# DSM in North American gas utilities

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# Contents

# 1 Introduction

In Enbridge Gas Distribution's ("EGD") 2003 rates case, EGD proposed to carry out a survey of North American natural gas jurisdictions to obtain a better understanding of the DSM frameworks in other jurisdictions. In particular, EGD was interested in how DSM budgets and targets were set in other jurisdictions.

Upon approval by the Ontario Energy Board to conduct this jurisdictional survey, EGD commissioned IndEco Strategic Consulting Inc. and Navigant Consulting Ltd. to carry out the survey. Initially, the survey was to focus on natural gas DSM exclusively. However, at the time the survey design was being prepared, the OEB announced that it intended to broaden the purview of the Minister's Directive to the Board on DSM and DR to review natural gas DSM as well as the original requirement to review electric DSM. In order to be as helpful to the Board as possible within the time and budget constraints approved by the Board for the conduct of the survey, EGD requested that the research team broaden the purview of the survey, where possible, to include an initial, high level overview of how these same jurisdictions treat electric DSM.

The research team began the survey in October 2003. Telephone interviews were conducted in mid-October through to early November 2003. The survey was completed in December 2003 and this report was finalized in April 2004.

The survey report presents the general findings of the survey in the main body of the report. The summaries of program information for each jurisdiction surveyed are appended.

The utilities in the jurisdictions surveyed appear to have a lower level of scrutiny of DSM by the regulator and stakeholders than Enbridge has. In general, DSM approvals for these utilities are not as tightly linked to rate approvals as they are for Enbridge. Further, because in all jurisdictions and utilities surveyed except Puget Sound Energy the budget is set first and then the utility is expected to do the best it can with the available resources, the budget and target setting process is less onerous.

Overall, jurisdictions define their DSM frameworks to meet the needs of their situation, and the needs of their utilities.

## 1.1 Research objectives

The survey was designed to obtain a better understanding of natural gas DSM in other North American jurisdictions. In particular, the survey was designed to meet the following objectives:

- explore the treatment of DSM in both cost of service and performance-based regulation (PBR) regulatory frameworks
- identify in a limited manner similarities and differences in the regulatory treatment of natural gas and electric DSM across jurisdictions and within the same jurisdiction
- explore the level of regulatory scrutiny of DSM plans
- obtain insight into how DSM plans are designed, approved and delivered in other jurisdictions
- determine how the budget and target setting processes work
- review the incentive mechanisms offered to encourage DSM by the utility
- identify tracking and reporting obligations.

## 1.2 Sample frame

The sample frame used in the research was developed to 1) address the research objectives cost-effectively and 2) provide the most relevant information for Enbridge, its stakeholders and the Board. The sample for the survey comprised twelve jurisdictions:

- British Columbia
- California
- Connecticut
- Iowa
- Massachusetts
- Minnesota
- New Hampshire
- New Jersey
- Oregon
- Vermont
- Washington
- Wisconsin

These jurisdictions were selected based on evidence of reasonable levels of natural gas DSM gleaned from previous projects by the research team, various industry reports and publications and references from survey participants.[1] As such, the sample is not representative of all North American jurisdictions, but is biased towards jurisdictions with relatively high levels of natural gas DSM activity. The sample also contains diverse DSM planning and delivery frameworks to exemplify various options that are available.

[1] In addition to the twelve jurisdictions included in the survey, preliminary research was also undertaken on approximately 20 other jurisdictions, but these other jurisdictions had very limited or no natural gas DSM activity and hence were not included in the sample.

# 2 Methodology

For each jurisdiction included in the survey, the state or provincial energy regulatory agency was contacted and the person with the most knowledge of natural gas DSM issues was identified. After describing the purpose of the survey and verifying the contact's willingness to participate, an in-depth telephone interview was arranged with this person and an electronic copy of the discussion guide and survey questions was sent in advance of the interview.[2] Sending the discussion guide in advance allowed survey respondents to identify relevant documents, decisions and filings and send these to the research team. In a small number of cases, survey participants answered some of the survey questions in writing in advance of the telephone interview.

For most of the jurisdictions surveyed, local natural gas utilities were also contacted to provide their perspectives on the DSM framework. This two-pronged approach provided a comprehensive picture of both the "rules" associated with the DSM framework (i.e., the regulator's perspective) and the actual mechanics or operation of this framework (i.e., the utility's perspective).

Because of the small sample size and wide diversity of the DSM frameworks in the jurisdictions surveyed, the research team did not undertake any statistical analysis (e.g. "42% of jurisdictions surveyed were …"). Instead, approaches, themes and trends have been characterized in a qualitative manner. Particularly interesting or relevant approaches used in single jurisdictions are also discussed.

To ensure a high level of accuracy in the results of the survey, the research team supplemented the interviews with a review of published materials from the jurisdiction. Upon completion of a draft of the jurisdictional summary, the research team sent the draft to either the regulator or the utility that was interviewed for review. Most survey respondents provided comments on the draft summaries. Based on the feedback received, the research team finalized the summaries for each jurisdiction to incorporate any changes identified by respondents, and these are attached as Appendix B. The jurisdiction summaries include references to the persons who provided information.

[2] The discussion guide is attached as Appendix A.

# 3 Findings

This section of the report summarizes the key findings of the survey of DSM activities in 12 North American jurisdictions. The findings are grouped according to the following key elements:

- Regulatory framework
- Design, approval and delivery of DSM plans
- Budget and target setting process
- Utility DSM incentive mechanisms
- Tracking and reporting

Each set of findings is discussed below. Overall, jurisdictions define their DSM frameworks to meet the needs of their situation, and the needs of their utilities.

## *3.1 Regulatory framework*

This section covers the regulatory framework in place in the jurisdictions surveyed. This information was deemed essential to understand the context within which the DSM programs operate, and in which budgets and targets are set.

**Key findings**

- DSM programs are offered by utilities operating under both PBR and cost of service regulatory regimes.
- Regulatory frameworks sometimes vary between electricity and gas utilities or between different gas utilities in the same jurisdiction.
- DSM and rate approvals are not usually integrated.

## Regulatory models

The survey revealed two main models for DSM: a utility driven DSM model and a central agency control model. In the utility driven DSM model the natural gas utilities are accountable to a regulator for DSM, but may contract out the delivery of certain programs. In the central agency control model, the central agency exercises control over the DSM programs to be delivered, but may contract out the delivery to the utilities and others.

Under both regulatory models, there are cases of utilities having the option to offer DSM programs. In the jurisdictions surveyed with a utility driven DSM model, most have made DSM mandatory for the natural gas utilities. Two exceptions were British Columbia and Washington, where DSM is offered at the discretion of the utility. In jurisdictions surveyed with a central agency control model, the utilities are either required to deliver or have the option to deliver DSM programs.

## The link between DSM and rate setting

Within the LDC driven DSM model, there is variability in the regulatory frameworks in at least two jurisdictions between natural gas utilities within the same jurisdiction. In Connecticut two of the natural gas utilities, Southern Connecticut Gas and Connecticut Natural, operate under a PBR framework with a revenue cap while the third utility, Yankee Gas, currently operates under a cost of service framework. In Oregon, NW Natural's DSM programs are funded through a Public Purpose Charge on customers' bills, whereas the DSM programs of Avista Utilities are funded through rates.

In all the utilities surveyed where there is utility involvement in DSM, the DSM regulatory approvals process is separate from, although linked to, the rate setting process. Where the utility is subject to a PBR framework, DSM is a pass through. However, at the time of the PBR approval, there may be aspects of the DSM Plan that may be approved for the duration of the PBR period. For example, in British Columbia Tersasen is under a four year revenue cap PBR (2004-2007) with the annual DSM budget approved by the British Columbia Utilities Commission (BCUC) for the period of the PBR, while the annual DSM targets and incentive mechanism are reviewed annually by the BCUC.

The linkages between the DSM regulatory process and the rate setting process generally occur on a different timetable. For example, the term of approval of Southern Connecticut and Connecticut Natural Gas' PBR framework is 5 years; however the budget and targets for the DSM programs are reviewed and approved annually for these utilities. A similar situation can be found in those jurisdictions operating under a cost of service framework. For example, in Minnesota Xcel Energy submits for approval its Conservation Improvement plan every two years,

yet the utility has not had a rates case since 1998. (Timeframes are also discussed in Section 3.3, which deals with budget and target setting. Please see page 14.)

## Consistency between gas and electric utilities

In all jurisdictions surveyed that have mandated DSM for the natural gas utilities, DSM is also mandated for the electric utilities. However, the DSM frameworks in these jurisdictions for the natural gas utilities and the electric utilities are not always the same. For example in Vermont, Vermont Gas is accountable for its DSM programs and delivers most of its DSM programs itself except for those programs designed specifically for low income customers. However, for Vermont's electric utilities all of the DSM programs were consolidated and the majority of programs are now delivered by a non-profit central agency, Efficiency Vermont. The exception is Burlington Electric, which has the same DSM programs as Efficiency Vermont, but the utility delivers these programs. As in Vermont, the delivery of DSM differs between the electricity and natural gas sectors in Oregon. For the two electric utilities in Oregon, the DSM programs are delivered by a non-profit organization, Energy Trust of Oregon (ETO). NW Natural, a natural gas utility, also offers its DSM programs through (ETO). However, Avista Utilities, a natural gas utility, is accountable for and delivers its own DSM programs.

## 3.2 Design, approval and delivery of DSM plans

This section covers the roles and responsibilities of regulators, utilities and stakeholders in designing, approving and delivering DSM programs. For simplicity the portfolio of DSM programs delivered by a particular utility agency and the strategies underlying these programs are referred to collectively as the DSM Plan.

**Key findings**

- In most jurisdictions, utilities develop a DSM plan and a regulator approves it.
- DSM programs are delivered by the utility, or delivery is contracted out, or some combination of the two.
- Central agencies are responsible for developing the DSM plan in a minority of jurisdictions, but most of these central agencies outsource DSM delivery.
- Most DSM plans are developed based on past experience and existing programs, but some are based on comprehensive DSM potential studies.
- The TRC test is the primary program screening criterion.
- Generally, there is limited regulatory scrutiny of the DSM plan.
- Very few jurisdictions have a formal consultative process, but utilities typically involve stakeholders in developing the DSM plans.
- In most jurisdictions, the utilities must provide low income programs. These jurisdictions may also choose to offer other DSM programs.

### DSM plan approvals

In most jurisdictions surveyed, the utilities are accountable to a regulator for DSM. The utilities propose and develop a DSM plan and the regulator approves the plan, in a manner generally consistent with the process used in Ontario. Depending on the legislative and regulatory framework

there may be two separate approvals required; for example, a government body may approve the programs and targets, while the public utility commission may approve the DSM budget and rates necessary to support the programs.

Once approved, the DSM programs are delivered by utilities either directly or by third parties such as community groups or contractors, or some combination of the two approaches. In most jurisdictions surveyed low income programs are delivered by community groups.

In a minority of jurisdictions surveyed, a state department or central agency is responsible for 1) developing the DSM plan and delivering the DSM programs (primarily through utilities and contractors as in Wisconsin) or 2) choosing the DSM programs to offer through a competitive bidding process (New Jersey). Typically, the winning bidders also deliver the DSM programs they propose. California operates an interesting hybrid approach. There is a core portfolio of uniform DSM programs specified by a central state agency which are delivered by investor-owned utilities, but utilities and private contractors can also bid to deliver other DSM programs to capture local market or niche opportunities.

The primary "inputs" to the DSM plan in all jurisdictions include past experience, existing programs and regulatory requirements (e.g. providing low income programs is mandatory in many of the jurisdictions surveyed). In a minority of cases such as for Washington's Puget Sound Energy (PSE), the DSM plan draws from comprehensive DSM potential studies or "conservation supply curves".[3]

The primary approval criteria are 1) the overall cost-effectiveness of the DSM Plan and 2) the cost-effectiveness of individual DSM programs. Most jurisdictions use the Total Resource Cost (TRC) test as the primary screening criterion, but some use the Societal Cost Test (SCT), which is similar to the TRC test, but also incorporates an economic valuation of environmental externalities.[4]

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[3] A conservation supply curve is essentially a presentation of DSM potential in which the DSM opportunities are sorted from lowest cost to highest costs similar to a traditional generation supply curve. In some cases, there is a temporal component to the conservation supply curve recognizing the expected penetration rates of particular DSM opportunities.

