

The Conservation Improvement Program

State law requires energy utilities to fund CIP.

SUMMARY

Under the Conservation Improvement Program (CIP), Minnesota requires its energy utilities to set aside a portion of their operating revenues for projects that reduce the consumption of electricity and natural gas. With these funds, the utilities offer rebates to their customers who purchase energy-efficient products, such as furnaces or motors. In 2003, Minnesota's utilities devoted roughly \$91 million to CIP. These efforts benefited not only the energy customers who purchased energy-efficient products but also other members of society. Customers who participate in CIP benefit by consuming less energy and having lower energy bills. Other members of society benefit by having utilities avoid the cost of constructing new power plants, transmission lines, natural gas pipelines, and distribution systems. Without conservation, the utilities would need this additional infrastructure to meet their customers' energy needs and would pass the resulting costs onto all their customers. Finally, conservation benefits overall society by reducing the environmental damage caused by burning fossil fuels.

The topic of energy conservation is very technical and complex and covers issues such as energy markets, generation and distribution systems, and energy efficiencies. Consequently, a basic understanding of these issues is necessary to assess the performance of the Conservation Improvement Program (CIP). This chapter addresses the following questions:

- What is the Conservation Improvement Program, and how does it work?
- What types and levels of conservation are carried out?

PROGRAM DESCRIPTION

Unlike most other state programs, the Legislature does not appropriate state tax dollars to CIP. Rather, state law mandates energy utilities to devote a portion of their revenues for projects that will reduce the consumption of electricity and natural gas. State law requires (1) electric utilities that operate nuclear-power plants to devote at least 2.0 percent of their gross operating revenue to CIP, (2) other electric utilities to devote at least 1.5 percent of their revenue, and (3) natural gas utilities to devote at least 0.5 percent.¹ The utilities recover these

¹ Minn. Stat. (2004), §216B.241, subd. 1a(a) and 1b(b). As specified in Minn. Stat. (2004), §216B.241 subd. 1b(a)(3), the CIP requirements do not apply to municipal utilities with \$5 million or less of natural gas sales to retail customers.

CIP provides rebates to customers who purchase energy efficient products.

CIP costs by increasing the electricity and natural gas rates they charge their customers.

The utilities use the conservation funds primarily to provide their customers with financial incentives (including rebates, grants, and low-interest loans) to purchase or invest in energy-efficient products and processes. The utilities also use CIP funding for projects that have a more indirect impact on energy conservation. These indirect projects include home energy audits, consumer education, and research & development.

The types of conservation projects sponsored by the utilities vary by the type of customer. For residential customers, the utilities provide rebates for such things as energy-efficient furnaces, boilers, air conditioners, refrigerators, and light bulbs. The utilities also help pay for home energy audits, which identify steps that customers may take to improve the energy efficiency of their homes. The utilities also have projects that exclusively target low-income households. These projects include home weatherization and appliance replacement.

Utilities provide a wide range of conservation services for their commercial and industrial customers. For example, utilities provide rebates and other financial incentives for such things as energy-efficient furnaces, boilers, lighting systems, air conditioners, motors, air compressors, and refrigeration systems. In addition, just like the residential customers, the utilities offer business customers energy audits for their facilities. The business customers may also receive a range of more specialized services. For example, Xcel Energy offers design assistance to businesses that want to build a new energy-efficient facility. Xcel also offers a program called “building recommissioning” that improves the operating efficiency of existing systems (such as heating, cooling, ventilation, or pumping) by adjusting the systems’ controls (such as start/stop times and sequences of operations).² Finally, many utilities offer their commercial and industrial customers customized energy-efficiency services if the customers have unique operations or systems that cannot be served by the standard conservation products offered in the utilities’ conservation programs. For example, an industrial customer could replace its laser-cutting machine with a more efficient one.

Some of the rebates offered by utilities are uniform for all customers. For example, in 2003, CenterPoint Energy Minnegasco offered a \$100 rebate to anyone who bought a 92 percent efficient furnace.³ In contrast, utilities negotiate with their customers the rebates for the customized conservation projects. For these custom projects, the utilities generally have guidelines or limits for the size of the rebates. For example, a utility may have a policy that negotiated rebates cannot reduce the customer’s payback period to less than two years.⁴ A utility might also limit the rebate to no more than half of the incremental cost between

² Xcel Energy, *Biennial Plan for 2003-2004 Minnesota Natural Gas and Electric Conservation Improvement Program* (Minneapolis, June 2002), 74 and 76.

³ Reliant Energy Minnegasco (now CenterPoint Energy), *Biennial CIP/DSM Plan, 2003-2004* (Minneapolis, June, 2002), 22.

⁴ The payback period refers to the number of years it will take the customer to recover the additional funds that were spent to buy the high-efficiency product. The customer recovers the investment costs by paying lower energy bills and receiving the rebate.

the price of the high-efficiency product and the price of the regular-efficiency product that the customer would have likely bought without the rebate.

