Toronto Sustainable Energy Plan

Part B: The Financial Options

Recommendations For Creating New or Leveraging Existing Financing Sources to Accelerate Investment in Sustainable Energy Initiatives

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1 Introduction

The purpose of this portion of the Sustainable Energy Plan is to discuss financial options available to The Corporation of the City of Toronto to accelerate investment in its own sustainable energy initiatives or those initiatives over which the City has an influence.[1] The focus of this Part B will be financial as opposed to operational (i.e. the attraction and effective employment of capital as opposed to the design and implementation of sustainable energy programs). Despite the financial focus of Part B, some operational issues are addressed in this portion of the Sustainable Energy Plan due to the interconnected nature of environmental issues.

In drafting this portion of the Sustainable Energy Plan, Access Capital Corp. ("Access") has had discussions with a number of stakeholders including employees of the City and its agencies, Enbridge Consumers Gas ("Enbridge") as well as energy project financiers and energy consultants. Discussion of the financial options available to accelerate investment in sustainable energy initiatives is a result of our stakeholder discussions as well as our own experience in the energy finance area.

[1] Throughout this Part B of the Sustainable Energy Plan, "City" is used to describe The Corporation of the City of Toronto and "city" is used to describe the city as a whole.

2 Definitions

The following terms are used in this portion of the report:

basis point: one one-hundredth of one percent

cogeneration: the simultaneous generation of electricity and thermal energy (heat or steam) from a power plant

debt service coverage ratio: cashflow available for debt service divided by the principal and interest payable in the period

internal rate of return ("IRR"): the discount rate which, when applied to a series of future cash flows, equates the present value of those cash flows to an amount equal to the initial investment

merchant project: a project where a majority of the energy outputs are not contracted to be sold

subordinated debt: debt which ranks lower in preference (i.e. is subordinated) relative to other debt. In the event of a default, subordinated lenders are paid off after the specified "senior" creditors have been fully compensated.

Acronyms

The following acronyms are used throughout Part of B of the Sustainable Energy Plan:

Access	Access Capital Corp.
BBP	Better Buildings Partnership
city	the City of Toronto as a whole
City	The Corporation of the City of Toronto
DLWC	deep lake water cooling
EE	energy efficiency
ESCO	energy services company
ICLEI	International Council for Local Environmental Initiatives
IRR	internal rate of return
OMERS	Ontario Municipal Employees Retirement System
PERT	Pilot Emission Reduction Trading Project
PV	photovoltaic
SIFIC	State of Iowa Facilities Improvement Corporation
TAF	Toronto Atmospheric Fund
TDHC	Toronto District Heating Corporation
TREC	Toronto Renewable Energy Co-operative

3 Financing Structures Available to Accelerate Investment in Sustainable Energy Initiatives

3.1 Traditional Financing Structures

The most basic forms of financing for any project are equity (i.e. capital provided by the project sponsors) and / or debt (i.e. capital provided by a lender). An understanding of the basic financing components of a project as well as the way the financing components are combined is important as it has a direct impact on the project's overall financing costs. By properly structuring EE and renewable energy projects, financing costs can be reduced and thus investment in these projects can be accelerated. The following discussion highlights the primary characteristics of debt and equity as well as the way these financing components can be combined to result in the lowest possible financing cost.

3.1.1 Equity Financing

Equity Financing is the most expensive type of financing. Equity investors generally look for after tax internal rates of return of 10 to 20^{+}% on their equity investments depending upon the perceived risk of the project. Energy efficiency project returns are often quoted in terms of simple payback periods. Payback periods for energy efficiency ("EE") retrofit projects vary from 2 years to over 6 years. These payback periods correlate to internal rates of return of 50% to less than 10% respectively (i.e. within the realm of investment returns required by equity investors).

3.1.2 Debt Financing

Debt Financing is generally less expensive than equity financing. The cost of debt financing depends upon the credit rating of the borrower and the security that the lender will have over the project's assets and revenues. For instance, the City's last debenture issue was completed in December 1998 at a yield of approximately 5.5% (only 44 basis points over a similarly termed Government of Canada bond) due to its high credit rating of "AA^{+}" by Standard and Poors and "AAA" by Dominion Bond Rating Service (i.e. American and Canadian debt ratings respectively). A subordinated debt lender, on the other hand, lending to a non-rated entity (i.e. greater risk) may charge as much as 700 basis points or more over similarly termed risk free securities (i.e. Government of Canada Bonds) for an all-in rate of approximately 13%. (Subordinated debt is often used to bolster a project developer's equity contribution.)

Given its borrowing opportunities, the City, if so disposed, can minimize the debt financing costs of energy savings initiatives by using its high credit rating and acting as either borrower or debt guarantor in debt financings.

Project debt financing terms also depend upon the project's economics, the corporate commitment and credit rating of the borrower, as well as the term of any contracts which support the project. The debt term (i.e. the period over which the debt is amortized) is dependent upon the financial strength of the parties involved. If the parties are creditworthy, and the project is supported by long term contracts, then the term on which the debt may be repaid, can be a maximum of 90% of the shortest term of any of the major contracts. One of the primary criteria that lenders consider when evaluating a project is its average debt service coverage ratio. For

gas-fired independent power projects with a long term credit worthy power purchase agreement, a debt service coverage ratio of 1.4 times (on a pre-tax basis) is the norm. Depending on the risk of the project technology, higher coverage ratios may be required.

Sources of debt financing include banks, life insurance companies, pension funds and other institutions. Generally speaking, banks are best suited for short term (<10 years) financings with floating interest rates. Life insurance and pension funds are generally best for long term (10 to 20+ years) fixed rate financings. Minimum amounts for banks can be as small as $1 to $2 million whereas life insurance companies and pension funds prefer minimum amounts of $5 million or more. Interest rate risk can be mitigated by utilizing fixed rate financing sources or by using floating rate financing sources and incorporating hedging instruments to protect against adverse interest rate movements.

