

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

* * * * *

IN THE MATTER OF THE APPLICATION)
OF PUBLIC SERVICE COMPANY OF)
COLORADO FOR AUTHORITY TO)
IMPLEMENT AN ENHANCED DEMAND SIDE) DOCKET NO. 07A-____E
MANAGEMENT PROGRAM AND TO REVISE ITS)
DEMAND SIDE MANAGEMENT COST)
ADJUSTMENT MECHANISM TO INCLUDE)
CURRENT COST RECOVERY AND INCENTIVES.)

DIRECT TESTIMONY AND EXHIBITS OF

SUZANNE DOYLE

INDEX

<u>SECTION</u>	<u>PAGE</u>
I. INTRODUCTION AND STATEMENT OF PURPOSE.....	1
II. GENERAL COST-EFFECTIVENESS MODELING	2
III. RESULTS OF STATUTORY MINIMUM DSM PLAN AND ENHANCED DSM PLAN COST-EFFECTIVENESS TESTING	12
IV. EVALUATION, MEASUREMENT, AND VERIFICATION	17

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

* * * * *

IN THE MATTER OF THE APPLICATION)
OF PUBLIC SERVICE COMPANY OF)
COLORADO FOR AUTHORITY TO)
IMPLEMENT AN ENHANCED DEMAND SIDE) DOCKET NO. 07A-____E
MANAGEMENT PROGRAM AND TO REVISE ITS)
DEMAND SIDE MANAGEMENT COST)
ADJUSTMENT MECHANISM TO INCLUDE)
CURRENT COST RECOVERY AND INCENTIVES.)

DIRECT TESTIMONY AND EXHIBITS OF
SUZANNE DOYLE

1 I. INTRODUCTION AND STATEMENT OF PURPOSE

2 Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

3 A. My name is Suzanne Doyle. My business address is 414 Nicollet Mall,
4 Minneapolis, Minnesota, 55401.

5 Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

6 A. I am employed by Xcel Energy Services Inc., the service company subsidiary of
7 Xcel Energy Inc., the registered public utility holding company parent of Public
8 Service Company of Colorado. My title is Manager, DSM Regulatory Strategy
9 & Planning. My primary responsibilities are to manage all demand-side
10 management ("DSM") regulatory filings, cost-benefit analyses, and tracking of
11 DSM achievements. My team also supports the DSM component of resource
12 planning, conducts economic analysis of DSM programs, and provides strategic
13 planning and policy guidance.

14

1 **Q. ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS DOCKET?**

2 A. I am testifying on behalf of Public Service Company of Colorado (“Public
3 Service” or the “Company”).

4 **Q. HAVE YOU INCLUDED A STATEMENT OF YOUR QUALIFICATIONS,
5 DUTIES, AND RESPONSIBILITIES?**

6 A. Yes. A description of my qualifications, duties, and responsibilities is provided
7 as Attachment A.

8 **Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?**

9 A. The purpose of my testimony is to describe the cost-effectiveness modeling
10 that will be used in the future for analyzing electric DSM programs, the results
11 of the cost-effectiveness modeling for the statutory minimum DSM plan and the
12 enhanced DSM plan as proposed by the Company in this application, and
13 Public Service’s plans for evaluation, measurement, and verification of its DSM
14 programs.

15 **II. GENERAL COST-EFFECTIVENESS MODELING**

16 **Q. WHAT IS COST-EFFECTIVENESS MODELING?**

17 A. Cost-effectiveness modeling is the manner in which the benefits and costs of
18 DSM programs are assessed, typically from a variety of perspectives. The
19 general purpose is to determine whether relative to supply-side resources,
20 DSM portfolios and programs are worthwhile investments from the
21 perspectives of program participants, non-participants, and the program
22 administrator (i.e. the utility). Public Service generally presents cost-
23 effectiveness results in the form of a benefit-cost ratio with ratios greater than

1 one signifying cost effectiveness. It is also possible to present results in
2 terms of the net present dollar value of the stream of avoided costs minus the
3 costs, otherwise known as “net benefits”.