Purpose of CIP

CIP is part of Minnesota's strategy for meeting the state's energy needs in the least costly fashion. State law requires electric utilities to prepare "integrated resource plans." These are intended to show the mix of electric generation and conservation that will achieve the least costly path for the utility to meet its customers' future electric needs.⁵ CIP is the primary mechanism by which the electric utilities achieve the conservation targets laid out in the resource plans. While state law does not require natural gas utilities to develop resource plans, the state still requires these utilities to sponsor cost-effective conservation projects under CIP.

Conservation is a critical part of Minnesota's efforts to meet its residents' energy needs. On an annual basis, newly implemented CIP projects reduce electricity consumption by approximately 0.8 percent.⁶ While this figure may seem small, these activities have a significant impact on the annual rate that electricity consumption grows. After accounting for new conservation activities, the Department of Commerce expects electricity consumption to annually increase by about 1.5 percent.⁷ In contrast, without new conservation activities, consumption would annually increase by roughly 2.3 percent.⁸

CIP saves energy, reduces pollution, and reduces the need for more power plants and other energy infrastructure.

A conservation program is cost-effective if the benefits of the program outweigh its costs. There are three primary benefits. First, conservation helps the utilities and their customers avoid the operating costs of providing more electricity and natural gas. These costs include buying fuel and operating and maintaining power plants. In the conservation field, these benefits are referred to as "*avoided energy costs*." Second, conservation helps the utilities and their customers avoid or delay the capital costs of adding new system capacity. Without conservation, utilities would have a greater need to construct new power plants, transmission lines, natural gas pipelines, and distribution systems. These benefits are referred to as "*avoided capacity (or demand) costs*." Third, conservation reduces the environmental damage caused by burning fossil fuels and the resulting smog, acid

⁵ *Minn. Stat.* (2004), §216B.2442, subd.1 - 2. Only utilities with the capability of generating 100,000 kilowatts or more of electric power and serving the needs of 10,000 retail customers in Minnesota need to file a resource plan with the Public Utilities Commission.

⁶ This estimate is not intended to be precise but reflect the relative magnitude of CIP's impact. According to data that the investor-owned utilities reported to the Department of Commerce, customers of Minnesota's investor-owned utilities annually consume a little more than 40,000 gigawatt-hours of electricity. In comparison, new CIP activities increase annual conservation levels of the investor-owned utilities' customers by about 325 gigawatt-hours over what they were already conserving.

⁷ Department of Commerce, *Energy Policy and Conservation Report (Draft)* (St. Paul, July 2004), 13.

⁸ This is an Office of the Legislative Auditor estimate based on (1) the Department of Commerce's estimate that energy consumption will annually grow by 1.5 percent after accounting for new conservation activities and (2) an expectation that newly implemented CIP projects will continue to annually reduce electricity consumption by an additional 325 gigawatt-hours. See footnotes 6 and 7.

rain, and global warming. These benefits are referred to as “*avoided environmental damage costs*.”⁹

There are two primary costs of conservation. First, there is the higher price that is paid for energy-efficient products. The customers pay for part of these costs, and CIP’s rebates pay for the rest. Second, the utilities incur costs to administer and carry out CIP projects. The utilities pass these costs onto their customers by increasing the energy rates that they charge.

The state tries to ensure that utilities use CIP to achieve broad social benefits.

There are several arguments for why the state should intervene in the energy market and encourage Minnesotans to invest in conservation. First, without intervention, energy consumers would not invest enough in conservation to maximize the net benefit to society. From a societal perspective, investments should be made in conservation as long as the societal benefits outweigh the societal costs. However, energy consumers investing in high-efficiency products have a narrower perspective. Some of the benefits of conservation (such as avoiding the construction of new power plants and avoiding environmental damage) go to all ratepayers and society as a whole, not just the individual or business making the investment decision. Energy consumers who invest in conservation typically do not take into account the benefits that accrue to other individuals when making their investments and consequently under-invest from a societal perspective. For example, a family that is looking for a new refrigerator may figure out that the lower energy bills that would come with a high-efficiency unit do not quite pay for the higher price. However, if the family also considered the broader benefits of delaying the construction of a new power plant and avoiding environmental damage, the benefits of the high-efficiency refrigerator would likely outweigh its higher cost. To overcome this barrier, Minnesota has added CIP rebates to the customer’s investment decision, which makes the high-efficiency refrigerator cost effective for the customer and leads to greater net benefits for society.

Government intervention in conservation serves a second function by providing energy consumers with information about the benefits of conservation. Without this information, prospective investors may not know for sure how much energy a high-efficiency product will actually save. Consequently, energy consumers may be reluctant to invest in high-efficiency products. However, CIP helps overcome this uncertainty and reluctance. Specifically, CIP’s sponsorship of a product provides information (or a seal of approval) to the customer that the investment should be cost effective.