[4] Although the rationale for and background leading to the regulatory decision to use either of these tests as the basis for cost-effectiveness was not specifically addressed in the research, it is interesting to note that in Massachusetts, the regulator considered using the Societal Cost Test, but felt it was outside their statutory jurisdiction as an "economic" regulator to consider the "environmental externalities" captured in the SCT in their assessment of cost-effectiveness. However, the TRC test proposed by the Massachusetts regulator is required to include 1) direct resource benefits (including, for example water savings from front-load washing machines) and 2) other known, quantifiable and significant end-use benefits to participants (e.g., O&M savings, reduced environmental compliance costs, etc.).

The level of scrutiny and rigour applied by the regulator in reviewing utility DSM plans varies across jurisdictions but, in general, the level of regulatory scrutiny applied appears to be somewhat less than is applied in Ontario.

In some jurisdictions, such as Washington and Oregon, the regulator does not explicitly approve the plan, but instead "allows" the DSM plan to go into effect.[5]

In those jurisdictions where utilities file multi-year DSM plans, such as in Iowa and Massachusetts where five-year DSM plans are prepared, the level of scrutiny is less for the "update" submissions within the term of the plan. In Massachusetts there is an annual update process in which program changes and budget reallocations are proposed in response to market changes, program saturation and other factors. For example, an update submission filed by a utility in the second year of a five year DSM plan would generally focus on changes from the original plan and the rationale for the changes (on the premise that the core DSM plan and programs are already approved). Utilities in those jurisdictions with a multi-year DSM planning horizon have some reasonable certainty of securing regulatory approval for DSM programs that are consistent with their approved DSM plan (i.e., the planning process is one of refinement and the approval process is incremental instead of zero-based). This provides greater stability for utilities, stakeholders and customers.

## Stakeholder consultations

To the degree that stakeholders concur with the DSM plan (or are part of a settlement process from which the DSM plan flows), regulators tend to subject the DSM plan to a less rigorous review and approval process than would otherwise be the case, often exempting the utility's DSM plan application from a formal "docketing" and public hearing process.

The majority of jurisdictions surveyed do not have a formal consultative process *per se*. One exception is Puget Sound Energy (PSE), which has established a Conservation Resource Advisory Group (CRAG). The CRAG has a mandate that is very similar to EGD's DSM Consultative – to provide input to the DSM plan and programs – but, as in Ontario, there is explicit regulatory acknowledgement that the final decision on specific issues raised by the CRAG and accountability for DSM results ultimately rests with the utility (PSE).

[5] Regulatory "allowance" appears to mean the DSM plan is not subject to the same level of regulatory scrutiny as would be the case in a full rate hearing. "Allowing" DSM spending preserves the regulator's right to review the DSM Plan more fully in a rate hearing.

Although stakeholders are not as deeply involved in DSM planning as they are for EGD's DSM planning process, utilities typically work informally with one or two key stakeholders in the DSM planning process. Some jurisdictions may have had a strong consultative process in the past, but have found that this is no longer needed. For both Vermont Gas and Terasen, there was an extensive collaborative process to establish the initial parameters for DSM. However, this level of consultation has not been necessary on an ongoing basis because the DSM budgets, targets and incentives have remained quite stable over the years.

In at least one jurisdiction, Vermont, Vermont Gas rejuvenated its consultative process when it was needed. The Public Service Board directed Vermont Gas to consider ways to enhance its retrofit activities. Vermont Gas used its collaborative to brainstorm how to enhance the delivery of these programs to the retrofit market and included the changes in their annual report for Board review.

## Low income customer programs

In most jurisdictions surveyed, the utilities must provide low income customer programs. For example, in Minnesota the Department of Commerce designates a portion of Xcel Energy's DSM budget for low-income programs, based on a 3-year average of DSM spending. In most cases, utilities are mandated to offer low income programs or to collect funds for programs delivered by local community action agencies. These community action agencies often receive additional funding from the federal government through the Low Income Home Energy Assistance Program (LIHEAP).

To complement their DSM portfolios, utilities that are accountable for DSM may also choose to deliver additional programs beyond those that are mandated. For example, in Oregon Avista Utilities' DSM portfolio includes the State Mandated Low Income Weatherization Program as well as a High Efficiency Space Heating Equipment Program, a High Efficiency Water Heating Equipment Program and Commercial Industrial Incentives.

## 3.3 Budget and target setting process

This section covers the DSM budget and target-setting process used by regulators and utilities.

**Key findings**

- DSM may be funded through a rate surcharge, or as part of the overall utility revenue requirement.
- The DSM budget is almost always set first, before the target is developed.
- Many jurisdictions allow multi-year DSM plans, in which the budget, the target or both are set for multiple years.
- DSM funding levels for gas DSM range from 0.2% to 2% of total customer bills and average 1%.
- Over- or under-spending of DSM budgets does not appear to be a controversial issue.

### Sources of funding

There are two primary sources of DSM funding:

- a rate surcharge, such as a special "systems benefit charge" or "societal benefits charge." These rate surcharges are typically mandated by legislation and may include charges for more than just DSM (e.g. renewables, research and development and special low income programs). Alternatively, the rate surcharge can be a increment added by the regulator to the rate for a particular utility just for DSM
- the utility's overall rates (i.e., the DSM budget is included in the utility's revenue requirements).

Typically, only one of these mechanisms is used to fund the DSM programs delivered by any particular utility. However, the DSM funding mechanism in a given jurisdiction can vary from utility to utility within a sector such as in Washington, where one gas utility – Puget Sound

Energy – has a specific surcharge for each DSM program and another gas utility – Avista – has its DSM funding provided through its general rates.[6] The DSM funding mechanism can also vary between gas and electric utilities in a given jurisdiction. It appears that the use of systems benefit charges is more widespread for electric utilities than for gas utilities, likely a result of the electricity restructuring legislation introduced in many jurisdictions in recent years.

The process to establish the systems benefit charge or surcharge is generally independent of the overall rate-setting process. Changes to the systems benefit charge or DSM surcharges are introduced separately from any changes to the utility's general rates.

## Setting the budget first

With the exception of PSE in Washington, DSM budgets are set first followed in some, but not all cases, by a target-setting process. The research team did not find any jurisdictions where the budget and target were negotiated simultaneously.[7] The primary basis for setting the budget appears to be "*what is reasonable*" and/or "*what is available*" through the funding mechanism.

In most jurisdictions where the utility delivers DSM, the focus is on cost-effectiveness (as measured through the TRC or societal cost tests) and spending the DSM budgets of the program rather than on targeted savings. Hence, there does not appear to be significant pressure to maximize the target. The general principle in the budget and target setting process used in many of the jurisdictions surveyed could be loosely characterized as "*Set a reasonable budget and do the best you can with the money*" (as measured through the TRC test or SCT).

As noted above, the exception to the general trend of setting the DSM budget first is the process used in Washington for PSE, where the regulator sets an annual savings target based on its determination of what was reasonable and would likely be cost-effective. PSE then develops a DSM plan and associated budget to achieve this target.

For those jurisdictions with central agencies having responsibility for DSM programs, the central agency typically seeks to maximize the DSM results achieved through some form of competitive bidding for DSM program design and/or delivery. Absent other considerations such as achieving specific funding allocations by customer class, by choosing

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[6] Avista has collected funds for DSM through its general rates for some time, whereas the DSM framework and funding mechanism for Puget Sound Energy was only recently developed.

[7] Although it could be stated that in approving a DSM plan, a regulator is simultaneously accepting both the budget and the target, there was no evidence that both were "negotiated" simultaneously.

those contractors (including utilities) offering cost-effective DSM programs, the agency is implicitly maximizing the overall cost-effectiveness of its DSM portfolio. California seems to follow this principle in choosing which programs to offer in any given year based on its assessment of the proposals received. The two most important evaluation criteria in California are the energy savings and cost-effectiveness of the programs being proposed.[8]

As discussed in the previous section, there is generally less formal stakeholder involvement in setting the budget (and target if applicable) than in Ontario, but most regulators encourage, and most utilities seek, stakeholder involvement in developing their DSM Plans.

### Timeframe for budgets and targets

There was significant diversity in the timeframe for which target and budgets were set. In California, the California Public Utilities Commission sets the budget, then negotiates the target on an annual basis. In many of the jurisdictions where utilities have the primary accountability for DSM, such as in Massachusetts and New Hampshire annual budgets are notionally set for several years into the future, but the target is set annually (often as an input to an incentive mechanism). In these jurisdictions with multi-year DSM plans, the annual budget-setting process focused on refinements and adjustments to the budget, based on market developments and learnings. In one case (Washington), the annual target is set for two years and budgets are set annually. In addition, in the case of Iowa, both the annual budget and target are set for a five year period.[9]

### Gas DSM budgets and utility revenue

Among the utilities and jurisdictions surveyed for which total revenue information was available, the level of gas DSM funding ranged from 0.2% to just over 2% of total utility revenue (or total customer bills), with the average being just over 1%. (See Appendix C.)

### Variance from the budgets

Over- or under-spending of DSM budgets does not appear to be a controversial issue in any of the jurisdictions surveyed. All jurisdictions have some mechanism to true-up actual expenditures vs. forecast

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[8] Page 2, Interim Opinion Selecting 2002 Statewide Energy Efficiency Programs, Decision 02-03-056 March 21, 2002, California Public Utilities Commission

[9] Note that Iowa does not have an incentive mechanism.

expenditures, but may not have a separate process just for DSM. The desire for and benefits of flexibility in DSM spending was expressed by many of the regulators and utilities surveyed with most asserting that budget flexibility allows for better capture of available market opportunities. In a minority of cases, there were explicit guidelines or constraints on the allowable level of over-spending in any given year before seeking explicit regulatory approval. For example, any expected over-expenditures beyond 20% by gas utilities in New Hampshire are to be reported to the regulator.

## *3.4 Utility DSM incentive mechanisms*

This section covers the incentive mechanisms available to utilities designing and delivering DSM programs.

**Key findings**

- Five of the jurisdictions surveyed have utility DSM incentive mechanisms.
- Where there is an incentive available, some utilities are eligible for incentives at some threshold level below their target.
- Incentives are typically based on the DSM budget, volumetric savings, TRC benefits realized, incremental TRC benefits realized over the target or some combination thereof.

Five of the jurisdictions surveyed have incentive mechanisms. Typically, these are jurisdictions where the utilities are accountable for DSM such as in British Columbia, New Hampshire, Massachusetts and Minnesota. However, New Jersey is an exception to this trend. New Jersey is moving to a central agency model; the utilities in New Jersey will be able to apply for an incentive mechanism, and have the choice to apply for either a shared savings approach or a standard price offer.

### Types of incentives

In some jurisdictions with a utility DSM incentive, utilities are eligible for an incentive at some performance level below their target. For example, gas utilities in New Hampshire become eligible for an incentive if they achieve 65% of their performance target, whereas gas utilities in Massachusetts are eligible for an incentive if they achieve 75% of their performance target.

In jurisdictions with a utility DSM incentive, the incentive available to the utility is typically based on either a percentage of the DSM budget, a percentage of the total TRC benefits realized, a percentage of the TRC benefits realized over and above the target (delta TRC similar to Enbridge's current mechanism) or some combination of these.

In many cases, the incentive is based on multiple performance measures. For example, in order to be eligible for a shareholder incentive, New Hampshire utilities must achieve a threshold volumetric savings and the DSM portfolio must surpass a threshold benefit / cost ratio. The incentive would then be based on the degree to which they have exceeded these threshold values. For Keyspan Energy Delivery New England in Massachusetts, the incentive is based on the number of participants in each of its DSM programs (which should be proportional to the savings realized, all other things being equal).

## Limitations of incentives

Not all utilities collected the incentives for which they were eligible either because they felt it was either not worth their effort (the financial gain was minimal) or it was too difficult to calculate the incentive (e.g., where there is a very complex incentive structure).

Experience in California highlights the potential difficulties with overly complex incentive mechanisms. In the past, the DSM incentive mechanism for California IOUs incorporated over 170 milestones or measures. This mechanism resulted in excessive monitoring and reporting burden for the CPUC and utilities. A simplified incentive structure was then introduced based on the utility's ability to meet targets for energy savings and electric peak demand reductions, market effects for market transformation programs and a performance adder for educational programs and energy centres. There is currently a proceeding underway regarding the IOUs' outstanding shareholder incentive claims from previous years dating back to 1998. The IOUs recently filed a joint report on areas of agreement and disagreement with respect to various components related to their incentive claims.

