

THE MUNICIPALITY OF KINCARDINE

Analysis and Recommendations regarding Intermediate Level Waste / Low Level Waste Management Facilities

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Project**

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1 Introduction

A team of four students from the Richard Ivey School of Business were commissioned to consult in a study regarding negotiations on a Radioactive Waste disposal facility. In the original mandate for the report, Kincardine requested a financial analysis, which they can use in negotiations with Ontario Power Generation.

The Municipality of Kincardine has offered to become the hosting community of a permanent nuclear waste management facility for Low Level and Intermediate Level Radioactive Waste from Ontario Power Generation. This offer is a major part of a strategy the Municipality has taken in response to stagnated growth during the last decade. The team understands that the ultimate goal of the Municipality of Kincardine is to provide greater benefits for its population and to grow steadily.

To fulfill its mandate, the team initiated the following activities:

- Gained an understanding of the principles of a deal, as well as the motivation behind the need for a deal.
- Gained an understanding of the nuclear industry and the environment in which it operates.
- Gathered information on the history between OPG, Kincardine, and other stakeholders.
- Created models for valuating a deal according to Kincardine's outline, and testing them using mock negotiations.
- Brainstormed value-creating options to bring about success in a deal.
- Planned a negotiating strategy to move forward.

It is important to note that the content of this report largely focuses on the business opportunity and value-creating mechanisms. While the report does not dwell too deep on the technical or political aspects of the deal, it does integrate the chronicles of past experiences with similar deals in an attempt to provide a more holistic analysis.

2 Executive Summary

The client, MUNICIPALITY OF KINCARDINE, is negotiating a contract for the building of a nuclear waste disposal facility with Ontario Power Generation (OPG). This report investigates the current state of the negotiating environment, analyzes the decision drivers of the major stakeholders, and provides various models useful for valuation. Based on the issues identified in this study, recommended changes to Kincardine's negotiating strategy are summarized, along with a "Future Investigations" listing of tasks for future groups.

Issue Identification

In analyzing Kincardine's development goals, current position, negotiating power and strategy, five important issues were identified:

- Kincardine and OPG are divided on the issue of remuneration and accordingly impact offset payment for a disposal facility if the wastes are to be hosted in the community permanently.
- Kincardine is not able to assess and claim the economic value of the impact.
- Kincardine needs to leverage this opportunity to support its long term development goal but does not want to be captive for an under-estimated value.
- OPG claims to have options and does not feel an urgent need to make a final decision.
- Kincardine turns to using OPG's alternative cost as a floor benchmark for negotiation.

Recommendations

Based on the conducted analysis as outlined in the introduction, we recommend Kincardine implement the following actions:

- 1) Decrease the level of competitive negotiation tactics, employing more collaborative negotiating strategies.
- 2) Clearly define development and growth goals Kincardine wants to implement, including a timeline for each item.
- 3) Increase the level of urgency OPG sees in completing a deal.
- 4) Include Provincial Government agencies in the negotiations.
- 5) Increase the value proposition OPG & the Ontario Government perceives in using Kincardine as a hosting community.
- 6) Expand on the number of options to increase the value of a deal.

Analysis

In order to assess the state of the key stakeholders, the report outlines information gathered from Kincardine and OPG. The Value Creation model is also explored as a more attractive and attainable strategy for Kincardine.

3 Issue

The Municipality of Kincardine is seeking to be the long term solution to properly accommodate the temporary low-level nuclear waste (LLW) storage, owned by Ontario Power Generation (OPG) for decades. Before OPG was privatized in 1999, the two parties had established processes and contracts managing the matters. Yet, the privatization of OPG, and its succeeding actions in terminating some of the benefits to Kincardine, brought the working dynamics into a new landscape undesirable to Kincardine for its future development.

Currently the community faces the following challenges:

- Highly dependent on nuclear power related industry, and related impact offset payments for growth. Kincardine has not been able to diversify its economy; yet OPG terminated some of the previously agreed benefits to the community.
- A permanent solution to OPG's LLW waste storage dilemma is required. OPG sees little need to change the status-quo, but is honouring a Memorandum of Understanding to work with Kincardine in resolving the issue. A possible option for OPG is to site the permanent facility in Kincardine. For OPG, it presents no new impact to the community, while Kincardine understands it will have great impact and constraints to its growth.
- Kincardine is not able to assess the size of the impact in economic terms to support its decision, or back up its negotiating strategy.
- OPG has options and time to solve the issue, while it is a very high stake matter for Kincardine to succeed.
- Facing such constraints, Kincardine is lured to a cost-based approach to negotiate a contract with OPG.

4 Size-up of Major Stakeholders

The following is a list of stakeholders categorised according to their relationship to this deal. "Stakeholders" comprises of stakeholders that are directly affected by this deal, or have some active say in the deal. "Competitors" comprise of alternative sites OPG has possibly approached in the past.

Table 1- List of Stakeholders

Stakeholders	Competitors
- Kincardine	- Deep River
- OPG	- Geraldton
- Ontario Government	- Darlington
- Neighbors	- Pickering
- LLWRWMO (LLW radioactive waste management office)	- Port Hope
- Federal Government	

Below is an analysis of the three major stakeholders we have identified:

4.1.1 The Municipality of Kincardine

Kincardine is currently the hosting town of one of OPG's nuclear power plants and waste storage facilities. The municipality has about 12,000 residents as of 2004. Approximately 3000 of these residents work with the power plants. The primary source of employment and revenue come from OPG-related facilities located in Kincardine.

As one of the communities hosting nuclear power generators and its wastes, Kincardine is bound by the stigma of 'nuclear' to attract outside businesses and talents to the community. Without an adequate injection of these two important factors for growth, it would be highly difficult for Kincardine to further develop in the long run.

Knowing its deep ties with nuclear power, and understanding the threat of the community's sustainability after the Bruce site is de-commissioned in 2034, Kincardine wants to leverage its current involvement with nuclear power to diversify its industries alongside its development goals.

Kincardine believes that a long-term contract for the disposal of low and intermediate level waste at the Western Waste Management Facility (WWMF) is in the town's best interest. At the same time, the town has long-term plans of further diversifying in an effort to reduce their reliance on nuclear related businesses. In support of diversification, Kincardine plans to develop its secondary industry, tourism, and agriculture. As such, a long-term contract with OPG in terms of hosting a low-level waste management facility remains a vital issue for the town.

4.1.2 Ontario Power Generation

Ontario Power Generation (OPG) is a utility provider formerly owned by the Ontario government and privatized in 1999. OPG's principal business is the generation of electricity to distributors in Ontario and Northeastern U.S. In response to the Ontario government's planning of competition in the utility industry, OPG has leased nuclear facilities in Kincardine to Bruce Power- yet, OPG remains to be the nuclear waste owner in its contractual relationship with Bruce Power.

According to recent announcements, plans for increasing the number of operational nuclear plants are materializing to add electricity supply in support of Canada's long-term economic growth. With the total number of nuclear plants increasing, the resulting volume of nuclear waste is expected to increase.

Currently, it appears the utilization level and flexible storage capacity provide OPG with little urgency to actively consider an ideal permanent disposal site for the low-level nuclear wastes, though it is a high priority issue for Kincardine. Yet, a recent turnover in OPG's top management, due to great cost and schedule over-runs, could affect OPG's planning guidelines. The new executive team may place greater emphasis toward pre-cautionary, long term perspectives that identify and incorporate potential risks into project budgeting, in addition to recognizable costs.

4.1.3 Province of Ontario

As the province with the most active industrial, commercial and living standard growth development in Canada, Ontario sets precedents among its peer provinces in handling many of the provincial-wide issues in business development, including nuclear waste management. Currently Ontario government has budget deficits, and any further financially-stressing projects could lead to Ontario residents' high concerns.

To strengthen its power industry, Ontario government privatized its Ontario Hydro to several business entities and provided incentive to encourage competition. The goal is to have a power industry that can respond to the increasing power demand from Ontario's continuing economic growth, at a price that helps Ontario industries stay competitive. On the other hand, an affordable charge is critical to residents to get through the long, low-temperature Ontario winter months.

The permanent solution of LLW nuclear waste disposal is the first instance for Ontario, and successfully managing the issue will be an important milestone demonstrating Ontario's ability in utilizing nuclear energy and in managing its resulting issues. The principles, the processes, and the initial results will serve as important precedents for future handling of similar event.

4.1.4 Summary

Table 2- Interests of Major Stakeholders

Kincardine	Ontario Power Generation	Ontario Government
Be treated fairly	Becomes more attractive to shareholders	Introduce competition to power industry; divest interest in OPG
Growth	New power plants, divest / Lease large fixed assets	Show OPG as attractive
Revive secondary and tertiary industries	Solve waste disposal siting issue and manage the disposal operation	Get Re-elected
Make Kincardine a better place to live for descendents		"For the Greater Good"

5 Environment Surrounding the Deal

5.1 History

In the previous chapter, we discussed the drivers that motivate the three major stakeholders with respect to this deal. In this chapter, we will discuss the pressures placed on these stakeholders to come to a deal, along with probable behaviour analysis.