3.1.3 Putting it all Together

In order to minimize the overall capital cost of a traditional financing structure, an effort is usually made to minimize the equity component and maximize the debt component of the overall financing requirement. Provided the project's economics are sufficiently robust, debt financing offers tax advantages (in the form of interest deductibility) and enhances returns to the project's equity investors as it permits them to reduce the amount of equity capital that they commit to the venture. The mixture of debt and equity in a traditional financing plan is referred to as the project's "capital structure". A project's capital structure is dependent upon the project's characteristics. If the project's economics and its supporting contracts are strong and the transaction parties are experienced, creditworthy parties, then it is generally possible to increase the amount of debt in a project's capital structure. If, on the other hand, the project's economics are uncertain, or the transaction parties are not creditworthy entities, then the amount of equity that the sponsors will need to contribute will likely increase (as will the overall financing cost since equity is more "expensive" than debt).

The above discussion emphasizes the financial importance of utilizing fixed contracts with creditworthy entities when structuring investments in sustainable energy initiatives. The following diagram emphasizes the difference in the overall after-tax cost[2] of capital between a project with long term creditworthy contracts with defined prices and a merchant project with no identified long term purchaser (i.e. the other extreme with the associated market price and potential credit risks):

[2]The example assumes a corporate tax rate of 44%.

Capital Structure

	A Long term, Creditworthy Off-take Contract(s)	**B** Merchant Project
Debt	**80%** @ 8.0 % pretax (4.5 % after tax)	**40%** @ 8.5 % pretax (4.8 % after tax)
Equity	***20%*** *@ 12 % after tax*	***60%*** *@ 18 % after tax*
Overall blended after tax cost of capital	**6.0 %**	**13.0%**

(In Case A, the cost of both debt and equity is less than Case B due to the reduced volatility and risk of expected cash flows to the debt and equity participants respectively.)

3.2 Alternative Financing Structures

There are a number of alternative structures available to finance sustainable energy initiatives. Some of these alternatives are discussed briefly below:

3.2.1 Leasing

Leasing is an alternative to purchasing assets and can take several forms including: sale-and-leasebacks, operating leases, capital leases or some combination of these. Under a lease structure, the lessor owns the asset and the lessee makes a periodic payment for the right to use the leased asset. Depending upon whether the lease is classified as a capital lease or an operating lease, the lessee's obligations under the lease contract may or may not by reflected on the lessee's balance sheet. (The lessee's obligations under an operating lease are not reflected on the lessee's balance sheet which can be attractive as it can free up capital for investment in other areas.) In some operating lease cases, the use of tax deductions associated with ownership of an asset can be utilized by third parties who in turn lease the asset to the end user at a lower cost than would have otherwise been available to the end user.

3.2.2 Energy Services Company Financing

Energy Services Companies ("ESCO's") tend to focus on EE projects with readily identifiable and quantifiable cost savings. The basic incentive to pursue EE occurs when the potential energy savings project can be demonstrated to provide a "pay from savings" situation within a reasonable time frame. From the project owner's point of view, comfort with the proposed energy savings can be achieved in a variety of ways:

- internal engineering review of the projected savings to be realized;
- guarantee of savings by a third party energy management firm; and

- performance insurance that also provides a "guarantee" of savings.

If the EE project is to be externally financed, the projected savings become a critical issue since these savings form the basis of repayment. The project can therefore be cash flow neutral with the full savings reverting wholly to the project owner upon repayment of the investor / lender's capital plus return.

The nature of EE involves a wide assortment of projects ranging from the simple such as upgraded lighting to the complex such as cogeneration projects. The most common form of projects are generally those that involve improving a building's existing infrastructure including lights, water system and heating, ventilating and air conditioning equipment. Wholesale changes to a building's source of energy such as installing cogeneration equipment have, to this point, been the exception rather than the rule.

While the energy cost savings of upgrading a building's existing infrastructure has demonstrated a successful track record, the nature of these projects creates a problem if they are to be externally financed. Improving lighting, water usage, HVAC, etc. requires assets which provide little or no security value for a lender. Light fixtures, water efficient toilets, etc. are difficult, if not impossible, to recover in the event of default of the building owner. The financing of such projects is therefore regarded largely as a cash flow transaction since there is nominal security value in the assets to be financed. Accordingly, financing of these projects by lenders has been limited to building owners of high credit quality. In buildings where the owner does not have a recognizable credit rating, the issues outlined above make EE projects difficult to finance. In these cases the support of financing sources such as the Toronto Atmospheric Fund ("TAF"), the Better Buildings Partnership ("BBP") or the City can be utilized to increase the likelihood of these projects being completed.

3.2.3 Emissions Trading

Emissions trading is not a financing structure, but rather a potential funding source. Under an emissions trading program, a limited amount of emission credits are allocated amongst all market participants who then trade those rights amongst one another. Although there is only a limited market for trading greenhouse gas emissions in Ontario, initiatives such as PERT ("Pilot Emission Reduction Trading Project")[3] are working towards further developing the market. In the United States, the emission trading market is more developed and transactions for emissions of NO_x have occurred at prices of US$3,500 to 8,200 per ton per year during 1999. The projected prices for NO_x trades in 2000 are considerably lower at around US$1,100 per ton. While there may be NO_x and other pollutant trading opportunities for the City in the future, the focus to date has been on CO_2 trades.

[3] PERT is an industry-led, multi-stakeholder initiative formed to evaluate the potential environmental and economic benefits of open-market emission reduction trading in Ontario. To date, approximately 30 potential trades have been verified and registered through PERT and a number of CO_2 trades have been completed (the verified and registered trades are known as "creations"). It should be noted that the City's initial credits are not classified as "creations" yet as they are currently working through the PERT process.

An ICLEI ("International Council for Local Environmental Initiatives") report submitted to the City and TAF in 1998 estimated that CO_2 emissions reduction credits may be worth in the range of US $.50 to US $3.00 per tonne.

City council has approved a pilot trade based on 50% of the City and its agencies' historic CO_2 emission reductions (approximately 240,000 tonnes in total or 50% of the 477,000 tonnes aggregated between 1994 and 1998). At these rates, the initial trade would yield between US $120,000 and US $720,000 in total. The ICLEI report also suggests that if 100% of Toronto's historical and potential CO_2 emissions reduction credits through 2005 were sold at these rates, they might fetch US $418,000 to US $2,508,000 in the aggregate.

The City's proposed initial CO_2 credits have been posted on the PERT website and it is expected that it will take approximately 6 months to determine who is interested in trading these credits and at what price. In 6 months time a decision will be made regarding the prudence of proceeding with a trade.