## Penalty mechanisms

Only one of the utilities surveyed had a penalty mechanism. Puget Sound Energy (PSE) is not eligible for an incentive but is subject to a penalty if it fails to achieve its targeted savings over a two year period. The penalty would then be applied to each year within the two year period that PSE failed to meet its target. The penalty for failing to achieve the target is as follows: $200,000 if PSE achieves between 90% and 99% of its annual target, $500,000 if PSE achieves between 75% and 89% of its annual target and $750,000 if it achieve less than 75% of its annual target.

## 3.5 Tracking and reporting

This section summarizes the tracking and reporting obligations in the jurisdictions surveyed.

**Key findings**

- The majority of utilities file a report with their regulator on DSM at least annually.
- Reports typically include a description of DSM programs and a summary of expenditures and achievements.

The majority of jurisdictions surveyed produce at least an annual DSM report which is filed with the regulator. In most cases, these reports are produced by the utilities and include a description of DSM programs and a summary of expenditures and achievements.

Where there is central agency control model, there may be a report that is produced by a third party or by the regulator. For example, in Wisconsin the evaluation contractor prepares a comprehensive annual report and quarterly performance reports covering DSM spending, energy impacts, non-energy impacts and estimated economic impacts of the DSM programs. In California, the investor owned utilities provide quarterly updates of their DSM program activities and the California Public Utilities Commission provides an annual report on its energy efficiency programs to the California legislature.

Some jurisdictions also produce DSM reports more frequently. For example, in New Hampshire and New Jersey the DSM reports are produced monthly by the utilities and in Connecticut, both Connecticut Natural and Southern Connecticut Gas produce a supply and demand filing twice a year.

In at least one jurisdiction, the reporting differs by utility. For example, in Washington, Avista is required to file an annual report with the commission, while PSE is required to provide a biennial Conservation Report Card to their customers.

# 4 Conclusions for Enbridge Gas Distribution

The overall conclusion from the survey is that jurisdictions define their DSM frameworks to meet the needs of their unique situations, and the needs of their utilities. That conclusion notwithstanding, this section reviews some of the conclusions of the survey for Enbridge Gas Distribution's DSM framework, and considerations for moving forward.

## Regulatory framework

In general, Enbridge's DSM approvals have been tightly linked to its rate approvals, yet this is not typical in other jurisdictions. It is common in other jurisdictions to separate the two. Often the review of DSM programs is more frequent than the review of rates. This suggests that if Enbridge were to seek a five year PBR approval, for example, all aspects of the DSM program would not need to be specified for the full term of the approval, but could be reviewed on a more frequent basis.

As Ontario considers a new regulatory framework for electricity DSM, the experience from other jurisdictions suggests that the electricity framework may be considered independently from the framework for gas. There are precedents for gas and electricity being treated differently. Even for utilities within the same jurisdiction there may be differences in the regulatory treatment of DSM, as is currently the case for Enbridge Gas Distribution and Union Gas.

## Design, approval and delivery of DSM plans

Several aspects of Enbridge's framework are consistent with those commonly used in other jurisdictions, including the development of a plan for approval by the regulator, and the use of the Total Resource Cost (TRC) test to screen programs.

In general, Enbridge appears to have its DSM plans subjected to a greater level of scrutiny by stakeholders and by the regulator than is typical in other jurisdictions. Unfortunately, it was not possible to determine the reason for this difference, or whether Enbridge's greater scrutiny was a benefit (e.g. higher performance for the same cost) or merely a cost (greater bureaucracy).

Utilities in other jurisdictions are typically required to offer programs specifically designed to address low-income customers. This has not been required by the Ontario Energy Board for Ontario natural gas utilities.

## Budget and target setting processes

Budget and target setting also appear to be more onerous for Enbridge than is typical for utilities in other jurisdictions, which do not report experiencing the same kind of extended negotiation over these values, and the relationships between the two. In all jurisdictions and utilities surveyed except one utility (Puget Sound Energy), the budget is set first, and then the utility is expected to do the best it can with the available resources. Clearly the target is likely to be more contentious where, as is true for Enbridge, the incentive is tied to performance relative to the target.

## Incentives

There appears to be no convergence towards a common approach to incentives; nearly every jurisdiction surveyed has a unique approach. Unfortunately, it is not possible to compare incentive design and effectiveness, though several jurisdictions had incentives that were either so small or so complex that the utility chose not to apply for them, suggesting that they are not serving their intended purpose as an incentive.

## Tracking and reporting

Most jurisdictions surveyed are required to file regular (typically annual) reports on DSM that include a description of DSM programs and a summary of expenditures and achievements. Reports may also include estimates of non-energy impacts, economic impacts of DSM programs, and other related factors.

# Appendix A. Discussion guide for the survey

**Survey Questions of North American Gas Utility DSM Processes and Results**

***Survey conducted by Navigant Consulting Inc and IndEco Strategic Consulting Inc, on behalf of Enbridge Gas Distribution Inc., September-October 2003***

***Introduction/General questions***

- How many natural gas utilities are there in your jurisdiction? Do you have regulatory jurisdiction over all of these utilities? If not, how many do you have regulatory jurisdiction over?
- Are the natural gas utilities within your jurisdiction operating under a cost of service rate-setting framework or a PBR framework? How many years is it typically between rate cases for a given utility?
- Is DSM mandatory for all natural gas utilities in your jurisdiction, mandatory for some natural gas utilities, or optional for all natural gas utilities?
- How many of the gas utilities in your jurisdiction offer DSM programs?
- How long have natural gas utilities been offering DSM in your jurisdiction?
- What was the original impetus for the natural gas utilities to do DSM in your jurisdiction? Was this ever codified in any legislation or regulation? If so, which legislation or regulation?
- Does the regulatory framework associated with DSM differ between gas utilities and electric utilities? If so, what are the similarities and differences?

***Designing DSM Plans/Programs***

- Are DSM Plans covering the various DSM programs to be offered, prepared and, if so, who prepares them (regulator, government, collaborative, utility).
- How are DSM Plans approved?
- Is there an alternative settlement process and if so, how has this worked?
- What is the term of approval for a particular DSM plan?
- How are individual DSM programs designed and selected for inclusion in the DSM plan?

- How are DSM programs delivered – by the utility, by third party delivery agents, by a central agency, or some combination? If a combination, how do you decide which programs get delivered by whom? Is there a central agency that manages all of DSM for the jurisdiction?

- Could you please provide a description of current natural gas DSM activities/programs in your jurisdiction by sector?

- Where can I get information on the historical DSM costs and energy savings achieved per utility by program and sector (eg, commercial, industrial, residential)?

- Were there or are there any natural gas DSM programs for low income customers?

***Tracking variances and DSM expenditures***

- How do utilities track DSM spending in relation to the forecast/approved DSM budget?

- What happens if the utility underspends its forecast/approved DSM budget?

- Do unspent DSM funds get carried over to the next year's budget? If so, is there any regulatory approval needed for this carry over? How does the carry over work? Over what time period can funds be carried over?

- What happens if the utility overspends its forecast/approved DSM budget? How is the matter settled? Over what time period?

***Budget***

- How are DSM programs paid for – through rate recovery by the utility, through a benefits charge on utility bills, by a government department such as Energy? What in your view are the advantages/disadvantages of this approach?

- What is the general rule of thumb or mechanism used for setting the overall DSM budget for a given utility?

- What is the typical gas utility DSM spending expressed as a percentage of total revenue including purchased gas? Does this differ from the typical electric utility DSM spending as a percentage of total revenue? If significantly different – why are the spending levels different?

- Why isn't the DSM budget for a given natural gas utility double or half of what it currently is?

- What role do stakeholders have in setting the budget?

- When do stakeholders become involved in the budget-setting process?

- In the normal course of events, what is the time frame for approving the DSM budget?

- What recent or proposed changes have taken place with regard to the mechanism for setting the DSM budget?

- Do you find this budget-setting process effective? What changes or improvements would you make to the process if you were able to make changes?

- Where can I get historic and projected budget and results by sector, by program in dollars per unit saved for a typical natural gas utility in your jurisdiction?

***Targets***

- What is the general rule of thumb or mechanism for setting targets for DSM programs?

- What is the period of approval for these targets?

- Is the target set concurrently with the budget, or is either the budget set in advance of the target or vice-versa – which is it and why do you do it that way?

- Who proposes the targets?

- Who approves the targets?

- Why aren't the targets for a given utility half/double of what they the currently are?

- What recent or proposed changes have taken place with regard to the mechanism for setting targets?

- Are there specific targets by sector and program?

- Is the utility accountable for achieving sectoral targets or just the overall DSM target? How does the accountability work?

- Do you find this target-setting process effective? What changes or improvements would you make to the process if you were able to make changes?

***Utility incentives***

- Are their any financial incentives for utilities to offer DSM programs and/or to achieve/surpass their DSM targets?

- What is the rule of thumb or mechanism for setting incentives?

- Why were these incentives put in place?

- Is the incentive mechanism that has been put in place successful? How do you know?

- What recent or proposed changes have taken place with regard to the mechanism for setting incentives for utilities?

- What changes or improvements would you make to the incentive mechanism if you were able to make changes?

- How is the incentive calculated?

- Could you please provide data regarding your historic, projected and maximum incentives that you have provided?

- Where can I find a detailed description of the utility incentive mechanism?

***Lost Revenue Adjustment Mechanism (LRAM)***

- Are the forecast/approved DSM expenditures and energy savings incorporated into the utilities' overall cost and volume projections for the test year?

- Is there a mechanism for a natural gas utility to true-up any variances in its actual DSM expenditures and/or savings compared with the forecast / approved DSM budget after the fact?

- If so, what is the largest this true-up has been and for which utility was this?

- Is this process repeated each year? If not, how do the cost and volume impacts of the DSM programs over multiple years get reflected in a utility's rates?

- Has this mechanism worked well? What changes would you propose to its use?

Note: This is a generic survey. Not all questions were relevant to a particular jurisdiction and not all jurisdictions were able to answer all of the questions relevant to them including those where the utilities were contacted directly.

# Appendix B. Summary of DSM programs by jurisdiction

## *B.1 British Columbia – Terasen Gas*

### Regulatory framework

The natural gas utilities in British Columbia operate under a PBR Framework with a revenue cap. The utilities do not have a rates case every year. DSM is regulated in BC but is not mandatory for all natural gas utilities. Terasen Gas (formerly BC Gas), the largest natural gas utility in BC, has a DSM program.

The regulatory framework for DSM differs between gas and electricity. On the electric side there is emphasis on clean generation and a portfolio standard. Aquila Networks Canada, a small electric utility operating in the BC interior, does DSM and its DSM program is regulated by the BCUC.

There is a unique situation for BC Hydro. It has been unregulated by the British Columbia Utilities Commission (BCUC) for 10 years, due to a rate freeze over that period of time. Since the electric utility is not regulated by the BCUC, it does not report its DSM expenditures, although it does carry out DSM programs. BC Hydro was just split into distribution, generation, and transmission business lines. There is a debate now on the future of the regulatory framework for BC Hydro, and there will be a BCUC hearing in the spring of 2004 on that matter.

The DSM regulatory framework for Terasen Gas and Aquila are similar, but not identical. For example, both are under a PBR framework with a revenue cap, but the PBR period for Aquila is shorter (3 years); and while both have an incentive mechanism for DSM (discussed in more detail for Terasen Gas below), Aquila is based on a delta TRC achieved (calculating the difference in TRC between actual and forecast TRC) sliding scale, while Terasen Gas is on a total TRC achieved sliding scale[10].

### Design and approval of DSM Plans

DSM is a pass-through in Terasen Gas' PBR framework. DSM plans are prepared annually by Terasen Gas and are approved by the BCUC. The DSM plan is approved through negotiated settlement after the DSM plan filing with the BCUC. Issues are discussed in the

[10] Fraser, Jim. 2003. Personal communication (Manager of Strategic Services British Columbia Utilities Commission)

settlement process and agreements on all issues are typically reached. A hearing is rare[11]. The term of approval of Terasen Gas' PBR framework is now 4 years for the period covering 2004-2007; Terasen's previously approved PBR period was for three years[12]. There were some recent years, including 2003, when Terasen was not under a PBR regime.

The TRC test is used to quantify the costs and benefits of DSM programs during program design. The test accounts for the cost of the measure, the promotional costs of the utility, any utility rebates to customers, the avoided gas supply costs, avoided utility distribution and transmission costs, and program free ridership. Terasen Gas calculates overall TRC impact on a portfolio basis, that is, by examining the impact of the combined group of programs for the year[13].