Finally, the state of Minnesota may wish to intervene because investor-owned utilities may not have an incentive to promote energy conservation. These utilities are in the business of selling energy to maximize their profits, but conservation lowers their sales and potentially their profits. Consequently, without the state mandate requiring utilities to invest in and carry out conservation programs, it is unlikely that investor-owned utilities would encourage their customers to carry out much conservation. To ensure that investor-owned utilities carry out CIP to

⁹ California Public Utilities Commission and California Energy Commission, *Standard Practice Manual: Economic Analysis of Demand Side-Management Programs* (December 1987); and California Public Utilities Commission and California Energy Commission, *California Standard Practice Manual: Economic Analysis of Demand-Side Programs and Projects* (October 2001).

maximize society's net benefit and not to minimize their lost profits, the state has given the Department of Commerce the responsibility for approving and overseeing the CIP activities of utilities.

In contrast to investor-owned utilities, there is theoretically less need for the department to closely oversee the conservation activities of municipal and cooperative utilities. These utilities are non-profits and not accountable to shareholders. Rather, municipal utilities are accountable to the municipalities' elected officials and residents, who are the utilities' customers. Likewise, cooperative utilities are accountable to their members, who are their customers. Municipal and cooperative utilities should provide their customers with the mix of energy and conservation that serves the best interest of the customers, rather than on the mix that maximizes profits. However, in the real world, municipal and cooperative utilities are often small operations and may not have the resources or expertise to determine the optimal mix of energy and conservation. Determining if municipal and cooperative utilities are actually providing their customers with the optimal mix was beyond the scope of this study.

Program Requirements and Procedures

In order to comply with state laws, rules, and policies, utilities must meet several CIP requirements, which are different for investor-owned utilities and for municipal and cooperative utilities. Table 1.1 summarizes these requirements. In general, the requirements for the investor-owned utilities are more extensive. Most notably, the Department of Commerce has a lengthy process for approving and overseeing the CIP activities of the investor-owned utilities, while the department's oversight of municipal and cooperative utilities is less substantial.

The Department of Commerce reviews CIP plans submitted by energy utilities.

With respect to the investor-owned utilities, the department's oversight starts with the utilities submitting their biennial CIP plans. The natural gas utilities submit their plans by June 1 of even numbered years, and the electric utilities submit their plans by June 1 of odd numbered years.¹⁰ After receiving the plans, the department goes through the review processes outlined in Table 1.2 to determine if the utilities' plans meet the requirements listed in Table 1.1. If a utility does not meet a program requirement, the Commissioner of Commerce will typically require the utility to modify its CIP plan to comply. As part of the review process, the Commissioner also sets CIP spending, participation, energy savings, and capacity savings goals for each utility. If utilities want to make substantial changes to their conservation programs after having their CIP plans approved by the Commissioner, they must submit plan modifications for approval.

As shown, in Table 1.1, the department also requires the investor-owned utilities to submit annual status reports that discuss the utilities' CIP activities and achievements from the previous year. The department reviews these reports to monitor program activity and verify that the utilities are achieving the conservation goals set by the department. If necessary, after reviewing the status reports, the department will require the utilities to make programmatic changes.

¹⁰ Xcel Energy is a combined electric and natural gas utility and submits its joint CIP plan (for both electric and natural gas conservation) in even numbered years. Interstate Power and Light is also a combined electric and natural gas utility but submits its joint CIP plan in odd numbered years.

Table 1.1: CIP Program Requirements and Expectations

Investor-owned utilities are required to:

- Submit plans to the Department of Commerce every two years that describe and outline the utilities' conservation programs,^a
- Submit status reports to the department every year that present the utilities' conservation activities and achievements from the previous year,^b
- Meet their minimum spending requirements (2.0 percent of gross operating revenues for electric utilities with nuclear power plants, 1.5 percent of revenues for other electric utilities, and 0.5 percent of revenues for natural gas utilities),^a
- Have cost-effective conservation projects,^a
- Meet the conservation goals set in their "integrated resource plans" (if an electric utility),^b
- Maintain their historical funding for projects that serve renters and low-income customers,^a
- Have projects that strongly encourage the use of energy-efficient lighting (if an electric utility),^a
- Serve a wide range of customer types (residential, commercial, and industrial),^b
- Offer rebates for a wide-range of conservation products and processes,^c
- Spend no more than 10 percent of the minimum spending requirement on research and development,^a
- Spend no more than 3 percent of the minimum spending requirement on evaluation,^a
- Spend no more than 5 percent of CIP funds on distributed generation and renewable resources,^a and
- Meet energy and capacity savings goals that are set by the Commissioner of Commerce.^b

Municipal and cooperative utilities are required to:

- Submit plans to the department every two years that describe and outline the utilities' conservation programs,^a
- Meet their minimum spending requirements (1.5 percent of revenues for electric utilities and 0.5 percent of revenues for natural gas utilities),^a
- Devote a portion of their CIP funding to projects that serve the needs of renters and low-income customers,^a
- Have projects that strongly encourage the use of energy-efficient lighting (if an electric utility),^a
- Spend no more than 10 percent of the minimum spending requirement on research and development,^a and
- Spend no more than 3 percent of the minimum spending requirement on evaluation.^a

^a*Minn. Stat.* (2004) §216B.241

^b*Minn. Rule* (2003) ch. 7690.0100 – 7690.1600

^cMinnesota Department of Commerce, unpublished document titled "Criteria the Minnesota Department of Commerce Uses for Evaluating CIP Projects For Investor-Owned Utilities (Utility)," (undated), received by the Office of the Legislative Auditor on April 6, 2004.