As outlined in the ICLEI report, proceeds from the City's emissions trading should be utilized to support other emissions reduction projects. Depending upon how the emissions trading market develops, there may also be an opportunity to fund projects which will generate future emissions reductions using the credits which will flow from these projects.

Another issue related to emission trading is the aggregation role that the City can play within the community. This opportunity relates to the ownership of emissions reduction credits. The City will have 100% ownership of any credits that it or its agencies are able to generate. The City may also be able to aggregate credits generated by the private and residential sectors via special arrangements. It is expected that emission credits generated via small EE projects (particularly those undertaken by the small industrial and commercial and residential sectors) will be too small to be realized on their own and thus the potential exists for the City to aggregate them and monetize some portion of their value (the net value of the credits could be shared on a 50 / 50 basis (for example) between the project owners and the City at the time of realization).

3.2.4 Income Trusts

Income trusts are a financing vehicle which were used extensively in 1997 and 1998 to finance a variety of resource based activities including oil, gas, coal, electricity generation and others. Income trusts are sold through initial public offerings to a wide variety of investors. Income trust investors recover their investments by receiving an income stream from the asset that secures the trust. In effect, income trust investors become limited partners in the asset that underlies the trust. The electrical generation income trusts completed to date have closed at yields of between 7.5% and 12.5% depending upon credit issues such as diversity of assets, location, sizes and technologies.

While we are not aware of an income trust offering relating to energy savings projects, it appears (in concept at least) that this type of financing structure may lend itself to these types of projects. If a sufficient number of energy savings projects could be aggregated ($50 million to $75 million would likely be required for a marketable transaction) with sufficient verifiable energy savings

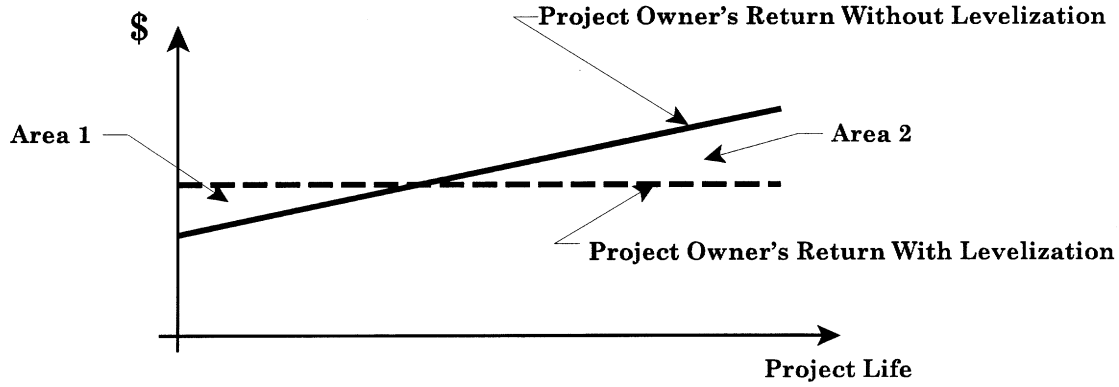
over a 15^{+} year time horizon, a portion of which could be paid to income trust unit holders, then this type of financing may be feasible.

The feasibility of an income trust offering should be investigated to determine whether this type of transaction could be structured in a way that would be supported by the financial markets.

3.2.5 Levelization Payments

Levelization programs can be used as a financing structure to increase returns in the early stages of a project in order to increase its financeability. The following diagram demonstrates the mechanics of a levelization program.

Mechanics of a Levelization Program



Area 1, the over-market portion of the structure, represents the effect of the up-front levelization payments made to the project by the levelization provider (which may be a lender, TAF, the City, BBP, the building owner, etc.) in order to increase the project's overall return (i.e. the project receives more revenues than it would have without the levelization program). The up-front levelization payments make the project attractive to the project developer. Without some form of levelization, many EE projects are not economically viable.

Area 2 represents the repayment of the over-market amounts by the recipient (usually the project developer) to the levelization provider. (The over-market amounts include carrying costs such as interest expense.) For this program to work, lenders and investors must be confident that project economics will improve adequately over time so that the levelization loans can be repaid. Throughout the levelization program, the project's economics must be strong enough to meet the lender's debt service coverage ratio requirements. Levelization structures can effectively catalyze sustainable energy programs which are economic in the long run but would not be financeable without some up-front support.

3.2.6 Net Billing of Renewable Energy Systems

The partnership between TREC ("Toronto Renewable Energy Co-operative") and Toronto Hydro to jointly develop, own and operate the Toronto wind energy project (known as the Windpower Co-operative by TREC) utilizes net billing or reverse metering of renewable energy. Net billing

or reverse metering means that the local utility effectively allows the generator to offset its electrical bill through spinning its power meter in reverse as internally generated electricity is put back into the power system. In the case of the Windpower Co-operative, investors own their respective percentage of the hardware, its direct output and / or whatever net revenues the project can generate.

3.2.7 System Wide Public Benefits Charge on Distribution

Another possible source of funding to support green energy initiatives is the establishment of a system wide public benefits charge on Toronto Hydro's distribution billing. Such funds could be used to support EE and renewable projects throughout the city. A modest charge, equal to approximately 50¢ / month / bill, is proposed for residential customers. The public benefits charge would need to be sanctioned by the Ontario Energy Board and would need to be presented as something which would benefit all customers (i.e. due to the positive impact of EE and renewable projects on the distribution system, etc.).

3.2.8 Use of Building Reserve Funds

There are a number of reserve / contingency funds which are generally associated with the construction of condominiums and building cooperatives. These reserve funds are generally required by law and are basically escrow funds which often sit in low yielding investments for periods of up to 10 years before they are utilized to fund anticipated building maintenance expenses. There are three primary problems with the current structure of building reserve funds: under-funding for anticipated liabilities (i.e. actual expenditures for anticipated repairs are higher than budgeted), under-funding due to unforeseen liabilities and the low rate of interest earned on the escrowed funds.