4 **Q. PLEASE EXPLAIN THE COST-EFFECTIVENESS TEST YOU WILL USE**
5 **TO ANALYZE THE DSM INITIATIVES THE COMPANY WILL UNDERTAKE**
6 **AS PART OF THE ENHANCED DSM PLAN THAT THE COMPANY IS**
7 **PROPOSING HERE.**

8 A. Colorado Revised Statutes, § 40-1-102(5), recently enacted in conjunction
9 with DSM legislation codified at C.R.S. § 40-3.2-101 et seq., provides the
10 following definition of cost-effectiveness:

11 (a) “Cost-effective” with reference to a natural gas or
12 electric demand side management program or related measure
13 means having a benefit-cost ratio greater than one.

14 (b) In calculating the benefit-cost ratio, the benefits
15 shall include, but are not limited to, the following, as applicable:

16 (I) The utilities avoided generation,
17 transmission, distribution, capacity and energy
18 costs;

19 (II) The valuation of avoided emissions costs;
20 and

21 (III) Non-energy benefits as determined by the
22 Commission.

23 (c) In calculating the benefit-cost ratio, the costs shall
24 include, but are not limited to, utility and participant
25 expenditures for the following, as applicable:

26 (I) program design, administration, evaluation,
27 advertising, and promotion;

28 (II) customer education;

- 1 (III) incentives and discounts;
- 2 (IV) capital costs; and
- 3 (V) operation and maintenance expenses.

4 The Company will apply these criteria through use of a Total Resource
5 Cost ("TRC") Test as defined in the statute quoted above. Under the
6 proposed TRC Test, the following benefits will be included in the benefit-cost
7 ratio calculation:

- 8 • Avoided generation capacity costs – representing the capital and
9 operations & maintenance ("O&M") costs avoided by not having to
10 build a generating plant;
- 11 • Avoided marginal energy costs – representing the cost avoided by
12 not having to generate or purchase energy;
- 13 • Avoided transmission and distribution capacity costs – representing
14 the capital costs avoided by not having to build transmission and
15 distribution facilities, and
- 16 • Avoided emissions - the environmental emissions avoided when
17 electricity is not generated in conjunction with the values used in
18 resource planning.

19 The following costs will be included in the calculation:

- 20 • Program design, administration, evaluation, advertising, and
21 promotion – representing the costs to bring the program to
22 customers;

- 1 • Customer education – efforts made by the Company to teach
2 customers about energy efficiency and load management, including
3 market transformation;
- 4 • Incentives and discounts – including rebates to customers (or
5 vendors and trade partners) for purchase of efficient equipment, as
6 well as upstream buy-downs at the manufacturer. Note that these
7 dollars are treated as both a cost to the utility and as a benefit to
8 the participant within the TRC Test;
- 9 • Customer DSM measure capital costs – the incremental cost of the
10 purchase and installation of efficient equipment or measure;
- 11 • DSM measure-related operation and maintenance (“O&M”)
12 expenses and savings – ranging from changes in maintenance
13 costs, etc. to reduced water use, labor costs, etc.

14 The benefits (or avoided costs) that will be used in cost-effectiveness
15 analyses will be updated with each Biennial Plan (as discussed in Witnesses
16 Sundin’s and Brockett’s testimonies) using the most recent company
17 information.

18 **Q. HOW IS THE BENEFIT-COST RATIO CALCULATED FOR A DSM**
19 **PROGRAM USING THESE DEFINED BENEFITS AND COSTS? (PLEASE**
20 **SHOW AN EXAMPLE).**

21 A. The benefit-cost ratio is derived from summing the total benefits over the
22 lifetime of the program and dividing this sum by the total first year costs of the
23 program. A simple hypothetical example is shown in Exhibit No. SRD-1.

1 **Q. HOW ARE THE NET ECONOMIC BENEFITS CALCULATED FOR A DSM**
2 **PROGRAM OR PORTFOLIO? (PLEASE SHOW AN EXAMPLE).**

3 A. Net economic benefits for the DSM portfolio (or program) are calculated by
4 subtracting the current or first year value of program costs (borne by both the
5 utility and the participant) from the present value of benefits (the discounted
6 stream of avoided costs over the project's life). The example in Exhibit No.
7 SRD-1 also shows the net economic benefits calculation.