Terasen Gas designs and is accountable for the DSM programs in the DSM plan; however, Terasen contracts out delivery of the programs to third party partnerships. For example, independent heating contractors do the program delivery for the program for high efficiency furnaces. Terasen Gas has never had any programs specifically for low income customers[14].

The programs Teresen were accountable for in 2002 include:

- **Residential Heating System Tune-up**, this program was designed to encourage customers to engage a contractor registered with the provincial Gas Safety Program to perform a series of furnace or boiler maintenance operations, performance checks and appliance adjustments. The offer included a $25 utility bill credit for participants.
- **Residential Heating System Upgrade** offers a $150 utility bill credit toward the purchase and installation of a replacement high efficiency furnace or boiler. An additional $150 utility bill credit is provided by Natural Resources Canada. An additional incentive ranging from $150 to $1000 in value toward the purchase of 22 different brands of residential high efficiency furnaces and boilers was organized and promoted as part of this program
- **Commercial Energy Utilization Advisory** includes an initial benchmarking consultation and an onsite assessment of natural gas conservation and efficiency opportunities along with recommendations and estimated savings impact[15].

[11] Fraser, Jim. 2003. Personal communication (Manager of Strategic Services British Columbia Utilities Commission)

[12] British Columbia Utilities Commission. 2003. Multi-Year Performance Based Rate Plan for 2004-2007, Terasen Gas Inc. Negotiated Settlement.

[13] BC Gas Limited. 2003. 2002 Demand Side Management ("DSM") Status Report.

[14] Bruce Vernon. 2003. Personal communication (Manager, Market Development, Terasen Gas)

[15] BC Gas Utility Ltd. 2003. 2002 Demand Side Management ("DSM") Status Report.

## DSM budget and target setting process

For the 2004-2007 PBR period, Terasen Gas has a DSM budget of $3million per year, which represents 0.25% of its total revenue including the cost of gas. The DSM spending per customer for this period is forecast to be $3.86 based on a customer base of approximately 800,000. The annual DSM budget is approved by the BCUC for the period of the PBR. However, the DSM budget has been the same for the past 10 years.

Annual portfolio targets as part of the DSM plan are also set through negotiated settlement. Terasen Gas targets are based on energy savings. These targets were set about 7- 10 years ago and have not been altered since. Terasen Gas must reach a threshold of 133,000 GJ of savings per year, and the target is set at 170,000 GJ/a.

There is no need for stakeholder involvement in setting the budget and targets prior to the filing of the annual report with the BCUC. When the budgets, targets and incentives were set up 7-10 years ago (in a now abandoned IRP process), there was extensive stakeholder involvement. However, this level of stakeholder involvement has not been necessary since that time.

Historically, Terasen Gas has always underspent its DSM budget. The difference between the DSM budget and the actual amount spent is returned to ratepayers through dispensation of the deferral account (that tracks the DSM expenditures) in the subsequent PBR period.

Terasen Gas has a Rate Stabilization Adjustment Mechanism (RSAM) in place. The RSAM account was originally implemented to mitigate the impact of temperature changes on earnings and on customer's bills. However, it has also removed a disincentive to running DSM programs.

## Incentives

Terasen is offered incentives to meet or exceed its DSM targets. The incentive mechanism operates in a step wise fashion with savings from a threshold of 133,070 GJ up to 177,425GJ resulting in an incentive of 3% of TRC net benefits, and a saving of 177,425GJ and above resulting in an incentive of 5% of TRC net benefits[16]. There is no penalty for failure to meet the 133,070 GJ threshold.[17] Terasen exceeded the threshold in 2002.

The targets and incentive mechanism are reviewed annually by the BCUC as part of the DSM annual report. However, in practice the incentive mechanism has not been altered since it was put in place about 7 -10 years ago.

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[16] BC Gas Utility Ltd. 2003. 2002 Demand Side Management ("DSM") Status Report

[17] Bruce Vernon. 2003. Personal communication (Manager, Market Development, Terasen Gas)

In 2002 Terasen was eligible for a small incentive of less than $50,000. Because the amount was so small, Terasen did not seek approval from the BCUC to obtain it. For 2003, Terasen is forecasting a possible incentive of about $100,000.[18]

## Tracking and reporting

Terasen Gas produces annual reports on DSM performance including summaries of the programs, and their natural gas and financial savings[19]. The reports are filed with the BCUC. Terasen Gas has done different types of monitoring and evaluation. Terasen Gas' program evaluation consultants have found it difficult to measure savings from certain programs where the expected natural gas reduction is below a few percentage points.[20] The table below provides a summary of the energy savings and number of participants for each of the DSM programs for 2002.[21]

**Table 1: Summary of energy savings and number of participants by DSM program in 2002**

| Program | Participants | | Savings (GJ) | |
|---|---|---|---|---|
| | Target | Actual | Target | Projected |
| Residential heating system tune-up | 20,000 | 45,000 | 60,000 | 135,000 |
| Residential heating system upgrades | 2,000 | 2,850 | 60,000 | 85,500 |
| Commercial energy utilization advisory | 22 | 12 | 20,000 | 19,200 |

[18] Bruce Vernon. 2003. Personal communication (Manager, Market Development, Terasen Gas)

[19] BC Gas Limited. 2003. 2002 Demand Side Management ("DSM") Status Report.

[20] Bruce Vernon. 2003. Personal communication (Manager, Market Development, Terasen Gas)

[21] BC Gas Limited. 2003. 2002 Demand Side Management ("DSM") Status Report.

## *B.2 California*[22]

### Regulatory framework

Since 1996, California's four investor-owned utilities (IOUs) have collected an electric Public Goods Charge (PGC) and/or a natural gas Demand Side Management charge from their customers. These surcharges represent approximately 1% of electric customers' bills and 0.7% of gas customers' bills. In total, approximately $540 M is available to fund various pubic purpose charges, of which approximately $275 M is allocated to energy efficiency programs covering electricity and gas. The gas IOUs are mandated to deliver DSM programs by the CUPC. The gas IOUs operate under a PBR framework.

### Design and approval of DSM plans

Currently, the California Public Utilities Commission (CPUC) has oversight over the DSM programs delivered in the IOUs' service territories. DSM programs are delivered on behalf of the CPUC by the IOUs and specialist DSM contractors. DSM plans are produced by the CUPC; however proposals are accepted by the CUPC from both the utilities and the specialist DSM contractors.

### Budget and target setting process

The CPUC develops an estimate of the overall funding available in a given year and allocates this funding across the following categories. The 2003 allocations for electricity and gas spending are shown in brackets. There is some provision to carry over the DSM budget from year to year.

- Statewide programs delivered by IOUs ($205 M)
- Local programs delivered by IOUs ($15 M)
- Allocated to Third Party Local Programs ($47 M)
- Marketing/outreach ($20 M)
- Other ($11M)

The statewide programs have identical terms and requirements, such as procedures and financial incentives, for all utilities in order to promote customer understanding and equitable funding across all customer classes. The funding allocated to third party local programs is released to individual third parties based on proposals received according to how well they address the CPUC's established criteria, which include: energy savings, cost

[22] All information contained in this summary is based on personal communication with Don Schultz at the Office of Ratepayer Advocate and with reference to the California Energy Efficiency website ( http://www.californiaenergyefficiency.com/resourcesFrm.htm ) and Pacific Gas and Electric website (http://www.pge.com/003_save_energy/003a_res/cempe/html/cem_plans.shtml).

effectiveness, addressing market barriers, equity considerations and innovation. Similarly, the marketing/outreach funding is released to individual contractors based on the CPUC's assessment of the overall merits of the individual proposals received (for 2003, 28 marketing/outreach proposals were submitted, 21 were rejected for not meeting the CPUC's criteria and of the seven proposals accepted, three were selected).

The IOUs propose enhancements to statewide programs on an annual basis and the CPUC approves those enhancements that will improve the program's cost-effectiveness, increase participation or promote equity.

## Incentives

In the past, the DSM framework for California IOUs incorporated an incentive mechanism for utilities and their shareholders, but this mechanism was reported to have recently been eliminated by the CPUC. The maximum incentive was approximately 6% of the total DSM budget. The initial incentive mechanism incorporated over 170 milestones to be measured among the utilities, resulting in excessive monitoring and reporting burden for the CPUC and utilities. A simplified incentive structure was then introduced based on the utilities ability to meet a revised set of predefined performance targets covering:

- energy savings and electric peak demand (together representing approximately 80% of the available incentive);
- market effects for programs promoting market transformation that may not yield immediate energy savings;
- performance adder for educational programs and energy centres that do not generate direct energy savings.

There is currently a proceeding underway regarding the IOUs' outstanding shareholder incentive claims from previous years. The IOUs recently (September, 2003) filed a joint report on policy areas of agreement and disagreement with respect to various components related to their shareholder incentive claims dating back to 1998.

IOUs are not compensated for lost revenues as a result of their DSM activities.

## Tracking and reporting

The CPUC has allocated approximately $11 M for evaluation, monitoring and verification for 2003.

The IOUs also provide quarterly updates of program activities and the CPUC provides an annual report on its energy efficiency programs to the California legislature

## *B.3 Connecticut– Southern Connecticut Gas and Connecticut Natural*

### Regulatory framework

DSM is mandatory in Connecticut for electric and gas utilities. Two of the three gas utilities in Connecticut, Southern Connecticut Gas (SCG) and Connecticut Natural (CN), operate under a PBR framework with a revenue cap. DSM is a pass-through in their PBRs. 2000 and 2001 were the first times PBRs were approved for SCG and CNG respectively. The initial PBR periods are expected to be 5 years. However, due to recent mergers and acquisitions, it will be more difficult to predict the future periods between rates cases. DSM is a pass through in SCG's and CNG's PBR framework. The third utility, Yankee Gas, currently operates under a cost of service framework.

The regulatory framework for the electric utilities in Connecticut is different than for the natural gas utilities. The electric utilities operate on a hybrid PBR framework; it is not as aggressive a PBR. The electric DSM programs are similar to those of natural gas in that both have mandatory and voluntary DSM programs, although there are more voluntary programs on the electric side. On the electricity side the programs are much larger with a budget of around $100 million. This larger budget means that their programs are scrutinized much more aggressively and on a program by program basis by the regulator. The electric utilities have a collaborative; it is not the same as the collaborative for the natural gas utilities[23].

### Design and approval of DSM Plans

On an annual basis, Southern Connecticut Gas and Connecticut Natural prepare DSM plans that include programs, budgets and targets. The plans are submitted to the multi-stakeholder collaborative for its review. If there are any issues, the utilities try to resolve them with the collaborative before taking the DSM plan to the regulator. Not many issues are raised by the regulator regarding the programs as the programs have not changed much over time. All three gas utilities have the same collaborative; this helps to standardize the programs[24].

Most of the DSM programs are standardized across the gas utilities and many are mandatory. Three DSM programs which gas utilities are required to participate in are:

**Energy Conservation Loan Program**. This program is accountable to the Department of Economic & Community Development and delivered by the Connecticut Housing Investment Fund (CHIF). It provides financial assistance in the form of below market interest rates to eligible building owners for residential energy efficiency improvements. The loans can be used for the purchase and installation of set-back thermostats, caulking, weather-stripping, heating systems, heating system improvements/replacements, insulation,

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[23] Crocco, Joseph. 2003. Personal communication (Manager of conservation Southern Connecticut Gas)

[24] Crocco, Joseph. 2003. Personal communication (Manager of conservation Southern Connecticut Gas)

low-flow shower heads, storm windows, storm doors, thermal windows/doors, and other items that will reduce energy bills.

**Energy Conservation Programs for State Facilities, Public Act 93-417**. This program was developed to improve energy efficiency in State facilities. Some of the measures used include heating, air conditioning, ventilation, controls, water heating and ancillary equipment as well as weatherization/insulation improvements. The cost of this program is split equally between the utility and the state. SCG reached its lifetime program budget cap during 2003, and consequently no funds are budgeted for 2004. CNG's program has an annual budget without a program cap and pursues conservation investment opportunities jointly with the state.

