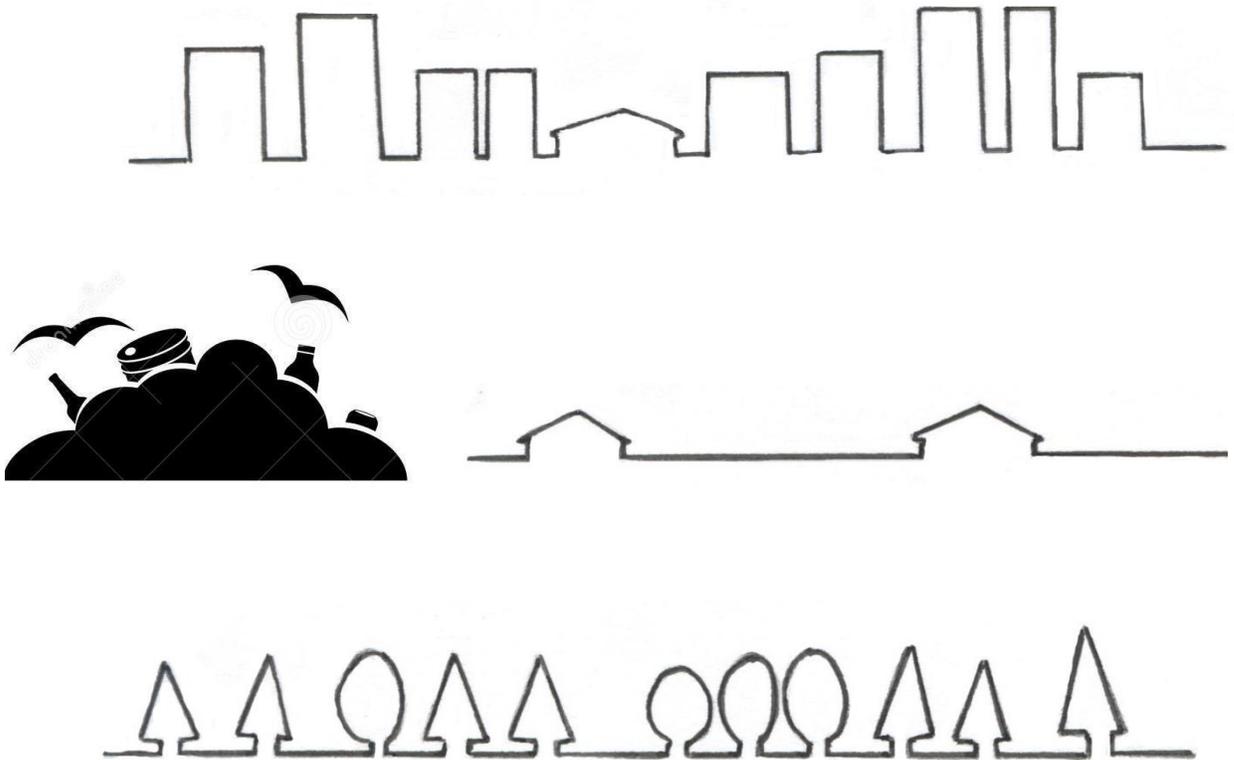


Waste Disposal Facility Siting in Nova Scotia

Opportunities to Increase Procedural Equity



Angele Clarke
Master of Planning Candidate 2016
PLAN 6000
Professor: Dr. Jill Grant
Supervisors: Dr. Mikiko Terashima and Dr. Eric Rapaport
Dalhousie University
December 9, 2015

This page is intentionally left blank



Table of Contents

Executive Summary	
Acknowledgements.....	1
Definitions.....	2
1.0 Introduction	
1.1 Why Study Waste Siting?	3
1.2 Why Study Siting Equity?	4
1.3 Report Outline and Project Summary.....	5
2.0 Project Overview	
2.1 Purpose.....	7
2.2 Objectives.....	7
2.3 Methods.....	7
3.0 Equity and Inequity	
3.1 What is Equity?.....	9
3.2 Equity and Planning	10
4.0 Waste Siting Practice	
4.1 Waste Siting and Equity in Canada.....	11
4.1.1 Waste Siting and Equity in Nova Scotia	12
4.2 Waste Siting Practice in Nova Scotia.....	13
4.2.1 History of Siting Practice in Halifax Regional Municipality.....	13
4.2.2 Current Siting Practice.....	18
5.0 Waste Siting Policy	
5.1 Provincial Legislation and Regulations.....	19
5.1.1 Environment Act.....	20
5.1.2 Municipal Government Act.....	20
5.1.3 Solid-Waste Management Regulations.....	21



5.1.4 Waste Specific Guidelines for Siting, Construction and/or Operation.....21

6.0 Participant Feedback

6.1 Discussion of Interviews.....23
6.2 Discussion of Workshop.....31
6.3 Workshop and Interview Comparison.....34

7.0 Opportunities to Increase Equity

7.1 Process.....35
7.2 Policy.....36
7.3 Tools.....38
7.4 Further Research.....40

8.0 Conclusion.....41

References.....42



Appendices

Appendix I: Equitable Siting Strategy	50
Appendix II: Interview Questions	76
Appendix III: Workshop Questions	77

Figures, Images and Table

Figure 1: Tool Selection Process.....	8
Figure 2: Equitable Siting Strategy Development.....	8
Image 1: Landfill in Nova Scotia.....	2
Image 2: Landfill Road.....	3
Image 3: Equality vs. Equity.....	9
Image 4: Africville Landfill.....	13
Image 5: Citizens protesting the Guysborough County landfill.....	17
Image 6: Composting facility in Nova Scotia.....	22
Image 7: Seagulls flocking to landfill.....	26
Image 8: IAP2 Spectrum of Public Participation.....	39
Image 9: Ladder of Citizen Participation.....	39
Image 10: Unlikely Setting.....	40



In Appendix A:

Image 11: Land rehabilitation in Atlantic Canada.....40

Image 12: IAP2 Spectrum of Public Participation.....58

Image 13: Spectrum of Public Participation relationships.....58

Image 14: Ladder of Citizen Participation.....59

Image 15: Where municipal decisions are made.....63

Image 16: Citizens in East Austin, Texas.....63

Image 17: Overlay zoning.....65

Image 18: Children in Chester, Pennsylvania.....65

Image 19: Community working group meeting.....67

Image 20: Understanding different perspectives.....68

Image 21: Wisdom below the surface.....69

Image 22: Deep Democracy facilitation.....69

Image 23: Light rapid transit.....71

Image 24: Construction of Eglinton Crosstown LRT.....71

Image 25: Maps in hierarchy.....72

Image 26: Social determinants of health.....75

Table 1: Summary of equity tools.....61

*“Equity is now part of the waste management problem.
Somehow, it must also become part of the solution”*

- R. Lang, Equity in Siting Solid Waste Management Facilities, 1990, p. 90



Executive Summary

The inequitable distribution of undesirable and potentially hazardous land uses is an issue across North America. In Nova Scotia no legislation requires equity to be considered during the waste disposal facility site selection process.

The purpose of this project is to support the formalization of siting procedural equity as one of the criterion in waste disposal facility siting processes in Nova Scotia. Siting equity is “the fairness of siting a facility at a particular location and the fairness of the process for reaching that decision” (Lang, 1990, p. 84).

The report is informed by a literature, policy and government document review. Interviews and a workshop with ten planners and other experts familiar with waste siting also guide the findings. Participant feedback suggests three strategic actions governments can take to help integrate equity into site selection processes. The three actions are to (1) build an awareness of equity in government and communities, (2) integrate equity into policy and regulations, and (3) encourage use of appropriate site selection tools.

Planners can raise awareness by creating language around equity and inequity, clearly defining terms of use and conducting community engagement that is accessible and inclusive. There are opportunities to integrate equity into provincial and municipal legislation including the Environment Act, Municipal Government Act, Solid Waste-Resource Regulations and waste site specific guidelines. Municipalities can incorporate equity into their municipal planning strategies, land use bylaws, community engagement strategies, and other planning strategies. Procedural and substantive tools can help planners select sites. Tools should be selected on a case to case basis. Overall, public dialogue about inequitable siting and waste facility distribution may pressure governments to integrate equity into procedures and policy. Nova Scotian governments have the opportunity to model best siting practices through demonstration, and inspire other local and provincial Canadian governments.