SOURCE: Office of the Legislative Auditor.

CIP requirements for investor-owned utilities are more extensive than the requirements for municipal and cooperative utilities.

Table 1.2: The Department of Commerce's Review Process for CIP Plans From Investor-Owned Utilities

CIP Review Activity	Deadline
Each investor-owned utility files a biennial CIP plan	June 1 of even numbered years for natural gas utilities and June 1 of odd numbered years for electric utilities
The Department of Commerce submits a notice that a utility's plan is complete and contains all the required information	10 calendar days after the CIP plan is filed with the department
Outside parties submit comments and alternative conservation projects	30 calendar days after the department issues the notice of completion
The utility responds to the comments and alternative projects	15 calendar days after the comments and alternatives are filed with the department
The department's analysts submit a proposed decision to the Commissioner of Commerce concerning the proposed CIP plan	30 calendar days after the reply comments are due
Parties submit to the department written comments about the analysts' proposed decision	15 calendar days after the proposed decision
The Commissioner of Commerce issues his or her final decision	30 calendar days after the written comments on the proposed decision are due

SOURCE: *Minn. Stat* (2004), §216B.241, subd. 2(a); and *Minn. Rules* (2003), ch. 7690.1440, subp. 2.

Investor-owned utilities receive a bonus payment for meeting CIP program goals.

Besides overseeing the CIP activities of the investor-owned utilities, the state has another mechanism to encourage these utilities to carry out conservation programs that maximize society's overall benefit. Investor-owned utilities that meet or exceed the energy savings goals established by the Department of Commerce receive a financial bonus.¹¹ The size of the bonus reflects the amount by which a utility exceeds its energy savings goal—the bigger the difference, the bigger the bonus.¹² The utilities receive the bonus by being allowed to increase the rates they charge their customers for electricity or natural gas. Because energy utilities are monopolies, the Public Utilities Commission regulates the electric and natural gas rates they can charge their customers. In 2003, these incentive payments totaled about \$11 million for all the investor-owned utilities, which represented a relatively small share of CIP's net benefit. The investor-owned utilities'

¹¹ Public Utilities Commission, *Order Approving Demand Side Management Financial Incentive Plans* (St. Paul, April 7, 2000).

¹² For the purpose of calculating the bonus payment, the state expects a utility to meet its "statutory-spending, energy-savings goal." This is not the approved goal in the Department of Commerce's final decision for the CIP plan, but the energy saving goal that the department would expect the utility to achieve if the utility just spent the statutory minimum on CIP. In some cases, the approved goal in the department's final decision reflects a spending level that is higher than the statutory minimum.

**The
Commissioner of
Commerce's CIP
recommendations
for municipal
and cooperative
utilities are
advisory and
non-binding.**

conservation efforts in 2003 generated an estimated \$238 million in net benefits for Minnesota.¹³

As mentioned earlier, the Department of Commerce's review process for the municipal and cooperative utilities is less formal than the process for the investor-owned utilities. Every two years, these utilities submit CIP plans to the department for review. The plans include (1) descriptions of their conservation programs, (2) evaluations of spending and investment levels, and (3) analyses of the energy savings and cost-effectiveness of the conservation programs.¹⁴ The department is required to review these plans and make recommendations where appropriate.¹⁵ Unlike the conservation activities of the investor-owned utilities, state statutes and rules do not establish a deadline for the department's review of these CIP plans, and the Commissioner's recommendations are advisory and non-binding. The department also has just started having the municipal and cooperative utilities file annual status reports.

ENERGY CONSERVATION IN MINNESOTA

In the rest of this report, we will use several technical terms to discuss energy and capacity savings. While it is not critical for the reader to fully understand these terms, it is important to have a general understanding. The capacity of a power plant or an entire electric system is expressed in "kilowatts" (kW), which is a measure of the amount of electricity that can potentially be generated at a given point in time. Capacity can also be expressed in "megawatts" (MW), which are 1,000 kilowatts, or "gigawatts" (GW), which are 1 million kilowatts. Thus, when a conservation project avoids or delays the construction of a new power plant, the savings are expressed as kW or MW savings. In contrast, the amount of energy actually generated or consumed is expressed in terms of "kilowatt-hours" (kWh), "megawatt-hours" (MWh), or "gigawatt-hours" (GWh). Correspondingly, when a conservation project reduces that amount of electricity actually generated, the savings are expressed as kWh, MWh, and GWh savings. With respect to natural gas, energy and capacity savings are typically expressed in "thousands of cubic feet" or "Mcf."