8 **Q. WILL YOU USE ANY OTHER COST-EFFECTIVENESS TESTS TO**
9 **ANALYZE DSM PROGRAMS?**

10 A. Yes. The Company will use a set of additional tests as informal guidelines for
11 evaluating the cost-effectiveness of DSM. These tests show the cost-
12 effectiveness of proposed programs from different perspectives, allowing
13 Public Service to assess how the programs will impact the Company, non-
14 participants, and participants in the DSM programs. The results of these tests
15 will be provided to the Commission for informational purposes as part of the
16 Biennial Plan and in subsequent status reports. The other tests include:

- 17 • The Utility Test, which measures the net costs of a DSM program
18 as a resource option based on the costs incurred by the program
19 administrator (including incentive costs) and excluding any net
20 costs incurred by the participant. The Company uses the Utility
21 Test because it provides a fairly pure way of assessing the direct
22 costs the utility directly incurs to produce DSM savings.

- 1 • The Ratepayer Impact Measure (“RIM”) Test, which indicates the
2 direction and magnitude a DSM proposal, has on customer bills or
3 rates. Public Service uses this test to show how the proposed DSM
4 programs will impact non-participants.
- 5 • The Participant Test, which assesses the quantifiable benefits and
6 costs from the perspective of the customers who directly participate
7 in DSM programs. Public Service uses this test to ensure that DSM
8 programs will appeal to potential program participants.

9 **Q. WHAT ARE NON-ENERGY BENEFITS AND ARE YOU PLANNING TO**
10 **INCLUDE NON-ENERGY BENEFITS IN YOUR COST-EFFECTIVENESS**
11 **ANALYSIS?**

12 A. Non-energy benefits (“NEBs”) are benefits that customers or society derive
13 from DSM programs that are not quantified and captured through traditional
14 engineering-based estimates of energy and demand savings. Examples of
15 NEBs can include: reduced customer water usage, reduced customer
16 operations and maintenance costs, reduced customer debt and lower utility
17 arrearage levels, or higher participant comfort and convenience levels. NEBs
18 are sometimes also called non-energy impacts (“NEIs”) to acknowledge the
19 existence of non-energy costs as well as benefits.

20 With one exception, Public Service is not proposing to include NEBs in
21 its cost-effective calculations. The Company has generally taken a more
22 restrictive approach towards NEBs, mainly because of the difficulty in reliably
23 quantifying their value. The one exception is the decision to include customer

1 DSM measure O&M cost and savings. Customer O&M costs and savings are
2 typically more readily quantifiable and are more recognizable to customers
3 than other non-energy benefits. For example, a business customer who
4 installs high efficiency process equipment pump may save on both electricity
5 and also reduce water use. In Public Service's models, such reduced water
6 use would be captured as an offset to the increased customer's incremental
7 cost of the high efficiency process equipment, thereby reducing the cost
8 portion of the benefit-cost ratio and increasing the ratio itself. This practice is
9 generally used with custom-type projects where the customer can readily
10 identify these reduced (or increased) O&M costs.

11 **Q. HOW DO YOU PROPOSE TO HANDLE GAS SAVINGS IN YOUR**
12 **ELECTRIC PROGRAMS?**

13 A. Electric DSM programs may impact gas consumption in at least two ways.
14 First, a project such as an industrial process change or building envelope
15 improvement may create both gas and electric savings. Second, a project,
16 such as installing more efficient lighting, may provide electricity savings while
17 causing increased natural gas consumption. (This occurs because the more
18 efficient lighting gives off less heat, thereby making it necessary to raise the
19 thermostat to maintain a similar pre- and post-project indoor temperature.)
20 For programs that are likely to contribute substantial electric and natural gas
21 savings, Public Service intends to offer both electric and gas components of
22 the program. In this case, the energy savings will be applied to the electric
23 and gas program accordingly. If there is no fuel-appropriate program, such

1 savings (or costs) would be incorporated into the cost-effectiveness analysis
2 of the relevant program as an O&M savings (or cost) to the participant. The
3 Company believes strongly that the integration of gas and electric DSM
4 programs will provide increased opportunities to benefit customers.