Prior to 1999, Ontario was supplied its electricity by Provincially-owned Ontario Hydro. Due to economic and public pressures, the government at the time decided to privatize the industry by selling their stake in the utility. Thus, in 1999 Ontario Hydro was divided into 5 separate entities:

- 1) Hydro One (power distribution)
- 2) Ontario Power Generation (OPG) (power generation)
- 3) Ontario Electricity Financial Corporation (OEFC) (debt-holding company)
- 4) Electrical Safety Authority
- 5) Independent Electricity Market Operator

During this same period, Hydro One and OPG became incorporated, carrying forward mainly the assets of the old Ontario Hydro. With the permission of creditors, a majority of the equity¹ (including the massive \$38 Billion debt²), was taken over by the OEFC, as it continued on as the legal entity of the old Ontario Hydro. To pay down the massive debt, Hydro One and OPG contributed a portion of their revenue towards debt repayment.

The privatization process did not proceed smoothly. With a sudden jump from being crown corporations to publicly-traded entities, both companies introduced dramatic price increases that the public could not digest. Relating to Table 2, the Ontario Government became fearful of their re-election prospects, as well as the embarrassment of an episode of privatization that did not meet the needs of the public's demand for 'a greater good'.

In a haste to calm very high public discord, the Government introduced an Energy Price Cap, thereby limiting the magnitude of a price increase to all consumers and industry. The effect of this price cap on OPG meant a decrease in its revenue-generating potential, as well as its market value in a publicly traded system. In response, all shares of OPG came under the control of the Ontario Government. One consequence of cutting the revenue generating potential of OPG was the cessation of payments to the OEFC. By limiting its debt-reducing ability, creditors felt betrayed, as they viewed this move as an increased risk to the capital tied up inside the OEFC. In 2002/2003, to appease these creditors, the Ontario Government completed a \$1.8 Billion borrowing program & \$1.6 Billion short-term borrowing program on behalf of the OEFC, presumably guaranteed by the government.

¹ Ontario Electricity Financial Corporation- 2002 Annual Report

² www.ampco.org, "The Issue on Stranded Debt- Feb- 22- 2001.pdf"- See Appendix 3

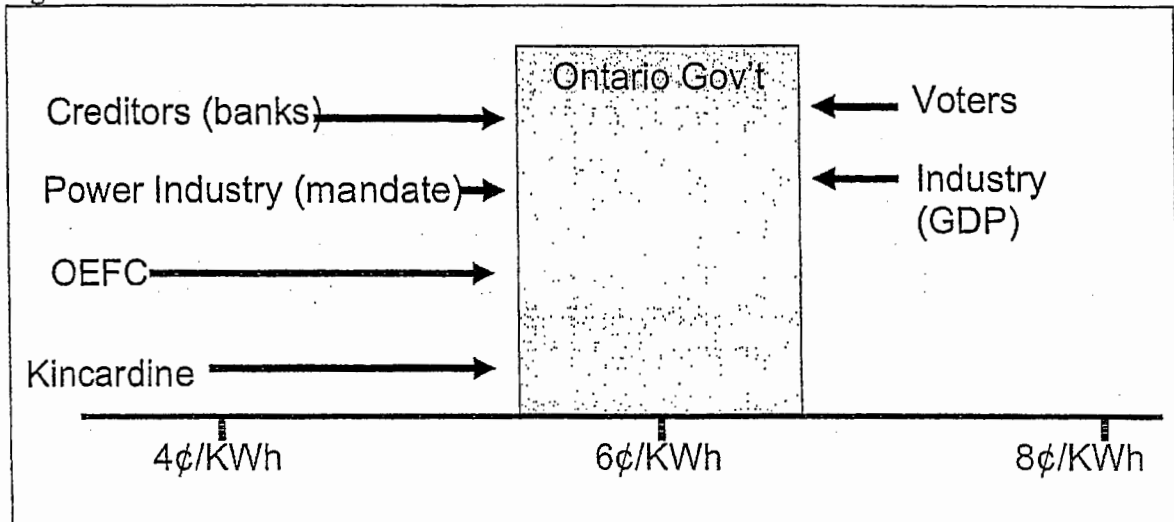
5.2 Analysis of the Deal- Pressure Tactics

In late 2003, Ontario elected a new premier, Dalton McGuinty, who outlined plans to scrap the price cap and bring an end to the deficit through unpopular means such as tax increases. While he is currently popular amongst Ontarians, this support could slip once overall expenses noticeably increase.

To summarize the issue with the Ontario Government:

- 1) Increased pressure to decrease the deficit
- 2) Increased pressure to lift the price cap
- 3) Increased pressure by consumer and industry to keep energy costs from sharply increasing
- 4) Increased pressure the OEFC and its creditors maintain or increase payback.

Figure 1



Kincardine's role in this high-pressure environment further increases the strain on the government in an upward price direction. With a mandate to increase competition in the energy market, and a notorious habit of legislating problems away, one of the easiest options the government has in its arsenal is imposing an order that would see LLW & ILW disposed of in Kincardine.

5.3 Analysis of the Deal- Possible Strategies and Courses of Actions

Assuming that it is the best interest for Kincardine to pursue the option of LLW / ILW disposal, the municipality should evaluate OPG's possible course of action or strategies that could minimize the financial compensation for the municipality.

OPG's core competency is in the generation of nuclear power, but not necessarily in the management of nuclear waste; nor is it one of OPG's top priorities. However, OPG does

recognize their responsibility to manage the waste that they generated and the historical waste inherited from Ontario Hydro. With the shake-up at the executive level of OPG, future management decisions will try to minimize any possible financial obligation related to non-priority functions.

In this case, one of the possible strategies for OPG is to minimize the compensation for Kincardine. One possibility is to hold off on a decision until some event triggers a real necessity for a long-term waste management facility. This does not mean that OPG would not negotiate with Kincardine, but that it would not need to make any compensation commitments until there becomes an absolute necessity to do so. OPG could keep using the short term waste storage facility at Kincardine until the status quo changes to form a real pressure for OPG to build a long term waste management facility. This is a "Temporal - forever solution" that Kincardine is highly concerned about.³ OPG can implement this strategy by arguing that Kincardine already hosts a temporal waste management facility, so modifying the situation slightly to host the long-term facility does not really affect the community:

...after reviewing the public opinion evidence, ...posited that most siting schemes had failed because they attempted to reduce people's risk perceptions, and approach, he soundly concluded, that is all but futile. To address this problem, he suggested searching for existing facilities, such as chemical plants, (etc), that neighbours regard as dangerous; buying the old factory and shutting it down; and building the new facility on the same site or nearby. This...would be acceptable to the neighbours because there would be no net change in the risks to which they were exposed.⁴

In OPG's view, the change from a short term to a long-term facility is just an upgrade of the current facility, and all financial compensation was already paid when the short-term facility was built. With a population dependent on OPG as an employer and a revenue generator, fighting OPG using Kincardine's own population would be a difficult task should OPG decide not to negotiate.

While this option may be acceptable to OPG in the short-term, it will set a precedent deterring other municipalities from considering a relationship with OPG. For example, a recent government mandate calling for greater energy supply may require OPG to start operating a greater number of facilities. For new plants to become operational, seeds for a competitive market need to be in place. Candidate communities will view the hard-handed tactics of OPG as a threat, and refuse to fully cooperate in this mandate. Spoiling the environment for a one-time gain may not bode well for OPG, however should it occur, Kincardine's would still not see an optimum value in the deal.

Another strategy that OPG could use is what we call "the several other opportunities" option. As Kincardine approached OPG, OPG could surmise that waiting for another town to volunteer would increase the competition among candidate communities and drive down the

³ Kincardine clearly expressed their concern in this strategy.

⁴ Michael B. Gerrard, "Whose Backyard, Whose Risk: Fear & Fairness in Toxic & Nuclear Waste Siting", 1996, pg. 138

remuneration for a hosting community. Again, this strategy is not sustainable, but could be used as a negotiation tool in the short term.

Other strategies OPG can employ include waiting until there is a need to renew federal or provincial licenses that requires the approval of the municipality. They can also wait until the social pressure of OPG's prolonged inaction becomes too risky or unmanageable that forces the provincial or federal government to step in to push for a permanent solution. These are principally political solutions, and Kincardine may exercise activities of the same nature, such as lobbying, to trigger an event that forces OPG to decide upon a permanent facility.

There are also operational situations that may force OPG to get a permanent facility. For example, when the storage space in the temporal facility is diminishing and cannot be further expanded physically. While not sustainable indefinitely, it is an option that may be viable for several decades. Without a thorough study on this matter, it would be difficult to predict an exact period.

5.4 Analysis of the Deal- Future Dilemma

The current deal is structured such that only Historic waste and Operational waste will be stored in any agreed upon facility. Forecasts of these wastes are given in Table 3.

Table 3- Forecasted Waste (as of Nov. 2003)

	LLW	ILW
December 2002 (Historic)	48,000 m3	9,300 m3
December 2015	62,000 m3	12,000 m3
December 2034	77,000 m3	15,000 m3

* Assumes 20 nuclear reactors

** All figures are cumulative.

*** Source: OPG meeting- November 2003

The majority of the waste produced is LLW, meaning low radioactivity, and a shorter half-life. All waste will be place in structures that are either above ground, or underground. Both concepts are expandable, and each carries its own risk profile and cost estimates.