There appears to be a significant opportunity to utilize a small portion of these underperforming funds to support energy savings initiatives within the buildings that the reserves are intended to benefit (either on an individual or a pooled basis). Such an initiative would have the following benefits:

- increased ability to finance EE initiatives;
- improved return on investment on reserve funds via the energy savings realized;
- increased likelihood of adequate funding for both foreseen and unforeseen building maintenance liabilities via the energy savings realized; and
- reduced building maintenance liabilities (i.e. EE upgrades are building improvements which increase asset values and often reduce future maintenance expenditures).

One consultant has estimated that as much as 50% of the condominiums and building cooperatives in the city could be retrofitted using this type of financing mechanism.

A key issue which would need to be satisfactorily resolved for this type of program to work is the securing of reserve funds while utilized for energy savings initiatives. Without a mechanism to guarantee that the reserve funds will be available when required, this type of program will be difficult to implement. The support of a number of agencies including the Canadian Mortgage and Housing Corporation, the City and others would also be necessary for the building reserve

financing process to work. The necessary legal and financial due diligence would also need to be completed before the viability of this type of financing program could be determined.

4 Opportunities Within the City of Toronto

4.1 Toronto Atmospheric Fund

TAF is an agency of the City which was created in 1992 to assist the City in reaching its goal of reducing greenhouse gas (i.e. CO_2) emissions by 20% relative to 1990 levels by 2005. TAF has a very important role to play in the promotion and facilitation of sustainable energy initiatives in the city. As outlined in TAF's 1998 Annual Report, the "TAF provides grants and innovative financing to organizations that promote EE , renewable energy, sustainable transportation, improved urban planning, and greening the city."

On December 31, 1998 TAF had total assets of approximately $25.4 million. These assets were comprised of the following primary components ($ millions):

cash, loans receivable and other receivables	$0.5
funds on deposit with the City	17.3
former Municipality of Metropolitan Toronto Debenture	7.6
	$25.4

These figures illustrate the significant untapped potential that exists within TAF. At December 31, 1998, performing loans represented only $394 thousand of the $25.4 million in total assets. In addition to these loans, there were $5.8 million in loan guarantees and other security commitments.

It is Access' understanding that TAF presently does not earn any revenues on the loan guarantees or other security commitments that it provides. It is recommended that TAF begin charging guarantee fees for the provision of this service. The guarantee fees could be set depending upon the perceived credit risks and are a way to improve the return on the TAF portfolio and put it on a commercial footing. In cases where project economics cannot support guarantee fees there could be deferrals and no-fee periods, however the concept is that TAF should be compensated on a commercial basis for providing these services.

The $17.3 million of funds on deposit with the City are held in trust and are invested in low risk, low yielding investments. Assuming that a sufficient number of environmentally and economically attractive projects could be identified within the city, these funds could be utilized much more efficiently. There appears to be a role for TAF as a project aggregator and facilitator within the city.

The $7.6 million debenture from the former Municipality of Metropolitan Toronto relates to a TAF loan to upgrade the city's street lights. This loan is currently not performing. TAF estimates that the new street lights have saved the City approximately $11.4 million to date. TAF has waived a total of approximately $2.5 million in interest payments in 1996, 1997 and 1998 (it appears, however, that some principal is being repaid on this facility). An effort should be made to have the City meet its obligations under this facility or renegotiate the terms of the debenture on a basis satisfactory to both parties. (The current unpaid interest rate on the debenture is

8.76%.) Access understands that some progress is being made regarding the City's repayment of this facility. The street lighting program appears to be one example of an opportunity to use realized energy savings to repay and provide capital for further EE project loans.

One mechanism which TAF could utilize to facilitate EE projects would be to use TAF assets to provide well structured subordinated loans to projects for which conventional financing is difficult to obtain (i.e. due to a lack of specialized knowledge or an unwillingness in the traditional financing community to obtain the resources to properly evaluate green energy projects). Subordinated debt investments could provide attractive returns to TAF (which would help facilitate more loans in the future). Another way for TAF to increase its investment returns is to structure loans based on a below market rate of interest plus receipt of some portion of the project energy savings.[4]

TAF is presently considering a capital pooling arrangement with private lenders under which TAF capital would lever private EE investments (a ratio of 1 part TAF capital to 5 parts private capital is currently under consideration). This concept is attractive as it should provide private lenders with the additional comfort necessary to become more involved with EE loans (i.e. they would not be alone in the process). The levering concept would probably work in tandem with the subordinated debt alternative outlined above with TAF providing one part high yielding subordinated debt and the private lender providing 5 parts lower yielding senior debt. TAF's support of the BBP's limited loan recourse fund (discussed in section 4.6.2) is another example of a way to leverage TAF's assets to support EE projects. (It appears that there may be an opportunity for TAF to increase its commitment to the limited loan recourse fund.)

In summary, there appears to be a significant opportunity to improve both the utilization and the return on TAF's assets and thus accelerate investment in sustainable energy initiatives. While the goals of TAF are clear, a more prudent portfolio approach to the management of the fund's assets is recommended. Adoption of a portfolio approach should facilitate investment in above-market cost renewable technologies and allow more grants to be made.[5] Development of an appropriate investment policy statement would be an important first step in this process. The components of the investment policy statement should be consistent with an endowment fund and should emphasize the management of short term needs within the context of achieving long term objectives (such as capital preservation). The use of prudent financial managers and / or advisors in the development of the investment policy statement as well as the execution and administration of TAF's investments will also be key to the improvement of TAF's performance.

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[4]One possible use of these loans would be to support EE projects within buildings which are, or will be, served by district energy projects. This type of support would ensure that the benefits of district energy projects are maximized.

[5]In addition to grants, other EE and renewable project subsidies such as interest rate buy-downs could be sponsored by TAF. Under an interest rate buy-down structure, TAF would fund a portion of a project's interest cost in order to improve its economics and thus its likelihood of success.