This page is intentionally left blank



Acknowledgements

This project is my independent project for the Dalhousie Master of Planning program. Thanks to my supervisors, Dr. Mikiko Terashima and Dr. Eric Rapaport, and my course instructor, Dr. Jill Grant for their guidance. Many thanks to Caitlin Hinton for her help editing and reflecting.

Without the planners and waste managers who participated in interviews and the workshop, I would not have been able to fully explore the topic of siting and siting equity in Nova Scotia. I am grateful for the time and knowledge they shared.

Thanks to the Nova Scotia Department of Municipal Affairs for providing workshop space.

I recognize the burden that many communities who live near potentially hazardous land uses have to bear. I hope that more local, provincial and federal governments will recognize inequity, and take the measures needed to ensure every person receives an equal opportunity to have good health and well-being.

“When we first moved to Halifax in the early 1970s we lived in a little apartment up in Fairview, and one of the first mornings we were there I went out onto the little balcony and noticed that the balcony and the cars down below, the long grass (this was August), all was covered in a sort of fine, grey dust. So I asked one of my neighbours, ‘what is this from’? Well we were living right in the plume of what was then Halifax’s incinerator. An open burning incinerator. If the wind was just right, we would wake up in the morning just like the poor folks at Mount Vesuvius. The old incinerator is where Africville was. So, go figure right. That was my introduction to waste management in Nova Scotia”

- Personal communication with a participant, October, 2015



Definitions

Environmental Justice: “The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies” (US EPA, 2015).

Fair: “Treating someone in a way that is right, or treating a group of people equally and not allowing personal opinions to influence your judgment” (Cambridge Dictionaries Online, 2015).

Locally Unwanted Land Use (LULU): A land use that may be useful to society, but objectionable to its neighbours.

Procedural equity: Fairness of the planning process (Antadze, 2013, p.2) “especially for groups and interests traditionally under-represented in planning and decision making” (Lawrence, 1996, p. 165).

Race: “A socially constructed category used to classify humankind according to such physical characteristics as skin colour, hair texture, and facial features” (Galabuzi, 2006, p. 251).

Racialization: “Process by which racial categories are constructed as different and unequal in ways that have social, economic, and political consequences” (Galabuzi, 2006, p. 251).

Siting equity: “The fairness of siting a facility at a particular location and the fairness of the process for reaching that decision” (Lang, 1990, p. 84).

Waste site/facility: Includes facilities that treat/contain solid waste, construction and demolition debris, organic compost, recycling, household hazardous waste, asbestos and waste transfer stations (Nova Scotia Environment, 2015a) (see image 1).



Image 1: Landfill in Nova Scotia (CBC, 2014b)



1.0 Introduction

1.1 Why Study Waste Siting?

Solid waste disposal facilities are a public need and responsibility, but are also a locally unwanted land use (LULU) because they can be unsightly, loud, smelly and pose a hazard to health. Due to these concerns, solid waste disposal facilities (waste sites/facilities) are on the edge of communities or in rural areas, and not in population centres such as urban or suburban areas.

Planners and other professionals who work with waste siting procedures have a challenging job. Selecting sites for waste involves choosing locations under a great deal of political, financial and social pressure.

People typically do not want to live near a waste site due to the concerns mentioned. Some Nova Scotian communities located near waste sites have raised concerns about the potential negative health and social implications of being near a facility. For example, the community of Lincolnville protest the neighbouring Guysborough

County landfill. Community residents say they were not adequately consulted when the landfill was sited, nor when the same site was selected for a second generation landfill (Save Lincolnville Campaign, 2007; Deacon & Baxter, 2013). Communities near the Otter Lake Waste Processing and Disposal Facility and the Sackville Landfill also protest the landfills (CBC, 2014a; CBC, 2015b). These examples, among others, demonstrate that citizens feel they are denied the chance to participate in decision making processes (Hird, 2013, p. 118; Deacon & Baxter, 2013; Baxter, et.al., 1996, p. 92).



Image 2: Landfill Road (Angele Clarke, 2015)



1.2 Why Study Siting Equity?

Siting equity is “the fairness of siting a facility at a particular location and the fairness of the process for reaching that decision” (Lang, 1990, p. 84).

My primary focus is on procedural siting equity. Procedural equity is the fairness of the planning process (Antadze, 2013, p. 2). Definitions of procedural equity emphasize the inclusion of “groups and interests traditionally under-represented in planning and decision making” (Lawrence, 1996). I review opportunities to increase equity proactively before and during site selection, and not opportunities to increase equity after waste site development. I do this to address equity at the earliest stages in the process.

The Environmental Noxiousness, Racial Inequalities and Community Health (ENRICH) Project has developed a map indicating the location of landfills in relation to Mi’kmaq and African Nova Scotian Communities. As indicated by this map, in Nova Scotia, many waste facilities are near racialized communities (The ENRICH Project, 2015). The film ‘In Whose Backyard?’ expresses that many people from these communities feel

excluded from decision making processes (The ENRICH Project, 2014).

I review waste facility siting equity from the perspective that siting procedures should be equitable and stakeholders should have a say in decisions that may affect them.



1.3 Report Outline and Project Summary

In the following sections, I discuss siting and procedural equity, describe waste siting procedures in Nova Scotia, and review equity tools. For this research, equity tools are policies and instruments that can assist equitable site selection. There are two types of equity tools: procedural tools (which affect behaviour and process) and substantive tools (which directly affect content, such as maps or policies).

The methods I used are literature, policy and government document review, interviews and a workshop. Research findings including participant feedback revealed three strategic actions governments can take to help integrate equity into site selection processes.

These actions are to:

- 1) Create awareness of equity and inequity in their organization and community;**
- 2) Integrate equity into policy and regulations; and**
- 3) Select and apply appropriate site selection tools.**

Actions (1) and (2) can be taken before the need to select a site arises. Action (3) can be taken before and during site selection.

Appendix I, a pilot 'Equitable Siting Strategy' details each of these actions.

Participants said that it is important to communicate clearly, accessibly and inclusively. Inviting citizens to participate in site selection processes early, before decisions are made is an example of inclusivity. Conflicting feedback from interviews and the workshop indicate that people may share more socially acceptable or popular opinions in group situations. Although this research draws from a small sample, this finding may imply that increasing awareness about inequitable distribution of waste facilities may pressure governments to include equity as a criterion in site selection processes.

Many participants think it is essential to integrate equity into guiding policy and regulations to ensure transparency and consistency. There are opportunities to integrate equity into provincial and municipal legislation including the Environment Act, Municipal Government Act, Solid Waste-Resource Regulations and



waste site specific guidelines. Municipalities can incorporate equity into their municipal planning strategies, land use bylaws, community engagement strategies, and other planning policies.

Procedural and substantive equity tools can help planners select sites. Tools should be selected on a case by case basis.

In the following sections, I describe opportunities to increase procedural siting equity through existing and potential policies, regulations and practices.

Nova Scotian governments can take these opportunities to demonstrate best practices, and inspire other local and provincial Canadian governments.



2.0 Project Overview

2.1 Purpose

The intent of my research is to support formalization of procedural equity as one of the criterion in waste siting process in Nova Scotia.

2.2 Objectives

1. Understand the waste siting procedures in Nova Scotia through document review and one-on-one interviews with experts.
2. Identify key equity tools, and assess the opportunities and barriers to using tools from the perspectives of planners in Nova Scotia.
3. Develop a pilot Equitable Siting Strategy and propose potential strategies to help incorporate equity into siting procedure.

2.3 Methods

The methods used include a policy, government report and literature review, one-on-one interviews, a workshop and content analysis.

One on one interviews with six planners and professionals familiar with waste siting illustrated barriers and opportunities to siting. The semi-structured interviews brought forward information about how siting procedures work, and perspectives and opinions about equity and siting.

From interview feedback, direct and indirect answers to the question 'how could site selection be more equitable' were extracted and themed. From this exercise I developed nine principles for equitable siting.

Concurrently, I researched site selection tools in literature and reports.

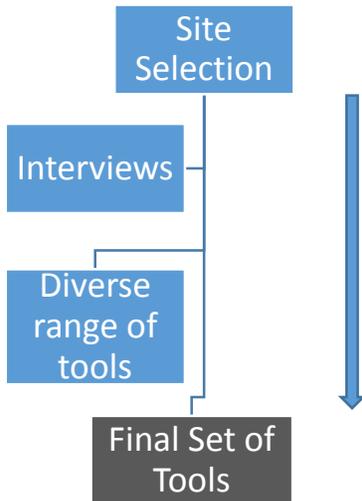
Requirements for selected tools and the tool kit are:

- Tools can assist LULU **site selection**,
- Tools address some of the 'principles for equitable siting' extracted from the **interview** feedback, and



- The tool kit includes a **diverse range of tools** (procedural, substantive, traditional and alternative).