5 **Q. ARE THERE ANY EXCEPTIONS TO THE RULE THAT ALL DSM**
6 **PROGRAMS SHOULD PASS THE TRC TEST WITH A RATIO GREATER**
7 **THAN ONE?**

8 A. Yes. As discussed in more detail below, Public Service proposes to treat low-
9 income and pilot programs, as well as indirect costs and programs in a start-
10 up mode differently with respect to the TRC Test.

11 **Q. PLEASE DISCUSS HOW LOW-INCOME PROGRAMS WILL BE MODELED**
12 **FOR COST EFFECTIVENESS.**

13 A. Although low-income programs produce demonstrable energy savings and
14 provide benefits to customers, the costs to achieve such savings generally
15 are higher than with other programs. Public Service is committed to running
16 successful low-income programs and will strive to achieve benefit-cost ratios
17 greater than 1.0 for these programs. Because this may not be possible,
18 however, the Company seeks approval to recover its prudently-incurred low-
19 income program costs even if the program does meet the 1.0 threshold.
20 Allowing flexibility for such programs is consistent with SB 07-022 (C.R.S. 40-
21 3-106(1)(d)(I), which authorizes the Commission to approve any service that
22 makes or grants a reasonable preference or advantage to low-income
23 customers.

1 **Q. WITH THIS PROPOSED MODIFICATION TO THE BENEFIT-COST RATIO**
2 **FOR LOW-INCOME DSM PROGRAMS, WILL THE COMPANY ENSURE**
3 **THAT ITS OVERALL DSM PORTFOLIO REMAINS COST-EFFECTIVE**
4 **UNDER THE TOTAL RESOURCE COST TEST?**

5 Yes, the entire portfolio, which will include the costs for the low-income
6 programs, as well costs for indirect programs, pilot programs, and start-up
7 programs, will have to remain cost-effective based on the Total Resource
8 Cost Test. This also is in keeping with the provisions of SB07-022 (C.R.S.
9 40-3-106(1)(d)(III)), which requires the Commission, when making or granting
10 a reasonable preference or advantage to low-income utility customers, to take
11 into account the potential impact on, and cost-shifting to, utility customers
12 other than low-income utility customers.

13 **Q. ARE THERE ANY OTHER TYPES OF PROGRAMS THAT PUBLIC**
14 **SERVICE PROPOSES TO BE EXCEPTED FROM THE GENERAL COST-**
15 **EFFECTIVENESS GUIDELINES?**

16 A. Yes. The Company proposes alternative guidelines for pilot programs, which
17 are temporary offerings, often to a subgroup, meant to test the marketability
18 of new measures or concepts. Pilot programs are useful when a market,
19 technology, or approach is unproven or the risk of loss from launching a full-
20 scale program is high (e.g. full-scale program roll-out is costly and program
21 failure could harm other programs). One of the objectives of operating a pilot
22 program is often to test the cost-effectiveness of such a program.

1 **Q. WHAT SORT OF SPECIAL TREATMENT DOES PUBLIC SERVICE**
2 **PROPOSE THAT PILOT PROGRAMS RECEIVE?**

3 A. Public Service requests that the Commission allow an exception to be made
4 for the cost-effective standard for pilot programs, while allowing the costs of
5 such programs to be recovered through our cost recovery mechanism. The
6 Company will strive to implement pilot programs that are cost-effective, but
7 requests to be able to recover expenditures on pilot programs even if they are
8 not. Further, the Company will count any savings resulting from its pilot
9 programs, regardless of cost-effectiveness, towards Public Service's DSM
10 goals.

