



**Report of the Energy Efficiency and
Conservation Working Group to the
CASA Electricity Project Team**

**Prepared by the
Energy Efficiency and Conservation Working Group
for the
Clean Air Strategic Alliance
Electricity Project Team**

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About this Report

In January 2002, Hon. Lorne Taylor, Alberta's Minister of Environment, asked the Clean Air Strategic Alliance to develop an approach for managing air emissions from the province's electricity generation sector. CASA established a multi-stakeholder Electricity Project Team (EPT) to undertake this task. The EPT subsequently formed several smaller groups to focus on specific issues (or items) and to propose recommendations for the team to consider. One of these smaller groups was the Energy Efficiency and Conservation Working Group. This document is the report of the Energy Efficiency and Conservation Working Group to the Electricity Project Team. The EPT final report and recommendations is available on the CASA website or on request to the CASA Secretariat.

About the Clean Air Strategic Alliance

The Clean Air Strategic Alliance (CASA) is a non-profit association composed of stakeholders from three sectors – government, industry and non-government organizations such as health and environmental groups. All CASA groups and teams, including the board of directors, make decisions and recommendations by consensus. These recommendations are likely to be more innovative and longer lasting than those reached through traditional negotiation processes. CASA's vision is that the air will be odourless, tasteless, look clear and have no measurable short- or long-term adverse effects on people, animals or the environment.

The Electricity Project website (<http://www.casahome.org/electricity/finalreports.asp>) contains all the documents produced by the team, including materials for the public meetings, as well as presentations made at workshops and seminars sponsored by the team.

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1 Introduction

One of the most effective ways of reducing air emissions from the electricity sector is to reduce demand for generation by increasing electricity use efficiency and expanding conservation efforts. Benefits of efficiency and conservation initiatives are many; for example:

- Electrical energy efficiency and conservation measures are among the least expensive means of achieving reductions in emissions from electricity generation.
- Energy efficiency and conservation can yield significant financial savings for industrial and residential end users.
- Making energy efficiency improvements is employment intensive.
- Many efficiency and conservation programs are modular and can be implemented in stages, as resources are available.
- Improvements in efficiency can increase the value of assets, particularly buildings.

During meetings held as part of the Electricity Project Team's public outreach and consultation, participants expressed strong support for the development and promotion of energy efficiency and conservation programs in Alberta.

Because of the potential for energy efficiency and conservation to contribute to improved air quality in Alberta, the Electricity Project Team established the Energy Efficiency and Energy Conservation working group. Its mandate was to examine the issues of efficiency and conservation as they affect air quality and emissions from the electricity sector, and to make recommendations on how these issues might be addressed.

Funding, regulatory backstops, market transformation programs and behavioural change all contribute to improved energy efficiency. At issue are not just technology and economics but desire. In most homes and offices a few simple changes can bring about significant reductions in energy use, yet the effort needed to turn off lights or put on a sweater rather than turn up the thermostat often seems insurmountable. Experience in many jurisdictions has shown that successful energy efficiency and conservation programs use a variety of levers to bring about changes in energy consumption.

Some efficiency and conservation work is already underway at both the federal and provincial levels; for example, Climate Change Central is developing Energy Solutions Alberta. The Energy Efficiency and Energy Conservation working group supports using and expanding existing channels rather than creating new bodies and programs. The working group has completed its mandate and has:

- agreed on a process for establishing an energy efficiency target;
- identified potential policy mechanisms to facilitate energy efficiency in the province;
- outlined the advantages and disadvantages of various funding methods; and
- identified some of the challenges that will be faced in implementing energy efficiency and conservation initiatives.

This report is not as prescriptive or detailed as some working group members might have preferred. It presents a number of options that may be acted on once decisions are made at other levels of government and industry. The working group hopes that the options and issues it describes will inform these decisions and result in significant improvements in efficiency and conservation. A key recommendation from the working group is that a multi-stakeholder implementation team be formed to explore these issues in more detail and to address the other recommendations in this report (see recommendation 1).