Figure 1: Tool Selection Process

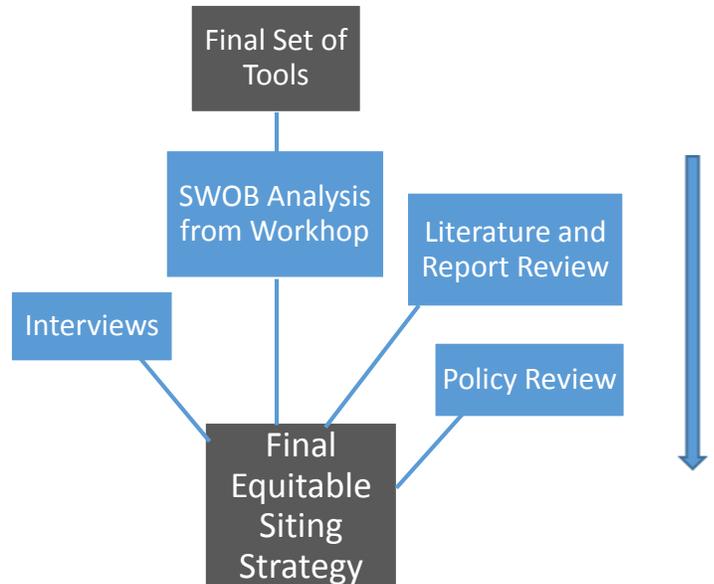


I selected seven tools for further analysis and presented the tools to six planners at a workshop. At the workshop, I gathered input about perceived potential strengths, weaknesses, opportunities, barriers (SWOB) to implementing the tools.

Interview and workshop participant responses illuminated the potential opportunities and barriers to waste siting procedural equity, tools and approaches.

The pilot Equitable Siting Strategy (Appendix I) describes processes, policies and tools.

Figure 2: Equitable Siting Strategy Development



3.0 Equity and Inequity

3.1 What is Equity?

Definitions of equity and inequity vary between disciplines and contextually. A scan of 'equity' definitions shows that most include 'fairness' as a primary goal. Then, equity is further defined by process or outcome. I focus on process because it offers more opportunity for proactive work, rather than reactive 'planning'. The definitions I use are specific to the site selection process (Antadze, 2013, p. 2; Lawrence, 1996; Lang, 1990, p. 84; Petts, 2005, p. 398). Procedural equity requires fairness of the planning process (Antadze, 2013, p. 2) "especially for groups and interests traditionally under-represented in planning and decision making" (Lawrence, 1996. p. 165).

My review of Canadian environmental equity research reveals that most research focuses on air pollution, and little research has looked at waste sites. In general, there are few environmental equity studies in Canada. A 2015 global survey of English

language outdoor air pollution environmental equity research found six of 300 publications were from Canada: cities studied are Toronto, Hamilton, Montreal and Vancouver (Maio, et.al., 2015, p. 48-9). The authors concluded that in Canada environmental equity policy is underdeveloped, research technologies and study designs should be improved, and evidence from research is needed to reduce exposure to health hazards (p. 54).

Creating a language to talk about equity and inequity is an important step to environmental justice.

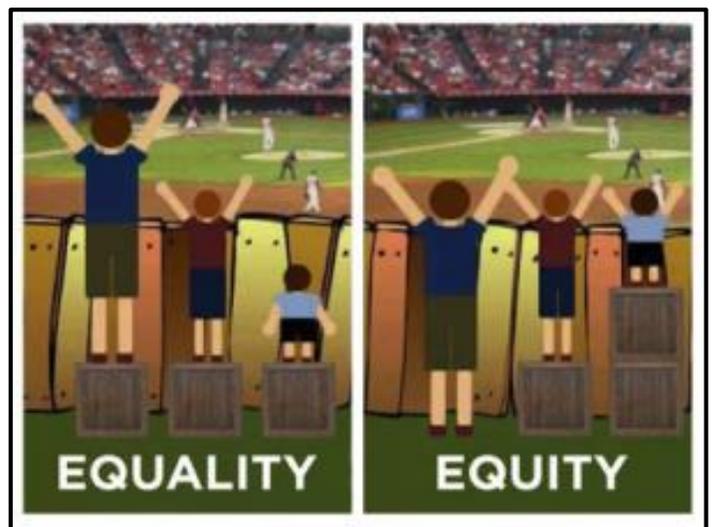


Image 3: Equality vs. Equity (Outfront Minnesota, 2014)



3.2 Equity and Planning

Land use decisions can have significant impacts on communities. What infrastructure and services communities have or don't have influence social life, culture and health. For example, communities that have sidewalks, parks and accessible health services offer more opportunity to be active and healthy. Communities that do not have public infrastructure and services that promote healthy activities have less opportunity to be active and healthy (World Health Organization, 2010). A lack of infrastructure to support healthy lifestyles is not the only thing that can negatively affect health. Research shows that many North American low income communities have a disproportionate range of toxic land uses (Pulido, 2000). Research, particularly from the United States, also finds that planning tools, such as zoning, can perpetuate the inequitable distribution of land uses (Young, 1999; Pulido, 2000, Ross, et al., 2000).

In response to experienced environmental racism, the field of environmental justice is emerging. Environmental justice focuses on how natural and built environments

influence lives, and how potentially unhealthy infrastructure is disproportionately located in racialized communities. Environmental justice “will be achieved when everyone enjoys the same degree of protection from environmental and health hazards and equal access to the decision-making process to have a healthy environment in which to live, learn, and work” (US EPA, 2015).

Planners play an important role in community design and land use decisions. Political geographer Oren Yiftachel highlights that planning also directly affects power relations (excludes or includes marginalized groups) through the control of decision making and communication processes (Yiftachel, 1998, p. 401-402). Planners, therefore, can facilitate opportunities for environmental justice. If planners integrate an environmental justice perspective into their work, they aim to offer an equal chance for all people to have good health and well-being.



4.0 Waste Siting

Practice

4.1 Waste Siting and Equity in Canada

The unfair siting of landfills is a persistent problem in OECD (Organisation for Economic Co-operation and Development) partner countries, including Canada (OECD, 2003). The environmental justice literature argues that it is inequitable to force a community to bear an extended period of time near a locally unwanted land use (LULU). Yet, in 1988, three-quarters of Canadian municipalities favoured locating new landfill facilities next to pre-existing landfills (Lang, 1990, p. 87).

The siting of landfills in Canada is typically done as a technical process (Lang, 1990, p.85; Hird, et.al., 2014). Technical considerations are an important component in siting because of environmental and financial constraints. The siting process, however, is complex because of the range of values, perspectives and knowledge amongst stakeholders (Lang, 1990, p.85; Harris Ali,

1999, p. 16-17). For example, communities and governments do not always agree on what is 'good' development. A common perspective is that people who do not want to live near a LULU, have protectionist 'not in my backyard' (NIMBY) attitudes and adopt "exclusionary/ oppositional tactics" (CMHC, 2006). Communities usually do not identify themselves as 'NIMBYist'; they may question a LULU development because they feel excluded from the decision making process, or they are concerned about their well-being or environmental health.

Some barriers to procedural equity in Canada go beyond poor communication. Societal causes of inequity such as discrimination may be a direct result of antiquated policies and practice. Inequity can affect anyone, but historically we find it most often affects certain gender, income, language and racial groups (Galabuzi, 2006). Across Canada, racialized oppression has been built into governmental processes, such as land granting, since colonization. Racialized oppression now also takes the form of post-colonial exclusion (CELA, 2012, p. 8-9; Galabuzi, 2006), such as not being involved in decision making.



4.1.1 Waste Siting and Equity in Nova Scotia

Groups of people who have been historically discriminated against in Nova Scotia include African Nova Scotians, Acadians, Irish and Mi'kmaq. In some cases, British and Canadian governments granted these groups land of little value: sites with poorly drained, rocky soils, outside of urban areas (Personal communication with a participant, October, 2015).

An interview participant with extensive experience siting waste facilities has observed a relationship between the poorly drained soils and rocky land in which marginalized communities settled, and the environmental suitability of soils for waste sites (personal communication with a participant, October, 2015). From a technical perspective, waste sites are best located on land with little agricultural value, and soils that do not allow leachate to easily permeate into the water table (Personal communication with a participant, October, 2015).

