes that the authorized return of 11.2% is too high, the outcome from a rate case (i.e., what the Commission may order for an appropriate return) is uncertain. I testified that the rate reduction accomplished two things: (1) it provided immediate rate relief for ratepayers, and (2) Questar would not likely earn more than 10.5% in 2006. I concluded that the certain outcome of the rate reduction outweighed the uncertainty and timing factors of a litigated rate case.

A lower return, in this case 10.5%, to establish a baseline revenue requirement was, from the Division's point of view, consistent with Dr. Dismukes' proposed modification. However, since the filing of the Joint Application, Questar has filed two results of operations: one for 2005 and, in response to a Division data request, a forecast results for 2006. The 2005 results indicate that Questar earned about 10.68%; the forecasted results indicate an earnings level of for 2006 of 10.67%. After the Stipulation defining a rate reduction of $9.7 million was filed with the Commission, the Division asked the Company to layer the rate reduction into the forecasted results for 2006. The response to this last data request indicates an earnings level of 10.03% for 2006.

Q: In other words, Questar Gas'Questar Gas'Questar Gas' earnings for 2005 and 2006, once the stipulated rate reduction is layered into the forecasted

results, are lower than initially anticipated. Is that correct?

A: Yes, at least at the time the initial response to the data request was provided to the Division, the expected earnings were lower than originally anticipated. However, Questar has updated the data initial data response to reflect the Company's actual numbers for the first six months of 2006. This update indicates that Questar Gas' earnings will be approximately 10.7% for 2006. This earnings level is a little higher than what the Division saw as a reasonable level (or in a range of reasonableness) at the time the Joint Application was filed.

Also, the Division continues to perform its own investigation into the appropriate earnings level for the Company. For example, we are currently (at the time this testimony will be filed) reviewing reports filed with federal agencies such as the 10-Q filing with the Securities Exchange Commission; analyzing the monthly result of operations reports filed by the Company; and conducting our own analyzes into the level of earnings for a standard peer group of Questar Gas'. The Division will take what it views as the appropriate action as these studies are concluded. For example, if the results warrant a decrease in Questar Gas' revenue requirement, then the Division would file an application or request for a reduction with the Commission. Thus, there is no need for the Commission to rule on the appropriateness of a decrease in the allowed ROE at this time.

Q: Are the returns for 2005 and 2006, but especially 2006, the only reason why you believe Dr. Dismukes' proposed return adjustment is not appropriate?

A: No, although important points to consider the benefits of a rate case at this time, I believe, are questionable.

Two sources of information became available subsequent to my filing direct testimony: a report on decoupling from the National Regulatory Research Institute by Ken Costello and an order from the Maryland Commission.

In his report Mr. Costello makes several observations which are relevant to the proposed modification of a reduced return. For example, commenting on the outcomes from revenue decoupling, Mr. Costello states, "Although a utility's overall risk would seemingly decline, exactly by how much would require a sophisticated quantitative analysis."[13] Furthermore, the basis of Dr. Dismukes' proposal appears to rely on the assertion that the reduced risk for the Company automatically shifts to the ratepayer. However, Mr. Costello points out that an independent study conducted of Northwest Natural's revenue decoupling mechanism concluded that, "most of the risk reductions experienced by the utility were eliminated rather than shifted to the customers."[14] Thus unless or until it can be explicitly demonstrated that either Questar Gas' risk has been reduced or eliminated or that risk has been shifted to the ratepayer, or that Questar is

[13] Ken Costello, "Briefing Paper: Revenue Decoupling for Natural Gas Utilities," The National Regulatory Research Institute, April 2006, p. 11.

[14] Costello, p. 19. The report Mr. Costello refers to was cited for other reasons in my direct testimony: Daniel G, Hansen and Steven D. Braithwait, "A Review of Distribution Margin Normalization by the Oregon Public Utility Commission for Northwest Natural," Christensen Associates Energy Consulting, March 3, 2005.

expected to over-earn, there is no basis to make an adjustment to the allowed ROE for Questar.