2 Challenges in Implementing Energy Efficiency and Conservation Programs

Alberta's electricity market is being restructured, a process that has presented challenges in implementing efficiency and conservation programs. The working group specifically identified the following challenges:

- Some of the sectors that could make significant gains in efficiency are “disaggregated”; that is, there is no one organization that speaks for the sector. For example, many commercial buildings have absentee owners, such as out of province pension funds, and negotiating with these one by one would be complicated and expensive.
- Small to medium sized companies need resources and support in planning and implementing energy efficiency in their businesses. Companies that understand the financial implications are often more receptive to implementing energy efficiency programs.
- The transmission companies might be in a good position to address some of these issues. However, they have not been part of the discussions to date, and they should be engaged.
- Some long-term power contracts are for a specified amount of power and include penalties if the customer doesn't use the amount of power in the contract (referred to as “take-or-pay” contracts). Retailers must purchase the power required to fulfill these contracts whether the power is used or not. This may be a strong economic disincentive for pursuing efficiency and conservation.
- The residential and small business sectors can be the most difficult places to get efficiency without price drivers or incentives.
- Experience has shown that significant increases in efficiency will require a combination of funding, education, capacity building among energy and building professionals, targets, regulatory support, and market transformation initiatives.
- Financial barriers can be significant, and energy efficiency and conservation work often requires more funding than is currently available.
- In landlord and tenant situations, the party who pays the electricity bills is often not the same one who makes the decisions about expenditures that would lead to less electricity use, such as the installation of energy efficient appliances.

3 Setting and Achieving Targets

In its discussion of an energy efficiency target, the working group considered the experience in other jurisdictions including the following:

- Participants in the federal government's Canadian Industry Program for Energy Conservation (CIPEC) achieved an average increase in energy efficiency of 2.4% per year between 1990 and 2000.¹
- In its *Climate Change Plan for Canada*, the federal government has asked Canadians to reduce their greenhouse gas emissions by 20%, or about one tonne each to help Canada meet its Kyoto commitment.²

¹ See <http://oee.nrcan.gc.ca/cipec/ieep/cipec/achievements/achievements.cfm> for more information.

² This is the “One Tonne Challenge” program; see http://www.climatechange.gc.ca/english/publications/announcement/bg_partnerships.html for more details.

- As part of electricity restructuring, the state of Texas required utilities to use efficiency to reduce load growth by 10% beginning in 2001.³

The working group was aware that most commercial buildings can reduce their energy use substantially through lighting retrofits and operational changes alone, and that items such as high-efficiency furnaces, new refrigerators and compact fluorescent light bulbs can have a dramatic impact on residential energy use. Small to medium sized companies often have more difficulty due to financing up-front costs, long capital stock turnover rates and comparatively longer payback periods due to Alberta's variable and relatively low energy prices. The Canadian Industry Program for Energy Conservation, in its 2001/2002 annual report, contains many examples of industries that have exceeded 1% annual improvement in energy efficiency.⁴

The working group reviewed various targets and tentatively agreed to some. However, setting a target and determining ways to measure progress towards it required more time and resources than the group had available. The working group realized that a number of areas require further work and is proposing the establishment of an implementation team to undertake a range of tasks. These would include establishing a measure for efficiency, outlining the places in which the greatest gains could be made, and setting a "stretch" target for energy efficiency, which would require significant effort but be within reach for the province. This is less than some members of the working group had hoped for, but should result in a defensible, implementable target.

Recommendation 1: Energy Efficiency and Conservation Implementation Team

A CASA multi-stakeholder implementation team should be struck and provided with sufficient funds to undertake the following tasks, and report to the CASA board in November 2004:

- a) Working with Climate Change Central's Energy Solutions Alberta, relevant Alberta government agencies and existing data centres in developing measurement tools and monitoring overall electrical energy efficiency for the province.
- b) Developing a process to determine the overall efficiency of the electrical system, "energy source to end user."
- c) Once tasks a) and b) are completed, the implementation team will undertake a detailed technical assessment as to the feasibility of developing a province-wide electric energy efficiency target and, if feasible, define what the target amount should be (including appropriate metrics) and costs to meet the target, its relationship to sector agreements and other ongoing programs, and mechanisms to meet this target.
- d) Reviewing electrical energy efficiency and conservation tools and programs and making recommendations for their implementation, including implementation of a pilot project.
- e) Working with retailers and the "wires" companies to ensure that "time of use" metering and rates are made available where they are not available currently.
- f) Seeking ways in which the purchase of ENERGY STAR™ appliances can be encouraged and incented.
- g) Working with electricity retailers to find ways of assisting retailers in managing the risks and recovering lost revenues associated with energy efficiency and energy conservation programs. This could involve but would not be limited to performance-based incentive mechanisms that reward the achievement of targeted energy savings and program costs.
- h) Examining the issue of thermal loss at generation facilities, and exploring means of encouraging and incenting the co-location of other facilities that are able to use waste heat. This could include the use of emission credits and offsets for the use of this energy.