In our analysis, having a single site for waste disposal is more rational than having several smaller sites:

- Economic cost of building and monitoring several sites indefinitely
- Politically less challenging
- Single site has smaller risk profile than multiple sites.
- Operationally more streamlined.

In coming to a deal, there is most likely going to be annual disbursements from OPG to Kincardine. In discussions about future trends of waste levels, OPG has revealed that after 2034, during the decommissioning phase of its nuclear facilities, a large amount of decommissioning waste will be generated. Unlike the operational and historic waste, a vast majority of the waste will be ILW. Total decommissioning waste will be equivalent to

about 100,000m³ (roughly the same amount of total operational and historic waste that would exist in 2034).

The consequences of this revelation should be of concern to Kincardine. Should Kincardine be unable grow out of its large dependence of OPG's proceeds, it may be 'forced' to accept a deal not in its favour:

"...ongoing compensation schemes- such as per ton payments- can become addictive. If a community grows accustomed to having no property tax because of facility fees, then the closure of the facility becomes a feared event, and permit renewals garner active support."⁵

As an example, poverty-stricken West African countries are seeing an explosion of revenue generation from oil ponds currently being exploited. With this income, very few economies are diversifying. There is a fear that when the oil runs dry, the general population will not have the skills needed to sustain their economy.

In applying this example to the context of Kincardine, if Kincardine is able to diversify during the next few decades, the bargaining power of Kincardine would improve significantly, and a new contract for placing the decommissioning waste will not be signed under an atmosphere of fear.

In light of this, we must be conscience that OPG may not wilfully be aware of this issue. The year 2034 is more than 3 generations away; for an executive to justify making a deal which their children would have to act upon would not rest well for OPG's board of directors.

⁵ Michael B. Gerrard, "Whose Backyard, Whose Risk: Fear & Fairness in Toxic & Nuclear Waste Siting", 1996, pg. 126

6 Decision Criteria

The most important criterion in making this decision centers around the issue of Kincardine's long-term development goals being met. The Municipality of Kincardine aims to be the safeguard for its resident's well-being in a prosperous community long into the future. The goals are achievable via economic development and population growth, thus, the following criteria are appropriate:

- **No safety or security concerns.**
- **No stigma to Kincardine's residents**
- **High standard of living for residents**
This includes good infrastructures such as transportation, communication, education and healthcare facilities, as well as the platforms for leisure and culture activities.
- **Sustainable economic development in addition to energy sector.**
This includes strengthening existing farming, fishing and tourism industries, as well as diversifying into any industry that Kincardine has a comparative advantage to engage in.
- **Able to attract new residents for population growth**
- **Long-term, complete solution**
- **Benign working relationship with the facility owner**

7 Valuation Models:

Establishing a value for a negotiated settlement is a particularly difficult task to accomplish. Here, we will examine 3 different methods to value the impact as a hosting community for the wastes:

- 1) the BATNA model (Best Alternative To a Negotiated Agreement)
- 2) the DCF model (Discounted Cash Flow)
- 3) Comparables and multiples model

For simplicity, each analysis will focus only on the monetary value (single dimension). For these models to work there are a number of assumptions we need to make.

7.1 Assumptions:

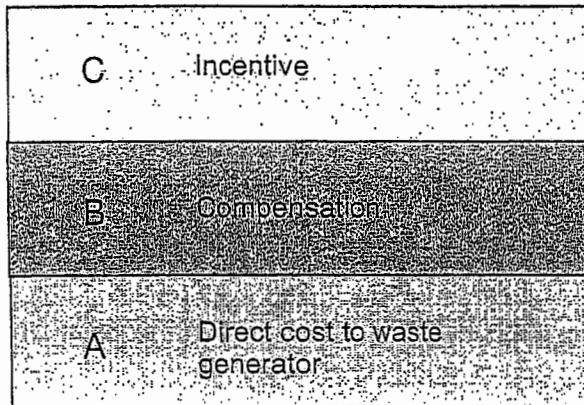
- 1) No other hazardous waste will be sited on the land
- 2) Kincardine will not take on any financial burden of maintaining the facility for as long as the facility exists (the next 300 years and beyond.)
- 3) Waste classification system will not change over the active life of the repository, thereby allowing ILW to be classified as LLW, or some HWL to be classified as ILW.
- 4) OPG will be a going concern for over 300 years
- 5) OPG (or some other institutions besides Kincardine) will monitor the facility indefinitely.
- 6) OPG will not import waste from outside producers and store them in Kincardine
- 7) The Ontario Government is unwilling to 'force' a community to accept the waste.
- 8) Any changes in regulation for maintenance criteria, upgrading technology, (during and after 2034) will not be the responsibility of Kincardine.
- 9) Kincardine will not be the legal owner of the waste at any time
- 10) The land which Kincardine owns and is 'leasing for long-term' to OPG will always belong to Kincardine. There will be no redefinition of Kincardine's boundaries.

7.2 BATNA model

BATNA (Best Alternative to Negotiated Agreement) seeks out to find the cost of the second-best alternative to OPG. Using this method, a negotiator will be confident that \$1 below the cost of the second best alternative will be attainable through negotiation.

The original scope of the project called for finding various costs that OPG would incur if OPG selects an alternate site. Kincardine could then use this information to justify a higher monetary settlement from OPG. The model proposed in this section classifies the various costs to OPG and presents them in the BATNA model.

Figure 2



The BATNA model presented in Figure 2 is composed of three components: 1) Direct Costs, 2) Compensation & 3) Incentive. The sum of all three components adds to the BATNA of OPG.

The next few sections will discuss each component in detail, in the context of the Municipality of Kincardine vs. the residents of Kincardine.

7.2.1 Direct Costs (A)

Direct Costs refer to the costs to OPG for building and maintaining a disposal facility. There are three further sub-classifications for Direct Costs⁶:



1) Pre Operational Costs:

Pre-Operational costs are upfront fixed costs to OPG. These costs can include:

- Site Selection
- Site Characterisation
- Licensing
- Site Preparation
- Hiring Expenses

2) Operational Costs

Operational Costs are composed of mostly variable costs, needed for the day to day operation of the facility over its lifetime. These costs can include:

- Material costs for processing and packaging
- Salaries for required labour contents
- Transportation
 - i. Moving historical waste to disposal facility
 - ii. Moving all future (operational) wastes to disposal facility
- Environmental Monitoring
- Facility expansion
- Training (police, fire)
- A more unquantifiable cost is one referred to as a "Geological Risk Premium". Take, for example, a LLW disposal facility placed on a volcanically active site prone to frequent earthquakes and floods, and a second facility placed in a geologically sound environment. Both structures may cost essentially the same to build, but the expected increase in long term maintenance costs, and the increased risk profile of the first facility will add to a "Geological Risk Premium".

3) Post-Operational Costs

At some point, the facility will need to close permanently. Since ILW has a half-life of thousands of years, proper markings and sensory devices will need to be installed. Because of a 'Geological Risk Premium', a site that can minimize the risk of natural disasters will reduce indefinite maintenance costs.

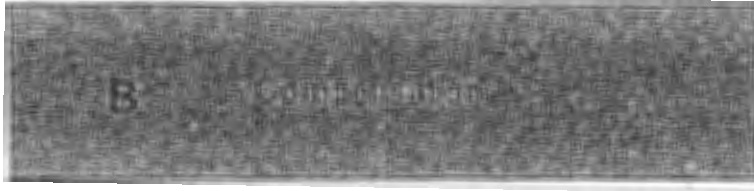
⁶ Partially taken from: William F. Newberry, "Radwaste Magazine", date unknown (Appendix 6)

7.2.2 Compensation (B)

The cost of getting public opinion and government approvals is the key driver of compensation. In the context of nuclear waste management, compensation serves as a remedy to the community for the stigma it will suffer as a result of the facility. While there can be an argument that stigma does not exist, if this were true then communities all over Ontario would have no qualms about accepting the facility into their boundaries. The fact is, there is a social stigma against nuclear waste, and with social stigma comes damages.

"Restitutio in Integrum- restoration to the original position"

Imagine \$100 worth of merchandise stolen from a shop owner. If the next day the owner is compensated with \$100 cash, the owner will feel that there has been no loss, and no gain; the original position is restored. The same basic principle applies to compensation. While hundreds of differing opinions can exist on the reality of stigma, the basic question remains- the shop keeper will not allow for \$100 of merchandise to be taken unless he feels that his original position will be restored (no loss, no gain)?



In the context of the deal, OPG's position is that since waste is already stored in a temporary facility, there will be no additional stigma for a permanent facility for the residents of Kincardine.

In targeting OPG's position of a stigma-less environment, consider the Municipality of Kincardine as an individual.

Table 4

Municipality of Kincardine	Residents of Kincardine
Indefinite Lifespan	Shorter Lifespan
Requires growth & infrastructure	Requires money, stability, health and respect
Does not have an option to move	Has an option to move

To make the legal case for stigma, let us first look at some legal precedence. There are two types of claims that can be made:

- i) loss of business (profitability)
- ii) loss of market value of land.