11 **Q. ARE THERE ANY OTHER PROGRAMS THAT YOU PROPOSE TO TREAT**
12 **DIFFERENTLY WITH RESPECT TO COST-EFFECTIVENESS**
13 **REQUIREMENTS?**

14 A. Yes. I propose that "indirect programs and activities" and programs in a start-
15 up mode not be required to meet the statutory cost-effective requirements.
16 Indirect programs and activities are those that do not directly produce energy
17 or demand savings but do contribute indirectly to cost effective demand-side
18 management program. They may also produce savings but they are not
19 easily measured. In this sense, these programs are like "education
20 programs" as defined in Section 1 of House Bill 07-1037 (C.R.S. 40-1-102
21 (7)). Under the statute, education programs are not subject to independent
22 cost-effectiveness requirements, and other indirect programs and activities
23 should be afforded similar treatment. Indirect programs include

1 comprehensive program evaluations, market potential studies, market
2 research, market transformation activities, consumer education, planning and
3 administration, and product design and development. These activities, with
4 the exception of market transformation, basically support the direct impact
5 programs (i.e. those with quantifiable energy/demand savings). Most market
6 transformation activities (e.g. ENERGY STAR) rely heavily on education to
7 encourage customer purchase of energy efficient equipment and do not lend
8 themselves to accurate quantification of energy/demand savings. Public
9 Service does not conduct cost-effectiveness evaluations on indirect programs
10 and activities, but their costs are included in cost-effectiveness evaluations at
11 the portfolio level.

12 In addition, programs that are in their start-up phase may also have
13 difficulty meeting cost-effective requirements due to higher initial costs and
14 potentially slow initial customer response. This could also result from timing
15 issues if a program is launched mid year and incurs costs without realizing
16 sufficient customer participation (and thus energy and demand savings) by
17 the end of the calendar year.

18 **III. RESULTS OF STATUTORY MINIMUM DSM PLAN AND ENHANCED**
19 **DSM PLAN COST-EFFECTIVENESS TESTING**

20 **Q. PLEASE DESCRIBE THE PLANS FOR WHICH YOU CONDUCTED COST-**
21 **EFFECTIVENESS EVALUATIONS.**

22 A. We conducted cost-effectiveness evaluations on both the statutory minimum
23 DSM plan and the Enhanced DSM Plan. Please see the testimony of

1 Witness Sundin for additional details regarding the goals and budgets for
2 these plans.

3 **Q. WHAT SPECIFIC PORTFOLIOS, PROGRAMS, OR MEASURES WERE**
4 **MODELED FOR COST EFFECTIVENESS?**

5 A. Except for the Saver's Switch[®] (air conditioner cycling) Program, the
6 Company did not model specific programs in either plan. Rather, within each
7 plan, Public Service modeled technology end-use bundles for cost-
8 effectiveness. These end-use bundles are groupings of DSM measures that
9 lend themselves to development of long-term scenarios for resource planning
10 purposes and were grouped together from measure tables supplied by KEMA
11 and Quantum Consulting in the Colorado DSM Market Potential Assessment,
12 completed March 31, 2006. Since the original study only contained DSM
13 potentials through the year 2015, Public Service requested an update out to
14 the year 2020. On July 5, 2007, KEMA sent an updated worksheet that
15 contains the economic potential for each individual measure out to the year
16 2020. For each of these individual end use measures we were given their
17 total economic potential in GWh and MW through the year 2020 and first year
18 costs for the incremental costs of the measure, the administration costs, and
19 the marketing costs per first year kWh. (The Assessment report and updated
20 worksheet are provided as exhibits to Witness Sundin's testimony). The end
21 use bundles are described below:

22

1 **Business End-Use Bundles:**

- 2 • Compressed Air – contains industrial compressed air systems and
- 3 related components;
- 4 • Cooling – contains air conditioning, chillers, ventilation equipment, and
- 5 related components;
- 6 • Lighting – contains lighting components and designs including bulbs,
- 7 ballasts and controls;
- 8 • Motors – contains pumps and fans and related components; and
- 9 • Miscellaneous – contains miscellaneous plug loads, computer
- 10 equipment, process equipment, refrigerator fan motors, vending
- 11 machine, etc.

12 **Residential End-Use Bundles:**

- 13 • Cooling – contains air conditioning and evaporative coolers and
- 14 associated measures;
- 15 • Lighting – contains compact florescent lighting fixtures and ballasts;
- 16 • Refrigeration – contains refrigerators and freezers;
- 17 • Miscellaneous – contains insulation, low flow showerheads, pipe
- 18 wraps, and clothes washers; and
- 19 • Saver’s Switch[®] Program.