In Nova Scotia, many waste sites are next to African Nova Scotian and First Nations communities. For example, 30% of African

Nova Scotians (who make up 2.3 % of Nova Scotia's population) live within five kilometres of a landfill (Nova Scotia Community Counts, 2011; Deacon, et.al., 2013, p .613). Many First Nations communities are near waste sites. According to the ENRICH (Environmental Noxiousness, Racial Inequities and Community Health) Project, thirteen Nova Scotia First Nations Communities are within five kilometres of a waste site (The ENRICH Project, 2015). Further research into how this compares to communities who are not racialized is needed. Income and other factors also influence siting inequity (Anderton, et.al., 1994). No published literature in Nova Scotia has correlated the settlement patterns of marginalized communities, and waste sites or other LULU sites.



4.2 Waste Siting Practice in Nova Scotia

4.2.1 History of Siting Practice in Halifax Regional Municipality

One of the most well-known examples of environmental racism in Canada took place in Nova Scotia. The African Nova Scotian community of Africville was industrialized, expropriated, razed and the residents were relocated. Zoning and land use planning were the tools used to break down the community. Before the community was razed in the **1960s**, industrial facilities, including a municipal landfill, were sited within the community (see image 5). No considerations were made for human health and well-being.

In retrospect, many people recognize the actions taken during the 1960s and earlier as racist and inhumane. Some former residents still struggle with the destruction of their community, and feel that policy makers are not listening to them (Tattrie, 2010).

Community Experience: Africville

In 1815 freed African American loyalists from the United States began to settle in Nova Scotia. The loyalists were granted land in Preston and Hammonds Plains. The land they were granted was un arable and rocky, so in the 1940s many people left to settle along the Bedford Basin in Halifax (Clairmont & MaGill, 1971, p. 45). This area of Halifax became known as Africville. In the 1880s a railway was built through the community, and connected the community to the surrounding region. Following railway development, the City of Halifax facilitated the siting of industrial facilities in Africville; facilities included a municipal dump (see image 5), infectious disease hospital, fish oil plant, slaughterhouses and prison (Clairmont, & MaGill, 1971, p. 120; Tattrie, J., 2010). In the 1940s, the City of Halifax made plans to increase industrialization of the area and refused to service Africville residents with water, sewer, paved roads and other basic infrastructure services (Clairmont & MaGill, 1971, p. 100). The City of Halifax considered Africville blighted. In 1947 the land was rezoned industrial and in 1964 the City made a decision to expropriate the land, bulldoze all structures and relocate residents (Clairmont, & MaGill, 1971, p. 104- 115).



Image 5: Africville landfill (Chronicle Herald, 2015b)



In **1977** the cities of Halifax, Dartmouth, Bedford and Halifax County needed a new landfill site. Two sites (Beaverbank-Windsor Junction and Jack Lake) were selected through technical analyses and proposed, but public protest led to these options being abandoned. The province assumed responsibility for selecting a site, purchased land between Sackville Beaverbank and Mount Uniack and established the Highway 101 landfill. The Nova Scotia Department of

Municipal Affairs defined the site area through a site feasibility study (Halifax Dartmouth Regional Authority, 1977, 1.1). Documented issues with the site include leachate springs, odour, sea gulls, flying airborne plastic and paper, stigma and an overall reduction of environmental amenity.

Scheduled closure of the Highway 101 landfill prompted Halifax County and the cities to explore options for future waste sites.

Participant Experience: Site Selection in the 1970s

The one participant who has sited landfills that are now operating shared the strategy used to site the facilities. One of the waste facilities they helped site was developed because at the time there was no officially permitted landfill operating within the region. The 14 municipal sites that existed were essentially 'dumps'; they were on "land that was available and where people just started dumping garbage. There was no collection of leachate, no surface water management, no traffic control, they were open 24 hours a day, anything and everything went" (Personal communication [P3], October, 2015). Residents started these dumps in places that seemed handy and central. So, the municipality decided to close the 14 dump sites and create one regional landfill.

The first step was to conduct a site selection process. The local government and consultants created a site selection criteria list. Criteria included good accessibility to roads, close to the largest communities, good topography, reasonable depth of soil over bedrock, at least three feet of glacial till, and then not located near water supply, recharge or surface watershed areas, provincial or national parks, permanent watercourses, and at least a mile away from the nearest residence. While developing the criteria, municipal staff conducted public meetings in the principal communities. The primary question asked of the public was "what do you want to do about waste disposal"? Then sites were selected using the criteria and public input, (including the site ultimately chosen because of location on a large plot of crown land between the two largest communities in the region). After selecting sites, another series of public meetings were conducted in the same communities. The purpose of these meetings was to talk about criteria, sites, and waste collection. Many people were happy with the selected site, except for those who lived along the highway nearby. There was concern among nearby residents that the waste site would have open burning, like the 14 municipal dump sites. Municipal staff assured people there would be no open burning, and the project went ahead.

Source: Personal communication with a participant, October, 2015



In response, Metropolitan Authority (the appointed waste management corporation under direction of the municipal governments) appointed a Solid Waste Management Advisory Committee to develop a Waste Management Master Plan in **1989** (The City of Halifax, 1992, p. 11). The advisory committee proposed a waste incinerator, but concerns with incineration led the City of Halifax to forgo their recommendation. Halifax City Council created a City of Halifax Waste Management Task Force to review waste management options (The City of Halifax, 1992).

In **1991**, the municipalities adopted an integrated solid waste management system. The system required five waste facilities: a landfill, composting facility, waste to energy plant, recycling facility and household hazardous waste facility (Metropolitan Authority, 1991b, p. 3). The Metropolitan Authority 'Initial Siting Review' stated that a mandatory environmental impact assessment including a health impact assessment was required (1991, p. 4). In 1991 the Municipal Authority also released a report 'Impact Management: Mitigation and Compensation Policies and the Use of Siting Agreement'. The report explores 'what is

fair' and 'what is acceptable'. Different types of impact management and compensation were described. "Impact Management should address... (1) impact prevention, (2) impact control, (3) impact mitigation, and (4) compensation" (Metropolitan Authority, 1991a, p. 2). The report listed potential approaches for siting that incorporate community participation and empowerment; this includes voluntary siting approaches and host community agreements (Metropolitan Authority, 1991a, p. 8-9).

In **1992** a landfill on Highway 102 was proposed. The Metropolitan Authority Report 'Environmental Assessment Act final guidelines for SG-R' list the required site information. Required site information included:

- proximity of the site to settled areas,
- sites of cultural significance,

and socio-economic information such as

- quality of life,
- social interrelationships,
- traditional lifestyles,
- population demographics,



- community dependence on natural resources and
- annual population changes
(Metropolitan Authority, 1992, p. 20).

The Highway 101 landfill closed on December 31, **1996** two years after it was scheduled to close.

In **1997** in anticipation of first generation landfill amalgamation, the Department of Environment through the Solid-Waste Resource Management Regulations, required all Nova Scotia municipalities to prepare and submit a regional solid waste-resource management plan. These plans include information such as a description of the roles and responsibilities of the municipality, and a public awareness program (Province of Nova Scotia, 1994-5b, p.).

In **1998**, the Halifax Regional Municipality Otter Lake Landfill opened, with an original operating life projection of approximately 25 years.

In the early **2000s**, the Province of Nova Scotia underwent municipal solid waste landfill amalgamation in which they reduced 57 'first generation' landfills to nine larger

'second generation' landfills across the province (Deacon, et.al., 2013, p .612-13).

During the writing of this report in December **2015** a new waste management agreement was signed with the Otter Lake Landfill developer/operator 'Mirror Nova Scotia', extending the life of the landfill. The agreement has not been released to the public yet, and so the length of extension is unknown (Chronicle Herald, 2015a).

Currently, in Nova Scotia, there are 9 municipal solid waste landfills and many other waste sites including 13 household hazardous waste facilities, 27 waste transfer stations, 17 organic composting facilities, 24 construction and demolition debris landfills and 13 recycling facilities (Nova Scotia Environment, 2015).



Community Experience: Lincolville, Nova Scotia

Among the nine second generation landfills is the Guysborough County Landfill. The second generation landfill was sited beside the first generation landfill.

The site is less than five kilometres from the community of Lincolville, a predominantly African Nova Scotian community. The community thought they only had to bear the burden of being near a landfill for 20 years, but upon development of the second generation landfill this time extended to 45 years (Save Lincolville Campaign, 2007; Deacon, 2013).