4.2 Toronto Hydro

The new Toronto Hydro has a key role to play in the development of sustainable energy initiatives.[6] There are a number of potential opportunities for the new organization to create value and encourage EE. Some of these opportunities are highlighted below:

4.2.1 Recapitalizing the Utility's Assets

At December 31, 1998, Toronto Hydro's capital structure was comprised of 18% debt and 82% equity (i.e. a debt to equity ratio of 18:82). A more traditional debt to equity ratio for a regulated utility like Toronto Hydro would be approximately 60:40.[7] Assuming that Toronto Hydro is refinanced to a 60:40 debt to equity ratio, this would result in total debt of approximately $1.2 billion versus $367 million (as at December 31, 1998) for net new proceeds of over $800 million which could be made available to the City.[8] It is Access' understanding that this process (or some variation of it) is underway. An article that appeared in the Globe and Mail on May 27, 1999 (page A3) reported that the City could realize $100 million from the restructuring of Toronto Hydro. While the precise source of the $100 million is not clear from the article, it is expected that this figure is related to the refinancing concept highlighted above.

The point of this discussion is that an optimization of the new utility's capital structure would yield substantial value. Allocation of a portion of these proceeds to support sustainable energy initiatives should be considered as part of this process.

4.2.2 Generation and District Energy Opportunities

Toronto Hydro is currently considering a number of projects which could benefit the environment while providing the utility with attractive economic returns. A few of these opportunities are discussed briefly below.

4.2.3 Port Lands Cogeneration Project

In partnership with Boralex Inc., Toronto Hydro is developing a 260 MW cogeneration project which would provide electricity to Toronto Hydro and thermal energy to both the Paperboard Industries paperboard mill on Commissioners Street and the Toronto Works main treatment plant located at the foot of Leslie Street. It is estimated that this project would reduce the city's CO_2 emissions by approximately 2 million tonnes per year which equates to one third of the city's CO_2 emissions reduction target.

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[6]Toronto Hydro has recently been restructured into a regulated distribution company called Toronto Hydro-Electric System Ltd. and a competitive energy company called Toronto Hydro Energy Services Inc. For simplicity, "Toronto Hydro" is used to denote the activities of both of these companies throughout this Part B of the Sustainable Energy Plan.

[7]According to the August 1999 issue of IPPSO FACTO (the magazine of the Independent Power Producers' Society of Ontario), the City has targeted a 60:40 debt equity ratio in its corporatization process.

[8]It should be noted that these figures are highly simplified and that a refinancing such as the one suggested here would be subject to regulatory approval and financial, tax, and legal due diligence.

Access has acted as the partnership's financial advisor since the project was conceived. The port lands project is the most thermally efficient project that Access has been involved with. Depending upon the final project configuration and structure, it is likely that the port lands project could be financed on a non-recourse basis (i.e. the financing could be arranged based on the project's structural attributes alone as opposed to being based upon the financial guarantees of Toronto Hydro or the City).[9]

The port lands project would provide Toronto Hydro with a reliable supply of electricity from a source located close to the utility's load. The project would also provide the City with an attractive economic return via Toronto Hydro's 50% equity interest in the project. The project would be an important first step towards the creation of a district heating system in the port lands area (which is expected to undergo significant development in the future) and, possibly, in the downtown area as well. Toronto Hydro and Toronto District Heating Corporation ("TDHC") should explore possibilities to optimize the district heating potential of projects such as the one proposed for the port lands.

4.2.4 Lakeview Repowering Project

Toronto Hydro has partnered with Atco Power Canada Limited (formerly CU Power), Ontario Hydro and Mississauga Hydro in a project to repower one half of Ontario Hydro's coal fired Lakeview Generating Station. Under the current proposal, each participant would have a 25% equity interest in the 550 MW repowering project.

4.2.5 District Energy and "Inside the Fence" Projects

Toronto Hydro is considering other energy efficiency initiatives including the Northwind district cooling project.[10] The Northwind project would utilize a technology which creates ice during off-peak hours for use during peak cooling periods. The Northwind technology can be implemented in approximately $20 million increments and is complementary to TDHC's deep lake water cooling ("DLWC") project (which is more capital intensive). The financeability of these two district cooling projects will depend upon the ability of Toronto Hydro and TDHC to sell these cooling services to building managers and institutions within the city. It is important that Toronto Hydro and TDHC work together on these and other sustainable energy initiatives to maximize project efficiencies and economics.

Toronto Hydro is also in discussions with some of its 300 large industrial and commercial customers regarding the implementation of energy efficient "inside the fence" electricity and thermal generation projects. The utility is also investigating the use of micro-turbines in some industrial and commercial settings. These types of discussions illustrate the role that Toronto

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[9]Depending upon the final project structure, Toronto Hydro's equity investment in the port lands project could likely be bolstered by subordinated debt (i.e. further reducing Toronto Hydro's direct investment in the project).

[10]Toronto Hydro is partnering with Ontario Hydro Services Company and Unicom Thermal Technologies on the Northwind project.

Hydro can play in the identification and aggregation of environmentally and economically attractive energy projects.

While Access is not familiar with the details of the financing strategies of the Lakeview, Northwind or other projects, it is expected that the ability of these projects to attract capital at reasonable rates will depend upon the factors discussed in the financing structures discussion above.

4.2.6 On-Bill and Private Label Financing Opportunities

Toronto Hydro can help to facilitate the financing of EE initiatives through "on-bill" revenue collection. Under this scheme, the beneficiaries of EE projects pay for the capital costs of these initiatives via a separate charge on their energy bills. This process enhances the financing of EE projects by simplifying the revenue collection process. It must be noted that "on-bill" financing is a revenue collection process only. Revenues collected by Toronto Hydro for energy management purposes are passed through to the borrower (i.e. the project developer) who retains responsibility for debt service.

Private label financing is a similar process under which private financial institutions provide seamless "no-name" financing for utility customers. The customer loans are negotiated by utility personnel based on pre-approved parameters and funds are advanced by the financial institution without recourse to the utility. This model is attractive as the utility maintains all customer control (i.e. including billing and collection services) but has no financial responsibility to the lender for the loans made to its customers. We understand that Toronto Hydro is currently considering the implementation of a private label financing program with a local non-bank financial institution.

4.2.7 Partnerships

It is expected that there will be a number of opportunities for Toronto Hydro to partner with other energy industry players to promote EE and renewable energy initiatives. The partnership that Toronto Hydro has struck with the Toronto Green$aver ("Green$aver") program (see section 4.5) is a good example of an effective EE partnership and is the first program geared towards the residential sector (more are expected to follow).