**Residential Conservation Services Program (home energy audits)**. This program provides residential customers with the opportunity to have a professional energy consultant conduct a home energy audit at an affordable cost. The audit includes a detailed on-site inspection, and a complete audit report with recommendations. Audits include the review of dwelling energy consumption patterns, air infiltration characteristics, the number of inhabitants and other variables affecting energy usage. Competitive Resources Inc. (CRI), and an independent contractor, perform the audits for CNG's & SCG's non-hardship customers. CNG & SCG pay more than half of the audit's cost, however, a customer "co-pay" of $85 is required for participation and is paid directly to Competitive Resources.

Each utility also has a voluntary DSM program. The voluntary program offered by Connecticut Natural Gas and Southern Connecticut Gas is:

**Insulation and Weatherization**. This program is free for residential customers of CNG and SCG that qualify for low income assistance. The Conservation measures installed under this program include insulation for attics and exterior walls, infiltration and hot water measures. Each utility spends about $250,000 annually on this program[25].

The voluntary low-income weatherization program is in place as it provides good public relations for the utilities as well as helps to reduce uncollectible expense. The gas industry competes directly with the fuel oil business for the heating market, but the fuel oil business is not regulated and they do not have to offer DSM. Therefore offering DSM programs help the utilities to retain their customers. State law also prohibits the utilities from shutting off gas supply during the heating season for non-payment of bills and allows customers who have been shut off for non payment to have service restored after agreeing to make minimum payment arrangements. Therefore it is in the utilities best interest to have these low-income programs.

**DSM budget and target setting process**

The budget for the DSM programs are reviewed and approved annually. The amounts budgeted have been previously approved in each company's most recent rate proceeding. The budget has remained stable over the years for both CNG and SCG. The regulator reviews and approves the allocation of the budget to the programs on an annual basis.

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[25] Connecticut Natural Gas website, Conservation Programs. **http://www.cngcorp.com/products_technology_safety/facts/conservation_programs.html**. Accessed October 14, 2003

Before the budget is filed with the regulator, it is submitted to the multi-stakeholder collaborative for review and the utilities try to resolve any issues identified. The annual budget for CNG is approximately $500,000, of which $250,000 is required by the regulator to go to the state's facilities program. CNG has a total operating revenue of $245 million and SCG of $69 million indicating that DSM represents 0.2% and 0.7% of total operating revenues respectively. CNG has 147,000 customers, while SCG has 167,000 customers which translate into an approximate spending per customer for DSM of $3.74 and $3.29, respectively[26].

Both SCG and CNG have some flexibility to underspend or overspend their DSM budgets. Both focus on meeting individual pre-approved program budgets. Program variances may occur from time to time, most typically these are underspending-related. If SCG underspends its total budget, the money is rolled over into the next year's budget. If the utility overspends its DSM budget, the utility would adjust the budget going forward to take into account the overspending and spend less in the following year to equalize the overspending. SCG is required to provide the regulator with a quarterly budget spending/variance report.

Connecticut Natural has a "Conservation Adjustment Mechanism" (CAM) in which all unspent money is returned to the ratepayers in the following year through its Purchase Gas Adjustment. If CNG overspends, the utility would be admonished by the collaborative and CNG would try to eliminate the overspending in the following year.

Targets are set by the utilities, based on avoided gas costs. These targets are filed with the regulator annually. The targets change very little from year to year and are set for the overall portfolio of DSM programs.

### Incentives

There are no incentives for SCG and CNG to meet or exceed their targets.

### Tracking and reporting

SCG and CNG track their DSM expenditures. CNG have a lost revenue adjustment mechanism to recover their costs. For SCG the lost revenue is tracked in a deferral account and recovered in the next rates case. The money held in this account is not large due to the small DSM budget, therefore, there is no problem with waiting until the next rates case to recover the money. For CNG lost revenue is recovered through the Purchase Gas Adjustment Clause, enabling lost revenues to be recovered annually.

SCG and CNG are not required produce annual DSM reports. However, there are periodic reporting requirements and a Bi-annual Supply & Demand filing.[27]

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[26] Crocco, Joseph. 2003. Personal communication (Manager of conservation Southern Connecticut Gas)

[27] Crocco, Joseph. 2003. Personal communication (Manager of conservation Southern Connecticut Gas)

## *B.4 Iowa*[28]

### Regulatory framework

Gas and electric investor-owned utilities (IOUs) have been offering DSM programs since 1991 and were asked by the Iowa Utilities Board (IUB) to file new five year DSM plans in 2002/3. Four IOUs filed gas DSM plans (some IOUs are dual-fuel, hence filed combined electric and gas DSM plans). Consumer-owned utilities must file biennial energy efficiency plans with the IUB, but the IUB appears to have only a "monitoring" role with respect to these utilities.

The details provided below cover the DSM framework for the IOUs.

### Design and approval of DSM plans

The gas IOUs' design and deliver the DSM programs and produce DSM plans to cover a five year period. The IOUs were encouraged to work collaboratively with stakeholders in developing their DSM plans (in one case, IUB prescribed a collaborative plan development process to expedite plan development).

The IUB approves the gas IOUs' DSM plans. For many of the DSM plan filings, the IUB waived the requirement for hearings on the DSM plan given that stakeholders and the utility proposing the plan had resolved all issues prior to the filing of the DSM plan.

All IOUs included DSM programs specifically for low-income customers in their plans, but the IUB asked many of the IOUs to increase their spending on low income programs given concerns about high natural gas prices in the coming winter.

### DSM budget and target setting process

The DSM plans cover both annual budgets and targets for DSM programs over a five year period.

DSM spending by investor owned utilities represents approximately 1% of Iowa customers total gas bills. This DSM budget is collected through rates. Cost-effectiveness for the DSM programs is based on the societal cost test (SCT).

### Incentives

There is no incentive mechanism is available to IOUs.

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[28] All information contained in the summary is based on personal communications with Gordon Dunn at the Iowa Utilities Board and Matt Daunis at Aquila and with reference to the Alliant Energy website (http://www.alliantenergy.com/stellent/groups/public/documents/pub/news_mk_011053.hcsp).

## Tracking and reporting

The IOUs are required to provide annual report of their DSM performance.

## *B.5 Massachusetts*[29]

### Regulatory framework

In response to electric and gas industry changes associated with restructuring, the Massachusetts Department of Telecommunications and Energy (DTE) opened a generic proceeding on energy efficiency in 1999. The final guidelines flowing from this proceeding were issued by DTE in 2000. The guidelines cover the process to evaluate and approve energy efficiency programs for both gas and electric utilities. Hence, the DSM framework for investor owned gas and electric utilities is largely consistent. There is also a less stringent framework for municipally-owned utilities. DSM is mandatory for natural gas utilities.

### Design and approval of DSM plans

On a five year cycle, gas utilities develop and deliver long term DSM plans and programs in consultation with several stakeholder groups, including low income agencies, the Northeast Energy Efficiency Council, the Attorney General's office and other government agencies. The overall annual budget is set based largely on recent experience and spending levels. The key negotiating focus in developing the DSM plans is on the budget and program allocation across sectors. Within each year covered in the DSM plan, there is an annual update process in which program changes and budget reallocations are proposed in response to market changes, program saturation and other factors. In addition to many traditional DSM programs, Keyspan offers a Residential Low Income Programs comprising of weatherization measures.

If stakeholders are supportive of the DSM plan (as they generally are given the collaborative approach used by the utilities), the DTE considers the plan as a "settlement document" and waives the need to open a docket (hearing) for the plan.

All DSM programs must pass the TRC test. Consideration was given to using a Societal Cost Test (SCT), but the DTE felt it was outside their statutory jurisdiction as an "economic" regulator to consider the "environmental externalities" captured in the SCT. Instead, the DTE encouraged continuing collaboration and co-operation between the DTE and other agencies with responsibility for and jurisdiction environmental matters. However, the TRC test proposed by the DTE is required to include 1) direct resource benefits (including, for example water savings from front-load washing machine) and 2) other known, quantifiable and significant end-use benefits to participants (e.g., O&M savings, reduced environmental compliance costs, etc.). Based on their view that investments in energy efficiency are relatively low risk, the DTE stipulates that the present value of future savings be determined based on the interest rate for a long term (30 year) Treasury (government) bond.

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[29] All Information in this summary is based on personal communication with Bruce Johnston at Keyspan and with reference to the Department of Telecommunications and Energy guidelines for the evaluation and approval of energy efficiency programs and utility incentives (http://www.state.ma.us/dpu/electric/98-100/finalguidelinesorder.htm).

## DSM budget and target setting process

As stated above, utilities develop long term DSM plans comprising cost-effective DSM programs on a five year basis, with updates to this plan on an annual basis within the five year planning period. The budget setting process revolves primarily around the allocation of DSM funds across different market sectors.

Funding for gas DSM programs is provided through utility rates, whereas funding for electric DSM programs is provided through a systems benefit charge on electric bills.

The total DSM budget for Keyspan Energy Delivery New England for the period from May 1, 2002 through April 30, 2003 was $12 million, representing approximately 1.7% of Keyspan's estimated revenues of $720 million in this same period.

## Incentives

Investor-owned utilities are eligible for an incentive payment based on their DSM performance in the area of number of participants, achievement of certain milestones, program cost-effectiveness (benefit-cost ratio) and volumetric savings. In the recent past, volumetric savings have been more emphasized relative to the other performance metrics.

The threshold level for incentive eligibility is 75% of the design performance goal (target), at which point the utility would receive an after-tax incentive of 75% times the average 3 month treasury bill rate times the direct DSM program implementation costs. The incentive increases linearly from the threshold level to 125% of the design performance goal (exemplary performance) at which point the utility would receive 125% times the average 3 month treasury bill rate times the direct DSM program implementation costs.

There is no LRAM mechanism – the incentive mechanism described above is considered partial compensation for lost revenues accruing from DSM.

There is also no DSMVA mechanism per se, but utilities can apply to the DTE to recover any costs that were prudently incurred in excess of the annual budget.

## Tracking and reporting

Investor-owned utilities are required to file Energy Efficiency Annual Reports (previously DSM Annual Reports).

## *B.6 Minnesota – Xcel Energy*

### Regulatory framework

The six natural gas utilities in Minnesota operate under a cost of service framework. Rate cases are not held annually in this jurisdiction. For Xcel Energy, a utility that has natural gas and electricity customers, the last natural gas rates case was in 1998[30]. DSM is required for all electric and natural gas utilities operating in the state, as mandated by Minnesota Statute §216B.241.

### Design and approval of DSM Plans

Every two years, the natural gas utilities in Minnesota submit for approval their Conservation Improvement Plan to spend 0.5% of gross operating revenues on DSM programs[31]. The programs are evaluated according to their cost effectiveness using a Benefit-Cost model (BENCOST) developed by the Department of Commerce. A program must have a benefit cost ratio of 1.0 or higher on the Societal and Participant Tests to be considered cost effective by the Department of Commerce[32].

Xcel Energy designs and delivers the following energy efficiency programs:

**Appliance Rebates**. The utility offers $50 rebates for the purchase of energy efficient natural gas water heaters and refrigerators.

**Heating /Cooling Systems Rebates.** Xcel Energy offers rebates of $250 to $350 for buying energy-efficient central air conditioning systems. Residential natural gas customers are also eligible for $75 to $100 in rebates for installing high-efficiency gas furnaces or boilers and combination space/water heating units[33].

Xcel Energy's DSM portfolio also contains a program for low-income customers that includes furnace repair, installation of cooling equipment and weatherization materials.

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[30] Grey, Staples. 2003. Personal communication (Manager, Restructuring and Regulatory Strategy, Xcel Energy)

[31] Minnesota Department of Commerce website, Utility conservation. **http://www.state.mn.us/cgi-bin/portal/mn/jsp/content.do?contentid=536884781&contenttype=EDITORIAL&agency=Commerce**

Accessed October 15, 2003.

[32] Sours-Page, Rachel. 2003. Personal communication. (Xcel Energy)

[33] National Energy Affordability and Accessibility Project, Residential Energy Efficiency Database Results. **http://neaap.ncat.org/db/results.asp.'** Accessed November 11, 2003

[5] Sours-Page, Rachel. 2003. Personal communication. (Xcel Energy)

[6] The CIP Tracker is simple a spreadsheet that tracks expenditures and cost recovery amounts

[7] Grey, Staples. 2003. Personal communication (Manager, Restructuring and Regulatory Strategy, Xcel Energy)

The Department of Commerce designates a proportion of the utility's DSM budget for low-income programs, based on a 3-year average of DSM spending. Historically, the level of spending on low-income natural gas conservation programs has been approximately $500,000. The savings achieved with the low-income program are combined with the savings from Xcel's other programs when calculating the financial incentive the utility will receive for the year. Xcel recovers a portion of its investments in DSM (including a rate of return on unrecovered amounts) through base rates and a portion through a pass-through cost-recovery mechanism[5] [6].