The community feels they were not properly consulted before the first and second generation landfills were developed (Save Lincolville Campaign, 2007; Deacon & Baxter, 2013). The barriers the community experienced during the siting of the second generation landfill include: avoidance and intimidation tactics by local government and consultants (Deacon, 2013, p. 615), inappropriate jargon and public consultation settings (p. 616) and no funding for community to hire interveners (p. 618).

Now many residents are concerned that leachate from the landfills is affecting their health, and their day to day lives are negatively affected by smell, bird waste, and other issues (see image 6).



Image 6: Citizens protesting the Guysborough County landfill (Chronicle Herald, 2015b)



4.2.2 Current Siting Practice

Waste management is a municipal responsibility and municipalities are responsible for siting municipally owned and operated waste facilities (Personal communication with a participant, October, 2015). If a waste facility is privately owned and operated, as is often the case for smaller facilities (such as construction and demolition debris sites), site selection is the responsibility of the proponent. When municipalities conduct site selection, they can do the process independently, but often contract the work out to consultants. Some site selection criteria require special expertise; this may include knowledge about soil, bedrock, ground and surface water flow, etc. (Personal communication with a participant, October, 2015). The expertise required to evaluate special environmental and engineering based criteria is rarely found within municipal offices.

When municipalities in Nova Scotia select waste sites, both in partnership with consultants and independently, they primarily use three tools:

1. siting criteria,
2. geographic information systems, and
3. public consultation (Personal communication with participants, October, 2015).

Once a site is selected, proposed waste facilities need to be approved by the Department of Environment. The municipality may need to provide a written letter of approval, and the Nova Scotia Department of Environment needs to approve the proponent's application, which include site and operational information. If a proposed privately owned and operated waste site is not allowed as-of-right, the developer may need to receive municipal approval through the development agreement process.

Community Experience: Fall River Quarry

In September, 2015 an application to develop a quarry in Fall River, Nova Scotia received approval from the Department of Environment. The proposed quarry has been protested by nearby residents since 2011. In November, Environment Minister Andrew Younger (removed from his position as a Member of Legislature during the writing of this report) revoked the approved operating permit because there was not adequate public consultation (CBC, 2015a).

This recent example of LULU siting demonstrates that current policies and practices may not be clear or adequately serving the public good.



5.0 Waste Siting Policy

Policies and regulations set out the minimum requirements for site selection. The following descriptions of Nova Scotia policies and regulations detail sections that relate to waste sites and siting. Based on existing policies and regulations, possible actions to increase equity through policy revision are listed in Appendix I.



5.1 Provincial Legislation and Regulations

Nova Scotia Environment requires municipalities and developers to submit site information before they administer a permit to operate. Requirements vary depending on waste type (e.g. municipal solid waste, composting, hazardous waste, recycling facility, etc.). Regulations (varying by waste type) state how far a facility must be from adjacent properties and structures.

Provincial and municipal responsibilities are described in the:

- Environment Act (1994-1995),
- Municipal Government Act (1998),
- Solid Waste-Resource Management Regulations (1994-1995) and
- waste type specific guidelines for siting and operation (including salvage yard guidelines [1998], waste transfer station guidelines [2006], etc.).

The Environment Act and Municipal Government Act each guide higher level regulations. The Solid Waste-Resource Management Regulations (1994-1995) and the waste type specific guidelines



provide more detailed regulations for siting. The waste type specific guidelines are for salvage yards (1998), waste transfer stations (2006), composting facilities (2010), construction and demolition debris facilities (1997), and municipal solid waste landfills (1997).

5.1.1 Environment Act

The Environment Act represents minimum standards in the province. The Environment Act must be followed if there is conflict between it and another act, unless the Environment Act imposes a lower standard than another act (Province of Nova Scotia, 1994-5a). The Minister of the Environment is responsible for establishing policies and plans for the managing of waste (Province of Nova Scotia, 1994-5a, 8.2.d). As part of this responsibility, the Minister may direct where dangerous waste goods are located (76.2.b), and establish restrictions and prohibitions on the storage and disposal of wastes and recyclables in specified facilities (96.a). The Governor in Council may make regulations establishing standards for waste disposal facilities and sites (Province of Nova Scotia, 1994-5a, 102.1.c).

5.1.2 Municipal Government Act

According to the Nova Scotia Municipal Government Act (1998), municipal governments have the legislative power to regulate the locations of waste sites through a land use bylaw if the municipal planning strategy provides (Province of Nova Scotia, 1998, 126, 231.4.h). For example, a bylaw should be developed if it is needed to implement a municipal solid waste management strategy (Province of Nova Scotia, 1998, 220.5.f). Municipalities may regulate waste sites through the site-plan approval process (Province of Nova Scotia, 1998, 231.4.h). Municipalities and villages can expend money on facilities (Province of Nova Scotia, 1998, 423.1.af) and compensate communities, property owners or residents in areas near waste sites (Province of Nova Scotia, 1998, 326.1). Municipalities can manage resources such as money and infrastructure through contract partnerships between municipalities, and municipalities and individuals (Province of Nova Scotia, 1998, 326.2).



5.1.3 Solid-Waste Resource Management Regulations

The Solid-Waste Resource Management Regulations detail the requirements for approval to operate a landfill for municipal solid waste. To obtain approval, the developer must submit information to the Minister of the Environment. This information includes site plans, descriptions about the waste materials, storage, monitoring, and any other information requested by the minister (Province of Nova Scotia, 1994-5b).



5.1.4 Waste Specific Guidelines for Siting, Construction and/or Operation

Detailed siting, construction and operation guidelines govern:

- composting facilities,
- construction and demolition debris sites,
- waste transfer stations,
- municipal solid waste landfills and
- salvage yards.

Each has different requirements for approval and operation. For example,

- waste transfer stations,
- compost facilities and
- construction and demolition debris sites

require a letter from the respective municipal unit before an application is approved. The letter must state that the facility meets zoning and planning restrictions such as bylaws. Conversely, salvage yards only require municipal approval if the Minister of the Environment requests, and municipal solid waste landfills do not require municipal approval.

In order to construct



- municipal solid waste landfills,
- construction and demolition debris sites,
- composting facilities,
- resource recovery facilities and
- waste transfer stations

developers must fill out an 'Application for Approval' through Nova Scotia Environment (Nova Scotia Environment, 2015b). The 'Application for Approval' requests information about the site including the distance between the active area and the nearest

- residential/institutional building/
commercial/industrial building,
- highway or common road,

- public water supply,
- off-site well and
- watercourse (Nova Scotia Environment, 2009, p. 3).

The application requests a site plan that includes:

- property boundaries,
- contours of the site and
- adjacent properties (Nova Scotia Environment, 2009, p. 3).

The final assessment of applications, for all types of sites, is on a case by case basis.

When approved, the developer receives a permit to operate. Siting criteria, detailed in the guideline documents, also vary depending on the waste site type.



Image 6: Composting facility in Nova Scotia (Angele Clarke, 2015)



5.0 Participant Responses

6.1 Discussion of Interview Feedback

I conducted interviews with six participants from Nova Scotia;

- two participants work in provincial government and
- four participants work in municipal governments.
- Two of the participants have retired from provincial and municipal work.

Participants are planners or other experts familiar with waste siting procedures. Phone and in-person interviews lasted approximately thirty minutes to 120 minutes. The interviews were semi-structured with nine questions (see Appendix II). The interviews generally followed the question structure, but sometimes led into stories about experiences, and related work in other provinces.

The following summaries are participant responses to the questions.

1. Can you please describe any experiences that you have with siting waste disposal facilities?

Three participants do not have direct experience with siting waste facilities, and three of the participants have direct experience. Of those who have experience siting a waste facility, two saw projects halted because of public protest. The one participant who has both sited and seen waste facility projects completed did so during the development of second generation landfills in Nova Scotia.

The main reason that facilities were not completed was because residents did not want waste from outside of their region coming near their community. Participants feel that communities have the perception that waste sites are poorly operated, as sites were in the past. In one participant's experiences, the community was first notified of a site through the development agreement process. In the other



participant's experiences, a final waste site was selected before residents were notified. In both cases, the municipal councils backed out of the projects. See Participant Experience: Site Selection in the 1970s on page 13 for an example of a completed project.