4.3 City of Toronto

The City can have a significant amount of influence over the facilitation and completion of a variety of energy savings initiatives. This influence is due to the following characteristics of the City and its agencies: its buying power, its assets and its ability to borrow inexpensively.

4.3.1 Buying Power

The City consumes approximately 90 MW of electricity.[11] The City's 25% green power procurement target would represent 22.5 MW of capacity. This is a sizable block of capacity in a renewable energy market which is just beginning to develop. The 25% figure is a reasonable near term target. Some premium will need to be paid for green power as the market develops. An initial target of greater than 25%, while helpful for the establishment of the green energy market, may not be economic for the City. The 25% target should be adjusted upwards as the market develops or as opportunistic circumstances present themselves.

4.3.2 The City's Assets

The City and its agencies control a variety of assets which offer the potential for EE improvements and / or financial support for these initiatives. A recent ICLEI study found that the efficient operation of municipal buildings, parks and street lights could reduce energy expenditures by approximately 10 to 15%. While Access is not aware of the specific economics of the investments required to achieve these savings, it is expected that a significant portion of them may be financeable on a commercial basis (i.e. using one of the financing structures outlined above).[12] There appears to be a significant opportunity for the City to aggregate EE projects within its control. This aggregation process should provide economies of scale in terms of increasing bargaining power with energy services companies and improving borrowing terms with lenders (i.e. lenders' enthusiasm generally increases as transaction size increases).

Also worthy of mention are the City's landfill sites. The Keele Valley, Beare Road and Brock West landfill sites currently utilize landfill gas to produce electricity (approximately 30 MW, 3.6 MW and 25 MW respectively). The City currently has an RFP out on a fourth site at the Thackery landfill which is expected to generate 600 to 800 kW of electrical capacity. Three RFP respondents have been short-listed for the Thackery project and negotiations are underway concerning commercial terms. In addition to these four projects, there are a number of smaller opportunities to reduce the impact of landfill gas on the environment. These opportunities include utilizing landfill gas to heat greenhouses and flaring or utilizing micro-turbines to combust landfill gas (and thus minimize the escape of methane into the environment). It should be noted that in the case of flaring (and likely micro-turbines as well), the cost of reducing landfill gas emissions is low relative to the benefits achieved (which include the potential realization of value via emissions reduction credits).

The production of electricity from landfill gas is an attractive technology as it harnesses an otherwise harmful greenhouse gas (i.e. methane is approximately 20 times more harmful than CO_2 in terms of its impact on global warming) for the generation of electricity. The City currently collects royalties of approximately $2.5 million per year from the independent power

[11]The City's agencies consume an additional 110 MW for a total demand (i.e. the City and its agencies) of approximately 200 MW.

[12]For those projects which are not financeable on a commercial basis, programs such as the federal government's Energy Innovators Plus program may be able to help. Energy Innovators Plus offers a grant of up to 25% of the cost of eligible EE projects within institutional office spaces when those projects are replicated in other facilities. The City of Regina is one of the program's "Energy Innovators".

producers who generate electricity at the three existing sites. It is our understanding that these revenues are currently applied against the City's solid waste disposal costs. The royalty revenues generated from these projects (or any other green energy initiatives the City is involved with) should be identified as such (i.e. in the City's budgeting and accounting process) and be reinvested to support other sustainable energy initiatives.

4.3.3 Financial Capacity

The City issues debentures depending upon the needs identified in its capital budget. The rates at which the City can issue debentures are attractive.[13] This low cost borrowing capacity gives the city another option for financing projects which provide attractive environmental and economic returns.

Also worthy of mention are the City's reserve funds. The total balance of the City's reserve funds at present is approximately $950 million. While there are legal constraints on the use of these funds, it appears that a very small portion of these assets could be accessed to support sustainable energy initiatives. Approximately half of the reserve funds are required to meet short term obligations and thus would not be available to support EE projects. As the other half of the City's reserve funds support longer term obligations, some very small portion of these funds may be available to support EE initiatives.[14] It is expected that a City council by-law would be required to permit such a use of the reserve funds. The merits of using City reserve funds to support EE initiatives would be judged against the following criteria:

- security (i.e. the likelihood of a loss must be minimized);
- rate of return (the 50% of the reserve funds which are held in longer term securities presently earn approximately 6.5% - any alternative use must earn a minimum margin of 300 to 700 basis points above this rate depending upon the project's risk); and
- liquidity (i.e. if the funds were needed they must be easily accessible).

4.4 Toronto District Heating Corporation

TDHC operates a district heating system in downtown Toronto which presently serves more than 100 buildings. Given TDHC's investment and expertise in district heating and cooling, the corporation has a critical role to play in the further development of these systems and the environmental benefits that will result.

As outlined in section 4.2.5 TDHC is involved with district cooling via the DLWC project. The initial phase of the DLWC project will serve the waterfront area with a capacity of 7,400 tons of

[13]The City's last debenture issued on December 18, 1998 was $250 million with a $125 million 10 year tranche yielding 5.26% and a $125 million 20 year tranche yielding 5.64%, approximately 36 basis points and 53 basis points over the respective benchmark Government of Canada bonds.

[14]This alternative should only be considered after all other financing options have been considered and exhausted and should be executed in a manner which will not impair the City's credit quality.

steam driven chillers.[15] The Convention Center and the Air Canada Center have committed to the project and have a total cooling load of 5,100 tons. To date, $25 million has been spent on this phase of the project. The balance of the project will be operational by the summer of 2002 (including construction of the water intake via the Toronto Island Water Filtration Plant). The cost for the entire system is expected to be $120 million (the full system will have a capacity of 52,000 tons). The economics of the project are expected to be consistent with utility investment returns.

As discussed in section 4.2.5, the DLWC project is complementary to the Northwind project as well as future cogeneration projects in the downtown Toronto area (as outlined in a report prepared for TAF by Allen Kani Associates titled "the big chill - how a district cooling system can improve the air"). An effort should be made by TDHC and Toronto Hydro to work together to develop the most efficient district cooling project possible with the most attractive returns to both parties. The City has confirmed this coordinated approach as its policy objective.

In addition to district cooling opportunities, it appears that there may be district heating opportunities that TDHC and Toronto Hydro should also consider together. Cogeneration projects such as the one proposed in the port lands should be examined by TDHC to determine how they can efficiently and economically provide attractive district heating opportunities.