³ Source: <http://www.aceee.org/energy/ee3.html>

⁴ Source: http://oee.nrcan.gc.ca/cipec/ieep/newscentre/AnnualReport01_02/cipec_e_01-02AnnualReport.pdf

- i) Working with Alberta Energy, Alberta Environment, New Era, and the Alberta Electric System Operator with the goal of ensuring that the metering and transmission interconnection needs of distributed generation are met.
- j) Working with Alberta Environment with the goal of ensuring that verifiable improvements in energy efficiency and energy conservation are classified as useable offsets.
- k) Working with the federal government with the goal of examining the tax issues relating to district heating and other energy efficiency and conservation issues, in order that energy efficiency and conservation not be disadvantaged relative to other energy policies and programs.

Although the EPT's mandate was confined to the electricity sector, everyone uses electricity and can help improve the efficiency with which power is used. The working group would like to see electrical energy efficiency and energy conservation be part of the sectoral negotiations between the Alberta government and industry as an effective tool in reducing Alberta's overall emissions.

Recommendation 2: Encouraging Electrical Energy Efficiency and Conservation by Industry

The Alberta government, in its upcoming greenhouse gas sectoral agreements with all sectors, should consider including and encouraging electrical energy efficiency and energy conservation as options for reducing emissions from electricity generation in Alberta.

Alberta's provincial and municipal governments are also major users of electricity. There are many opportunities for these levels of government to be innovative and creative in the way they design and use building space. Climate Change Central is a logical organization to work with governments in finding new and better ways to use and conserve electricity.

Recommendation 3: Encouraging Electrical Energy Efficiency and Conservation by Governments

Climate Change Central should:

- work with Alberta and municipal governments to encourage energy efficiency in residential housing design, both in building codes and in municipal planning.
- examine the issue of "take or pay" contracts. This work would include:
 - gathering information on the extent of the issue;
 - providing information for consumers to assist them in making informed decisions about their electricity purchases; and
 - developing and piloting alternatives that would meet the retailer's needs while allowing for consumers to benefit fully from energy efficiency and conservation practices.
- provide a resource in which information about the various government programs all levels and funding options be made available.

4 Measurement

A meaningful efficiency target will have to be measurable. Thus finding a defensible measure of Alberta's electrical energy efficiency becomes one of the underlying tasks in setting a target. There are various sources of information on Alberta's energy efficiency in general and electricity efficiency in particular, but there is no one place where that information can be easily found and where changes can be tracked. Some of the existing programs are listed below:

- Climate Change Central is considering the use of measurements such as “energy use in for GDP out”, “MWh per dollar of provincial GDP”, and “kWh per square metre of industrial, office, and housing space” for tracking energy efficiency.
- The Alberta government's planned Greenhouse Gas Reporting Program will provide a means of tracking efficiency improvements for large emitters.
- The federal government has been measuring energy efficiency for at least a decade through Natural Resources Canada and Statistics Canada, and has set up several energy data centres, including the University of Alberta's Canadian Building Energy End-use Data and Analysis Centre, online at <http://www.ualberta.ca/~cbeedac/home/index.html>.
- Although electricity retailers have some concerns over the confidentiality of customer data and competitive information, they have data on average usage, uptake of green power, and other measures.
- Energy Service Companies (ESCOs) have information on the measurement of energy efficiency and may be useful sources of information.

5 Tools and Programs

Through its discussions, the working group concluded that a) an effective approach must involve different tools for different sectors, and that b) the interest of government and industry in mandatory measures is not high. The working group examined various tools and programs, noted below with comments and examples, that might be effective in Alberta's deregulated electricity market.