2. Can you describe any waste disposal facility siting experiences that you are familiar with?

All participants were familiar with a siting experience, either within their jurisdiction or within another jurisdiction. These include the siting of second generation landfills and construction and demolition debris sites. Most of the participants were familiar with the siting of landfills for Halifax Regional Municipality (HRM) outside of the Halifax County boundaries, and/or with the siting of the Otter Lake Landfill in HRM.



3. If you were asked to select a site for a waste disposal facility, how would you begin the process? What procedures would you follow?

All participants said that technical and environmental considerations are important to consider when siting a waste facility. All participants said that the public should be involved or consulted.

Technical and environmental considerations mentioned were:

- soils,
- trucking routes,
- minimum distance from dwellings,
- distance from existing uses,
- topography,
- groundwater,
- surface water,
- land ownership (crown, private),
- traffic patterns,
- weather,
- flooding,
- population density,
- wind direction,
- access to fill and clay,
- area of land,
- geology,
- distance to the centroid of generation, and
- distance to parks and protected areas.



Half of the participants indicated either directly or indirectly that they would look at technical and environmental criteria before involving the public. “If you have already made major decisions before going out to the public, you have already built a level of distrust. So you may not go out to the public before you identify a site, but after you choose sites, you start the process” (Personal communication [P6], October, 2015).

The other half of the participants said they would involve the public as early in the process as possible. “My instinct would be to start with the technical stuff. Find the right soils; find the right trucking route, all those sort of technical analyses, and figure out what the best practices are for minimum distance to the nearest dwelling. All of that kind of technical stuff. I wouldn’t start there now. What I would do is start with a public process. Without a site in mind. So I can say, ‘here is the need, here is the process we are going to go through to select that site, and what do you think of our process’ before you actually get into picking sites. And then get into those technical analyses about trucking, soils, cost of operation, nearest dwellings, all of that stuff. And, I know this too. It doesn’t

matter what process you follow... but as soon as you start putting a point on a map, I think that’s when it gets tough” (Personal communication [P5], October, 2015).

Most participants said that initial selection of sites utilizes tools such as civic addressing and GIS software. Then, analysis of technical considerations, such as geologic and soil conditions, is often contracted to consultants.

4. The responsibility of siting waste disposal facilities is often shared between municipal and provincial governments. How does the division of responsibility affect the process?

Waste management and land use are municipal responsibilities. Nova Scotia Environment plays a regulatory role in the siting process. Nova Scotia Municipal Affairs does not get involved in the siting process, unless a municipality needs support, or a resident has a concern.

Participant feelings about the relationship between provincial and municipal governments range. Some feel that Nova Scotia Environment is not supportive and too strict, and others feel that the division of



responsibility is clear and shouldn't affect the siting process.

"Typically, the municipalities are the ones that wear it. The province, through the Department of Environment will regulate the process, and set out the process but they're not really going to show up at the meeting and say this is the best site. They will never do that because it's always politically sensitive... Again, if you did a technical analysis of the entire province to figure out where the six waste facilities should go, you really need to do that on a province wide basis, and that has never been done" (Personal communication [P5], October, 2015).

5. What makes siting waste disposal facilities within your level of government different than siting within other levels of government?

Siting is a municipal responsibility. The province's role is regulatory. If for some reason the provincial government does site a waste facility, it is not required to follow municipal bylaws such as zoning.

Two participants noted that they were not familiar with the siting of facilities on First

Nations reserves, but that it likely involves the federal government.

6. What kinds of issues have been raised during waste disposal facility siting public consultations, to your knowledge

Issues that participants have heard from the public include:

- Garbage from the city/outside of the region is toxic
- Odour
- Rodents
- Birds (see image 7)
- Truck noise
- Groundwater contamination
- Surface water contamination
- The production of methane gas
- Truck traffic
- Litter



Image 7: Seagulls flocking to landfill (Otago Daily Times, 2015)



- Environmental racism
- “Why our community?” (Personal communication [P1], October, 2015).
- Wear and tear on roads
- “So you say you’re going to get it right this time, but in the past you haven’t” (Personal communication [P4], October, 2015).

7. I understand that communities sometimes feel excluded from site selection decision processes. What kinds of strategies are used to avoid such problems?

Participants often preceded sharing strategies with experienced challenges of community engagement. These include the public’s lack of understanding about proposed projects, and the public responsibility of waste management. Some planners find it frustrating that many people don’t become engaged until they perceive a problem. One participant said that people “are not going to pay attention until they are threatened. I find that with land use all of the time. Until there is a perceived threat in your community, it’s hard to engage people” (Personal communication [P5], October, 2015).

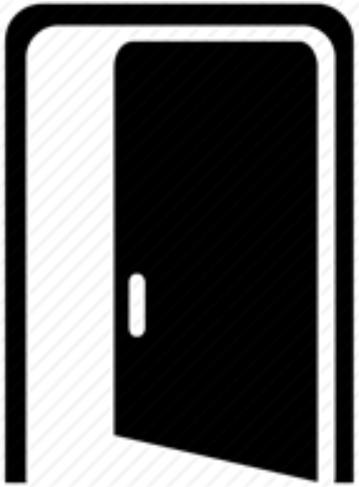
The most common strategy shared by participants is to be open, honest and

transparent with the public. They said that when going to the public, anticipate what questions may arise and have recommendations in mind, but not a decision. Participants felt that if a decision is made before going to the public, the community does not have an opportunity to weigh in and this disengagement can put people ‘on the defensive’. “When looking to site a waste facility ask the public to join you in the process. People are more accepting of a decision if they know their voices have been heard” (Personal communication [P2], October, 2015). A couple participants emphasized understanding what residents main means of learning are. First, find out how the community learns, and who community leaders are (often unofficial). Then, touch base with all communities; this includes geographic communities, and interest based communities. One participant said that “somebody has got to be the champion,” and that the champion should be “ideally from the community” (Personal communication [P3], October, 2015).

A couple of participants said that some work should not be contracted to an outside consultant because municipalities know their own communities best. Working with



municipal politicians is a strategic opportunity because politicians are ‘close’ to the people. As a planner, developing relationships with politicians and giving them the chance to reach out to talk to people may help. A credible proponent (municipal officials, mayor, senior staff, Nova Scotia Environment, developers), and leaders who try to build consensus will help communities feel more comfortable engaging in the siting process.



8. Researchers suggest that waste disposal sites are disproportionately located near low-income neighbourhoods. What strategies or procedures may help the waste disposal facility site selection process when an issue of equity is raised?

Participants often preceded sharing strategies with experienced challenges. One of the challenges shared was whether or not to include the property value of dwellings near proposed sites during the site selection process. One participant said “we do not factor in assessment value of properties. The minute you start doing that, you’re victimizing yourself, the municipality. If we find an appropriately located site, it shouldn’t adversely affect property values” (Personal communication [P4], October, 2015). Another participant felt waste sites have a negative effect on local land values. Most participants think that income or property value should not be considered when selecting sites because it would make the process more challenging. One participant felt that such criteria could bias the site selection process in the other way, and still be inequitable. Another participant said there may already be a bias toward not siting LULUs near low income communities.



Four of the participants spoke directly about waste sites near low income and racialized communities. Two participants discussed the influence of historical settlement patterns, and the marginalization of certain groups of people including African Nova Scotians and Irish Nova Scotians.

Participants who discussed the marginalization of these groups of people, said that the land those groups received

from the federal government had little value, was not arable, and had rocky and impermeable soils.

One participant noted that the land near their jurisdiction's waste site is very affordable, primarily because of the rural location, and poor soil and water quality. These are the reasons why the waste site was chosen. "So, are we near low income-

Participant Experience: Environmental Racism

One participant reflected on the locations of waste sites and marginalized communities. He said, "what does this have to do with these suggestions of environmental racism and putting these disposal sites into areas where there are low income people, poor people, marginalized people. I have a theory.

At least in what I've done, all of these sites had to be located some little distance away from a highway, but not too far, and on soils that were essentially glacial tills, almost all forested so the topsoil aspect of it would be a little bit marginal, podzolic soils and so on... Out there some little distance, on these poor soils, those clay soils, poor for farming, but good enough to put these poor people on, and perfect for landfills. Perfect for landfills. So if you go looking for pockets of lousy farmland, that are reasonably accessible, with deep impermeable soils, which you could try to farm but it would be hard, I think that is where you will find most of these communities.