According to recent reports, the Ontario Municipal Employees Retirement System ("OMERS") and the City have reached an agreement to bring each of their interests in TDHC to 50%. This is a positive development for TDHC. The investment in TDHC by a sophisticated financial institution such as OMERS is expected to increase the credibility of TDHC and pave the way for investments in larger projects. The nature of district energy investments is complementary to OMERS' investment requirements (i.e. long term, predictable, utility rate of return, etc.). The City may wish to consider dedicating a portion of the proceeds from the sale of its partial interest in TDHC to fund sustainable energy initiatives.

4.5 Green$aver

The Green$aver program is aimed at the residential retrofit market. Green$aver was founded 8 years ago as an initiative of the not-for-profit Urban Environment Center. Green$aver is currently a fee for service program. Green$aver is a not for profit corporation which provides energy audits and retrofits to residential customers. Green$aver is still governed by the Urban Environment Center and has a staff of eighteen (9 of whom are independent contractors). Eleven of the eighteen staff members are involved with the energy audit side of Green$aver. Green$aver also owns two service vans and a variety of energy audit and retro-fit equipment.

The energy auditing component of Green$aver's service offering is essentially a loss leader. This being the case, Green$aver is one of the few organizations providing this service to residential customers. The installation component of Green$aver's business is the profitable component. It

[15] Additional capacity of 9,400 tons can be added to the existing plant. Phasing of this additional capacity will depend upon the rate of new district cooling sales.

is also the area in which Green$aver finds itself competing with private firms (such as insulation companies).

The primary financial issue for the Green$aver program is the attraction of adequate financing to support the growth of the organization. To this end, TAF has advanced an $80,000 loan to Green$aver to provide the program with the capital required to carry out its business plan. The interest rate on the loan is 9% (an attractive rate for TAF) and is expected to be repaid by the end of the year 2000 (pending negotiations in the new year). TAF has also guaranteed a $30,000 Green$aver loan to support a line of credit extended to Green$aver by a bank.
In addition to the TAF support, Green$aver has also partnered with Toronto Hydro. Under the arrangement Toronto Hydro markets home energy services to its customers which are then delivered by Green$aver (with Green$aver as a co-brand). Under the arrangement, Toronto Hydro provides up-front capital to Green$aver to expand the capacity of the program in order to meet the demand expected from the Toronto Hydro partnership. Toronto Hydro's investment in Green$aver will be recovered via revenue sharing agreements between the program partners. It is our understanding that Green$aver is also participating in the development of an independent contractor network initiated by Enbridge.

Green$aver's new business plan is just now being executed. Its success in addressing the residential EE market has not yet been demonstrated. It is expected that Green$aver's efforts in this very important market will be enhanced by the partnerships that it is developing.

4.6 Better Buildings Partnership

The BBP is a public-private partnership that promotes and implements EE and building renewal retrofits in industrial, commercial and institutional buildings. The BBP is administered by the City and is comprised of a group of companies acting under various memorandums of understanding.[16] The BBP's primary goal is to reduce CO_2 through the renewal of the city's buildings. To achieve this goal, the BBP provides a variety of professional EE services.

From a financial perspective, the BBP acts as a facilitator between building owners and sources of financing to increase the attractiveness to building owners of implementing energy and water efficiency measures. Since the launch of the BBP in 1996, the program has stimulated $100 million of investment in the Toronto economy. BBP projects in 155 buildings have resulted in annual building operating cost reductions of $11 million and the creation of over 3,000 person years of employment. The primary financial services that the BBP provides are interest free loans and loan security packages (the BBP does not provide grants to building owners). The two primary BBP programs are summarized below:

[16] The sponsors of the BBP are Toronto Hydro, Enbridge and TAF. The implementing partners of the BBP include DukeSolutions, Rose Technology Group and 34 other ESCOs.

4.6.1 Interest Free Loans

The BBP was allocated $4 million dollars from each of the federal, provincial, and municipal governments for a total of $12 million under Phase 1 of the Canada Ontario Infrastructure Works Program. It should be noted that the City's $4 million share was provided by the private ESCOs providing energy management services under the BBP and thus no City funding was required. These funds have been utilized to provide loans totaling $10.6 million to building owners for the implementation of energy and water efficiency projects.[17] $7.1 million of these loans are being repaid by the borrowers on an interest free basis in scheduled monthly payments over an average 10 year term. The remaining funds (i.e. the $3.5 million provided by the ESCOs) are being repaid by the borrowers with interest over the same term.[18]

The loans provided by the BBP under this program are fully secured, partially secured or unsecured. The majority of the loans are unsecured or partially secured (i.e. the goal of the BBP program is to support the public / non-profit sector which often find it difficult to offer lenders the security necessary for traditional financing to occur). In some cases, the BBP has also been able to bolster its loans by arranging matching interest free loans from ESCOs.

The performance of BBP borrowers to date has been stellar. Since the loan program began in 1996, **no borrower has ever missed a payment**. The success of the program to date is attributable to the conservative nature of the ESCOs participating in the program (i.e. the energy savings achieved have been greater than projected) and the fact that the borrowers are repaying the loans from the energy savings achieved by the underlying projects.

The program's success is instructive as it demonstrates the credibility of both EE projects and the public / non-profit sector in general to lenders. The success of the program should be communicated to the financial community to encourage investment in these initiatives. Once the credibility of these projects is established, there should be an opportunity to finance these initiatives under normal commercial terms and thus leverage the amount of capital available for future EE projects.

4.6.2 Credit Enhancement Fund

Established by Enbridge, TAF and the City less than one year ago under the Retrofit Facilitation Agreement ("RFA"), a limited loan recourse fund (the "Fund") was established to provide limited support for loans made by Enbridge or designated third party sources for qualified projects. These loans are provided primarily to building owners in the small / medium institutional, commercial, industrial and multi-residential sectors. The Fund also supports the financing of retrofits to public, non-profit and large buildings where feasible.

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[17] Of the $12 million in funding, $1.4 million was utilized to fund consultant studies and other program costs leaving $10.6 million available to make loans.