20 **Q. HOW WERE THESE END USE BUNDLES USED IN THE COST**
21 **EFFECTIVENESS MODELING?**

22 A. Some assumptions were made in order to estimate the total costs of the
23 Business and Residential segments within the Enhanced DSM Plan. First,

1 we needed to decide what the penetration of residential to business potential
2 should be that would make up the total goal of 50 percent of the total
3 economic potential. We have found through our past experience in Colorado
4 and Minnesota, that a larger level of penetration can be achieved more cost-
5 effectively in the business segment than in residential. Based on this
6 information, we assumed a penetration of 25 percent of the total residential
7 economic potential, which accounts for 17 percent of the overall portfolio goal.
8 The balance of the overall portfolio goal, or 83 percent, would come from the
9 business segment, representing a penetration of 63 percent of the total
10 business economic potential.

11 To estimate the costs at these penetration levels, assumptions were
12 made for rebate levels and the costs of administration and marketing (“A&M”).
13 Again, using our experience and historical achievements and costs in both
14 Colorado and Minnesota, we assumed a 60 percent rebate level and for
15 business we doubled the study’s estimates of A&M costs. For the residential
16 segment, the cost levels from our Minnesota programs were used for the
17 corresponding residential end-use bundles. These costs assumptions were
18 then applied to the individual measure incremental capital and utility
19 administration and marketing rates that were supplied by KEMA to yield the
20 resulting goal cost levels.

21 Using these cost assumptions and the avoided costs that are
22 discussed next in this testimony, TRC ratios and net benefits were calculated
23 for each end-use bundle. The net benefits and costs for the entire portfolio

1 were then summed across these bundles of measures to calculate a portfolio-
2 wide TRC net benefit and ratio estimates as shown later in my testimony.

3 **Q. PLEASE PROVIDE MORE DETAIL REGARDING THE AVOIDED COSTS**
4 **YOU USED IN YOUR COST-EFFECTIVENESS MODELING FOR THE**
5 **STATUTORY MINIMUM DSM PLAN AND THE ENHANCED DSM PLAN.**

6 A. I have included the detailed avoided cost information and assumptions as
7 Exhibit No. SRD-2. The avoided cost assumptions used in analyzing these
8 two plans are based on current Company information and both the
9 methodology for determining avoided costs (i.e., the comparable supply-side
10 asset or plant used in the assumptions) and the avoided cost values will be
11 updated with each Biennial Plan.

12 **Q. PLEASE PROVIDE AN OVERVIEW OF THE RESULTS OF YOUR COST-**
13 **EFFECTIVENESS EVALUATIONS FOR THE STATUTORY MINIMUM DSM**
14 **BASE PLAN AND THE ENHANCED DSM PLAN.**

15 A. As Table 1 below shows, the statutory minimum DSM Plan has a benefit-cost
16 ratio of 2.16 while the Enhanced DSM Plan has a benefit-cost ratio of 1.82.

17 These scenarios were modeled for the period 2007-2020

18 **Table 1: Cost Effectiveness of Statutory Minimum DSM Plan versus Enhanced DSM Plan**

	Stat. Min. DSM Plan	Enhanced DSM Plan
TRC PV (\$Nominal) of Benefits	\$ 1,646.9 M	\$ 2,948.1 M
TRC PV (\$Nominal) of Costs	\$ 764.1 M	\$ 1,616.3 M
Net PV (\$Nominal) Benefit (Cost)	\$ 882.8 M	\$ 1,331.8 M
Benefit-Cost Ratio	2.16	1.82

19
20 **Q. WHY ARE YOU PROPOSING THE ENHANCED DSM CASE IF THE**
21 **STATUTORY MINIMUM DSM PLAN HAS A HIGHER BENEFIT-COST**
22 **RATIO?**

1 A. Although the Enhanced DSM Plan has a lower benefit-cost ratio, the
2 Enhanced Plan produces much higher net benefits and is still cost-effective
3 when compared to the supply-side resources that it avoids. Also, even
4 though the benefit-cost ratio for the Enhanced DSM Plan is lower than the
5 statutory minimum DSM Plan, there are other critical policy reasons for
6 recommending the Enhanced DSM Plan, such as the Company's focus on
7 meeting our customers' energy needs in a balanced, cost-effective, and
8 environmentally-friendly manner. These policies are discussed in more detail
9 in Witness Stoffel's testimony.