Other legal challenges in a case for stigma may exist, but these are the two most commonly used in Canadian law. In the first claim, because of the current presence of nuclear facilities, any business currently operating in this environment has already been valued under a

stigmatized condition. However, unlike a nuclear facility, a disposal facility has a 'forever' nature, which affects the value of business for the long term (indefinitely).⁷

In the second claim concerning loss of market value of land, again, the claim can be made that LLW will not bring stigma to an area already affected by a nuclear plant, unless we consider the land stigmatized indefinitely.⁸ Current residents may not feel much stigma, but the long-term value of the Municipality receives the bulk of the stigma. In valuing economic and population growth, a disposal facility may keep outsiders from settling in the Municipality to become residents.⁹

While the case for stigma on the market value of land will be difficult to argue in a negotiation, the general public attitude towards nuclear waste disposal may still be negative due to perceived risks in this deal.

The costs to OPG for dealing with these risks include "public indignation, political opposition, and even obstructionist lawsuits."¹⁰ Another topic to ponder is why many communities fear such a deal. Many of these bottlenecks may not be due to the physical act of placing the waste in a facility, but rather due "to our collective state of mind about attempting to execute a solution that is meant to be permanent and irreversible"¹¹. If this is true, then consider regular waste storage sites are generally irreversible once they are covered with soil, and a park is made over top. So why then is the prospect of doing the same with LLW so different, even if the waste is disposed of in such a way as to avoid contact with the public? In resisting the temptation to go into a philosophical explanation, one can assume the fear of change and the fear of the unknown. There are social stigma fears of Kincardine becoming known as a provincial "nuclear waste dump". There are fears of Kincardine having a permanent liability that may drive away future inhabitants, or discourage newcomers from establishing a presence. There are worries of even having modern-day engineering ideas antiquated by the standards of the next century. These are all examples of drivers for stigma.

In evaluating a compensation scheme, it is important to note that before a disposal facility is ever built, residents can begin experiencing losses immediately (mostly market value of property). The delay between the signing of a deal and the time nuclear waste arrives may see a decrease in property market value. This decrease may be unfair to residents in the surrounding communities.

Another important item to note is that with storage facility, there is always a possibility that the waste will someday be retrieved, and the community can be 'repaired'. However, with a disposal program, long-term stigma should be considered with short-term stigma. Consider— what is the value of stigma of the first unit of disposal waste, versus the value of

⁷ For more information on business losses, see Appendix 4

⁸ For more information on Property Value losses, see Appendix 4

⁹ Small sample of individuals (<20) were asked if they would ever move to Kincardine if given a job offer of \$80,00, knowing that there is a LLW disposal facility and nuclear facility in the area. None answered positively.

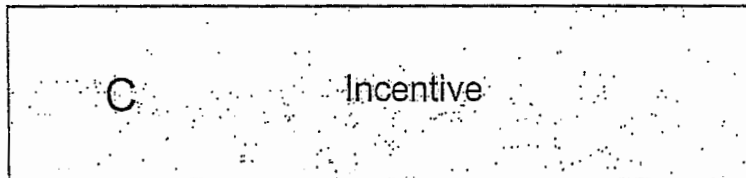
¹⁰ William F. Newberry, "Radwaste Magazine", date unknown (Appendix 6)

¹¹ William F. Newberry, "Radwaste Magazine", date unknown (Appendix 6)

stigma after the 10,000th unit. The largest stigma will be upfront with the first unit, after which the marginal stigma decreases significantly. The reason for this is simple: Nobody ever asks how much waste exists at a garbage dump. The fact that it exists is cause enough for stigmatization.

7.2.3 Incentive (C)

Let us look again at the example of the shop owner. In the previous section, the shop owner did not gain any money, nor did he lose. It is as if the incident never took place. What then is the incentive for him to allow for the grief and personal resources in dealing with the situation? In this section, we discuss the final component of the BATNA model- the incentive.



As a motivator for action, the incentive is generally a tool used to garner support. In the context of the LLW issue, an incentive is a 'reward' for accepting the social burden of the waste, or the cost of educating the population (general public as well as political lobbying) in an attempt to reposition the waste as a non-liability.

With respect to the deal, OPG believes the value of increased employment and indirect business growth should be incentive enough for this deal to exist. This may or may not be true, but if communities in general disagree with this assessment, then the cost to OPG to educate and lobby will increase, thereby increasing the incentive component anyways.

One drawback with the incentive system is that there will always be individuals against any incentive no matter what the amount. "Individuals who perceive these facilities as dangerous will not change these perceptions when offered money. They will view the offer itself as immoral. Health, like love or salvation, does not belong in the marketplace; to buy or sell any of these is a travesty."¹²

¹² Michael B. Gerrard, "Whose Backyard, Whose Risk: Fear & Fairness in Toxic & Nuclear Waste Siting", 1996, pg. 126

7.2.4 Applying this model:

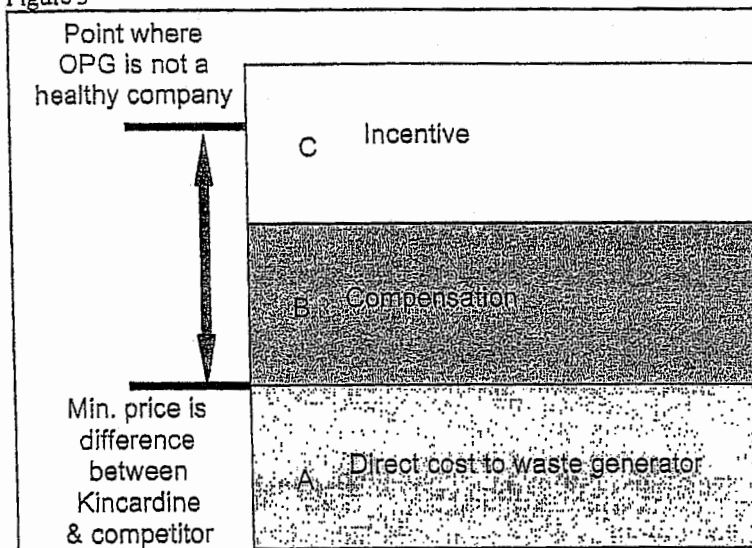
Now that the components of the model are understood, the next step is to put the components together and apply the model to the deal. While we have not been able to gather what alternatives OPG is pursuing, we have drawn up a table of possibilities:

Table 5- Example Alternatives Available to OPG

Location	Comments
Geraldton	Remote Community, may require less incentive, small population
Kincardine	Existing facilities in place, minimize capital costs, geology. Minimal resistance by residents
Deep River	Existing nuclear research laboratory. Minimal resistance by residents. Talks have broken down.
Darlington	Existing nuclear generating station. Minimal resistance by residents. Too close to GTA. Politically sensitive
Port Hope	Already in a deal for federal waste. Minimal resistance by residents.
Pickering	Existing nuclear generating station. Minimal resistance by residents. Too close to GTA. Politically sensitive.
Provincial Park	No population to deal with. Owner is also sole shareholder of OPG. May prompt backlash by environmentalists and Native Canadians.
Do Nothing	Keep sending waste to Kincardine. Look into the issue at some future time. Alternative not sustainable.

Using a BATNA model, each alternative available to OPG will need to be filtered through this model. By stacking the components, we see that the total cost OPG sees is the sum of all three components together, and not individually. Take note, however, that there exists a possibility that no negotiable range even exists for a deal to take place with any alternative.

Figure 3



* Note, the Minimum Price here assumes Kincardine is the most cost-effective alternative for OPG.

For a deal to exist, the complete cost to OPG must be below the “point where OPG is not a healthy company”. If every alternative is above this line, no monetary deal can exist unless one alternative reduces / changes its compensation or incentive.

7.3 DCF Model (Discounted Cash Flow)

7.3.1 Concept

Another way to assess the impact, we can compare Kincardine's values in two scenarios. Scenario 1 is how much Kincardine is worth if it does not have any nuclear power plants or wastes. Scenario 2 is how much Kincardine is worth when it has them. The difference in values of the two scenarios reflects the change of value due to having nuclear sites. Thus the impact is measured in economic terms.

In Scenario 1, we assume that Kincardine does not have the nuclear power plant and wastes. The community would be free from any nuclear stigma and could pursue its long term development goals at its maximum potential via the approaches of growing target industries and population. The pace of economic growth would follow Canada's average long run economic growth, because Kincardine would stand on the common ground as other average municipalities to realize their development goals. Here we can use Canada's long run GDP growth number as the approximation of Kincardine's potential economic growth rate.

In Scenario 2, Kincardine has nuclear power plants and also hosts nuclear wastes disposal forever. In this case, we assume Kincardine's growth would be highly limited because outsiders, including industries and people, would avoid moving into a nuclear-related community by choice due to perceived risks. Kincardine's opportunities to grow its industries and population may therefore become stunted. The capacity of growth would be extremely tied to the current pegged-level of contribution from hosting nuclear power sites and wastes. In other words, Kincardine would have limited growth aspect in this scenario.

The statement that Kincardine would have little growth aspect in Scenario 2 can be supported by a closer look at Kincardine's demographic changes from 1966 to 2001. The population increased steeply between 1966 and 1976, as a result of utility-business-driven population inflows, yet the curve flattened from 1981 to 1991 and started to drop from 1991.

