

Energy Efficiency in the Natural Gas
Sector: A New Priority

The Minnesota Approach to
Natural Gas Energy
Conservation

Commissioner Phyllis A. Reha
Minnesota Public Utilities Commission
September 27, 2005, 9:30 – 11:15 am

Background (continued)

- **Minnesota**

- Map of U.S.A. (with Minnesota highlighted)
- Map of Minnesota (with St. Paul highlighted)
- The Commission's offices are in St. Paul
- Weather – cold in winter, warm in summer
- Population – approximately 5.1 million

Background (continued)

– Seven investor-owned, state regulated natural gas utilities

- CenterPoint Energy
- Northern States Power (Xcel Energy)
- Aquila Networks-PNG
- Aquila Networks-NMU
- Great Plains Natural Gas (MDU Resources)
- Interstate Power & Light (Alliant)
- Greater Minnesota Gas, Inc.

3

Background (continued)

– Thirty-one municipal-owned gas utilities

- The City of Duluth's natural gas utility is the largest, the City of Austin's is the second largest. (The average number of customers is 11,500, and the median number of customers is 3,100.)
- All municipally-owned gas utilities are required under state law to have conservation improvement programs, however, these programs are not regulated by the state.

4

Background (continued)

– Natural gas consumption in 2004

• Residential	132.363 Bcf	38.9%
• Commercial	96.579 Bcf	28.4%
• Industrial	96.391 Bcf	28.3%
• Electric Power Generation	<u>15.279 Bcf</u>	<u>4.5%</u>
	340.612 Bcf	100.1%

Total U.S. natural gas consumption was approximately 22.4 Tcf in 2004. Minnesota's share of this was approximately 1.5%.

- Number of natural gas consumers in 2003

- 1,308,143 residential customers statewide
- 123,123 commercial customers
- 2,074 industrial customers

– \$2.3 Billion spent on natural gas in 2001

» All data on this slide is from the U.S. DOE Energy Information Administration web site.

5

Introduction

- Energy efficiency is a top (but not a new) priority in Minnesota
- All gas (and electric) utilities are required by state law to implement comprehensive conservation improvement plans ("CIPs"), authorized by the Minnesota Department of Commerce
- Utilities may also receive authorization to collect performance-based financial incentives for their conservation programs from the Minnesota Public Utilities Commission

6

Natural Gas Conservation Improvement Programs in 2003

- \$12.2 million - approved budgets
- \$13.1 million – actual spending

- 1.3 million Mcf – approved energy savings
- 1.8 million Mcf – actual energy savings

- 12.9 thousand Mcf – approved demand savings
- 17.8 thousand Mcf – actual demand savings

- \$1.85 billion – gross operating revenue of Mn. Investor-owned LDCs

7

Conservation Improvement Program Budgets for 2005

- Natural gas. Approved 2006 budgets for natural gas CIPs are approximately \$13 million.
- Electric. Approved 2005 budgets for electric CIPs are approximately \$49.3 million. Actual spending on electric CIPs will be higher.
- Electric CIP budgets are higher because the minimum statutory spending requirement is higher, i.e. 1.5% of gross operating revenue, or 2.0% if the utility operates a nuclear-powered electric generating plant within the state, rather than 0.5% for natural gas utilities. (Minn. Stat. § 216B.2411, subd. 1a (1), (2) & (3))

8

Organization of State Policy Making

- Legislature: promulgates laws affecting public utilities and energy conservation
- Public Utilities Commission: approves bi-annual electric resource plans including renewable energy resource objectives, conservation-related financial incentives, renewable energy purchase power agreements with utility affiliates, etc.
- Department of Commerce: investigates, sets energy savings goals, and approves bi-annual Conservation Improvement Programs (“CIPs”) and budgets, investigates and makes recommendations on all other matters that come before the Commission
- Office of Attorney General-Residential Utilities Division: investigates and makes recommendations on a select number of matters that come before the Commission

9

Other Stakeholders

- Minnesotans for an Energy-Efficient Economy (ME³)
- Izaak Walton League
- Minnesota Center for Environmental Advocacy (MCEA)
- Center for Energy and the Environment
- St. Paul Neighborhood Energy Consortium
- etc.
- Some stakeholder groups work primarily at the legislature, others are involved in the CIP process at the Department and as program providers (or program contractors) for the utilities. Other stakeholders are directly involved in Commission proceedings.