Also, in a recent order the Maryland Commission declined[15] to make a specific adjustment for Baltimore Gas and Electric's revenue decoupling type mechanism (Rider 8): "Based on the reasons provided by staff and the Company, the Commission declines to order a specific adjustment for Rider 8 effects."[16] For example, Maryland Commission staff indicates that "the reduction in risk for weather or conservation mitigation" is already incorporated in the peer group of companies used to set the authorized rate. Whether this is true of Questar is a matter of empirical investigation. If already incorporated in the analysis from the last rate case, then an ad hoc adjustment would be entirely unwarranted in this case. If not incorporated, then the complicated analysis mention by Mr. Costello would need to be performed. While the Division is not opposed to undertaking the complicated analysis Mr. Costello alludes to, in light of recent rate reduction and the relatively low forecasted returns for Questar, the benefits of doing so at this time appear limited. Rather, it would seem more beneficial to implement the pilot program with the modifications as specified above and monitor Questar

[15] Mr. Costello reports that the Maryland Commission "reduced" the Company's ROE "by 50 basis points to reflect reduced revenue risk for the utility." It appears Mr. Costello's assertion is inconsistent with the actual published order. Apparently consumer advocates in the case argued for a 20 basis point reduction due to the effects of Rider 8, but this argument was specifically rejected by the Commission.

[16] Order No. 80460, "In the Matter of the Application of the Baltimore Gas and Electric Company for Revision in its Gas Base Rates," Before the Public Service Commission of Maryland, Case No. 9036, December 21, 2005.

Gas'Questar Gas' earnings and make recommended changes or adjustments as necessary.

Modification Discussion Summary

Q: Would you summarize your position on the modifications proposed by Dr. Dismukes?

A: Yes. In direct testimony, Dr. Dismukes proposes five modifications to the CET pilot program proposed by the Joint Applicants. Of these five, four are reasonable or are consistent with the intent of the Joint Application. I am rejecting one modification, Modification 2, which proposes an unspecified reduction in Questar Gas' authorized return, as inappropriate.

Modification 2: Rather than adjusting the return at this time, in light of the available information as explained in detail above, I recommend that Questar Gas'Questar Gas' earnings be monitored throughout the pilot program with parties making recommendations for adjustments as necessary.

Modification 1: Rather than waiting for an undefined period of time, I recommend initiating the CET pilot and DSM programs simultaneously. The Advisory Group has been meeting and Questar is prepared to submit DSM programs for the Commission's approval in the near future. This will ensure the maximum opportunity to implement effective DSM programs for the upcoming heating season.

Modification 3: I agree that the Company should produce details of several DSM

programs to be approved by the Commission. However, I recommend that the Commission allow enough flexibility to allow appropriate changes to be made to the DSM programs throughout the pilot.

Modification 4: This modification appears consistent with the Joint Application. I recommend, however, that no one metric (or test) be specified at this time. Rather, Questar with input form the Advisory Group should present the results for all standard DSM metrics and allow the Commission to determine which if any are the most important for determining the cost effectiveness of specific DSM programs.

Modification 5: This modification is consistent with the intent of the Joint Application. Once ordered by the Commission, any changes to the pilot (including discontinuance) must be approved by the Commission.

RESPONSE TO DISMUKES' DIRECT TESTIMONY

CET Example

Q: On pages 6-7 of his direct testimony, Dr. Dismukes discusses an example of the way the CET tariff supposedly works. Do you have any comments with regards to his example?

A: Yes. In general, I believe his example fairly represents the way the CET tariff is intended to work. However, there are several key factors that warrant clarification. First, all of the inputs into the tariff calculation – current non-gas revenue, 2005 number of customers, volumetric charge per customer, 2006 actual

number of customers, and the actual DNG Revenue for Month – while similar to actual Questar numbers are simple assumptions. Second, and more importantly, the Accrual Added to Monthly Bill is a direct result of the assumed input values and, possibly unintentionally, overstates the expected effect of the CET tariff adjustment.