The population's age profile provides another clue. In 1981, the Young Adults (ages 20-39) accounts for 33% of the population and School Age (5-19) is 27%. In 2001, after 20 years, however, the two groups dwindle to only 10% and 22% respectively. On top of that, 64% of the population ages over 40 in year 2001, comparing to only 30% in 1981.¹³ A conclusion can be drawn that Kincardine's population is decreasing slowly and aging quickly. This is fundamentally detrimental to Kincardine's development goals. Therefore, we do not factor in a growth aspect in Scenario 2 in valuating Kincardine's worth.

7.3.2 Putting Dollar Values on Kincardine in two Scenarios

In this DCF approach, to evaluate Kincardine's worth we view Kincardine as a financial asset that generates future cash flows (returns) to its owner for as long as the holding period. We add up all the future cash flows to the owner, and then discount them with a market rate to consistently bring the values of these future cash flows happened at different point of time

¹³ Source: Municipality of Kincardine's Community Profile, 2002.- See Appendix 1

in the future to today. By calculating the present values, we can fairly compare the two scenarios at the same time frame and clean of interest rate effects.

The formula for Scenario 1

The present value of a financial asset that has constant growth of return into perpetuity.

$$\text{Present Value} = [FCFF^*(1+g)]/(Kc-g)$$

Where

FCFF = free cash flow to the asset owner. Here we will use Kincardine's annual net tax revenue (excluding sources from nuclear power related contributions) as the proxy of all future cash flows to Kincardine.

g = growth rate. We will use Canada's long run GDP growth estimate as Kincardine's growth rate for reasons discussed in the Concept section.

Kc = Cost of capital. It means the opportunity cost for the asset owner if he has the amount of interest-bearing capital that will be locked into this investment. Here we will use Canada's 30 year government bond's coupon rate as an approximation of Kincardine's cost of capital.

The formula for Scenario 2

The present value of a financial asset that has no growth of return (i.e. *g* = 0). The cash flow stays at the same level into perpetuity.

$$\text{Present Value} = FCFF / Kc$$

Again, *FCFF* will be Kincardine's all net annual tax revenues, but here it includes sources from both nuclear related and non-nuclear related contributions. *Kc* is still the cost of capital, for which we still use the 30 year Canadian government bond coupon rate as a proxy. Notice that no growth component is built in this formula for Scenario 2 for reasons covered in above in Concept section.

7.3.3 Calculation

Scenario 1:

Clear of nuclear site and wastes; tax revenues will grow to perpetuity at the rate of Canada's long term real GDP growth.

Scenarios 2:

Having nuclear site and wastes; no tax revenue growth factored in.

Calculation Inputs:¹⁴

- Length of Term: perpetuity
- Long run GDP growth (g): 3.1% in real term for Canada, according to current growth outlook estimates made by economists.
- Long run inflation rate: 2% for Canada, which is Bank of Canada's objective.
- Cost of Capital (K_c): 30 Year Government Bond: 5.75% (nominal term); 3.75% (real term)
- Net annual tax revenue: Using the ratio of 3:2 for the tax revenues in Scenario 2 and 1 respectively. For example, according to Kincardine's financial report for fiscal year 2002, tax revenue for Scenario 2 would be CAD 8,815,244, and we calculate a 2/3 of that for Scenario 1, CAD5,876,829.

The following shows Kincardine's values in two scenarios. We use "real term" rates and deducted inflation component from 30 year government bond's coupon rate.

Table 6- DCF Summary Table

Kincardine's Value Using DCF

Components	Scenario 1: No Nuclear. GDP Growth	Scenario 2: Has Nuclear. No Growth
	$PV = [FCFF \cdot (1+g)] / (K_c - g)$	$PV = FCFF / K_c$
Net annual tax revenue (FCFF)	5,876,829	8,815,244
30 year gov. bond; real term (K_c)	3.75%	3.75%
GDP growth estimate; real term (g)	3.10%	
Present Value	932,155,545	235,073,173
Differential (Impact of Nuclear)	697,082,372	

The decreased Present Value from Scenario 1 to Scenario 2 thus measures the approximate impact in economic terms.

However, the fact that Kincardine already has nuclear power generation site makes it difficult to separate the impact of having nuclear power sites from the impact of hosting permanent waste disposal. An attempt can be made to further discount the two situations with different length of time (having nuclear power site till decommissioning for another 50 years vs. hosting nuclear wastes for 300 years of institutional control and actually waiting until the radioactivity totally decays after thousands of years). Thus, it is conceptually viable, but it would be difficult to recognize the differences and negotiate upon in real practices.

¹⁴ These inputs are from The Economists and Wall Street Journal.

7.4 Comparables and Multiples

A third way to value a project or an opportunity is to use comparables. In the financial world "the price-earnings approach is a common valuation 'multiple' technique"¹⁵ but this method can be further refined to connect to some revenue-driver measures for the industry. For example, "(in) telecommunications industries price-to-cash flow multiples are most popular."¹⁶ So we can use any appropriate price-variable multiples (i.e. sales, future cash flows, earnings before interest and taxes, etc.)

However, the multiples are based on the conditions of a specific market. The multiples that are used for valuating a company in Canada are different from those used to value a company in Mexico. This means the same price-variable multiple can be used but has to be adjusted to the specific market conditions. Multiples are also affected by the timing. In other words, even in the same geographic region a company could be valued at 10 times earnings in general, but if the time of valuation meets the optimistic market going rate, then the value has much higher upside potential than the usual 10 times earnings.

To use a multiple, we need to first identify a comparable situation and estimate their multiples. This requires an investigation into the similarities and difference between one business and the other, and those of their respective markets.

In this project, Kincardine can find a driver of the opportunity and look for a comparable situation in the world to generate a multiple. The possible drivers of this opportunity could be:

- Volume of waste (cubic meters)
- Weight of the waste (tons)
- Radioactivity of the waste (microSievert)
- Land utilized (square meters)
- Demographic conditions at the host communities
- Other drivers of similar nature

For example, Kincardine can search for this data at various host communities, and divide the compensation paid to the host community by the different concepts. For example, a UK host community may receive \$X per person, \$Y per square meter, \$Z per microSievert, \$L per ton of waste and \$K per cubic meter of waste, while in France, the structure could be \$2X per person, \$1/3Y per square meter, \$5Z per microSievert, \$2L per ton of waste and \$1/4K per cubic meter of waste.

In negotiation with OPG, Kincardine could identify the best multiple to use and customize it to fit Kincardine's specific situation. For instance, if a UK facility received \$X per person, and in France the rate is \$2X, it may be because the population in France is older and so less open to this idea.

¹⁵ "Financial Management: a Primer", Stephen R. Foerster, Final draft version

¹⁶ same as above

7.5 Limitations of the Financial Models

“Whatever valuation technique is used, it must be recognized that any results, either through simple calculations or more elaborated spreadsheets, are only as good as the assumption that underlies the models.”¹⁷

At this stage, the uncertainties around this project are so great that the assumptions on the common financial models can be easily arguable and fall apart if used solely in negotiation. A financial model that can completely and faithfully represent the uncertainties and risks of this project is not only complicated, but will be immediately subject to constant re-modeling as unfolding real life changes shake the underlying assumptions.

The biggest financial and business risk in this project can be conceptualized as illiquidity. In general, it means that a possession cannot be traded or exchanged promptly. Therefore, if a person invests in an illiquid business, the investor is not able to exit his investment easily. The deal surrounding the LLW project presents a highly unconventional risk beyond what a liquidity-based financial model is able to depict as a risk-return decision.

In this opportunity, the illiquidity is in the length of the business (i.e. using land for the next three centuries and beyond.) While Kincardine can recognize this constraint, incorporating this additional risk factor into any value provided by the financial models would be very difficult.

Other disadvantageous factors for Kincardine in using these previous financial models include:

- Quantifying the values for various siting alternatives may become difficult to predict. Surveying for a dollar value on a host-community's compensation and incentive requirements may in itself produce an uproar within a community.
- The impact of nuclear waste at a community is not well defined in current practices, and claiming for any stake could be highly arguable. While Kincardine can apply the models to make a case based on stigmatization for negative financial impact, OPG could focus on the quantifiable benefits to argue that the net effect is positive.
- The fact that Kincardine now has a nuclear power site makes it difficult to quantify the economic impact due to accepting the permanent wastes disposal. Though the time durations of the impacts can be distinguished and consequently discounted (in the DCF model) to assign approximate values for comparing the difference, it would be difficult to translate to conceivable and actionable terms at negotiation table.
- Focusing on financial numbers can easily lead OPG and Kincardine into the thinking of “cost-based pricing” aspect in solving this issue. When there are other low-price towns “competing” with Kincardine, then the focus becomes seeking low-cost

¹⁷ “Financial Management: a Primer”, Stephen R. Foerster, Final draft version

solution. The matter becomes a price-cutting game instead of a complete solution for any of the accepting communities.