When we examined Minnesota's energy markets and conservation activities, we found that:

- **Two utility companies—Xcel Energy and CenterPoint Energy Minnegasco—dominate both the provision and conservation of energy in Minnesota.**

¹³ Department of Commerce, unpublished table of each utilities' net benefits and incentive payments for the 2003 CIP program, received by the Office of the Legislative Auditor on October 26, 2004. In this context, net benefits are defined as the net present value of the avoided energy and capacity costs less the utilities' CIP spending.

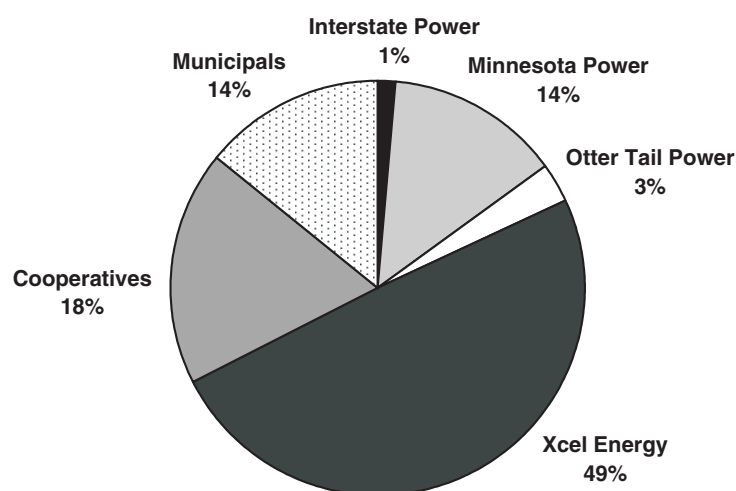
¹⁴ Small municipal electric utilities (those with less than 60 million kilowatt hours of annual electricity sales) are not required to submit this full CIP report but only required to submit a letter identifying the utility's minimum spending requirement and certifying that the utility has complied with the requirement.

¹⁵ *Minn. Stat.* (2004), §216B.241, subd. 1b(g).

For electricity, Minnesota has 4 main investor-owned utilities (Interstate Power & Light, Minnesota Power, Otter Tail Power, and Xcel Energy), 126 municipal utilities, and 46 distribution cooperative utilities.¹⁶ Figure 1.1 shows the proportion of Minnesota's electricity consumption served by these utilities. Xcel provides about half of the electricity consumed in Minnesota. Consequently, as shown in Table 1.3, Xcel also accounts for roughly half of the statewide CIP spending. Xcel's CIP also provides a large share of the energy and capacity savings generated by the investor-owned utilities.

Figure 1.1: Share of Minnesota Electricity Consumption Served by Each Utility, 2001

Xcel Energy dominates the electricity market in Minnesota.



SOURCE: Office of the Legislative Auditor analysis of data from the Department of Commerce, *The Minnesota Utility Data Book: A Reference Guide to Minnesota Electric and Natural Gas Utilities, 1965-2001* (St. Paul, undated),

For natural gas, Minnesota has 6 investor-owned utilities (CenterPoint Energy Minnegasco, Great Plains Natural Gas, Interstate Power and Light, Northern Minnesota Utilities, Peoples Natural Gas, and Xcel Energy) and 29 municipal utilities.¹⁷ Figure 1.2 shows that CenterPoint Energy Minnegasco provides about half of the natural gas consumed in Minnesota. Consequently, as shown in Table 1.4, CenterPoint Energy Minnegasco also accounts for about half of CIP's statewide spending and energy savings.

We also found that:

- **Commercial and industrial customers account for most of the energy consumption and conservation in Minnesota.**

¹⁶ Department of Commerce, *The Minnesota Utility Data Book: A Reference Guide to Minnesota Electric and Natural Gas Utilities, 1965-2001* (St. Paul, undated), 3. Minnesota is served by a fifth investor-owned electric utility (Northern Wisconsin Electric Company), but the utility serves less than 100 customers.

¹⁷ Department of Commerce, *The Minnesota Utility Data Book, 1965-2001*, 106.