10

Minnesota Statute - CIP

- **Minn. Stat. § 216B.241. Energy conservation improvement.**
- Minimum spending requirement is one-half of one percent of gross operating revenue per year. Gross operating revenue includes the cost of natural gas.
- Minn. Stat. § 216B.241, subd. 1a (1). Investment, expenditure, and contribution; public utility. Each public utility shall spend and invest for energy conservation improvements the following amounts:
(1) for a utility that furnishes gas service, 0.5 percent of its gross operating revenues from service provided in the state.

11

Minnesota Statute – CIP (continued)

- **Minn. Stat. § 216B.241. Energy conservation improvement.**
- “investments in projects designed specifically for low-income households and renters, with funding based on the most recent three-year average of low-income spending to total CIP spending”
- Minn. Stat. § 216B.241, subd. 2. Programs. (f) The commissioner shall ensure that a portion of the money spent on residential conservation improvement programs is devoted to programs that directly address the needs of renters and low-income persons, in proportion to the amount the utility has historically spent on such programs based on the most recent three-year average relative to the utility's total conservation spending under this section, unless an insufficient number of appropriate programs are available.

12

Minnesota Statutes - CIP (continued)

- **Minn. Stat. § 216B.241 - Energy conservation improvement.**
- “a cap on research and development spending equal to ten percent of a utility’s minimum spending requirement”
- Minn. Stat. § 216B.241, subd. 2. Programs. (c) Each public utility subject to subdivision 1a may spend and invest annually up to ten percent of the total amount required to be spent and invested on energy conservation improvements under this section by the utility on research and development projects that meet the definition of energy conservation improvement in subdivision 1 and that are funded directly by the public utility.

13

Minnesota Statutes – CIP (continued)

- **Minn. Stat. § 216B.2411 - Distributed energy resources.**
- “an allowance for the use of up to five percent of the utility’s minimum spending requirement to construct cost-effective renewable energy and distributed generation projects”
- Minn. Stat. § 216B.2411, subdivision 1. Generation projects. (a) each public utility may use five percent of the total amount to be spent on energy conservation improvements under section [216B.241](#), on: (1) projects in Minnesota to construct an electric generating facility that utilizes eligible renewable energy sources as defined in subdivision 2, such as methane or other combustible gases derived from the processing of plant or animal wastes, biomass fuels such as short-rotation woody or fibrous agricultural crops, or other renewable fuel, as its primary fuel source; or (2) projects in Minnesota to install a distributed generation facility of ten megawatts or less of interconnected capacity that is fueled by natural gas, renewable fuels, or another similarly clean fuel.

14

Minnesota Statute - CIP (continued)

- **Minn. Stat. § 216B.241 - Energy conservation improvement.**
- “a cap on evaluation spending of three percent of a utility’s minimum spending requirement”
- Minn. Stat. § 216B.241, subd. 2. Programs. (i) Up to three percent of a utility’s conservation spending obligation under this section may be used for program pre-evaluation, testing, and monitoring and program audit and evaluation.

15

Minnesota Statute - CIP Cost Recovery

- **Minn. Stat. § 216B.16 Rate change; procedure; hearing.**
- **Subd. 6b. Energy conservation improvement.**
 - (a) all investments and expenses of a public utility incurred in connection with energy conservation improvements shall be recognized and included by the commission in the determination of just and reasonable rates as if the investments and expenses were directly made or incurred by the utility in furnishing utility service.
 - (c) The commission may permit a public utility to file rate schedules providing for annual recovery of the costs of energy conservation improvements.