- ◆ **Energy performance labelling**
 - Examples include the EnergyStar™ and Energuide™ programs
 - Clarity is required as to which programs are evaluative and which simply provide information on energy usage.
 - There may not be a need for a new “brand”; supporting existing programs may be more effective.
- ◆ **Develop the industry related to Energy Service Companies**
 - ESCOs sell units of energy savings, based on audits and recommended energy management practices, but only large enterprises are currently involved.
 - It may be possible to expand the ESCO industry to cover smaller enterprises through subsidies for energy audits.
 - EPCOR and ENMAX have ESCO-type programs that cover medium-sized organizations.
 - Through new training and funding programs, a sub-ESCO industry could possibly be developed to address all enterprises.
 - The Canadian Industry Program for Energy Conservation covers some of the costs related to ESCO work.

- ◆ **Negotiated agreements for energy efficiency**
 - Sectoral covenants could include efficiency targets and programs along with regulatory backstops. Low and fluctuating energy costs reduce the motivation for voluntary programs.

- ◆ **Education and outreach programs**
 - Experience over the last 20 years or so has shown the success level of voluntary programs to be poor, due in part to price elasticity; that is, consumers often do not change their behaviour until significant costs are incurred. The relative value of time and money can thus make it hard to convince consumers that energy efficiency is a good idea.
 - Utilities already provide information on consumers' electricity bills. This information could be expanded but must be done in such a way that it doesn't complicate the bill or confuse the consumer.

- ◆ **Financing**
 - Low interest financing for "green mortgages,"⁵ loans for energy efficient furnace upgrades, and other capital improvements that reduce energy use.
 - A cost-shared program between government, industry and end users of energy would reduce the burden on those wanting to make efficiency improvements.

- ◆ **Energy efficiency and load management as an alternative to network expansion**
 - Encourage the Alberta Electric System Operator to evaluate alternatives such as demand side mechanisms and efficiency programs in addition to building new capacity.
 - Location of facilities and reducing line losses can have great impact on overall efficiency.
 - Improving transmission capacity can increase efficiency by reducing line losses.
 - Programs such as the Jasper Energy Efficiency Program are an alternative to installing more capacity or local generation (see box).

- ◆ **Creating entrepreneurial energy organizations**
 - Create self-funding organizations with clear responsibility for achieving energy efficiency goals; for example, the New Era group and Energy Solutions Alberta.

Jasper Energy Efficiency Project (JEEP)

Between 1985 and 1991, the town of Jasper's demand for power almost doubled. Alberta Power, which served the community at that time, considered three options: to expand the generating capacity of the station supplying power to Jasper; to connect Jasper to the provincial electric grid; or to reduce the demand for electricity. They chose the latter, and the Jasper Energy Efficiency Project (J.E.E.P) was born. Through a comprehensive public education campaign, a door-to-door marketing campaign, financial incentives and rebates on energy efficient products available locally, Alberta Power effected a 20% reduction in the town's power demand. A follow-up survey of Jasper residents found more than 80% of J.E.E.P. participants increased their knowledge of energy efficiency, and close to half undertook energy efficiency measures beyond those offered through the program.

Source: Emerald Award website:

<http://www.emeraldawards.com/1994.html>

⁵ Green mortgages are those with low-interest financing for the purchase of energy efficient homes and for energy efficiency upgrades.

- ◆ **Aggregating purchases to achieve energy efficiency and market transformation**
 - As an example, B.C.'s electric motor requirements (which is a subsidy and market transformation program) have spurred efficiency improvements across the country.
 - Energy codes and regulations can drive the creation and transformation of industries.

- ◆ **Competitive sourcing of energy services**
 - Industry, government or consumer groups could require retailers to meet defined objectives as a condition for purchasing power from them; for example, the Alberta government put out a request for proposals before it made its green power purchasing decision.

- ◆ **Demand-side bidding**
 - Energy service companies negotiate to provide and install energy efficiency equipment and services at either their entire cost or on a shared cost basis with the customer. Their capital investment is paid back and profit obtained over a predetermined time frame from the savings in energy costs.

- ◆ **Reducing tax barriers**
 - Federal government taxation policy does not permit district heating investments to be written off at the same rate as co-generation facilities. These systems are more efficient but more costly and there should be a level playing field for the various technologies.