Table 1.3: 2003 Electric Conservation Levels

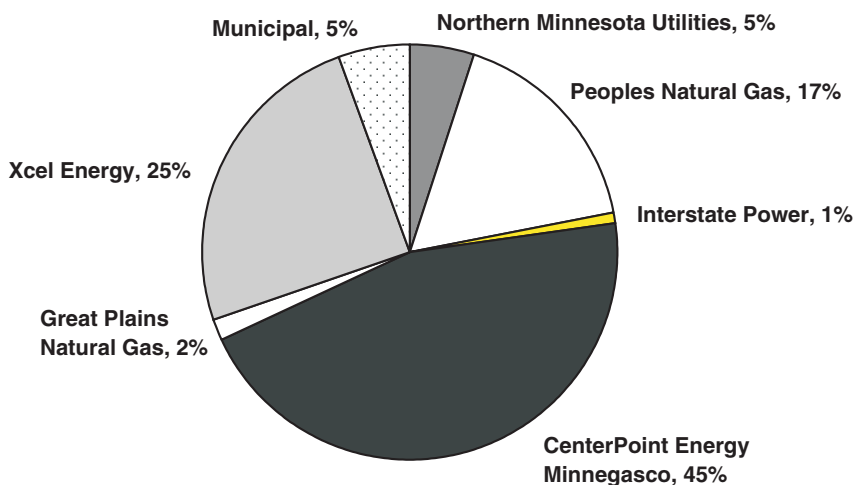
<u>Utility</u>	<u>Expenditures (Millions)</u>	<u>Energy Savings (Millions of kWh)</u>	<u>Capacity Savings (kW)</u>
Investor-Owned Utilities			
Interstate Power & Light	\$ 3	21	4,072
Minnesota Power ^a	5	48	11,152
Otter Tail Power	2	14	2,984
Xcel Energy	<u>42</u>	<u>245</u>	<u>110,607</u>
Subtotal	\$52	328	128,815
Cooperative Utilities	19	N/A	N/A
Municipal Utilities	<u>6^b</u>	N/A	N/A
Statewide Total	\$77	N/A	N/A

NOTE: N/A means "not available."

^aExcludes CIP projects for Minnesota Power's large industrial customers who have not opted out of CIP.

^bBased on municipal utilities that have reported results by January 11, 2005. The figure is an underestimate because not all utilities had reported results.

SOURCE: Department of Commerce database of CIP outcomes, *Electric dbase 5-04.xls*, received by the Office of the Legislative Auditor on July 1, 2004; and Department of Commerce, unpublished tables of actual CIP spending as reported by municipal and cooperative utilities, received by the Office of the Legislative Auditor on January 11, 2005.

Figure 1.2: Share of Minnesota Natural Gas Consumption Served by Each Utility, 2001

SOURCE: Office of the Legislative Auditor analysis of data from the Department of Commerce, *The Minnesota Utility Data Book: A Reference Guide to Minnesota Electric and Natural Gas Utilities, 1965-2001* (St. Paul, undated).

**CenterPoint
Energy
Minnegasco
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natural gas
market in
Minnesota.**

Table 1.4: 2003 Natural Gas Conservation Levels

<u>Utility</u>	<u>Expenditures (Millions)</u>	<u>Energy Savings (Mcf)</u>
Investor-Owned Utilities		
CenterPoint Energy Minnegasco	\$6.6	867,687
Great Plains Natural Gas	0.2	36,627
Interstate Power & Light	0.3	21,595
Northern Minnesota Utilities	0.4	24,788
Peoples Natural Gas	1.6	121,498
Xcel Energy	<u>3.9</u>	<u>708,864</u>
Subtotal	\$13.1	1,781,059
Municipal Utilities ^a	<u>1.1</u>	N/A
Statewide Total	\$14.2	N/A

NOTE: N/A means "not available."

^aExpected 2003 spending levels (not actuals).

SOURCE: Department of Commerce database of CIP outcomes, *Gas dbase 6-04.xls*, received by the Office of the Legislative Auditor on July 1, 2004; and Department of Commerce, unpublished tables of expected CIP spending as reported by municipal utilities, received by the Office of the Legislative Auditor in August 2004.

While most electric and natural gas customers are residential households, commercial and industrial businesses consume more energy in Minnesota.

While most electric and natural gas customers in Minnesota are residential households, commercial and industrial businesses consume most of the electricity and natural gas. Tables 1.5 and 1.6 provide a breakdown of each utility's clientele and sales in 2001. For all the utilities listed, residential customers accounted for a sizable majority of customers. In contrast, commercial and industrial customers consumed the majority of energy provided. Commercial and industrial customers dominate Minnesota Power's service area in particular. These customers accounted for 89 percent of the electricity consumed. In fact, seven very large customers (five taconite facilities and two paper mills) accounted for over 50

Table 1.5: Electric Utility Operations in Minnesota, 2001

	Customers			Electricity Provided		
	Percentage of Utility Total			Percentage of Utility Total		
Utility	Total	Residential	Commercial & Industrial	Total MWh	Residential	Commercial & Industrial
Interstate Power & Light	40,480	79%	21%	763,355	34%	66%
Minnesota Power	122,401	82	18	8,311,392	11	89
Otter Tail Power	58,449	80	20	1,896,431	26	74
Xcel Energy	1,139,485	89	11	29,871,615	27	73
Cooperative Utilities	647,200	69	31	11,069,000	40	60
Municipal Utilities	326,459	85	15	8,599,000	28	72

NOTE: The "commercial & industrial" category includes farms and all other non-residential customers.