So now we come along sticking landfills on them. Is it because they are attracted to those soils, or were we just putting those facilities there because it was easier to push them onto these politically voiceless, poor people... you know we can shove it onto them but we can't push it onto anybody else. I'm not sure what the answer is, but I've been intrigued by it because I've seen the search for a site being driven by those kinds of (geotechnical) criteria. Then you put together the settlement history and why these communities are where they are. Well, in my mind it's a theory. You could call it a sort of accident of history... you know like, is it a real living political and social force that needs to be dealt with? Sure does. If you're living in a black community. You have lived there all your life. You have felt marginalized, beaten down, and oppressed and not appreciated. Then someone comes along as says 'oh ya, we have followed a careful process and guess what? You are going to have a compost plant, or a landfill', or things like that... It's very easy, it's almost natural to think 'well shit, here we go again. We could never get our roads paved, we could never get a decent school, we could never get all these things but guess what, we're good enough for a landfill'"

Source: Personal communication with a participant, October, 2015



yes. Because high income is never going to move there” (Personal communication [P6], October, 2015).

A few participants shared ideas for strategies or procedures that may help when equity is raised. One strategy is ensuring that people learn about the proposed project and have multiple avenues to voice their views. In cases where people are financially challenged, do not have computers, or much education, planners can assist them to bring forward their case. Citizens with more money have more ability to solicit assistance, such as hiring lawyers. This may result in “the site that ends up getting selected is the one where there is the least push back. Or, the push back is the least sophisticated” (Personal communication [P5], October, 2015).

Working together with people from other professions such as police, public health, school boards, the local grocer, etc. may help planners find place based solutions.

Another suggestion for bringing equity into site selection procedures is to include ‘community impact’ as a siting criterion. The participant who suggested this noted that a

person’s potential experience of dust, odour, noise, etc. from a waste site should be taken into account.

9. What other challenges may planners face when siting a waste disposal facility?

Other challenges participants shared:

- Not being able to deliver what was promised, and subsequently losing the communities trust
- Finding a site with the right combination of essential criteria (e.g. central location, highways, etc.)
- Cost to site, build and maintain a waste facility
- Maintaining partnerships with other municipalities
- Social media can spread an inaccurate message
- Even with a well-run process, planners run into issues
- “I have never seen anything as emotional, as contentious, as irrational as dealing with waste” (Personal communication [P5], October, 2015).



6.2 Discussion of Workshop Feedback

Following the one on one interviews, I held a group workshop with six professional planners. The purpose of the workshop was to assess the perceived usability of the seven selected equity tools, and propose potential strategies to better incorporate equity into siting procedure. To be more inclusive to planners without specific knowledge or experience about waste disposal facilities, the workshop included all locally unwanted land uses (LULUs). Framing the equity tools within the context of LULU siting may also broaden the applicability of the pilot Equitable Siting Strategy.

Six planners from Nova Scotia participated in the workshop. All participants were practicing planners including two municipal, two provincial, and two private/institutional. Participant's experiences with locally unwanted land uses and siting ranged from no experience to extensive experience. Two of the participants were under the age of thirty-five and four of the participants were over the age of thirty-five.



The workshop was held in November at the Nova Scotia Department of Municipal Affairs office. The workshop was two hours and had three parts;

- first, I introduced the project and participants,
- second, I presented my project preliminary findings including feedback from interviews, and
- lastly I presented the equity tools and gathered input about the perceived potential strengths, weaknesses, opportunities and barriers (SWOB) to implementing tools. The presentation and collection of feedback for each tool was approximately five minutes.

We had an open discussion on the topic of equity, LULUs and site selection. For each



tool I asked participants if they had used the tool or heard about the tool being used. This was recorded by a student volunteer note-taker. I also asked participants to individually write down what they felt the potential strengths, weaknesses, opportunities and barriers were for each tool.

A major theme that emerged during the workshop discussions is accessible and appropriate language. Planners should try to understand people's level of awareness, offer to communicate in people's first language (whether French, Mandarin, English, Mi'kmaq, etc.) and use clear and comprehensive definitions.

Participants emphasized the importance of clear definitions as terms can be understood differently if there is room for interpretation. For example, 'procedural equity' is understood differently even when there is a clear definition. The definition of equity I use in this report is the fairness of the planning process (Antadze, 2013, p.2) "especially for groups and interests traditionally under-represented in planning and decision making" (Lawrence, 1996). However, different people may have different understandings of what is 'fair'.

One participant said that the range in understanding of what is 'fair' may be due to differences in cultures and legal systems (common law or Napoleonic law, etc.).

I asked the workshop participants what they thought about the principles for equitable siting (developed from the interview responses). Workshop participants saw the list as comprehensive, but better organized into more manageable categories. One participant recommended grouping the principles into categories such as technical, community education, approach, etc. When asked how to apply the principles, participants felt as though the level of application for each principle varies, and they raised the question 'how do you measure the success of principles'. Some principles were unclear because the term has broad meaning. For example, 'Assist & Facilitate' could mean many different things; it could include offering interveners, funding, education, transportation to meetings, etc.

I asked participants 'Are there any other tools that may help to equitably site LULUs'? No specific tools were identified; however, participants said to always begin the site selection process with a resource document



including at least background, a social and economic needs statement, a technical review, risks assessment and contingency plans, and an example of a similar project. They also said that during siting, dialogue should stay focused on societal needs, how the project meets these needs at minimal risk, and why chosen sites are optimal. A couple of participants recommended that the 'tools' be named 'policy development guidelines' and to define tools as instruments such as GIS or social data analysis. Making these distinctions may avoid confusion between instruments and policy development. See participant feedback on individual tools in the Equitable Siting Strategy (Appendix I).



6.3 Workshop and Interview Comparison

Group dynamics influence what stories and opinions are shared in group discussion settings. Additionally, sensitive topics such as inequity and LULUs may incline participants to censor themselves. Small group discussion methods such as workshops offer more than answers to direct questions. Group discussions can reveal professional consensus (Grant, 2011, p. 410); the presence of colleagues can create pressure to express social and professional norms, or empathy.

The workshop participants appeared comfortable sharing their opinions and all participants shared with the group. The purpose of the workshop was not to analyze group dynamics or interpersonal interactions. A couple of points of conflicting feedback between interviews and the workshop led me to explore this dynamic. Most interview participants said that property value and income should not be considered when siting a waste facility. Most workshop participants indicated that equity should be explicit when doing

equitable site selection. Interview participants also expressed more frustration with the public than did workshop participants.

Although this research draws on a small sample and the questions posed in each participant method were different, this finding may be an example of how social and professional pressures influence expressed opinion. Projecting this finding into a larger context, perhaps public awareness of inequity will encourage policy makers to integrate equity into procedures and policy. Group discussion can also generate socially constructed meaning (Grant, 2011, p. 410). Collaboratively constructing a professional language around equity and opportunities to increase equity may help planners build the hope and confidence needed to facilitate positive change.

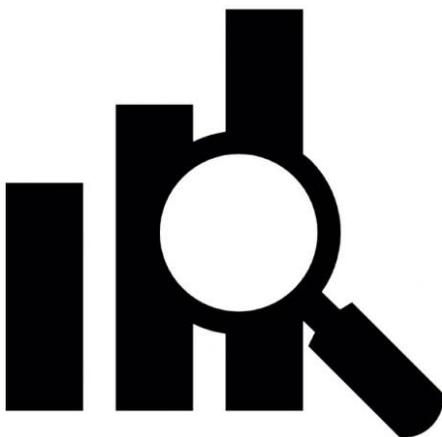


6.0 Opportunities to Increase Equity

There are opportunities to increase waste siting procedural equity. Opportunities exist to integrate equity into processes and policies before a site needs to be selected, during site selection processes.

Three actions governments can take are to:

1. create awareness of equity of inequity in their organization and community,
2. integrate equity into policy and regulations and
3. use appropriate site selection tools.



7.1 Process

If equity is understood by government staff, policy makers and community members it can be better integrated into site selection processes. Governments can start this process by developing an organizational culture that understands and values equity, and building capacity for engagement within community. Awareness and education can help build capacity for engagement. Early integration of place-specific values or principles for equitable site selection may help guide site selection. From interview feedback, I extracted direct and indirect answers to the question ‘how could site selection be more equitable?’ and developed ‘equitable siting principles’.

These principles are to:

- Educate
- Engage Early
- Customize Communication
- Assist & Facilitate
- Foster Partnerships & Relationships
- Use Local Knowledge
- Be Open & Transparent
- Be Honest, and
- Be Practical



Such principles may help guide equitable site selection processes. A finding that emerged from participant feedback is that siting processes should start with the integration of equity as a value into the organization and community. Interview participants felt that many people do not understand how second generation landfills are operated, and that waste management is a public responsibility. Facilitating an understanding of issues through education is helpful for planners, politicians and citizens. Planners can create multiple avenues for people to voice their opinions. Also, building partnerships for engagement with municipal politicians and community ‘champions’, may be an effective way to reach a representative public.