Q: Why do you say that the example overstates the expected effect of the CET tariff?

A: There appears to be an inconsistency between the inputs and assumptions in Dr. Dismukes' example and the outputs. The inputs, Current Non-gas, Volumetric Charge per Customer, and the assumed decrease in Monthly Revenues, are stated on an annual basis, while the Accrual Added to the Monthly Bill is on a monthly basis. The result is an exaggeration of the expected effects of the CET tariff adjustment.

Specifically, notice that the difference between the Allowed DNG Revenues for Month and Actual DNG Revenue for Month (reported in the right hand box of Dr. Dismukes' Exhibit CCS-2.1) is approximately 2% (= $13,914,900/$13,650,000). According to Questar Gas'Questar Gas' IRP, the average decline in usage per customer is on average approximately 1.5% annually. Implicitly, Dr. Dismukes' example forces an approximate average annual decline into one month, thus, overstating the CET adjustment effect. A more "accurate" representation would be to spread the Accrual Added in Dr. Dismukes' example over the year by

dividing it by 12 yielding approximately $0.04: $0.433/12 = $0.036. Thus, compared to the volatility in gas prices, "the overall effect on customers of a [revenue decoupling]-driven rate adjustment appears to relatively small."[17]

Disincentive to Promote Energy Efficiency

Q: Dr. Dismukes claims, "[I]t is not clear that a significant utility disincentive exists in promoting least-cost efficiency resources." Would you agree with that statement?

A: No, the statement contradicts everything I have read on the subject and seems inconsistent with common sense. For example, the DSM Advisory Group , which the Committee participated in, concluded

> There are specific barriers that can be addressed that will improve the market efficiency. Many of these are being addressed in other jurisdictions . . . the development of CHP [combined heat and power] in Utah will be enhanced through future [Commission] actions that eliminate or mitigate the barriers. . .[18]

Recently the Regulatory Assistance Project issued a statement acknowledging strong disincentives:

> Traditional ratemaking results in some strong disincentives to acquiring energy efficiency. These include:
>
> 1. Utilities lose revenues and profits from sales not made as

[17] Costello, p. 13.

[18] "Report of the Distributed Energy Subgroup of the Natural Gas Demand-Side Management Advisory Group," Docket No 02-057-02, June 1, 2004.

a result of successful energy efficiency programs.

2. By devoting resources to efficiency programs rather than to other profit-making activities, utilities forego earnings opportunities.

3. Utilities are often restricted in how they can recover efficiency program expenses.[19]

Similarly, Ken Costello states:

> Under standard ratemaking as practiced in the vast majority of states, gas utilities have strong motivation to promote gas sales between rate cases. . . . Conversely, when a utility sells less gas it recovers a smaller portion of its fixed costs. . . . with few exceptions, utilities' shareholders shoulder financial harm in varying degrees whenever sales decline between rate cases."[20]

Mr. Costello provides a generic numeric example to illustrate the potential earnings effect of a small decline in sales and concludes that in his example a one percent reduction in sales causes a 10 percent decline in earnings to common equity holders.[21]

Load Management

Q: Starting with a question on page 10 of his direct testimony, Dr. Dismukes argues that load management DSM programs "may not reduce overall

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[19] "Regulatory Reform: Removing the Disincentive to Utility Investment in Energy Efficiency," Issues Letter, Regulatory Assistance Project, September 2005.

[20] Costello, p. 2.

[21] See Costello, pp. 7-9.

revenues." Would you agree with this argument?

A: In general, Dr. Dismukes' discussion of load-management versus conservation DSM programs is true. However, agreeing or disagreeing with the argument is not the point, because the basis of the argument – i.e., that there are cost-effective load-management DSM programs available in Utah – is irrelevant. The CET tariff is targeted to the GS-1 class, which is a winter peaking class. The primary driver for the winter peak is obviously heating. No matter how many load-management programs we design and analyze, it is doubtful that customers will turn their furnaces off in the winter in favor of running them in the summer. Therefore, Dr. Dismukes' endorsement of load-management programs is irrelevant in the present case.