SOURCE: Office of the Legislative Auditor Analysis of data from the Department of Commerce, *The Minnesota Utility Data Book: A Reference Guide to Minnesota Electric and Natural Gas Utilities, 1965-2001* (St. Paul, Undated).

Table 1.6: Natural Gas Utility Operations in Minnesota, 2001

Utility	Customers			Natural Gas Provided		
	Percentage of Utility Total			Percentage of Utility Total		
	Total	Residential	Commercial & Industrial	Total Mcf	Residential	Commercial & Industrial
CenterPoint Minnegasco	711,265	91%	9%	142,052,496	46%	54%
Great Plains Natural Gas	20,531	86	14	5,440,410	29	71
Interstate Power & Light	10,367	88	12	2,142,090	42	58
Northern Minnesota Utilities	36,218	85	15	15,564,729	20	80
Peoples Natural Gas	146,036	90	10	53,302,975	24	76
Xcel Energy	383,109	92	8	77,779,299	46	54
Municipal Utilities	72,682	92	8	16,553,872	43	57

NOTE: Figures include natural gas that some customers purchase from natural gas suppliers/wholesalers but is delivered/transported through the utilities' distribution systems. The "commercial & industrial" category includes all non-residential customers.

SOURCE: Office of the Legislative Auditor analysis of data from the Department of Commerce, *The Minnesota Utility Data Book: A Reference Guide to Minnesota Electric and Natural Gas Utilities, 1965-2001* (St. Paul, undated).

Commercial and industrial energy conservation projects produce more energy savings per dollar of CIP spending than residential projects.

percent of Minnesota Power's electricity sales in 2002.¹⁸ These seven facilities (along with three large facilities in Xcel's electric service territory) have taken advantage of a statutory provision that allows facilities that have a peak electrical demand of at least 20 megawatts to opt out of CIP and avoid paying the program's rate adjustment in their electric and natural gas bills.¹⁹

As Tables 1.7 and 1.8 show, the investor-owned utilities have split CIP funding between commercial/industrial and residential customers. On a statewide basis, commercial/industrial customers received more funding than the residential customers for electric conservation, while residential customers received a little more funding than the commercial/industrial customers for natural gas conservation.

However, for both electricity and natural gas, conservation projects for commercial and industrial customers accounted for 75 to 91 percent of the energy and capacity savings statewide. The commercial and industrial projects produced more energy savings per dollar of CIP spending than the residential projects.²⁰

The percentage of Minnesota Power's CIP funding (shown in Table 1.7) going to commercial and industrial customers is relatively small for two reasons. First, as discussed earlier, seven of its largest customers have opted out of CIP. These facilities do not pay into CIP and are ineligible to receive any program funding.

¹⁸ Department of Commerce, *Analysis and Recommendations of the Advocacy Staff of The Energy Division of the Minnesota Department of Commerce, Regarding Minnesota Power, Inc.'s Conservation Improvement Program 2004-2005* (St. Paul, September 2003), 6. The electricity sales are based on Minnesota Power's gross operating revenue coming from the seven facilities that have opted out of CIP.

¹⁹ *Minn. Stat.* (2004), §216B.241, subd. 1a(b).

²⁰ Table 1.8 does not include capacity savings for natural gas because the Department of Commerce requires all the investor-owned natural gas utilities to assume that capacity savings are 1 percent of the energy savings. Consequently, the proportion of capacity savings coming from each customer segment is exactly the same as the proportion of energy savings.

Table 1.7: Proportion of Electric CIP Spending and Savings by Customer Class for Each Investor-Owned Utility, 2003

Utility and Customer Class	Spending	Energy Savings	Capacity Savings
Interstate Power & Light			
Commercial & Industrial	77%	98%	89%
Residential	23	2	11
Subtotal	100%	100%	100%
Minnesota Power ^a			
Commercial & Industrial	39%	55%	56%
Residential	61	45	44
Subtotal	100%	100%	100%
Otter Tail Power			
Commercial & Industrial	66%	92%	88%
Residential	34	8	12
Subtotal	100%	100%	100%
Xcel Energy			
Commercial & Industrial	68%	97%	76%
Residential	32	3	24
Subtotal	100%	100%	100%
Statewide Total			
Commercial & Industrial	66%	91%	75%
Residential	34	9	25
Subtotal	100%	100%	100%

NOTES: The spending percentages exclude spending for general CIP activities (such as research & development and overhead) that are not assigned to a customer class. The "residential" customer class includes CIP projects targeted exclusively for low-income customers.

^aExcludes CIP projects for Minnesota Power's large industrial customers who have not opted out of CIP.

SOURCE: Office of the Legislative Auditor analysis of Department of Commerce's database of CIP outcomes, *Electric dbase 5-04.xls*, received by the Office of the Legislative Auditor on July 1, 2004.