16

Minn. Rules - CIP

- **Minn. Rules, Chapter 7690**
- DEPARTMENT OF COMMERCE
- ENERGY CONSERVATION IMPROVEMENT

- **7690.0200 PURPOSE.**
- The purpose of this chapter is to specify procedures to be followed by public utilities in submitting, and by the department in analyzing and selecting, proposals for conservation improvement programs and to provide for the participation of other interested persons in developing conservation improvement programs.

17

Evaluation of Conservation Improvement Programs

- **The Department of Commerce's Advocacy Staff's Overall Analytical Approach for Evaluating Conservation Improvement Programs**
 - Societal perspective – environmental costs are included in the analysis of whether the least cost way to obtain new energy is through conservation or the purchase of supplies.
 - LDC CIP programs should be designed so that the least cost conservation and load management resources are acquired

18

Evaluation of Conservation Improvement Programs

(Continued)

- CIP programs must be cost-effective and compete with supply-side resources
- Research is an important part of CIP programs for developing new ideas and new technologies.
- All LDC customers, in all customer classes should have an opportunity to participate.
- Programs should reach a variety of end-uses.

19

Evaluation of Conservation Improvement Programs

(Continued)

- **Some of the questions about the natural gas CIP process are:**
 - How are energy savings goals set for a proposed CIP project?
 - How do changes in wholesale natural gas prices influence the evaluation of CIP projects?
 - How does the Department of Commerce decide which natural gas price to use in its evaluation of a natural gas CIP program or project?

20

Legislative Auditor's Evaluation of Minnesota's Energy Conservation Improvement Program

- On January 31, 2005, the Minnesota Office of the Legislative Auditor, Program Evaluation Division issued its report entitled: *Energy Conservation Improvement Program*
- This report assessed the cost effectiveness of the Conservation Improvement Program and recommended improvements in program operation
- **Key Findings:**
 - “The benefits of CIP are greater than its costs, and the program has the potential to provide cost-effective energy conservation in the future.”

21

Legislative Auditor's Evaluation of Minnesota's Energy Conservation Improvement Program

- **Key Findings** (continued):
 - “On balance, the methods and assumptions used by investor-owned utilities to calculate the benefits and costs of their 2003 conservation activities tended to understate CIP's cost effectiveness.”
 - “While cost-effective energy conservation is a primary goal of CIP, some Minnesota laws, rules, and procedures reduce the cost-effectiveness of the program to achieve a desired distribution of program benefits.”

22

Legislative Auditor's Evaluation of Minnesota's Energy Conservation Improvement Program

- **Key Findings** (continued):
 - “Utilities, low-income advocates, environmental groups, and the Department of Commerce have concerns about how conservation projects for low-income households are being carried out and evaluated.”
 - The Department of Commerce conducts relatively thorough reviews of investor-owned utilities' conservation plans and activities, but the review process has some deficiencies.”
 - “A Department of Commerce policy that limits communication within the department about CIP plans makes the department's review process inefficient and creates confusion.”

Full report available at: www.auditor.leg.state.mn.us/ped/2005/pe0504.htm

23

PUC Conservation-related Responsibilities

- **Minn. Stat. § 216B.2422 - Resource Planning**
 - electric utilities only
 - plans required every two years
 - renewable energy objectives
- **Minn. Stat. § 216B.2423 – Wind Power Mandate**
 - 225 megawatts of installed capacity by December 31, 1998
 - an additional 200 megawatts of installed capacity so generated by December 31, 2002
 - an additional 400 megawatts of electric energy installed capacity generated by wind energy conversion systems by December 31, 2002, subject to resource planning requirements
- **Minn. Stat. § 216B.2424 – Biomass Power Mandate**
 - 50 megawatts of installed capacity by December 31, 1998 to be operational by December 31, 2001
 - an additional 75 megawatts of installed capacity by December 31, 1998 to be operational by December 31, 2002.