Desmukes' Obligation to Promote Energy Efficiency

Q: Dr. Dimukes argues, "If a utility has a lower cost resource available to meet customer resource requirements, then it has an obligation to select that resource regardless of whether the resource is capacity-oriented (and rate base-building) or demand-oriented." How would you assess this argument?

A: I would classify the argument as the "Field of Dreams" response: if the utility would just do it, everything would be OK.[22] Actually, I addressed this issue

[22] Dr. Dismukes repeats his argument in his surrebuttal testimony on page 4. ("Supplemental Surrebuttal Testimony of David E. Dismukes, PH.D., On Behalf of the Committee of Consumer Services," Docket No. 05-057-T01).

earlier while discussing Dr. Dismukes' proposed Modification 1.[23] Briefly, ordering the Company to adopt or aggressively pursue DSM without addressing the inherent conflicting incentives that exist under traditional ratemaking practices, would almost guarantee failure.

RESPONSE TO DISMUKES' REBUTTAL TESTIMONY

Three Additional Alternatives

Q: In his (supplemental) rebuttal testimony Dr. Dismukes offers three alternatives to address the Company's disincentive to pursue DSM. Two of these alternatives he characterizes as incentive regulation approaches; Dr. Dismukes characterizes the third alternative as "a partial revenue-sales decoupling approach." What is your general impression of these alternatives?

A: In general I believe the alternatives,[24] to the extent that Dr. Dismukes has explained them, are inadequate and fraught with controversy. Additionally, they represent radical departures from traditional regulatory approaches to recovering distribution non-gas costs.

Q: Why do you say that Dr. Dismukes alternatives are radical departures from traditional regulatory procedures?

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[23] See discussion herein starting on page 4.

[24] "Supplemental Surrebuttal Testimony of David E. Dismukes, Ph.D., On Behalf of the Committee of Consumer Services," Docket No. 05-057-T01, lines 118-245.

A: First, concerning his first alternative, in response to the question, "Has this approach been utilized in any other state," Dr. Dismukes responds, "No, this would be a unique approach and it does include some potential implementation issues."[25] Second, the fundamental incentive mechanism of the first two alternatives is to reward the Company for superior behavior and to punish the Company for inferior behavior. This would, as indicated before, set up conflicting incentives: the Company would have an incentive to overstate potential program costs and understate potential savings, thus, artificially lowering the projected or baseline benefit-cost ratio; consumer groups would have opposite incentives, thus, artificially raising the projected or baseline benefit-cost ratio.

Furthermore, given the opposing incentives, the Dr. Dismukes' alternatives do not fully remove the disincentive to the Company of pursuing DSM. The CET proposed by the Joint Application, however, does remove the barriers, and it does so without imposing conflicting incentives for regulators or the Company.

Q: Wouldn't you classify the CET as a radical departure from traditional regulatory procedures?

A: No. Distribution non-gas costs are currently collected both through a customer charge, which in Questar Gas'Questar Gas' case is $5 per month, and through a

[25] Dismukes Rebuttal Testimony, lines 154-156.

volumetric rate. Under the current regulatory paradigm the volumetric rate is set during a rate case and is fixed between rate cases. Under the proposed CET, the volumetric rate would be adjusted between rate cases to collect the Commission's approved average distribution non-gas costs as usage varies. Since the CET is not designed to address the actual costs the Company incurs, the Company still has the same risks of controlling its costs that it currently faces. As Dr. Dismukes points out in his direct testimony, "[T]he proposed CET is nothing more than a fixed rate recovery mechanism in disguise, and the fact that these [CET] charges are applied volumetrically is a difference without a distinction."[26]

Q: In an earlier response you indicated that Dr. Dismukes' alternatives were "inadequate and fraught with controversy." Would you explain why you believe the alternatives presented by Dr. Dismukes are inadequate?