- ◆ **Community energy planning processes**
 - Develop programs and make financial support available to all sizes of municipal governments for the development and implementation of community-wide energy efficiency plans and actions. Some Alberta communities have had good success with such approaches, including Okotoks and Edmonton. On September 26, 2003, Alberta Municipal Affairs announced the ME First (Municipal Energy) energy efficiency assistance program, making \$100-million in interest-free loans available to municipalities.⁶

- ◆ **Mandatory implementation of energy efficiency programs**
 - A legally enforced requirement for defined energy efficiency outcomes, with penalties and incentives to ensure compliance.
 - This includes programs as well as sourcing of power, and can include portfolio standards for both energy efficiency and conservation.

- ◆ **Mandated energy efficiency standards (codes)**
 - Mandatory minimum energy efficiency requirements for new buildings, renovations and equipment can ensure energy efficiency is built in.
 - This approach can also include mechanisms aimed at older building stock, such as San Francisco's codes that require minimum energy efficiency standards for all buildings upon re-sale.

⁶ Climate Change Central will be administering the committee reviewing municipal applications for these funds; for more information, see http://www.energysolutionsalta.com/default.asp?V_DOC_ID=972.

6 Role of Retailers

Retailers can play a major role in implementing efficiency and conservation programs since they are the main contact between consumers and the electrical system. Retailers have a variety of educational materials and tools available and can be effective channels for delivering energy efficiency and conservation programs. But by doing so, they risk reductions in sales. The working group was reminded that retailers are not just selling power, but are competing for customers. In this competition, green energy programs or energy efficiency audits and information can be good sales programs.

A retailer-based or retailer-funded program would be more acceptable if it provided some way for retailers to manage their risk and recover lost revenues. This approach is used in British Columbia, Ontario and Quebec, where performance-based incentive mechanisms reward achievement of targeted energy savings and program costs. These programs include Aquila Networks Canada (B.C.), B.C. Gas, Union Gas, Enbridge, Consumers Gas, and Gas Metropolitan. It is not yet clear how this could be accomplished in the deregulated Alberta marketplace with retail competition.

7 Funding Options

Most energy efficiency and conservation practices offer economic returns through reduced energy costs. However, the initial costs for education and outreach, effective market transformation programs and the uptake of technology needed to reach the energy efficiency targets will require additional, ongoing funding.

The working group considered various sources for funding programs to encourage and implement efficiency and conservation practices, described below. While consensus was not reached on a preferred method of funding, conventional financing and credits, offsets, and allowances were seen as less effective for most of this work. The federal government's commitment of \$1.8-billion for action on climate change could be a source of matching funds, and provincial programs should be established with a view to leveraging the federal monies. In many cases these funds can be matched dollar per dollar. On October 15, 2003, the Government of Canada launched a grant program to encourage homeowners to undertake energy efficiency retrofits.⁷

7.1 Option One: Public Benefits Surcharge

A Public Benefits Surcharge (PBS) is a charge added to the cost of electricity to raise funds in support of a particular goal; that is, the "public benefit." These funds are usually collected by the retailers but are administered by a third party responsible for ensuring that the funds are used for the stated purpose, in this case encouraging energy efficiency and conservation. Various methods are used to implement a PBS, but the most common is a small additional cost per kilowatt-hour.

Advantages of a PBS

- It applies to everyone equally, which may also be a disadvantage for large electricity consumers.

⁷ More information is available from the Office of Energy Efficiency in Natural Resources Canada, or online at <http://oee.nrcan.gc.ca/houses-maisons/english/homeowners/grant/grant.cfm?PrintView=N&Text=N>

- It provides guaranteed, reliable funding for a variety of electricity related programs that deliver measurable results. Components of programs could include priority setting, capacity building, efficiency incentives, low interest loans, and education and outreach work.
- If the PBS is used for a specific fund with clear goals and reporting in place, consumers would know where the money is going.
- It is based on usage.
 - Big users and inefficient consumers pay more.
 - It increases the bonus for achieving efficiency.
- A PBS provides a strong link between the funding source and the programs funded; consumers who pay would be given options to receive program-related benefits of reduced energy costs.
- The PBS approach has had proven success in other jurisdictions, mainly in the U.S. A program in Alberta would help to maintain competitiveness with the U.S.
- It would be possible to leverage funds from federal programs with the monies raised.
- Large industrial consumers could be exempted if they meet energy efficiency and conservation targets and/or spend comparable monies on approved efficiency and conservation programs.