## Budget and target setting

Natural gas utilities are required to invest 0.5% of their gross revenues (includes the cost of gas) in conservation programs. The DSM budget is set based on one year's revenue, but is applied to the proceeding biennium. For example, the 2001 gross revenue would determine the 2002 and 2003 minimum-spending requirement. Because the budget is based on a fixed proportion of gross revenues, the budget can vary greatly from planning period to planning period due to fluctuations in the price of gas. For example, Xcel Energy's gas DSM budget in 2002 was $2.8 million, for 2003 and 2004, it is $3.7 million[7]. Taking an average annual budget of $3 million, Xcel Energy spends approximately $6.66 per customer on their natural gas DSM programs, based on a customer base of 450,000.

Xcel Energy Minnesota's gas DSM goals are established within the CIP Biennial Plan. These goals are based on the DSM budget, historical experience with DSM, and the gas markets. Although the utility establishes its goals at the program level, the regulator only approves goals at the segment (residential, commercial and industrial, small business and low-income) level. This gives Xcel Energy flexibility to move resources between the programs to achieve the segment targets.

Xcel Energy may overspend its budget by up to 25% as long as the overall CIP Plan remains cost-effective. Utilities generally have little incentive to overspend their approved spending levels, as the financial incentive is capped at the lesser of 30% of approved or actual spending (that is, assuming they are achieving through program results the maximum available financial incentive). Natural gas and electric utilities could, in the past, recover their DSM costs using a lost revenue adjustment mechanism. However, the utilities no longer have access to a LRAM[8].

## Incentives

Minnesota's natural gas utilities have a financial incentive for meeting their targets. The formula for obtaining the incentive is a stepwise (sliding scale) function. A utility can earn between 0 and 30% of its total DSM spending, based on percent achievements over the gas saving target and the net benefits associated with these savings. The incentive is awarded as a percentage of the net benefits achieved, where the percentage is calculated using the % of Mcf goal achieved. The incentive is capped at the lesser of 30% of regulator-approved or actual spending. On a $3 million DSM budget, Xcel could earn

[8] Sours-Page, Rachel. 2003. Personal communication. (Xcel Energy)

$900,000 using this incentive. The incentive is reviewed on an annual basis in the CIP Status Report. While the incentive calculation methodology has remained the same for several years, the inputs change annually depending on the regulatory-approved goals[9].

## Tracking and reporting

Xcel Energy tracks its gas DSM spending monthly, and produces an annual CIP Status Report. The annual status report is filed with the regulator and includes:

- Annual goals and achievements (savings, budgets, expenditures, and participants);
- Goal and actual cost-benefit analyses for each program;
- Descriptions of the programs and changes that occurred in that year;
- Calculation of the financial incentive;
- Compliance filings requested by the Minnesota Department of Commerce or Public Utilities Commission[10].

[9] Grey, Staples. 2003. Personal communication (Manager, Restructuring and Regulatory Strategy, Xcel Energy)

[10] Sours-Page, Rachel. 2003. Personal communication. (Xcel Energy)

## *B.7 New Hampshire*[34]

### Regulatory framework

DSM programs were made mandatory for gas utilities in a regulatory decision in late 2002, which reflected government policy introduced through legislation. Both of the New Hampshire's natural gas utilities – EnergyNorth Natural Gas and Northern Utilities –operate under the same DSM framework. The DSM frameworks for gas and electric utilities are broadly consistent, but there are some minor differences which reflect differences between the two industries.

Utilities may file a rate case whenever they desire, but the typical period between rate cases is up to five years. The utilities do not have a formal PBR framework per se, but the frequency of rate hearings would have a similar outcome as a PBR framework.

### Design and approval of DSM plans

Utilities design the DSM programs with input from stakeholder groups, and propose a DSM Plan to the regulator for approval. Stakeholders are also intervenors in annual DSM filings with the regulator and are active in attending technical sessions established as part of the procedural schedule in the annual DSM filings.

Generally, the utilities and the regulator seek a balance between residential, commercial/industrial and low income programs. The programs delivered by gas utilities in New Hampshire are similar to those delivered by the utilities' affiliates in Massachusetts. These programs include Residential heating, C&I High Efficiency, High Efficiency Water Heating, Energy Star Homes, Energy Star Windows and Energy Star Thermostats. While the gas utilities deliver most of the DSM programs directly, programs for low income customers are delivered with the support of community action agencies. The cost effectiveness of these programs is based on a societal cost test. This is essentially the standard TRC test, with a 15% environmental adder.

### DSM budget and target setting process

The utilities produce DSM plans covering program budgets and targets for a three year period. These plans are filed with the regulator for regulatory approval. Funding for DSM programs is provided through a utility-specific surcharge and represents between 1.5 % and 2% of the gas utilities' forecast 2003 revenues. Both volumetric and TRC benefit/cost ratio targets are set. These form the basis of the incentive mechanism.

[34] All information contained in this summary is based on personal communication with James Cunningham at the New Hampshire Public Utilities Commission.

## Incentives

Incentives range from 8% to 12% (pre-tax) of approved DSM budget expenditures based on the utilities achievement of its DSM volume targets (50% of potential incentive) and DSM portfolio's target benefit/cost-ratio (50% of potential incentive). Utilities must achieve 65% of their volumetric target to become eligible for the incentive. There are no penalties if the utilities do not achieve their targets.

Unspent funds are allowed to be carried over, but the mechanism for such carry-overs has not yet been determined. Any expected over-expenditures beyond 20% are to be reported to the regulator.

There is no explicit LRAM mechanism.

## Tracking and reporting

Utilities are required to submit monthly reports on DSM expenditures. Electric utilities in New Hampshire have been filing a joint quarterly DSM report since their DSM programs were established in June, 2002.

## *B.8 New Jersey*

### Regulatory framework

The framework for DSM is currently undergoing a transition from utility driven DSM to DSM driven by a central agency. Most of the information contained in the summary is with regard to this new system, where this is not the case it is indicated. There are four natural gas utilities in New Jersey operating under a cost of service rate setting framework. Rate cases are not held annually; the last rates case was held in 1992[35].

DSM is a legislated requirement for all natural gas and electric utilities in New Jersey[36]. The Clean Energy Council (CEC) of the New Jersey Clean Energy Program (CEP) is accountable for all DSM programs delivered by both the gas and electric utilities. In this jurisdiction the utilities will have the option to bid to deliver the DSM programs developed by the CEP in their service area[37]. This new bidding process is expected to begin in spring 2004[38].

### Design and approval of DSM plans

Every utility which has successfully bid to deliver a DSM program or programs must file a DSM plan for review and approval from the regulator. This must be done within two years of the approval of the utility's last DSM plan. This DSM plan should include the following elements:

- A forecast of the overall energy and capacity savings and an overall energy savings target
- A forecast of the effect of the DSM Plan
- A list and description of "Performance-Based Programs" accompanied by a proposed budget, and a goal and target market for each sector
- A description of "Core Programs" (those that involve the dissemination of information, achieve public and social goals, and are not subject to incentives)

The DSM programs are designed by the two committees of the CEP, the Energy Efficiency Committee and the Renewable Energy Committee. These programs are submitted to the CEC. The New Jersey Board of Public Utilities has approval authority for the DSM

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[35] Mosser, M and Wolfe, S. 2003. Personal communication (Chief, Bureau of Energy Efficiency, New Jersey Board of Public Utility)

[36] New Jersey. Board of Public Utilities. Supp 1-22-02. 14:12. Chapter 12, Demand Side Management.

[37] New Jersey Clean Energy Program website **http://www.njcleanenergy.com/html/1residential/** Accessed October 14, 2003.

[38] Mosser, M and Wolfe, S. 2003. Personal communication (Chief, Bureau of Energy Efficiency, New Jersey Board of Public Utility)

programs. The internal mechanics at the Board for the approval are still being worked out[39].

The DSM programs available for gas and electric utilities to bid on are:

- **Cool Advantage**. This program improves the energy efficiency of new central air conditioners and electric heat pumps. The program provides rebates towards the purchase and installation of energy efficient electric central air conditioners or heat pumps.
- **Warm Advantage**. This program promotes the purchase of high efficiency natural gas home heating systems and/or water heaters, through rebates towards the purchase of qualifying high-efficiency natural gas equipment.
- **New Jersey EnergyStar**. This program consists of a coordinated effort to promote ENERGY STAR rated appliances (refrigerators, dishwashers, clothes washers and room air conditioners), windows, and lighting products (compact fluorescent screw-based lamps, hardwired fixtures and portable fixtures). These efforts may be coordinated regionally or nationally where possible.
- **Comfort Partners**. Comfort Partners is designed to improve energy affordability low income households. This is done through energy efficiency measures which include: efficient lighting products, hot water conservation measures, refrigerator replacement, programmable thermostats, insulation upgrades, air sealing, duct sealing and repair, and heating/cooling equipment maintenance, repair and/or replacement. Energy education and counselling and arrearage forgiveness for participants who agree to payment plans are included.
- **New Jersey EnergyStar Homes.** This program is designed to increase the energy efficiency level of residential new construction in New Jersey to that of the national ENERGYStar Homes Program.
- **Home Energy Analysis**. Local gas and electric utilities provide home energy audits.
- **Energy-Efficient Commercial & Industrial Construction Program**. This program encourages customers to utilize high efficiency electric or gas equipment and an integrated design approach when considering the building envelope and its mechanical and lighting systems[40].

## DSM budgets and targets

The budget is set for the DSM programs when the programs are designed by the CEP committees. The budget is based on historic spending. The program and the budget are approved by the New Jersey Board of Public Utilities when the program design is submitted. The budget for these programs comes from a Societal Benefits Charge on customers' bills.

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[39] Mosser, M and Wolfe, S. 2003. Personal communication (Chief, Bureau of Energy Efficiency, New Jersey Board of Public Utility)

[40] New Jersey Clean Energy Program website **http://www.njcleanenergy.com/html/1residential/** Accessed October 14, 2003.

In the past, prior to the introduction of the centralized agency, utilities could overspend their budgets by up to 150%. This allowed the utilities to continue programs in spite of factors outside of their control, such as if there was a hot summer the utility would not have to stop an air conditioner program if the utility had already exceeded the budget. Those funds left unspent could be carried over to the following year. Under the new bidding process it is unclear how underspending or overspending will be handled in the future[41].

For 2003, while the DSM model is in transition, the goals and objectives of the DSM programs are being set at the same time the programs are being designed by the CEP committees. Therefore, there are no specific targets at this point in time, however this may change in the future[42]. The utilities are required by regulation to include an overall energy savings target in their DSM plan.[43]

There is a lost revenue adjustment mechanism to recover the program costs and lost revenue from DSM initiatives on the overall level of revenues collected by the utility. Each gas and electric utility is expected to file a Demand Side Management Cost Recovery Mechanism (CRM) as part of its DSM plan. The CRM allows the utilities to recover the DSM program costs (including incentives, disincentives or standard offer payments) and fixed cost revenue erosion (revenue lost due to less energy used as a result of DSM). The CRM is a deferral account which tracks the difference between the program costs and the revenue erosion, and the amount of money recovered in rates. This will most likely be adjusted on an annual basis or some other period concurrent with implementation of the utilities fuel adjustment clause[44].

## Incentives

The utilities may apply for an incentive mechanism. The mechanism can either be a shared savings approach or a standard price offer. The shared savings incentive to be retained by the utility is calculated as a percentage of the net benefits. The percentage is to be proposed in the DSM Plan. The net benefits are determined using a Total Resource Cost test. If the net benefits are less than zero, then the utility would receive a penalty based upon the same percentages the utility proposes to determine the positive incentives[45].

A standard price offer involves the utility paying the energy service company, contractors or customers who meet minimum threshold requirements for delivery of verifiable energy and capacity savings from DSM measures. The utilities may also propose to deliver verifiable savings and will be permitted to receive revenues equivalent to the standard price offer for delivery of the savings. The price of the standard price offer is determined

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[41] Mosser, M and Wolfe, S. 2003. Personal communication (Chief, Bureau of Energy Efficiency, New Jersey Board of Public Utility)

[42] Mosser, M and Wolfe, S. 2003. Personal communication (Chief, Bureau of Energy Efficiency, New Jersey Board of Public Utility)

[43] New Jersey. Board of Public Utilities. Supp 1-22-02. 14:12. Chapter 12, Demand Side Management.