10 **IV. EVALUATION, MEASUREMENT, AND VERIFICATION**

11 **Q. WHAT DO YOU MEAN BY EVALUATION, MEASUREMENT, AND**
12 **VERIFICATION?**

13 A. Evaluation, measurement, and verification refer to the practices employed by
14 DSM program administrators to reliably document program achievements (or
15 impacts) and, in turn, improve program designs and operations.

16 **Q. WHY IS IT IMPORTANT TO HAVE A PLAN FOR EVALUATION,**
17 **MEASUREMENT, AND VERIFICATION?**

18 A. Evaluation, measurement, and verification help document DSM program
19 effects and improve program design and operations to maximize the cost-
20 effectiveness with which resources are acquired. An evaluation,
21 measurement, and verification plan enables stakeholders to determine before
22 programs begin how results of the DSM portfolio will be analyzed, assessed,
23 and documented, and whether such a plan strikes an appropriate balance

1 between thoroughness and cost. In the 2009-10 Biennial Plan (to be filed
2 July 1, 2008), Public Service will propose a comprehensive evaluation,
3 measurement, and verification plan. Specifically, the plan will ensure that:

- 4 • Every program within the portfolio has a measurement and
5 verification plan;
- 6 • Comprehensive program evaluations are conducted periodically
7 based on cost and need; and,
- 8 • On-going measurement and verification is included in individual
9 program budgets.

10 **Q. PLEASE EXPLAIN THE DIFFERENCE BETWEEN ON-GOING**
11 **MEASUREMENT AND VERIFICATION AND PERIODIC COMPREHENSIVE**
12 **PROGRAM EVALUATIONS.**

13 A. On-going measurement and verification (“M&V”) refers to the activities
14 conducted in support of program delivery and range from field audits of
15 sample customers, to project pre- and post-metering, to Saver’s Switch®
16 annual load research. The decision on what level of M&V activities to
17 conduct are based on the characteristics of the individual program and the
18 respective participants. Because of the high expense and difficulty of
19 metering, pre- and post-metering is conducted based on the size of the
20 program or project savings. Such on-going measurement and verification
21 would be included within individual program budgets and care is taken to
22 ensure that the costs of these on-going M&V activities are kept in perspective
23 within the program budget. These M&V activities are conducted continuously

1 for each program with the aim of verifying the gross savings attributed to the
2 program.

3 Comprehensive program evaluations, also known as impact and
4 process evaluations, may be conducted following the launch of a new
5 program, when there is a major program change (such as changing from
6 downstream incentives to upstream incentives), or if the program is
7 experiencing problems meeting its goals. These studies would help: 1)
8 validate savings calculations (including net-to-gross ratios), and 2) identify
9 program improvements. Nearly every program will be comprehensively
10 evaluated at least once over an 8-year period. Exceptions to this rule would
11 include short-lived programs, low-savings impact programs, or programs with
12 extensive national data on the net-to-gross ratios and/or process information
13 that could be easily used for the Company's Colorado service territory.
14 Because the costs for comprehensive evaluations are often quite high, Public
15 Service will evaluate the need to conduct such studies and weigh the costs
16 versus benefits before commencing. Also, because the costs for these
17 evaluations are high, they will be included in the "Indirect Activity" category of
18 costs and not within each program budget.

19 **Q. PLEASE EXPLAIN WHAT YOU MEAN BY NET-TO-GROSS RATIO?**

20 A. Net-to-gross ratio is the ratio of net DSM program impacts divided by gross or
21 total impacts. "Net DSM program impacts" refer to the calculation of impacts
22 incorporating free riders and free drivers. Free rider calculations estimate the
23 number of customers who would have installed DSM measures even in the

1 absence of a rebate from the program while free driver calculations estimate
2 the number of customers who install a DSM measure because of the
3 program's influence but did not receive a rebate. Equal and offsetting
4 numbers of free riders and free drivers result in a net-to-gross ratio of 1.0 (no
5 savings discount).