Disadvantages of a PBS

- It could be costly to administer, but retailers could be compensated for the costs of administering this program from the funds raised.
- The general public has concerns about electricity rates and may be unwilling to pay added costs unless they can see a direct benefit accruing to them.
- Large industrial users may have to be addressed differently.
- This option may be perceived as a new tax.

General discussion about a PBS

Having a PBS for one energy source alone (electricity) may distort the market in favour of other energy sources; however, this distortion may be minimal given the size of most PBSs. The City of Edmonton's greenhouse gas emission reduction program (CO₂RE) proposes a PBS covering all fossil fuel energy sources and may be a good model, but the working group's mandate did not extend to other energy sources.

There are various places in which a PBS may be levied, some of which are limited by legislation and existing long-term contracts. In general the working group favoured such a charge being visible to the end user, provided that it could be done without unduly complicating the process and adding to the administrative expense. One of the simplest methods may be to apply a fee on the Power Pool energy transactions. This could be done with the agreement of the Pool members without requiring any regulatory or legislative change, but would not necessarily be visible to end users. Ultimately the end user will pay; the issue would be how the charge is packaged and how acceptable it is. There are significant costs for administering the program and a decision will have to be made as to how these costs are covered: the taxpayer, the revenue generated by the PBS, or some other way. Given the existing billing issues, retailers do not believe this is the most appropriate mechanism for collecting funds for energy efficiency and conservation initiatives.

Large industrial users of electricity could be exempted from the fee if they demonstrate that they have established efficiency and conservation programs that achieve outcomes similar to programs supported by the PBS. Criteria for these programs could be designed to ensure that money is being spent on efficiency and conservation rather than on public relations. The electricity usage would be adjusted for production levels and a baseline level set; if a company achieves its target it is exempt from the charge.

Programs funded through a PBS could be required to demonstrate that the monies used in funding them are recovered through energy savings within a set period of time.

7.2 Option Two: One-Time Government Funded Endowment

This would be a one-time investment into an endowment for energy efficiency in Alberta, and would leverage other funding from federal and private sources. A revolving fund would be set up that is designed to replenish itself. For example, a low-interest energy efficiency loan program could be established to support investments that have tangible results. Loan recipients would pay the loan back at a rate that reflects their energy savings. Thus, the fund could be replenished and be reinvested in new energy efficiency projects. It is estimated that an endowment of approximately \$100-million would be required.⁸ Excess revenue from profitable investments could be invested in non-returning investments, such as education programs and incentives.

Advantages

- Quick and easy to administer.
- Could be connected to the Heritage Savings Trust Fund.
- Can be linked to the Climate Change and Emissions Management Fund outlined in the *Climate Change and Emissions Management Act*.
- Guaranteed funding for longer term planning.
- Easier to manage than other proposed programs.
- Experience in other jurisdictions (e.g., Toronto's Atmospheric Fund)
- Easier to leverage the funding (Toronto's fund leveraged \$24-million into \$110-million)
- Leaves the electricity retailers and consumers out of the funding loop, other than participating in energy efficiency programs and accruing benefits.
- No administration expenses for electricity retailers, more money for funding efficiency and conservation initiatives.

Disadvantages

- Would have to compete for funding with other programs.
- Not related to actual energy use so does little to influence consumer awareness and uptake or energy use patterns.

⁸ The ME First (Municipal Energy) program announced in the fall of 2003 by Alberta Municipal Affairs and administered by Climate Change Central will assist municipalities in making energy efficiency improvements. See http://www.energysolutionsalta.com/default.asp?V_DOC_ID=972 for details.

General discussion about an Energy Efficiency and Energy Conservation Endowment

The proceeds from the auction of Power Purchase Arrangements might have provided such an endowment, but had to be directly returned to consumers and could not be offered to any other organization or fund.

The Toronto Atmospheric Fund received its initial funding of \$24-million from the sale of a piece of city property; the fund has subsequently grown to well over \$100-million. In Oregon, companies may choose to pay into the state's eco-trust rather than buy offsets for greenhouse gas emissions. Payment into a designated fund as an alternative to purchasing greenhouse gas offsets could serve as a potential source of endowment funding for energy efficiency projects in Alberta. This model works better for long-term funding than for short-term work.