[44] New Jersey. Board of Public Utilities. Supp 1-22-02. 14:12. Chapter 12, Demand Side Management.

[45] New Jersey. Board of Public Utilities. Supp 1-22-02. 14:12. Chapter 12, Demand Side Management.

based on the following formula: avoided energy costs plus avoided capacity costs minus fixed cost revenue erosion times 0.5[46].

In order to receive Board approval and be eligible for the incentive, each performance based DSM program must demonstrate a cost/benefit ratio of at least one as defined by the TRC test[47].

## Tracking and reporting

The utilities that deliver the programs are expected to report monthly on the programs, including expenditures. The CEP and the CEC produces a monthly progress report on program expenditures and participants for all utilities and programs. The CEP also submits a quarterly report to the New Jersey Board of Public Utilities. This report consists of:

- Descriptions of overall statewide expenditures;
- Description of detailed expenditures and participation by program;
- Actual and committed expenses for each program and utility;
- Reports on participation;
- Reports on energy saved, annual, lifetime and cumulative lifetime;
- Reports on emission savings, annual, lifetime and cumulative[48].

[46] New Jersey. Board of Public Utilities. Supp 1-22-02. 14:12. Chapter 12, Demand Side Management.

[47] New Jersey. Board of Public Utilities. Supp 1-22-02. 14:12. Chapter 12, Demand Side Management.

[48] New Jersey. Board of Public Utilities. Supp 1-22-02. 14:12. Chapter 12, Demand Side Management.

## *B.9 Oregon – Avista Utilities*

### Regulatory framework

There are three natural gas utilities in Oregon, all of which operate under a cost of service rate-setting framework. The rates cases for gas utilities take place anywhere from every 3 to 10 years[49]. Prior to this year the last rates case for Avista Utilities was held in 1990[50].

DSM is mandatory for both the natural gas and electric utilities, however the DSM programs they offer are delivered differently. For the two electric utilities the DSM programs are delivered by a non-profit organization, Energy Trust of Oregon (ETO)[51]. These programs are funded by a 3% Public Purpose Charge on customer's bills[52]. The gas utility NW Natural also offers its DSM programs through (ETO). The remaining two natural gas utilities in Oregon, are North West Natural Gas and Cascade Natural Gas Corporation. Avista Utilities are accountable for and deliver their own DSM programs.

### Design and approval of DSM plans

Avista Utilities does not submit a DSM plan to the regulator. The annual report produced by the utility is submitted to the regulator in the first quarter of each year. This report describes the accomplishments of the programs in the previous year and provides some direction for the future. The regulator can raise questions regarding the programs described in the annual report. The regulator does require that the programs are cost effective, which is determined using a TRC test.

Avista Utilities delivers both voluntary and mandated programs. The legislated programs Avista Utilities delivers have very specific guidelines and therefore there is not much opportunity for the utility to change the programs. For the voluntary programs, such as the **High Efficiency Space Heating Equipment Program** there is more flexibility. Avista can adjust the incentive to customers based on participation and the price of gas. This can be done without approval from the regulator.

Avista is required to offer a low-income weatherization program. This program is delivered by local community action groups. Avista provides a proportion of its DSM budget and administration funds to these groups for the delivery of the program.

Avista's portfolio of programs includes:

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[49] Tatom, B and R. Harris. 2003. Personal communication. Program Manager, Consumer Services, Public Utilities Commission of Oregon)

[50] Shroy, K. 2003. Personal communication. (Manager of demand side management, Avista Utilities, Oregon)

[51] Tatom, B and R. Harris. 2003. Personal communication. Program Manager, Consumer Services, Public Utilities Commission of Oregon)

[52] National Energy Affordability and Accessibility Project, Residential Energy Efficiency Database Results. **http://neaap.ncat.org/db/results.asp.'** Accessed November 11, 2003

- State Mandated Low Income Residential Weatherization Program
- High Efficiency Space Heating Program
- High Efficiency Space Water Program
- Commercial Industrial Initiative[53].

## DSM Budget and target setting process

Avista's budget for DSM is set in rates and has been relatively steady for the last 13 years. Avista spends $600,000 annually on DSM. With a customer base of 80,000 this translates to a spending per customer of $7.50. The DSM budget has increased slightly in recent years due to increased customer participation, which is a result of higher gas prices[54]. Program budgets are set annually and do not have to be approved by the regulator. The regulator can raise any issues regarding the budget when the annual report is filed.

There is no flexibility for Avista to underspend the DSM budget. Unspent money does not role over to the next year. Underspending rarely occurs as Avista almost always meets or exceeds the budget. The budget is not broken down by program; therefore there is flexibility to move the money between programs. If Avista should overspend the budget it can still recover this money through the lost revenue recovery mechanism.

Through the LRAM Avista can recover lost margin due to DSM gas savings and DSM program costs for the equipment and commercial programs. As a result the utility recovers almost all of its DSM expenditures. These expenditures are tracked and recovered by the utility every couple of years. As the State Mandated Low Income Weatherization program is legislated there is no allowance for the recovery of the lost margin. However, Avista can recover the program costs associated with administration and customer incentives for the low income program.

There are no regulated targets that Avista Utilities has to meet. The utility does, however, set its own targets for each program. The targets set and achieved for each of the programs is shown in the table below[55].

[53] Shroy, K and Powell, J, 2002. 2002 Oregon DSM Program Review. Avista Utilities

[54] Shroy, K. 2003. Personal communication. (Manager of demand side management, Avista Utilities, Oregon)

[55] Shroy, K and Powell, J, 2002. 2002 Oregon DSM Program Review. Avista Utilities

**Table 1: Targets set and achieved by program for 2002**

| Program | 2002 target (Therms) | Achieved savings (Therms) | Percent of target |
|---|---|---|---|
| State Mandated Low Income Weatherization | 40,500 | 80,960 | 200% |
| High Efficiency Space Heating Equipment | 42,000 | 44,190 | 105% |
| High Efficiency Water Heating Equipment | 13,600 | 5,562 | 41% |
| Commercial Industrial Incentives | 10,000 | 6,859 | 69% |
| Total | 106,100 | 137,571 | 130% |

## Incentives

There are no incentives for Avista Utilities to meet or exceed the DSM targets. The only targets are self imposed.

## Tracking and reporting

Avista Utilities tracks its expenditures and files an annual report with the regulator in the first quarter. This report provides a description of the accomplishments of the programs and some future direction. The number of participants, the energy saved and the cost of each program is described in Table 2 below[56].

[56] Shroy, K and Powell, J, 2002. 2002 Oregon DSM Program Review. Avista Utilities

**Table 2: Number of participants, cost and energy saved by program for 2002**

| Program | Participants | Cost | Therms |
|---|---|---|---|
| State Mandated Low Income Weatherization | 492 | $238,375 | 80,960 |
| High Efficiency Space Heating Equipment | 982 | $218,849 | 44,190 |
| High Efficiency Water Heating Equipment | 206 | $29,331 | 5,562 |
| Commercial Industrial Incentives | 3 | $32,094 | 6,859 |

## *B.10 Vermont – Vermont Gas*

### Regulatory framework

Vermont Gas (VGS) is the only natural gas utility in the state. The utility operates under a cost of service rate-setting framework, with rate cases taking place generally every year. DSM is mandatory for both the natural gas and electric utilities. There is considerable corporate pride in DSM at the senior level of Vermont Gas; senior management believes that there are customer service benefits to the utility delivering the program that should be maintained.

The gas and electric sectors have different methods of delivering the DSM programs[57]. For the electric utilities in Vermont all of the DSM programs were consolidated and the majority of the programs are now delivered by the non-profit central agency, Efficiency Vermont. The exception is Burlington Electric, which has the same DSM programs as Efficiency Vermont, but the utility delivers these programs. The budget for all of the electric DSM comes from a benefits charge on the customers' utility bills, rather than from rates[58].

### Design and approval of DSM

Vermont Gas prepares annual DSM reports containing the DSM programs, budget, and targets. The annual reports are filed with the utility's regulator, the Public Service Board. The programs the utility offers were designed with a collaborative and have been in place for 10 years. If there are any proposed changes to the DSM programs then, the changes are included in the DSM annual report. In one case, the Public Service Board directed VGS to consider ways to enhance retrofit activities, work with the Department of Public Service to resolve concerns, and file a report with the Board regarding this review, which was done.

Vermont Gas used its collaborative to brainstorm how to enhance the delivery of programs to the retrofit market and included the changes in the annual report for Board review[59].

Vermont Gas delivers its own DSM programs except for those designed specifically for low income customers. Low income customers of VGS are referred to the Champlain Valley Weatherization Service (CVWS) for energy efficiency programs. The CVWS determines the customer's income status and eligibility, performs the energy audit, submits the recommended measures to VGS for screening, and coordinates the installation of the cost-effective energy saving measures. VGS shares the costs of the program with CVWS[60].

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[57] Jim, Grevatt. 2003. Personal communication (Manager, Energy Services, Vermont Gas)

[58] Efficiency Vermont, About Us. **http://www.efficiencyvermont.com/index.cfm?L1=9&sub=res** Accessed November 6, 2003.

[59] Jim, Grevatt. 2003. Personal communication (Manager, Energy Services, Vermont Gas)

[60] Vermont Gas website, Efficiency Programs. http://www.vermontgas.com/dsm.htm Accessed October 14, 2003.

Vermont Gas has delivered DSM programs since 1992. The DSM programs delivered by Vermont Gas are:

**Homebase Retrofit Program**. This program is designed to help customers with larger than average gas usage find ways to improve the efficiency of their homes. It provides financial incentives to encourage customers to install cost effective energy conservation measures. An energy audit is also performed on each participating building to identify potential energy saving measures.

**HomeBase New Construction Program**. Page: 52
Vermont Gas delivered a residential new construction program for 8 years prior to developing the ***Vermont Energy Star Homes*** program with Efficiency Vermont. While the **HomeBase New Construction Program** that is now offered was developed in partnership with Efficiency Vermont, it is essentially the same program as Vermont Gas' **Energy Star Homes Program** that has been offered since about 2000, and only a variation on the program that Vermont Gas offered prior to that. The **HomeBase New Construction Program** provides new home buyers with no-cost technical assistance and home energy ratings, assistance complying with Vermont's Residential Building Energy Standards (RBES), free construction inspection to identify potential insulation and air leakage problems, final inspection and blower door test for air tightness, cash incentives for meeting minimum program standards, and bonus incentives for installing efficient appliances and additional high efficiency lighting.

**HomeBase Equipment Replacement Program**. When qualifying residential and small commercial customers of VGS are replacing existing equipment, or when home owners are converting to natural gas, VGS provides the rebates to promote the use of high-efficiency heating and water heating equipment.

**Workplace Retrofit Program.** This program is designed reduce natural gas production and peak day demand by encouraging commercial and industrial customers to install cost effective natural gas saving space, water and/or process heating measures.

**Workplace New Construction Program.** This program encourages commercial and industrial customers to install cost effective natural gas saving measures in the design and construction of new buildings and in the expansion, renovation or remodeling of existing buildings.

**Workplace Equipment Replacement Program**. This program encourages commercial and industrial owners and occupants to install high efficiency natural gas space, water and process heating and cooling equipment that has reached the end of its useful life or is being switched to natural gas[61].

**DSM Budget and target setting process**

The DSM budget for Vermont Gas is set in rates. The DSM budget for the fiscal year 2004 is $1.4 million; this corresponds to 1.8% of gross revenue; this percentage of gross revenue

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[61] Vermont Gas Systems. 2003. 2002 Annual Report, Demand Side Management Program.

for the DSM budget is typical. This budget was agreed upon 10 years ago by a collaborative and has not changed significantly in the rates cases. DSM spending has increased slightly in last few years, as have revenues, with DSM spending now a smaller proportion of total spending. The spending per customer for Vermont Gas is $40, based on a customer base of 35,000[62].

Vermont Gas sets both portfolio and program targets annually. However the utility is only responsible for achieving the overall portfolio targets. These targets are based on historical numbers, what Vermont Gas believes the utility can achieve. The utility may not always achieve its program targets, but it always exceeds the portfolio targets.

There is some flexibility for Vermont Gas to underspend or overspend its DSM budget. Unused funds are not included in requests for cost recovery in a rate case, but they are not deferred to the next fiscal year. Each fiscal year starts with a clean slate. It is unclear how the regulators would respond to overspending. It is likely that the cause of the overspending would be critical in determining the regulatory response.