A: As explained in the White Paper attached to Company witness Mr. McKay's testimony, there were three objectives that were to be addressed by the parties: (1) the disincentive to promote DSM; (2) the declining usage per customer; and (3) the level of contention or adversarial nature of regulatory proceedings.

First, as I previously discussed, the alternatives presented by Dr. Dismukes in rebuttal testimony do not completely remove the barriers to DSM promotion. Indeed, by institutionalizing conflicting incentives, his alternative proposals will

[26] Dismukes, Direct Testimony, lines 920-922.

likely lead to the Company and others gaming the system to their own benefit. Second, by his own admission (and by deliberate design) Dr. Dismukes' alternatives only address the decline in usage related to DSM and, thus, only address "half" the problem. By not addressing the entire problem, this again creates conflicting signals or incentives for the Company. Addressing only half the declining usage problem reinforces the Company's incentive to understate energy savings attributable to DSM, thereby, recovering the lost revenues from non-DSM declining usage through incentive payments designed to reward the Company's superior performance on DSM programs. Finally, Dr. Dismukes' alternatives are likely to increase the level of contention in regulatory proceedings.

The CET proposed by the Joint Applicants clearly is superior in that it addresses the first objectives directly – it removes the barrier to the Company for promoting DSM programs and addresses the declining usage per customer problem completely. Furthermore, while current proceeding may indicate otherwise, I believe that the CET tariff will reduce contention in many respects in future proceedings.

Q: Why do you believe that Dr. Dismukes' alternatives would increase the level of contention in regulatory proceedings?

A: The alternatives present by Dr. Dismukes in rebuttal testimony require numerous parameters or variables to be estimated. Given the conflicting incentives resulting

from the alternatives, arriving at the required estimates will, in my opinion, be very contentious.

Q: Could you provide an example of the types of parameters or variables to be estimated and the controversies surrounding them?

A: In discussing the first alternative, what is characterized as an "incentive-based mechanism that would be based on an achieved [benefit-cost] ratio, Dr. Dismukes indicates that a "target or benchmark" benefit-cost ratio along with a dead-band would need to be established. According to Dr. Dismukes' proposal, if the Company achieves a benefit-cost ratio within the dead-band, no penalties or rewards are set; if the Company's performance is above the dead-band, the Company is rewarded; if the Company's performance is below the dead-band, the Company is penalized.

There are several areas of potential conflict inherent in this proposal. First, while Dr. Dismukes proposes a fixed dollar per decatherm saved as a reward or penalty, it would need to be determined if this were indeed the best mechanism for rewarding or penalizing the Company for performance outside of the dead-band. The inherent conflicts would seem obvious to the most casual observer. For example, Questar would have an incentive to argue for a asymmetric band favoring superior performance, while others may have an incentive to argue for a asymmetric band punishing inferior performance. Second, the target benefit-cost ratio and the dead-band would need to be established. One way of approaching

this problem would be to interpret the target ratio as an average benefit-cost ratio for similar programs or utilities and the dead-band as a multiple of the standard deviation around that average.[27] Again, the inherent conflicts seem obvious: what multiple of the standard deviation is to be used to establish the width of the band or whether the mean or median should be used as the baseline . Third, the size of the dollar amount would need to be determined and whether the penalties and rewards were symmetric or not, or graduated or not, or some combination.

Many of the same problems or controversies discussed above also apply to Dr. Dismukes' third alternative, partial decoupling or statistical re-coupling. In addition to those problems, there are several serious statistical problems that would need to be addressed before statistical re-coupling could be considered a viable alternative. For example, in addition to DSM Dr. Dismukes correctly describes or attributes the decline in usage (or the variation in usage) to a variety of macro-economic variables. The basic idea behind statistical re-coupling is to estimate the decline in usage with information on all of these variables using regression analysis. The Company would then be compensated for the decline in usage estimated to be directly attributable to DSM. There are two statistical problems that could undermine this approach.