[18] The funds are allocated to borrowers on a prorata basis (i.e. each borrower has an interest-free and an interest-bearing component to their loan). The ESCO portion of the loans generally include interest rates of 200 to 500 basis points over similarly termed Government of Canada bonds.

TAF has committed $2 million to the Fund (via a letter of direction to Enbridge). Enbridge also contributes to the fund based on the natural gas savings that result from the projects supported by the Fund. To date, over $739,000 has been credited to the Fund by Enbridge.[19] This structure is attractive as the Fund will continue to grow (via the Enbridge gas savings contributions) as new projects are completed.

In the event of a default, the Fund guarantees a maximum of 20% of the amount borrowed (plus reasonable legal expenses). Given Fund contributions to date, approximately $13.7 million in loans can be made with the Fund's support (i.e. 5 times the $2,739,000 in current Fund commitments). Under a default, the Fund would pay the lender from the following sources in the following order of priority:

- first, from the interest earned on the Enbridge contributions;
- second, from the principal contributed by Enbridge; and
- third, from TAF under the $2 million letter of direction.

This kind of creative relationship benefits the City, TAF and Enbridge as it encourages and leverages the funds available for EE projects and allows maximum flexibility for the use of TAF capital (i.e. TAF's security commitment under the program does not come in the form of a letter of credit or other restrictive security instrument).

As the credit enhancement program has just been launched, no loans have been made to date, however a total loan portfolio of over $10 million is expected to be established over the next several months. Demand for this type of program appears quite high (i.e. there are lenders who are comfortable making loans under this type of security arrangement) and thus there appears to be an opportunity to bolster the program with more security commitments (i.e. possibly from TAF, a very small portion of the City's reserve funds, etc.).

4.6.3 Other BBP Initiatives

In addition to Enbridge, the BBP is talking with other North American utilities which are interested in utilizing their (i.e. the utilities') significant capital to finance EE initiatives in the city. It is hoped that other creative programs such as the Fund can be structured with these utilities in order to increase the number of EE projects undertaken in the city.

The City has also approved the concept of a national BBP program and is currently working with its federal government partners to implement such a program. The federal government (particularly the Ministry of Finance) is very supportive of the BBP program.

5 Conclusions and Recommendations

The City is in a unique position to accelerate investment in its own sustainable energy initiatives both directly and indirectly. The primary conclusions of Part B of the Sustainable Energy Plan are outlined below as are a number of specific recommendations:

[19] It should be noted that Enbridge's $739,000 contribution to the Fund is based on energy savings from other, non-Fund related BBP initiatives (as the Fund has just recently been established).

5.1 Re-invest Energy Savings

Energy savings from City EE projects and a portion of the investment returns from City renewable energy projects should be re-invested in further local green energy initiatives which are technically viable and economically attractive. Specific recommendations relating to this conclusion include:

- modifying the City's accounting and administration systems as necessary to permit accurate records to be kept of energy usage and revenues received from green energy projects; and
- continuing the City's investigation of emissions reduction trading as a way to realize value for, and support future, EE initiatives.

5.2 Optimize Financial Support for Green Energy

In the short term, the financial support provided by City sponsored programs such as TAF, the BBP and Green$aver is key to the development of the local green energy market. These and other resources should be optimized and used sparingly (i.e. only to support credible projects and only to the extent necessary to support commercial financing) in order to maximize their impact on the development of the market. Specific recommendations relating to this conclusion include:

- optimizing TAF assets via adoption of a portfolio investment management approach;
- optimizing Toronto Hydro's capital structure and allocating a portion of any refinancing proceeds to EE and renewable energy projects;
- continuing City support of innovative programs such as Green$aver and the BBP;
- using the City's purchasing power in the energy market to encourage the development of green energy initiatives (via green power procurement and City EE initiatives);
- encouraging the development of further renewable net billing projects such as TREC's Windpower Co-operative;
- investigating the potential for innovative financing and funding structures such as income trusts, levelization accounts, public benefits charges and use of building reserve funds to support green energy projects;
- utilizing the City's borrowing capacity (as appropriate) to facilitate or support sustainable energy initiatives which are technically proven, economic and will be revenue neutral in the short term and net revenue positive over the longer term; and
- as a last resort, considering use of City reserve funds to support EE projects where appropriate (i.e. where the integrity of both the initial reserve fund and the City's credit quality is not compromised).

5.3 Establish Green Energy as a Credible Commercial Venture

In order to influence and increase investment in sustainable energy initiatives in the city on a longer term basis, these projects must be established as credible commercial ventures capable of providing attractive economic returns. This process is key to the long term development of the green energy market. Specific recommendations relating to this conclusion include:

- presenting the economic performance of the City's green energy initiatives (particularly TAF and the BBP) to the financial community in a concise and well documented manner; and

- encouraging and continuing support for partnerships with private lenders (such as those being investigated by TAF).

5.4 Coordinate Green Energy Initiatives

A coordinated, defined and well understood approach to green energy initiatives throughout the City and its agencies is key to the acceleration and proliferation of investment in sustainable energy initiatives. Specific recommendations relating to this conclusion include:

- ensuring that Toronto Hydro and TDHC (or other City agencies) work together on projects wherever appropriate to maximize efficiency, economies of scale and project economics (i.e. DLWC, port lands, Northwind, etc.);
- establishing a (or expanding the) City EE office to provide overall responsibility for the coordination of City sustainable energy initiatives; and
- providing sufficient funding and resources to ensure that the City EE office can meet its EE objectives (staffing of this office should be completed in the most efficient manner possible which could include use of existing staff or hiring new staff or outside experts as necessary).

5.5 Minimize Financing Costs via a Long Term Approach

A long term, defined price contract approach to green energy projects should be utilized wherever appropriate to minimize financing costs (particularly for generation or district energy projects).

5.6 Aggregate Projects to Improve Attractiveness

Projects should be aggregated whenever possible to improve economies of scale and to improve the attractiveness of projects to financiers. A specific recommendation relating to this conclusion is:

- continuing support for utility initiatives such as on-bill revenue collection and private label financing.

5.7 Study other Jurisdictions

Other jurisdictions have made considerable progress through a variety of green energy programs and initiatives. A specific recommendation relating to this conclusion is:

- the City should study the programs implemented and the lessons learned by other jurisdictions which have implemented sustainable energy programs.

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