- Time horizon issue. OPG might focus on the impact to the hosting community in the first few decades while Kincardine assess the impact for hundreds of years. Such divided perspective in time horizon inevitably leads to different inferences of magnitude of the issue. It is very likely that hosting nuclear sites and wastes appears more financially attractive in the short term due to spin-off employment and business opportunities. This point could lead OPG to argue that hosting the disposal site itself will produce a net positive impact to the community than not hosting it, and that the community should not further ask for any offset payments. However, Kincardine wants long-term prosperity, and in the long run of over 300 hundred years and beyond, the negative impact does exist (as demonstrated in the DCF model). Yet it is easier for OPG to justify the tangible, short term benefits than for Kincardine to argue the community's growth potential in the far future.
- Using comparables to value a deal hinges on full disclosure of any deal. In most comparable deals studied, only monetary benefits were listed, with little mention of non-monetary incentives. Further, very little was mentioned about the environment surrounding the deal, or the issues of the hosting community at the time. Using a potentially poorly-constructed deal as a model for this deal may not produce a result that is acceptable to Kincardine. Since there is no standard model on which to frame a valuation of a deal, many of these communities may have accepted a deal far less than its fair market value.
- As indicated in the previous section, the value of an opportunity is strongly affected by the timing, and currently the situation appears not the best to harvest a maximized financial outcome of this opportunity.

To sum up, applying the financial models above in order to define and maximize the outcome for negotiation often leads to a sub-optimal result that could leave Kincardine with a poorly- negotiated settlement.

8 Collaborative Negotiations

8.1 Competitive Negotiation vs. Collaborative Negotiation

In the preceding chapter, much of the analysis is done in the context of a competitive negotiating environment. That is, both sides solidify their positions and only reluctantly give concessions in return for the same. In the book *Negotiate Your Way to Financial Success*, the author details "Seven Golden Rules" of negotiating, one of which is outlined here:

"Negotiators are not necessarily popular individuals, but there is nothing wrong with getting the edge in any deal.... 'Tough' means sticking to your guns, letting the other side know that you mean business, and being unafraid to ask for extra concessions"¹⁸

Each side can clearly draw up explanations on their positions, including valuation models and existing practices. However, if an agreement is ever reached, both sides will feel 'cheated' in a sense. The reason is, in these types of negotiations, a 'pie' of fixed size needs dividing. Each slice of the pie that is given is a slice that is taken away from the other negotiator. The ultimate prize is to have the entire pie. By relying on valuation models in the preceding section, the negotiations will be based around a single dimension, or a single, fixed pie. An alternative strategy is a more collaborative strategy, where both sides take a more collaborative approach to solving each other's issues.

To give a useful example, we will discuss the 1978 Peace Treaty between Egypt and Israel. During the 6-day war of 1967, Israel had captured the Sinai Peninsula and occupied it for over a decade. During peace negotiations, the positions both sides took were incompatible with each other. Egypt's position for peace: the entire Sinai Peninsula had to be returned. Israel's position was that they could not return the land. In using the pie example above, the Sinai Peninsula is the pie which needs to be split up, but neither side wants to give the other any portion of the slice. Looking into their interests, instead of their positions, they found a way to reach an agreement.

"Israel's interest lay in security; they did not want Egyptian tanks poised on the border ready to roll across at any time. Egypt's interest lay in sovereignty; the Sinai had been part of Egypt since the time of the Pharaohs. After centuries of domination by Greeks, Romans, Turks, French, and British, Egypt had only recently regained full sovereignty and was not about to cede territory to another foreign conqueror."¹⁹

The two sides subsequently agreed to a plan that would see the return of the Sinai Peninsula to Egypt, in return for a large, demilitarized area on which no Egyptian military arms could pass. By looking beyond a 'fixed pie', the two sides were able to come to an agreement which satisfied each other's issues.

While we can recommend that the use of this alternate strategy, Kincardine should be aware that this strategy is vulnerable to 'competitive negotiating' strategies

¹⁸ Ronald J. Posluns, *Negotiate Your Way to Financial Success*, 1987

¹⁹ Roger Fisher, "Getting to Yes- Negotiating Agreement Without Giving In", 1991, pg 41

(exaggerating own benefits, while minimizing the benefits of the counterpart's concessions.)

Next, we will introduce a framework that could lead participants to think beyond the fixed size of the pie and engage in collaborative strategies to increase the total benefits to both parties, and to solve the issues in a fair and win-win fashion.

8.2 Net Buyer Benefit as a Value Creation Model

The net buyer benefit is based on a business model with which a premium price can be obtained for the greater value from you perceived by a customer than from a competitor. For this to occur, the switching cost plus the perceived benefit by the customer should be lower than the price offered by the new supplier. A client, logically, will not replace the current alternative unless he perceives more value from the newer alternative. Such a value can be driven by economic or strategic benefits.

The team decided to adopt this model to the permanent waste management facility opportunity at Kincardine because we believe this would be the ideal option to get an optimal results for both Kincardine and OPG. Here, we position Kincardine as the supplier of the hosting community solution, and OPG as the buyer. We started by understanding the mindset of the principal stakeholders to identify if Kincardine projects higher value in the mind of OPG. The initial assessment showed a weak answer for Kincardine. Therefore, we asked what was required to increase perceived value from this opportunity in the mind of OPG for Kincardine to get a premium price. Thus, this model is trying to achieve a premium price for Kincardine by increasing the total value to both parties.

Here the dominating thinking to apply this model for success is a business relationship mindset. If the issues and solution is sought from a political solution mindset, this model would not be applicable because of the complicated relationships implied in this issue. It is true that a business relationship mindset might oversimplify the web of relationships involved in the development of a permanent solution to manage the nuclear waste from OPG at Kincardine. However, this simplification helps understand each player's issues, and finds how greater value for buyer is reached.

As mentioned above, we are assuming that Kincardine plays the role of the supplier in this relationship and OPG as the customer, and the product is a community open to welcome the permanent solution for the nuclear wastes from OPG. Such role assignments might appear questionable to conventional thinking of a hosting community solution which the waste owner is usually the supplier and the community the client. Yet, it is important to review the fact that OPG has the time and options to wait as described in Chapter 5.3, while Kincardine's development approach needs to leverage the existing power industry in the community. Besides, OPG holds the view that Kincardine approached the company and offered to host the permanent disposal. Thus, it is in the best interest for Kincardine to demonstrate that it is offering a value-added solution to OPG, in order to reach an optimal outcome consisting of financial and non-financial benefits to the community in the long run. In short, what Kincardine needs is a value creation model.

Net buyer benefits should be used to increase the offset payment for Kincardine. The key in the implementation of this tool is to underline and remark on the values that the town is offering to OPG as a volunteer host community,(i.e. The geology of the area, the open mind of the community to welcome the nuclear waste, the already existing temporal waste storage and the waste processor facilities.) Some of the benefits could be already appreciated by OPG, yet Kincardine should be involve in a more active selling process and demonstrate other no so clear benefits for OPG. for example: That as a volunteer community Kincardine could help to destigmatize nuclear issues demonstrating that a community could growth even while it host nuclear waste, also that Kincardine could solve the historical and operational waste one for all. Some of these benefits are beyond the interest of OPG, but are important to the Ontario Government, and an essential part of the Kincardine offering. On the recommendation, we include several options on how to generate a net buyer benefits using a Value Creation Model principally point 3 to 5 of the recommendations section.

Traditional valuation models for Nuclear Waste Management facilities are often based on the stigma that in general is debatable. The financial models provide a relative value but are constructed on several assumptions which might not be able to fully anticipate the complexity and uncertainties around this project. Thus, holding firmly to a hard number from the financial models into negotiation does not bear the desired fruit. Yet by generating a net buyer benefit for OPG, Kincardine has the opportunity to optimize the deal.

9 Recommendation / Implementation

9.1 Specific Recommendations

We believe the best course of action for Kincardine is to pursue the following tasks:

1) **Spell out clearly what Kincardine wants alongside its development goals**
Kincardine needs and wishes to grow, yet the vision and high-level planning toward that target are not clearly in place. Lack of readiness to articulate what and how it wants to grow often projects too vague a picture for the other parties in the negotiation to understand and help with Kincardine's challenges. Kincardine, for example, should have a wish list of desired areas for development and infrastructure. While this phase of the project is second priority, we believe Kincardine should write down a detailed growth plan, including all the facilities it needs, and the timeline it would like these facilities operational. This will provide a more concrete plan of issues with which to negotiate, instead of a pure monetary negotiation.

2) **Increase the level of urgency for the deal**
In our investigation, OPG does not appear in any hurry to come to a negotiated deal for the LLW / ILW with Kincardine. This is a claim that was revealed to the team in our November, 2003 visit to OPG. A lack of urgency for a deal strengthens the possibility of a 'Do Nothing' option, which will maintain the status-quo. As argued in Chapter 5.3, should OPG decide to enact this option, Kincardine may find it difficult to counter such a move.

One way to inject urgency to the matter is to have an independent institution investigate OPG schedule, and find if it is self-imposed, or regulated by a government agency (such as the LLWRWMO, as cited in Table 1 of Chapter 4.0.)

Inviting the press to make the public aware of the problem can be another way of creating greater urgency. Ontario residents cannot take the risk of interim storage capacity running out while permanent solution is not ready: a reality that has happened many times in the US. Many similar siting efforts in the United States show that these projects can easily run behind schedule, largely due to community resistance. As a greater number of operational nuclear reactors are coming online, focusing the public's attention on OPG's untimely management of the issue can work in Kincardine's favour.

Another option to scuttle the status-quo is to create a short-term contract similar to the contract that was cancelled by OPG. In a short-term deal, a contract should allow them to continue the status-quo for a short period of around two years. The short-term contract should also claim a somewhat premium price in order to spoil the 'Short-term forever' option.