Many macro-economic variables are non-stationary. That is, in simple terms, the

[27] Additionally, it would need to be determined if the target and dead-band applied to all programs or if new targets and dead-bands were to be applied to each program separately.

average and standard deviation of macro-economic variables vary over time. Using non-stationary variables in a regression leads to bias in the parameters estimates and renders inferences based on the estimates unreliable. In other words, you could actually reward (punish) the Company when its performance is inferior (superior). Non-stationarity is not an insurmountable problem however. There are statistical tests that will detect non-stationarity and, in some cases, there are some rather simple data transformations, such as first differences, that will correct the problem.

The second statistical problem, however, is not easily overcome. Macro-economic variables are often correlated with one another or even dependent on each other. If two variables in a regression are significantly correlated, then the resulting standard deviation of the individual parameters will be inflated. As a result, separating the individual effects of each variable is impossible and, thus, the effect of DSM on usage per customer can not be separated from the effect of the macro-economic variables. If two variables in a regression are dependent on each other, and the model does not take this into account, the resulting parameter estimates of all the variables in the regression will be biased. Again, if the parameter estimates are biased any inference based on those estimates could be invalid as described above.

Overcoming or "correcting" the dependency problem might be accomplished by specifying a more complicated model such as a system of simultaneous equations that captures the dependency. This will add a dimension of contention beyond

that of choosing which variables should or should not be included in the initial regression model. Overcoming correlation among variables, a problem known as multicollinearity, is much more problematic. Multicollinearity is a data problem and not a statistical problem. In other words, it is a condition of the data and not a condition that is correctable using statistical techniques.[28] An approach advocated by many researchers is to add more data to the sample being used to estimate the regression model. Since the problem is a data problem, the hope is that the collinear relationship will not be present in the larger sample. However, this approach is not always successful. Additionally, one must wonder why, if the data was available in the first place, it was not used initially.

Q: Suppose the Commission was to order that one of Dr. Dismukes' alternatives (or an alternative of its own making) be implemented as soon as practicable. How long would you estimate it would take for the Division to evaluate the proposal and formulate its recommendations for implementation and potential modifications?

A: That is an interesting question. I would point out that Dr. Desmukes unfortunately did not detail any of his alternatives, which precludes a thorough and timely analysis for this filing. Once the details are specified, which in the case of Dr. Dismukes may require several rounds of discovery or in the case of a

[28] Some researchers advocate using step-wise regression or some other selection technique that eliminates "unnecessary" correlated variables. Discarding variables, however, can lead to bias problems similar to those previously discussed with the same inferential results.

Commission designed mechanism several technical conferences, I would estimate six to eight months.

Q: Six to eight months! Aren't you being overly pessimistic in an attempt to undermine the viability of Dr. Dismukes' alternative proposals?

A: On the contrary, given the problems and controversies detailed above, I believe an estimate of six to eight months is conservative. Consider the current docket. In my opinion, the CET proposal contained in the Joint Application is a simple and transparent proposal, especially compared to the alternatives put forward by Dr. Dismukes. The Joint Application was filed in December 2005, this testimony is to be filed on August 14, 2006 a time frame of approximately nine months.

Declining Usage as a Problem

Q: The CET is designed top address declining usage in general as well as declines associated with DSM. However, it appears that Dr. Dismukes questions whether declining usage is in reality a problem. How would you respond to Dismukes questioning declining usage?

A: Frankly, I am surprised by his position and, by association, the Committee's questioning of the general problem of declining usage. The problem has been discussed for several years (and probably much longer) in a variety of forums. For example, the problem has been described in the past several IRP filings, rate cases, and pass through filings. While the Division has challenged the Company's estimate of the decline in usage in at least one rate case, I am not

aware of any party challenging the notion that the problem exists. Furthermore, the industry literature, to my knowledge, acknowledges the problem.