24

Minnesota Statute - Financial Incentive Plans

Minn. Stat. § 216B.16. Rate change; procedure; hearing.

- **Subd. 6c. Incentive plan for energy conservation improvement.**

(a) The commission may order public utilities to develop and submit for commission approval incentive plans that describe the method of recovery and accounting for utility conservation expenditures and savings. In developing the incentive plans the commission shall ensure the effective involvement of interested parties.

25

Minnesota Statute - Financial Incentive Plans (continued)

Minn. Stat. § 216B.16. Rate change; procedure; hearing.

- **Subd. 6c. Incentive plan for energy conservation improvement.**

(b) In approving incentive plans, the commission shall consider:

- (1) whether the plan is likely to increase utility investment in cost-effective energy conservation;
- (2) whether the plan is compatible with the interest of utility ratepayers and other interested parties;
- (3) whether the plan links the incentive to the utility's performance in achieving cost-effective conservation; and
- (4) whether the plan is in conflict with other provisions of this chapter.

26

Minnesota Statute - Financial Incentive Plans (continued)

Minn. Stat. § 216B.16. Rate change; procedure; hearing.

- **Subd. 6c. Incentive plan for energy conservation improvement.**

(c) The commission may set rates to encourage the vigorous and effective implementation of utility conservation programs. The commission may:

- (1) increase or decrease any otherwise allowed rate of return on net investment based upon the utility's skill, efforts, and success in conserving energy;
- (2) share between ratepayers and utilities the net savings resulting from energy conservation programs to the extent justified by the utility's skill, efforts, and success in conserving energy; and
- (3) compensate the utility for earnings lost as a result of its conservation programs.

27

Design & Evaluation of Financial Incentive Plans

Shared Savings Incentive

Purpose

The Minnesota Shared Savings Incentive is designed with the understanding that by law, utilities already have to invest in conservation improvements at a certain level. The intent of the incentive is not to give utilities a financial incentive for simply complying with the law but to encourage increased energy savings and increased cost-effectiveness.

28

Design & Evaluation of Financial Incentive Plans

Shared Savings Incentive (continued)

Design

For this reason, the incentive does not take effect until the utility approaches the energy-savings goal associated with the statutory spending requirements (1.0% of gross operating revenues for electric IOUs, 2.0% for Xcel Energy, 0.5% for gas utilities). The incentive takes effect once a utility achieves 91% of its energy-savings goal.

29

Design & Evaluation of Financial Incentive Plans

Shared Savings Incentive (continued)

Design (continued)

Under the Minnesota Shared Savings Incentive, utilities are rewarded with a specific percentage of the net benefits (utility program costs netted against avoided supply-side costs) produced through investments in conservation. The percentage of net benefits awarded increases as the percentage of the energy-savings goal achieved increases. Since in general, net benefits also increase as the amount of energy savings increases, the shared savings incentive increases quickly. The incentive is designed that way because each additional amount of energy saved may cost more than the previous amount.

30

Design & Evaluation of Financial Incentive Plans

Shared Savings Incentive (continued)

Design (continued)

The incentive is calibrated such that at 150% of the energy-savings goal, the utility will be awarded about 30% of the utility's conservation expenditure budget. The incentive is capped at about this level.

Under the incentive design, utilities are also rewarded for delivering their programs more cost-effectively. This occurs because more net benefits are created when actual costs are lower than projected.

31

Design & Evaluation of Financial Incentive Plans

Shared Savings Incentive (continued)

Evaluation

The Minnesota Shared Savings Incentive appears to be working, although this can not be empirically demonstrated due to the Minnesota statute requiring utilities to make a specific level of investment in conservation. However, utilities have indicated that one of the main reasons that utility management is willing to support utility investments in conservation is that recovery of the investments are guaranteed using a tracker account, carrying charge, and current/non-rate case adjustments to rates to recover the investments.

32