Having a short-term contract also provides additional benefits to Kincardine, one of which is a grace period. The Ontario Government signalled cost-cutting measures and increased fees to offset the large deficit it inherited. With a surge in recent economic activity, the government may be more willing to discuss possible deals on infrastructure more

readily. Another benefit deals with the shake-up of OPG's executive management itself. With a new CEO arriving at the helm of OPG, there will be a great deal of pressure to cut back on costs and make new, reliable forecasts. By waiting until this shake-up has settled, greater OPG attention and resources can be put into making this deal possible.

3) **Make Kincardine into a real offering**

Re-position itself as the community that accepts that nuclear waste for the good of whole Ontario as a well-informed decision. This positioning allows Kincardine to get away from any cost-based impact assessment that is not in its best interest for the long term because it is not in the role of passive acceptor of the waste that only asks for compensation to offset the impact that is often tied to low cost drivers and sub-optimal results.

Acting for the good for whole Ontario to solve this trouble also has spin-off benefits that are not quantifiable in pure monetary, cost terms. For example, it can be setting the precedent for other Canadian community to follow for any future disposal. Considering the fact that many of the nuclear sites will enter a decommissioning process very soon, and that eight more nuclear generators are planned to be built to support Canada's economy, a welcoming, collaborative community showing confidence in OPG distinguishes Kincardine among possible competition, and thus provides value to buyers including OPG and eventually Ontario government. And as we demonstrated in the net buyer benefit section, higher perceived value comes with premium price.

Accepting the wastes as an informed decision means that Kincardine calculated the scientifically proved minimum risk, does not resist to help waste owner solve the issue, and the community is willing to step further to start de-stigmatize the myth around nuclear power and its waste disposal. Carlsbad City in New Mexico state adopted this approach, and the collaboration has been working well. This is an ideal practice for Kincardine to learn from.²⁰

When the value proposition is defined, Kincardine can further investigate how to communicate the benefits to buyers. For example, having public relationship consultancy to educate and sell Kincardine as a nuclear-energy-smart community with full growth potential and high quality of life to attract the waste owner, businesses, and people to the municipality.

4) ***Bring the Ontario Government into the negotiations***

The trend in US in disposing the equivalent nuclear wastes from 1965 to 1999 is that government agencies, in addition to facility/wastes owners, are having more direct involvement for the solution with the community due to the complexity implied. In fact, in virtually all successful comparables, government agencies took an active part in the negotiations process.

This relationship-building exercise with government agencies is important not for the precedents it has set, but for the issue of core businesses. OPG's core business is in energy

²⁰ Source: "Why Carlsbad, New Mexico? A Small Town's Perspective on Hosting the Nation's First Radioactive Waste Repository" by Gary L. Perkowski, Mayor of City of Carlsbad. July 24, 2001.

generation, and not in hospital or school construction and support. Kincardine's issue revolves around growth, an issue which OPG can help solve, but which the Ontario government is capable of doing better. As such, we see the Ontario government as the primary supplier of value to Kincardine. The facility being discussed is a one-time event which will not require continuous contract negotiations. Therefore, as the single shareholder, the Ontario government may not see this as continuous subsidization for waste products.

Also, deregulation and privatization of power industry can really affect the strength and viability of originally state-owned incumbents. For example, British Energy in UK, privatized in 1996, has been undergoing financial distress due to strong competition, and independent watchdog institute is questioning private sector's ability to really manage up the long haul waste liability. This is another reason why the Ontario government should have direct involvement and endorsement of the effectiveness of the long term solution, even in the event that if OPG could no longer perform its duties. In this worst scenario, Kincardine can be assured that the wastes will be well taken care of no matter what business volatility that OPG might go through.

Bringing the Ontario government into the negotiation may prove difficult, especially as it wants OPG to act independently. For this reason, OPG may also be reluctant to have a tri-party negotiation. In order to help convince OPG to bring the government to the negotiating table, Kincardine can argue that historic wastes produced prior to 1999 (wastes produced under Ontario Hydro), should not be the responsibility of OPG, but of the former (and legal owner) of Ontario Hydro; this could be the OEFC.

A government endorsement, or other forms of engagement, will reduce uncertainties and boost public confidence. It will signal to the community that the waste will be suitably managed for the long term. This can be an assurance that reduces Kincardine's difficulty in attracting new residents.

5) *Expand Options to Create Value*

Create value for the parties involved for a long term relationship in areas such as planning and community involvement in the disposal facility's institutional control and destigmatization.

Considering the long-term nature of the waste half-life, it is critical for Kincardine to keep a successful partnership with OPG to ensure the wastes will be properly managed indefinitely. A partnership focuses on solving the issues, and not locking into positions. So when the parties involved focus their goals and efforts to solve the other party's issues, greater options for value is created. With the aim toward mutual success, Kincardine, OPG and the Ontario Government have challenges and pains that can be solved using each other's advantages. Kincardine's advantage is that its residents are relatively more successful in overcoming this stigma than the general public. For example, Kincardine can engage in efforts to build the public's trust and confidence in OPG and the Ontario government's handling of the waste issue:

Table 7- Overlapping benefits

	Can Provide	But needs
Kincardine	A cost effective environment for waste disposal, free from stigma that is perceived by other communities	- Economic & Population Growth - Infrastructure to attract industry & populace
OPG	- Discounted power to Kincardine to attract industry - Education programs to teach energy alternatives, should a college open up.	- Stable operations for permanent waste disposal. - Long-term solution
Ontario Government	- Tax incentives for industries to open facilities in Kincardine. - infrastructure such as hospitals and colleges, including the personnel needed to run them	- Create a model of a positive working relationship. - decrease the fear associated with nuclear power and waste - create an attractive atmosphere for competition to enter the energy markets.

Some examples of option expansion are identified:

i) tax-free status for a fixed number of years

Kincardine can convince the Ontario Government to grant existing and incoming industries tax-free (or tax incentives) to locate in Kincardine. The benefit of this approach is that new industries from the U.S. will see advantages in moving facilities up into Ontario, thereby increasing overall tax revenues where they were once non-existent.

ii) cheaper electricity costs for residents and industry

We estimate that the distribution channel between OPG and power resellers such as Hydro One produces line losses in the range of 10%. These losses are priced into the invoices of the end customer. Since the Bruce facility is within Kincardine, any line losses will be negligible. Kincardine may be eligible for price reductions of 10%, which will further attract industries to the community.

iii) Memorandum of Understanding to handle disposal wastes in 2034

Set up a working group to anticipate other needs in managing the decommissioning wastes to materialize in year 2034, and allow for future discussions of disposal wastes. In the instance OPG refuses, Kincardine can lay down a rule that if the facility is built and ready for operation in 2015, no waste will be allowed in until a solution for the decommissioning waste is finalized (note, this does not mean that Kincardine needs to be a part of a plan for the decommissioning waste).

9.2 Urgency & Importance Matrix

The following matrix will outline the importance and urgency levels of each task.

Importance refers to the value of the task in relation to a positive outcome (it does not convey the need to do it right away however.)

Urgency refers to the significance in doing this task immediately (an urgent task may not need be important).

Recommendation	Urgency	Importance
1. Spell out clearly what Kincardine wants alongside its development goals	Medium	Medium
2. Increase the level of urgency for the deal	Medium	High
3. Make Kincardine into a real offering	Medium	High
4. <i>Bring the Ontario Government into the negotiations</i>	High	High
5. <i>Expand Options to Create Value</i>	Low	High

Note: This matrix highlights the importance and urgency levels of our recommendations, and not the tasks laid out in the "Future Investigations" Section of Chapter 10.

9.3 Weaknesses of this report

Chapter 8.1 provides samples of a few options available for expanding the value in a deal.

While this may sound good in theory, take note of drawbacks to this method:

- It does not fully address the issue of long-term stigma.
- It may seem that most of the benefits provided to Kincardine is from the Ontario Government, and not from OPG.
- It gives little incentive for the other parties to keep their promises

Most of the value that Kincardine can get will need to come from the Ontario Government. In an effort to make OPG more marketable for shareholders, there may be little value exchange between OPG and the government through this deal. This poses a dilemma for the government as outsiders can interpret this deal as a further subsidization of OPG. This will also create an environment for artificially low cost for waste disposal (for OPG), possibly resulting in inefficiently high volumes of waste sent to Kincardine (ie. With little incentive to reduce waste, OPG may find it more cost-effective to reduce processing of the waste prior to disposal.).

As for incentives to keep promises, realize that the largest stigma will be upfront with the first unit of waste, after which the marginal stigma decreases significantly. Once the wastes are disposed of in Kincardine, incentive systems need to exist to ensure compliance with the goals of each stakeholder. OPG's cancelling of the original contract shows a precedent of its willingness to cancel contracts unilaterally.

To mitigate this dilemma, Kincardine should investigate a deal structure that would provide incentives for all parties to work towards a goal. One example is the creation of a list of milestones that Kincardine would need to meet in the next 5 to 50 years. As Kincardine meets these growth objectives, OPG can decrease monetary support to

Kincardine, and the Ontario Government can start decreasing tax incentives. Both institutions will have an incentive to actively support Kincardine's growth objectives. Other areas of weakness in this report include lack of legal and political lobbying campaign procedures. The core competency of the ICFP team is in making and implementing strategic business decisions. The importance for legal and political lobbying strategy is high in the context of this deal.