Q: Could a party challenge the Company's estimate of the decline as you indicate and yet endorse the CET?

A: Yes. A party could challenge the Company's forecast of the decline in usage say over the next 18 months in the context of determining the Company's forecasted earnings or for setting rates in a rate case. This challenge, however, really has nothing to do with the CET since the CET adjustment would be determined on actual past usage.

Q: In an exhibit (Supplemental Rebuttal Exhibit CCS-2.13) attached to his rebuttal testimony, Dr. Desmukes provides evidence that the decline in usage per customer is not statistically significant. Do you have any comments about the statistical test performed by Dr. Desmukes?

A: I believe there are several serious flaws with the test and, therefore, any conclusions or recommendations based on the test are invalid. Before I explain what I am referring to, let me make some general comments about statistical hypothesis testing.

A statistical hypothesis test is designed to test an inference (assumption) about an unknown population parameter that describes one or more characteristics about the population distribution. If the population parameter – say the population

mean μ – is known, then there is no reason to conduct the test. Suppose that we want to test whether the population mean is less than or equal to an assumed value, μ_0, then the specification of the test – the null and alternative hypotheses – would be

$$H_0 : \mu \leq \mu_0 \qquad H_a : \mu > \mu_0 \tag{1}$$

Since the population mean is unknown, the sample mean, $\bar{X}$, and sample standard deviation, S, can be used to construct the test statistic

$$T = \frac{\bar{X} - \mu_0}{S / \sqrt{n}} \tag{2}$$

As long as the sample comes from a normally distributed population, the test statistic will follow a student-t distribution with n-1 degrees of freedom. To complete the test, a rejection region is specified by choosing a critical value corresponding to the amount of probability to be left in the tail of the student-t distribution. If we wanted to leave 5% in the upper tail of the distribution then, under certain conditions, the critical value would be 1.645. If the test statistic is greater than 1.645, then we would reject the null hypothesis; otherwise, we would fail to reject the null hypothesis.

I apologize for the technical detail, but it will be beneficial in understanding my criticisms of Dr. Desmukes' test. I believe what Dr. Desmukes attempts to do is test whether the average usage per customer has declined. In his case, the

assumed value of the population average usage is the average usage for 2005 (μ_0 = 112.876). The sample Dr. Desmukes uses is usage for the five years 2001 through 2005. Thus, we can write the null and alternative hypotheses as

$$H_0 : \mu \leq 112.876 \qquad H_a : \mu > 112.876 \tag{3}$$

The sample mean and standard deviation are 116.14 and 2.76, which yields a test statistic of 2.64. If we choose to leave 2.5% probability in the upper tail, the critical value would be 2.776. Thus, we would fail to reject the null hypothesis. (See Table 1).

With one exception, this is essentially the test Dr. Desmukes performs. Dr. Desmukes reports a T-statistic of 1.1809. However, this value fails to take into account the sample size as indicated in Equation (2). The correct value is 2.64 as indicated in Table 1.

Table 1: Desmukes' Declining Usage Hypothesis Test

Year	Average Usage		
2001	118.970		
2002	115.841	T-Statistic =	2.64
2003	118.899	Critical Value =	2.78
2004	114.103		
2005	112.876	P-Value =	0.029
Sample Mean	116.138		
Standard Deviation	2.762		

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I have also included the P-Value for the T-statistic. The P-value is the probability left in the tail given the value for the test statistic 2.64 and is commonly reported with testing results. The P-value in this case of 2.9% (compared to the rejection region of 2.5%) indicates that the failure to reject was relatively weak.[29] For instance, if we had left 5% in the upper tail, the critical value would be 2.132, and we would have rejected the null hypothesis. Thus, given the information contained in the sample, the conclusion is sensitive to the size of the test or the probability used to define the rejection region. However, before we draw any strong conclusions from this test, there is another fundamental problem that needs correcting.