6 **Q. HOW WILL YOU INCORPORATE THESE NET-TO-GROSS RATIOS?**

7 A. Net-to-gross ratios are included in savings and cost-effectiveness calculations
8 for each DSM program. Public Service proposes that net-to-gross ratios
9 would remain the same during the course of a Biennial Plan; any updates
10 determined based on periodic impact and process evaluations would be
11 incorporated into prospective programs.

12 **Q. ARE YOU RECOMMENDING A CAP ON EXPENDITURES FOR**
13 **COMPREHENSIVE PROGRAM EVALUATIONS OR ON-GOING**
14 **MEASUREMENT AND VERIFICATION ACTIVITIES?**

15 A. No, Public Service is not recommending spending caps on either of these
16 activities because the emphasis placed on overall portfolio cost effectiveness
17 and maximizing net benefits effectively disciplines the Company's spending in
18 these areas. For on-going M&V, portfolio managers need to ensure that their
19 programs are cost-effective and verifiable; therefore, they will as a matter of
20 course seek to balance expenditures on on-going M&V with expenditures on
21 other direct impact activities.

22 Comprehensive program evaluations will be included in the category of
23 "indirect activities" costs. As discussed earlier in my testimony, these costs

1 are included at the overall portfolio level for calculating net economic benefits
2 and benefit-cost ratios. Since it is in Public Service's interest to keep the
3 entire portfolio cost effective, the Company again has a natural incentive to
4 keep these year-to-year costs reasonable and balanced with the rest of the
5 portfolio costs. For these reasons, we do not feel it is necessary to include a
6 cap on these expenditures.

7 **Q. PLEASE SUMMARIZE YOUR TESTIMONY.**

8 A. Public Service proposes to use the Total Resource Cost Test as described in
9 HB07-1037 to determine the cost-effectiveness of our DSM programs and
10 portfolio. However, this test should not apply to low-income programs, pilot
11 programs, indirect programs and activities, and programs in the start-up year,
12 as each of these types of programs presents unique circumstances. The
13 entire DSM portfolio of programs will be required to pass the TRC Test, which
14 will include the costs of the excepted programs. On-going measurement and
15 verification plans will be required and conducted continuously for each
16 program within the DSM portfolio. Comprehensive impact and process
17 evaluations will be conducted for most programs but at less frequent intervals
18 and will be implemented based on a demonstrated business need and under
19 a balance of benefits and costs. Public Service does not recommend a cap
20 on these expenditures.

21 **Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

22 A. Yes.

Statement of Qualifications

Suzanne Doyle

I graduated from Augsburg College in Minneapolis, Minnesota with a Bachelor of Arts degree in Business Administration. In 2005, I completed the Qualified Project Manager Certificate degree at the University of St. Thomas.

I have been employed by Xcel Energy, previously Northern States Power Company, for 35 years. From 1972 through 1977, I was an administrative assistant in the Consumer Education and in the Research Department of Northern States Power Company. In 1977, I transitioned to a Data Analyst position in the Research Dept where I was responsible for translating energy data from customer meters into load characteristic data. In 1979, I became Supervisor of Translation Operations. In 1983, I assumed the position of Senior Load Research Analyst in the Load and Market Research Department. In 1988, I was promoted to the Administrator of Load Data Management and within the same year assumed the position of Administrator of Load Research Analysis. In 1996, I became the Manager of the Load Research Department. My primary responsibilities in the Load Research Department were to lead a team in preparing jurisdictional, class, and customer energy and demand data to be used in cost of service studies for rate cases and in forecasting utility loads, and to evaluate the demand savings impacts of load management programs; such as through interruptible rate programs and air conditioning cycling programs.

In November of 2005, I assumed my current position as Manager of DSM Regulatory Strategy and Planning. I manage a team whose primary responsibilities

are to set Xcel Energy's energy efficiency policies, develop plans for Xcel Energy's energy and demand savings goals and budgets, track and report on energy efficiency financial operations, prepare energy efficiency regulatory reports and filings, and analyze the cost-effectiveness of DSM programs and portfolios in each of Xcel Energy's eight states with active energy efficiency programs or pending legislation.