Vermont Gas recovers its DSM costs through a lost revenue adjustment mechanism; however the lost revenues recovered are very small.

### Incentives

There are no financial incentives for Vermont Gas to offer DSM. Vermont Gas is required to offer DSM; it is a regulatory requirement.

### Tracking and reporting

Vermont Gas produces an annual report that summarizes the achievements of its DSM programs. This annual report is filed with the regulator by April 1 every year, regardless and independent from any rate case activity. The regulator uses this to comment on program design, budgets and results[63].

Program highlights from the 2002 DSM programs are:

- All programs resulted in installed measures for 982 homes and businesses that will save 1,088,000 Mcf over their lifetime.
- 289 audits were conducted, and 118 customers had energy saving measures installed through the Homebase Retrofit Program. The installed measures are estimated to save 5,450 Mcf annually.
- The Homebase Equipment Replacement Program completed 655 projects, with a total gas savings of 5,235 Mcf.
- The Homebase New Construction Program achieved a record savings of 7,968 Mcf, which is a 12% over the 2001 results.

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[62] Jim, Grevatt. 2003. Personal communication (Manager, Energy Services, Vermont Gas)

[63] Jim, Grevatt. 2003. Personal communication (Manager, Energy Services, Vermont Gas)

- 9,942 Mcf were saved in the Workplace Retrofit Program, 59% greater than projected. A total of 42 building audits were completed.
- The Workplace Equipment Replacement Program measures installed are estimated to save 10,858 Mcf annually.
- The Workplace New Construction Program completed 24 projects. An estimated 12,381 Mcf were saved, reflecting 97% of the projected annual savings[64].

[64] Vermont Gas Systems. 2003. 2002 Annual Report, Demand Side Management Program.

## *B.11 Washington*[65]

### Regulatory framework

Gas utilities in Washington operate under a cost of service framework and are required to develop/update a Least Cost Plan every two years. There is no mandatory requirement for gas DSM, and the DSM framework among those gas utilities that do offer DSM varies by utility. One gas utility – Avista – has been fairly active in gas DSM and operates under a different DSM framework than Puget Sound Energy (PSE), which was under stakeholder pressure to "do more DSM". The following details of the DSM framework refer to PSE's framework unless otherwise indicated.

The gas DSM framework is different than the electric DSM framework.

### Design and approval of DSM plans

PSE established a Conservation Resource Advisory Group to provide stakeholder input to the development of a two year DSM Plan submitted to the regulator. The regulator "allowed" PSE's DSM plan to go into effect. Regulatory "allowance" appears to reflect the fact that DSM plan is not subject to the same level of regulatory scrutiny as would be the case in a full rate hearing. "Allowing" DSM spending preserves the regulator's right to review the DSM plans more fully in a rate hearing.

Ratepayer-funded electric and gas DSM programs are designed and delivered by the utilities. Electric utilities also deliver special electric DSM programs funded by Bonneville Power Authority. The utilities' DSM portfolio includes low income programs in response to political desires.

The overall DSM program portfolio must pass the TRC and Utility Cost Test, but individual programs do not have to pass the TRC test provided there are identifiable, significant non-energy benefits.

### Budget and target setting process

Initially, the regulator set reasonable savings targets based on experience and available information on market potential, then PSE would develop a budget to achieve these targets. The regulator envisages a similar process going forward – PSE would develop a cost-effective portfolio of programs to achieve targeted savings.

Based on new information from a recent Least Cost Plan (LCP), which included a DSM market potential assessment and further collaboration with stakeholders, PSE has proposed

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[65] All information contained in this summary is based in personal communication with Joelle Steward at the Washington Utility and Transportation Commission and with reference to PSE GENERAL RATE CASE DOCKET NOS. UE-011570 and UG-011571, Appendix F, SETTLEMENT TERMS FOR CONSERVATION and Triple E Report, January 1, 2002 to December 31, 2002; Avista Annual DSM Performance Report, and Semi-Annual Report of DSM Programs, Puget Sound Energy, February 14, 2003.

a new two year target of 5 million therms over two years. This is higher than the original savings target that was set. Program results will be based on best available information at the time the DSM plan was developed. There are no retroactive adjustments to unit savings, measure life and other program parameters affecting savings and cost-effectiveness based on new information, but new information is expected be reflected in new DSM plans going forward.

Funding for PSE's DSM programs is covered by a surcharge (tracking account) for each program. Avista has a set DSM funding level embedded in its rates and develops programs to offer within the funding level. There is flexibility to under or overspend on the DSM budget. Any under or overspending is carried over in a variance account and the utility can apply for clearance.

PSE's annual gas DSM budget is approximately $4.5 million US, representing approximately 0.7% of their estimated natural gas revenues of $650 million. Avista had been spending more than available through its DSM funding, but recently received regulatory "allowance" to increase its DSM funding from 0.5% to approximately 1% of revenues.

### Incentives

PSE is not subject to an incentive mechanism, but is subject to a penalty if it fails to achieve targeted savings over a two year period. The penalty would then be applied to each year within the two year period that the utility failed to meet its target. The penalty for failing to achieve the target is as follows: $200,000 if they achieve between 90% to 99% of annual target, $500,000 if they achieve between 75% to 89% of annual target and $750,000 if they achieve less than 75% of target. Avista has neither a penalty component nor an incentive component in its DSM framework.

Given the cost of service model the utilities are operating under, it is unclear whether gas utilities reflect their expected DSM savings in the volume forecasts used to establish rates. Hence, there is no explicit LRAM mechanism per se, but the potential exists for utilities to reflect DSM volumes in their volume forecast used for rate-setting.

### Tracking and reporting

PSE is required to file semi-annual reports on conservation programs with the commission. Avista files an annual report with the commission. PSE is also required to provide a biennial Conservation Report Card to their customers.

## *B.12 Wisconsin*[66]

### Regulatory framework

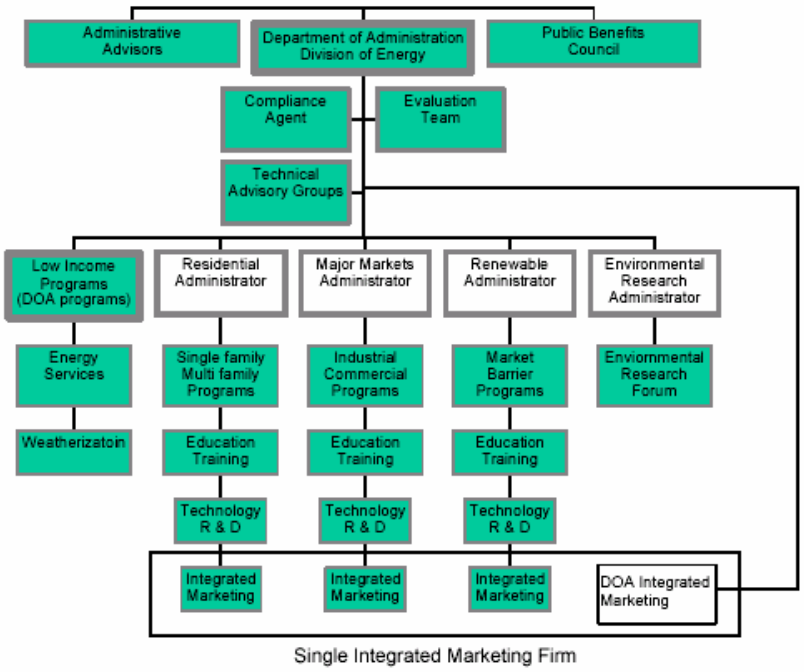
Legislation passed in 1999 assigned responsibility for DSM to the Wisconsin Department of Administration's Division of Energy (DoE) under the "Wisconsin Focus on Energy" program. Under the legislation, a new public benefits charge was established to complement existing rate-based funding for investor-owned utilities (IOUs) that were providing DSM programs. The IOUs were required to develop a transition plan to transfer responsibility for DSM to the state over a three year period at a rate to be determined by the regulator.

### Design and approval of DSM plans

DoE subcontracts DSM program design, delivery and reporting to Program Administrators, who in turn may use subcontractors for specific program activities. There are three Program Administrators, one for each of the following areas: Major Markets (commercial/industrial), Residential and Renewables. There are also separate "Administrators" for evaluation and integrated marketing (essentially a marketing firm) and a compliance agent.

The "organization" chart for Wisconsin Focus on Energy is shown below:

[66] All information contained in this summary is based on consultation with State of Wisconsin, Department of Administration, Division of Energy, Focus on Energy Statewide Evaluation, Evaluated Energy Impacts Report, (Contract Year 2, Quarter 2), Final Amended: March 10, 2003 and *Public Benefits In Wisconsin: The Wisconsin Focus On Energy. Energy Efficiency And Renewable Energy Plan*, Department of Administration Division of Energy, November 15, 2000



Single Integrated Marketing Firm

The DoE also established several Technical Advisory Groups to cover various market segments (e.g., commercial/industrial, residential) and DSM components (such as evaluation, technology and marketing)

Given the level of subcontracting involved in DSM delivery under the Wisconsin Focus on Energy model, the DoE's role in DSM can be divided into five areas:

1. Policy Planning and Program Design
2. Procurement and Contract Administration
3. Communication
4. Oversight and Reporting
5. Evaluation Co-ordination and Program Adjustments

## Budget and target setting process

The DoE relies on the Program Administrators to develop cost-effective programs for DoE approval. The Administrators are also held accountable to achieve the desired outcomes.

Total annual funding for gas and electric energy efficiency is approximately $66 million, with approximately $16 million from a public benefits charge and $46 million from rate-based funding for previous IOU DSM programs. Municipal utilities and co-operatives also contribute $16/meter to fund the program.

Specific information on gas DSM expenditures was not available, but during the one year period from October 2000 through June 2002, total energy efficiency spending for the Focus on Energy program was $56 million, approximately 0.8% of combined gas and electric utility revenues over that same period. Given that most programs were not delivered until the second half of 2001, most of this spending would have occurred over a one year period.

Recently, the state government developed a biennial budget that sharply reduced the funding for the Focus on Energy program by some 40% through 2005, but it is unclear how the overall program portfolio or individual programs will be affected by this change.

### Incentives

Information as to whether the Program Administrators are subject to any penalties or eligible for any incentives was not available.

### Tracking and reporting

The evaluation contractor has developed a very comprehensive, multi-faceted evaluation plan covering:

- Tracking and database management, including GIS mapping.
- Research and planning, including multi-year evaluation plans and baseline market research.
- Impact evaluation/measurement and verification of energy savings.
- Quantification of environmental, social and economic benefits, including non-energy benefits
- such as comfort and productivity.
- Evaluation of market effects, including momentum, development and change over time.
- Process evaluation, including the effectiveness of product/service delivery and customer
- satisfaction.
- Reporting, including findings, results, analysis, conclusions and recommendations.

The contractor provides a comprehensive annual report and quarterly performance reports covering spending, energy impacts (gross savings, verified gross savings and verified net savings), non-energy impacts and estimated economic impacts of the DSM programs.

# Appendix C. Gas DSM spending as a proportion of gas revenue in 2002

| Utility or jurisdiction | Revenue | DSM Budget | DSM spending as proportion of revenues |
|---|---|---|---|
| BC Gas[67] | $1,707,200,000[68] | $3,000,000 | 0.2% |
| Southern Connecticut Gas | $69,000,000[69] | $500,000 | 0.7% |
| Connecticut Natural Gas | $245,000,000[70] | $500,000 | 0.2% |
| Vermont Gas | $66,700,000[71] | $1,400,000 | 2.1% |
| California | | | 0.7% |
| Massachusetts (Keyspan) | $720,000,000 | $12,000,000 | 1.7% |
| Iowa | $1,200,000,000 | $12,000,000 | 1% |
| Wisconsin (electric and gas DSM combined) | $6,800,000,000 | 56,000,000 | 0.8% |
| New Hampshire | | | 1.5% - 2.0% |
| Washington (Puget Sound Energy) | $650,000,000 | $4,500,000 | 0.7% |

SOURCE: Survey participants

NOTE: Utilities or jurisdictions presented in the table are the sub-set of those surveyed for which data were available

[67] BC Gas is now Teresan Inc.

[68] Gross revenue

[69] Operating revenue

[70] Operating revenue

[71] Total budgeted revenue

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