Second, we have excluded Minnesota Power's remaining large industrial customers from Table 1.7 because there is a disconnect between the level of funding that these customers receive and the resulting energy savings. Minnesota Power allocates CIP funding to these customers and allows them to reserve it until they have a conservation project ready to be implemented, which may be several years after the customer was allocated the funding.²¹ (Minnesota Power is the only utility that allows its customers to do this, and it only grants this flexibility to its largest industrial customers.) Therefore, the conservation projects for these customers are often concentrated in a few years, and the resulting energy savings do not coincide with the year in which the funding was provided.

Finally, we found that:

- **The level of CIP funding has fluctuated substantially over the last decade.**

²¹ Minnesota Power, *2004-2005 Conservation Improvement Program*, (Duluth, May 2003), 35.

Commercial and industrial projects also account for most of CIP's energy savings.

Table 1.8: Proportion of Natural Gas CIP Spending and Savings by Customer Class for Each Investor-Owned Utility, 2003

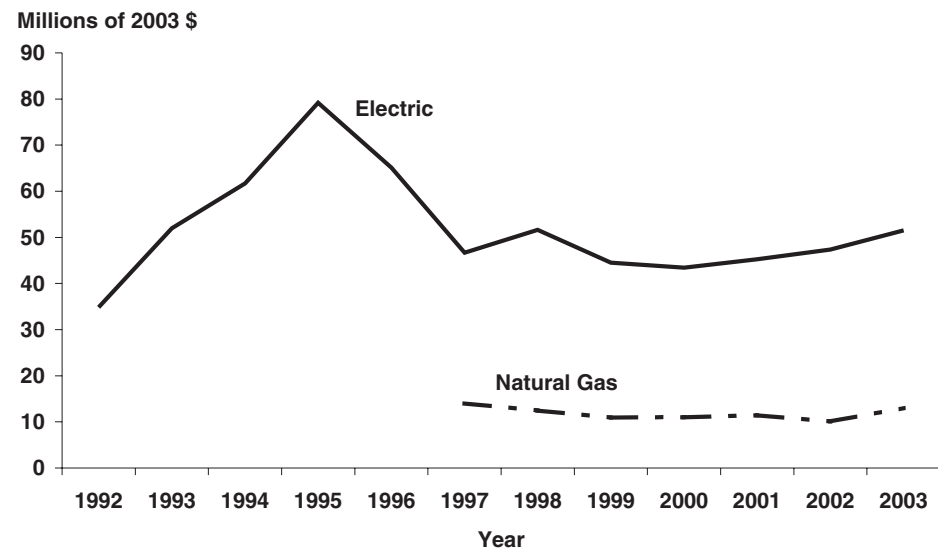
<u>Utility and Customer Class</u>	<u>Spending</u>	<u>Energy Savings</u>
CenterPoint Energy Minnegasco		
Commercial & Industrial	57%	82%
Residential	43	18
Subtotal	100%	100%
Great Plains Natural Gas		
Commercial & Industrial	10%	83%
Residential	90	17
Subtotal	100%	100%
Interstate Power & Light		
Commercial & Industrial	20%	36%
Residential	80	64
Subtotal	100%	100%
Northern Minnesota Utilities		
Commercial & Industrial	35%	64%
Residential	65	36
Subtotal	100%	100%
Peoples Natural Gas		
Commercial & Industrial	24%	53%
Residential	76	47
Subtotal	100%	100%
Xcel Energy		
Commercial & Industrial	47%	80%
Residential	53	20
Subtotal	100%	100%
Statewide Total		
Commercial & Industrial	47%	79%
Residential	53	21
Subtotal	100%	100%

NOTES: The spending percentages exclude spending for general CIP activities (such as research & development and overhead) that are not assigned to a customer class. The "residential" customer class includes CIP projects targeted exclusively for low-income customers.

SOURCE: Office of the Legislative Auditor analysis of Department of Commerce's database of CIP outcomes, *Gas dbase 6-04.xls*, received by the Office of the Legislative Auditor on July 1, 2004.

In recent years, CIP spending on natural gas projects has been stable.

As Figure 1.3 shows, electric conservation spending for investor-owned utilities rose dramatically in the early 1990s but then dropped off in the mid-1990s. In recent years, spending has stayed in the \$45 million range but rose to over \$50 million in 2003 for the first time since 1998. According to the Department of Commerce's chief electric analysts, a temporary boom in Xcel's lighting retrofit program largely caused the dramatic rise and fall in CIP spending in the 1990s, which the analysts referred to as the "lighting bubble." We only obtained spending data for natural gas conservation for 1997 through 2003. During this period, spending by the investor-owned utilities stayed between \$10 million and \$14 million.

Figure 1.3: Conservation Spending, Investor-Owned Utilities, 1992-2003

SOURCE: Office of the Legislative Auditor analysis of data from Department of Commerce databases of CIP outcomes, *Electric dbase 5-04.xls* and *Gas Dbase 6-04.xls*, received by the Office of the Legislative Auditor on July 1, 2004.