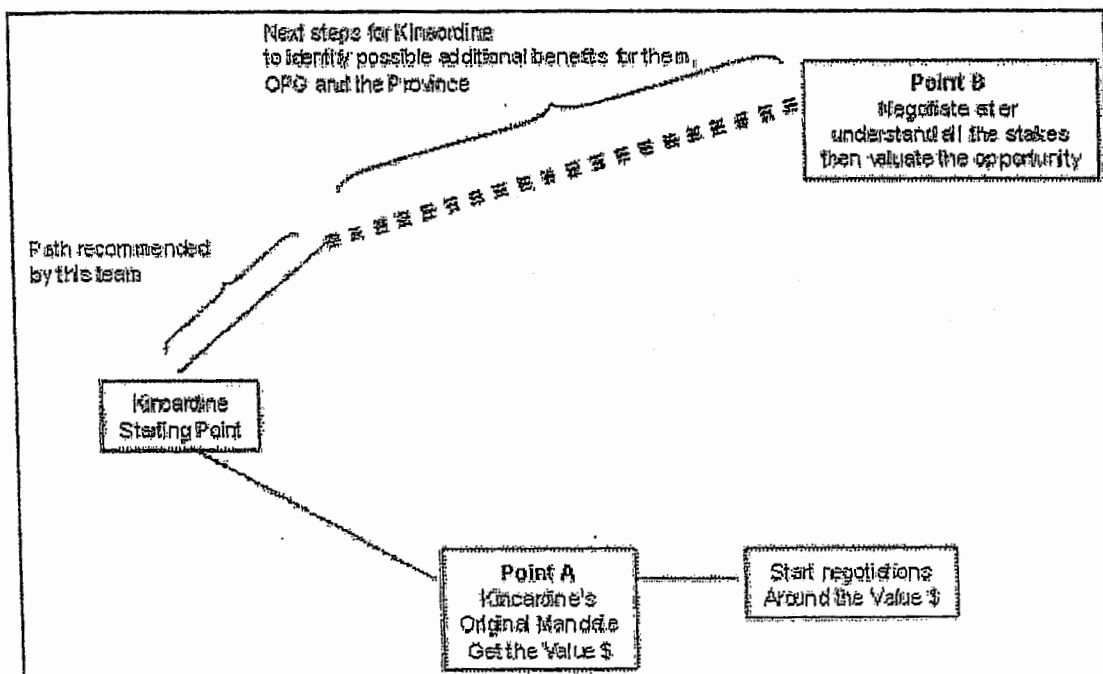
10 Conclusions

The initial mandate of this project called for valuing the opportunity to host a waste disposal facility in Kincardine. During our analysis we observed that Kincardine's strategy to pursue its perceived value from this opportunity may not produce optimal results, nor fully align with its development goals of economic and population growth. Principally, the team believes that disputing over a price tag will lead the negotiations into speculative, misguiding and highly arguable conflicts, focusing on concessions and delaying the agreement. As an alternative, this report outlines the team's view of a potentially more optimal result. The team steps further in providing some short-term and long-term action plans which Kincardine can take toward implementing the suggested alternative solution.

Figure 4 below depicts the team's observation of the negotiation and its goals. Kincardine's original strategy under discussion would lead to a result (Point A) that may or may not be acceptable to Kincardine, but would not be optimal. The alternate strategy recommended in this report has the potential to produce a result which we believe will bring about greater value to Kincardine (Point B).

This report provides an alternate strategic direction and the initial steps to move forward. We recognize the existence of some uncertainty beyond what the team can deliver on the full course of pursuit. Therefore, the following "Future Investigations" chapter provides a bridge to help Kincardine progress toward that goal. Kincardine might want to adopt its original path, but we would remind Kincardine that whatever it does, it should not engage in actions that would obstruct Kincardine's potential to reach the team's suggested solution.

Figure 4



11 Future Investigations

The bulk of this report's analysis deals with the opportunity size-up between Kincardine and OPG, as well as the negotiating environment surrounding the talks. In this section, we will outline further topics that need pursuing in order to bridge the gap between this report, and the path leading to the final outcome.

1) Legal council on OPG's rights

A possibility exists that OPG may continue to export its LLW/TWL wastes to Kincardine. In such an event, Kincardine may want to take a legal route to stop this dumping. In order to find the legalities of this alternative to OPG, Kincardine needs to consult with a lawyer to find out if OPG would actually be breaking any law. While by-laws may exist that can prevent private citizens from dumping their waste products on their own land, this may not be true in the case of OPG, who has a more specialized agreement with Kincardine. While there may be a possibility that OPG is perfectly within their rights to store waste from the Bruce facility within Kincardine, it may be interesting to find out if waste from the other facilities (Pickering and Darlington) are just as acceptable to store.

2) A talk with the ex-mayor of Deep River

During the last decade, OPG was in negotiations with Deep River with the purpose of finding a long-term disposal facility for the LLW/ ILW. These talks broke down and were not pursued any further. It is in the interest of any future consultant to speak with officials from Deep River that were present for the negotiations at that time. The purpose would be to provide a clearer view of OPG's negotiating strategy (competitive versus collaborative), their offer, and the general negotiating environment that lead to the collapse of the talks.

3) Review of the January 2004 Golder Report

In January, 2004, Golder & Associates released a report to both Kincardine and OPG outlining their findings on a variety of topics including population acceptance statistics of a proposed disposal facility, estimated economic impact, and more. While we have reviewed the report, we have not been able to fully analyze the findings. Some items to scrutinize in the report include:

i) Content and order of Questions asked to interviewees

Some questions may be misleading, or may not be worded in a way that the interviewee may misinterpret or be lead to an answer.

ii) Characteristics of the interviewee base

Is the sample size appropriate to make an inference on the findings? Where do they reside? What is there age and general education level? Are any of these likely to lead to a skewed interpretation of the results?

iii) Interpretation of the results

A quick view of the report shows little social-stigma to the current population residing in Kincardine. This is expected as the majority of individuals opposed to the nuclear facility would have moved away from the area decades before, leaving

those that accept the facility, and any stigma it brings. However, Kincardine's focus is on growth; therefore, is there sufficient data to answer the question if 'outsiders' are willing to come to Kincardine (both in the short and long-term forecast?). The Report may come to a conclusion that there will be no effect on tourism, but this is not what Kincardine wants; Kincardine wants a positive effect on tourism.

4) Source of Information

The source of information for many of the reports on the WWMF are paid for by OPG (see Appendix 11.7). It may be in the interest of Kincardine to use a greater variety of sources for consultancy purposes. Consultancy reports most cited in a negotiation need to be independently verified.

5) Review of the "A REVIEW OF IMPACT OFFSET PAYMENTS AROUND L/ILW MANAGEMENT FACILITIES" report

This document is a good document for collaborative-style negotiations. In reminding ourselves that Kincardine's issue is in economic and population growth, this document introduces ideas for 'expanding the pie' of available alternatives to pure monetary benefits. Some other thoughts on this report:

- i) The survey took a very small sample (only 11 respondents) which is not statistically significant. The inability to get a larger sample is an indication that the world is still trying to define the rules for this impact offset. Thus, the report can be viewed as citing some examples or practices, but it's definitely not a consensus to follow. Kincardine should cite and combine from the best practices in the report that applies to Kincardine's context and can support its rationale.
- ii) The survey only polled the facility owners/operators, and we don't hear the voice of hosting communities. What have they learned after agreeing their deals long time ago? What they would like to do differently if they were given the chance to do it again?
- iii) The Carlsbad City, New Mexico, US appears to be the more recent and best practices for Kincardine to learn from, though its waste type is a bit different. In essence, the community actively tried to grow the value with the waste owner, and the results are mutually beneficiary to both the facility owner and the community.

6) BATNA Model- Costs Generation

If the BATNA model of Chapter 7.2 is pursued, hard financial numbers must be filled into the model. Many of these numbers, including costs of drilling, training, transportation, etc., will not come from OPG willingly. Instead, these numbers should be found using alternate methods such as specialized consultants and industry experts. Secondly, this model must be applied to various alternatives that OPG has (i.e. disposal facility in Geraldton, Pickering, etc.) While we have supplies some possible alternatives in OPG's arsenal, these alternatives are only educated guesses based on minimal economic costs and social resistance.

7) Value Model- Options Generation

As discussed in Chapter 8.0, 'Expanding the pie' is much more valuable and conducive to a positive negotiations atmosphere than is wrangling over monetary positions. By increasing the number of dimensions in the negotiation, a settlement that favours both sides is more likely attainable.

8) Create a resistance point for the negotiations

If positional bargaining is pursued, a strong recommendation to the LLW waste committee of Kincardine is to settle on a 'resistance point'. A resistance point is a money-figure which, under no circumstances, the committee will agree to go below. If the committee sees a resistance point of \$40 Million, then under no circumstances will the committee allow itself to go below this mark.

12 Table of Appendixes

12.1 Appendix 1- Kincardine

- I. "The Corporation of the Municipality of Kincardine Financial Statements", 2002
- II. "Memorandum of understanding between Kincardine and Ontario Power Generation", April 16, 2002
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