The T-statistic in Equation (2) is actually the ratio of a standard normal random variable to the square root of a Chi-square random variable that is divided by its degrees of freedom.[30] In constructing his test, Dr. Desmukes uses one of the sample values as the hypothesized value under the null hypothesis. If we let X_1, X_2, X_3, X_4, and X_5 represent the sample of usage values for the years 2001

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[29] In general, a P-value less than 1% is considered to indicate highly significant results; a P-value between 1% and 5% is considered to indicate significant results; and a P-value greater than 5% is considered to indicate insignificant results. Although generally considered not to be significant, reported P-values between 5% and 10% are often reported "as tending toward significance." (See, William Mendenhall, James E. Reinmuth, and Robert J. Beaver, "Statistics for Management and Economics," 7th Ed., [Belmont, California: Duxbury Press], 1993, p. 346).

[30] The T-statistic is the ratio of the random variables $Z=(\bar{X}-\mu_0)/(\sigma/\sqrt{n})$ and $\chi=\sqrt{(S^2(n-1)/\sigma^2)/(n-1)}$. The practical implication is to replace the population standard deviation, σ, in the first random variable, Z, with the sample standard deviation, S. The resulting formula is the T-statistic described above.

through 2005, then the numerator of Dr. Desmukes' T-statistic can be written as,

$$\frac{1}{n}\left(X_1 + X_2 + X_3 + X_4 + X_5\right) - X_5 \quad (4)$$

Rearranging, the numerator can be written as,

$$\frac{1}{n}\left(X_1 + X_2 + X_3 + X_4\right) - \frac{(n-1)}{n}X_5 \quad (5)$$

Clearly, this formula does not follow the pattern of the T-statistic specified in Equation (2) and, therefore, Dr. Desmukes' test statistic will not follow a student-T distribution. Thus, the test as constructed is invalid.

A valid test can be constructed from the data by holding out the usage value for 2005. In other words, the numerator of the test statistic would be,

$$\frac{1}{(n-1)}\left(X_1 + X_2 + X_3 + X_4\right) - X_5 \quad (6)$$

This formulation yields a test statistic of 3.40 with a critical value of 3.182 representing a 2.5% rejection level, and a P-value of 2.12%. Since the test statistic is greater than the critical value, we would reject the null hypothesis – we would conclude that usage has significantly decreased. The interpretation of the P-value supports this conclusion; the P-value is between the typical rejection levels of 1% and 2.5%, which indicates that current usage is significantly less than the historical average. (See Table 2).

Table 2: Corrected T-Test for Usage per Customer

Year	Average Usage		
2001	118.970		
2002	115.841	T-Statistic =	3.40
2003	118.899	Critical Value =	3.182
2004	114.103		
		P-Value =	0.0212
Sample Mean	116.953		
Standard Deviation	2.395		

Similar corrections apply to Dr. Desmukes' statistical test of the average GS1 Revenue per Customer presented in "Supplemental Rebuttal Exhibit CCS 2.13." Correcting for the calculation error and limiting the sample to the values for 2001 through 2004 yields a T-statistic of 0.153 with a critical value of 3.182 and a P-value of 0.44. In this case we clearly fail to reject the null hypothesis – there is no statistical difference or change in the average revenue per customer. Thus, the evidence presented by Dr. Desmukes (and as corrected herein) supports the conclusion that while average revenue per customer is not significantly changing, usage has significantly declined. Thus, declining usage appears to present a serious potential problem for the Company.

Q: Based on the evidence presented by the various parties to this docket, what is your final conclusion and recommendation?

A: Based on the testimony presented I conclude that of the various mechanisms discussed in testimony by the parties to this case, the CET proposed in the Joint

Application is the only mechanism that addresses fully the problem of declining usage and removes the barriers for the Company to aggressively pursue DSM. Therefore, I recommend that the Commission approve the CET pilot program proposed in the Joint Application with the modifications specified herein.

Q: Does this conclude you surrebuttal testimony?

A: Yes it does.