7.3 Option Three: Annual Government Funding

With annual government funding, the provincial government would invest each year in energy efficiency programs through the Energy Solutions Alberta office or other mechanisms. This funding would leverage other funding from federal and private sources and could be directed towards priority areas for the provincial government. The monies could be attached to performance targets.

Advantages

- It's easier to come up with a smaller amount of annual funding than a much larger one-time amount for an endowment fund.
- Could be linked to annual funding given to Energy Solutions Alberta.
- The amount could be increased with other priorities.
- There is a lot of experience with this approach and it would be treated as a line item in the budget.

Disadvantages

- Need to negotiate a dollar figure every year.
- Subject to changing government priorities.
- Not tied to energy use.
- Could be decreased with other priorities.
- Limits the options, as there may not be sufficient funding to get many programs running.

General discussion around annual government funding

The long life and payout time of some of these programs, and the desire to leverage funding from other sources make stable funding important. Alberta Environment has requested funds for energy efficiency programs for 2004. In its 2003 budget, the Alberta government allocated an additional \$30-million over the next three years to implement the Climate Change Action Plan. Energy efficiency and conservation are key focus areas of the plan, but the actual dollar amounts dedicated to efficiency and conservation are not known at this time.

At the Electricity Project Team's public meetings, it was suggested that funding for energy efficiency work could come from royalties derived from resource extraction, especially coal. However, this could be hard to sell in Alberta, particularly because of existing long-term coal contracts.

7.4 Option Four: Conventional Financing

Under this option, energy efficiency programs would be funded through conventional private financing from chartered banks, credit unions, insurance companies, Energy Service Companies, pension funds, and other sources.

Advantages

- Already established.
- Doesn't require anything other than raising public awareness.
- Could include partnering with banks on such programs as low interest loans for residential energy efficiency programs and implementation.

Disadvantages

- People move every five to seven years and paybacks on energy efficiency improvements are often longer than that.
- Low and fluctuating energy costs to consumers do not provide a strong signal to invest in energy efficiency. For example, Albertans have shown relatively little interest in the R2000 program, which supports energy efficient residential construction.
- Consumers have not shown much interest in energy efficiency.
- Requires a lot of education for little penetration.
- No funding available for education and outreach.
- Banks and developers have shown little interest to date in providing lower interest loans specifically for energy efficiency upgrades, due in part to low consumer interest.

General discussion about conventional financing:

The federal climate change plan has a target of 20% of homes and commercial buildings to have high energy efficiency by 2012. Depending on the mechanisms proposed for meeting this target there may be some way to combine the target with a variety of financing options.

ESCOs are self-financing but focus on larger commercial operations (\$1-million plus). It may be possible to underwrite their work with smaller firms or to assemble a group of customers such as the Jasper Energy Efficiency Project did. It may still be necessary, however, to develop sector-specific initiatives and programs for small and mid-sized businesses and the residential sector.

7.5 Option Five: Greenhouse Gas Credits

In this system, allowances can be created and the funds raised through their sale set aside for funding energy efficiency improvements. In a related program, greenhouse gas credits could be provided for improvements in energy efficiency. Alberta's emissions trading system could allow emitters to pay into the Climate Change and Emissions Management Fund rather than purchase offsets in the open market. The direct use of credits and offsets to underwrite energy efficiency has proven difficult to administer in other jurisdictions. For example, the system in New Jersey, which included indirect emissions, has been shut down due to difficulty with verification. The various trading systems can help internalize environmental costs and may make efficiency and conservation work more financially attractive.

The purchase of greenhouse gas offsets at an expected price of \$9-15/tonne⁹ combined with an assumed coal intensity of 1 tonne/MWh, would be equivalent to \$9-10/MWh, which may make efficiency and conservation programs more attractive.

Recommendation 4: Funding Energy Efficiency and Conservation Programs

The Alberta and federal governments should consider means for providing stable and sufficient funding to allow for the development and implementation of energy efficiency and energy conservation programs, and that the various options for funding described in this report be considered.

⁹ This range was modelled by the Electricity Project Team.

Appendix A Working Group Members

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Appendix B Bibliography

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