Following through with promises will build and maintain relationships; honest communication, and on-going partnerships can create understanding around the practical challenges that local governments often face. See Appendix I for other opportunities to increase equity through process.

7.2 Policy

Some provincial legislation supports the formalization of procedural equity as one of the criteria in waste siting processes in Nova Scotia. For example, the Environment Act empowers the Environment Minister and Governor in Council to make policies, plans and regulations that can improve legislation (Province of Nova Scotia, 1994-5a, 102.1.c, 8.2.d).

The provincial government’s interest in municipal affairs is expressed by the Statements of Provincial Interest (Province of Nova Scotia, 1998). There is no explicit interest in waste sites. However, Nova Scotia Department of Municipal Affairs becomes involved with municipalities when infrastructure, drinking water and housing may be affected (Province of Nova Scotia, 1998, p. 288). The siting of waste facilities may affect infrastructure, drinking water, and/or housing. If Statements of Provincial Interest are monitored inequities can be better mitigated.

The Nova Scotia Environment Act includes a series of goals that support the inclusion of equity in policies and regulations. Goals include:



- applying the principle of shared responsibility of all Nova Scotians,
- taking remedial action,
- providing access to information,
- facilitating effective public participation in when formulating decisions,
- using the precautionary principle in decision making and
- providing a responsive, effective, fair, timely and efficient administrative and regulatory system (Province of Nova Scotia, 1994-5, 2.a-j).

The precautionary principle is used in decision making “so that where there are threats of serious or irreversible damage, the lack of full scientific certainty shall not be used as a reason for postponing measures to prevent environmental degradation” (Province of Nova Scotia, 1994-5, 2.b.ii).

The Environment Act states that Minister of Environment shall promote, support or conduct research on waste management in the province. Research can be on topics such as waste-disposal practices and facilities, and the distribution of wastes in the province (Province of Nova Scotia, 1994-5, 94.1.a). The Department of Environment,

therefore, can support and guide siting equity research in Nova Scotia.

The Environmental Goals and Sustainable Prosperity Act (2007), also guides provincial behaviour through a set of principles including: the use of a long-term approach to planning and decision making and the Mi’kmaq concept of supporting the well-being of the individual and community without jeopardizing the integrity, diversity or productivity of the environment (Province of Nova Scotia, 2007, 3.1.d). The Environmental Goals and Sustainable Prosperity Act emphasizes fostering an integrated approach to environmental sustainability and economic well-being that includes social, economic and environmental improvement (Province of Nova Scotia, 2007, 4.1.b). This act enables public and community education programs and capacity-building, and other appropriate programs and measures related to sustainable prosperity (Province of Nova Scotia, 2007, 7.1.e).

Within the Solid Waste-Resource Management Guidelines, the Administrator can establish a technical steering committee to provide recommendations for, or



establish a plan, study or audit (Province of Nova Scotia, 1994-5b, 45.1).

The Municipal Government Act empowers municipalities to regulate the locations of waste sites through a land use bylaw (Province of Nova Scotia, 1998, 126, 231.4.h) and regulate waste sites through the site-plan approval process (Province of Nova Scotia, 1998, 231.4.h).

See Appendix I for possible additions (to better integrate equity) to provincial and municipal policies and regulations.



7.3 Tools

Equity tools are policies and instruments that can assist equitable site selection.

There are two types of equity tools: procedural tools and substantive tools. Procedural tools affect the behaviour of people and the process. An example of a procedural tool is the ‘host community group’. Substantive tools are instruments that directly affect content. Substantive tools include geographic information systems (GIS) and overlay zoning.

Some Canadian municipalities have included equity as a consideration during site selection processes. In the article ‘Approaches and methods of siting locally unwanted waste facilities’ Lawrence (1990) identified three major waste facility siting approaches in Canada. These include the environmental suitability approach, the social equity approach and the Community Control Approach (CCA). These approaches apply different tools. The social equity approach (SEA) includes the use of procedural tools including stakeholder participation, negotiation and equity principles. Users of this approach usually do not locate facilities where there are social



equity concerns (Lawrence, 1990). This approach has been used in Swan Hills, Alberta (near Edmonton) (Lawrence, 1990; Rabe, 1992). In response to public demand, in the 1980s the Alberta provincial government put a temporary moratorium on siting until they re-structured their siting procedures. In the mid-1980s the moratorium lifted, and in 1987 the Swan Hills Special Waste Treatment Centre opened (Rabe, 1992, p.124). The neighbouring community supported the waste treatment centre because new procedures included improvements to waste management as a whole, and they “considered siting only in communities that met provincial environmental standards and volunteered as site candidates” (Rabe, 1992, p. 124-5).

Participant feedback and literature research indicate that the most equitable tools may be tools that include citizens in the process.

The International Association for Public Participation’s ‘Spectrum of Public Participation’ is a highly regarded consultation framework. The framework indicates that as the ‘level of impact’ on

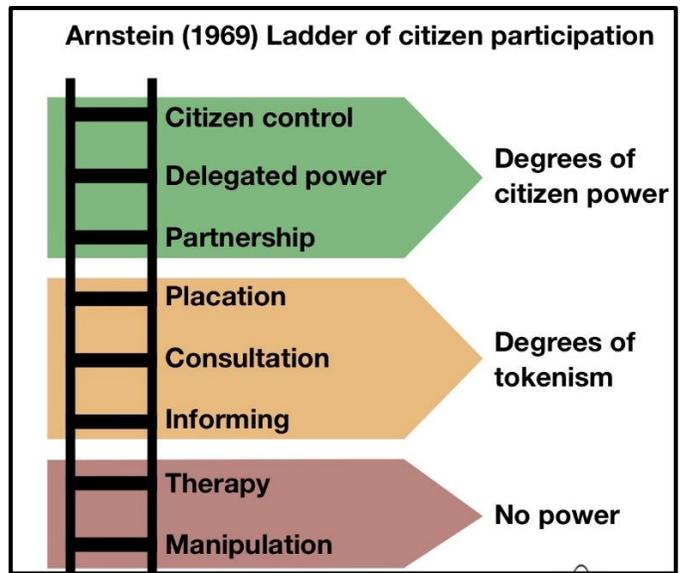


Image 9: Ladder of citizen participation (George Julian, 2012)

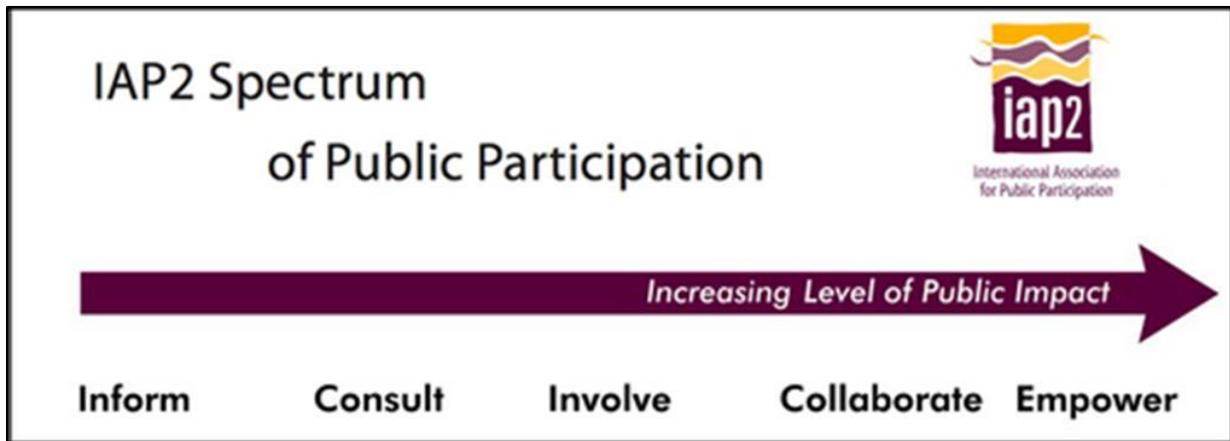


Image 8: IAP2 Spectrum of Public Participation (IAP2, 2006)

people



people increases, the level of public participation should increase (see image 8).

The ladder of citizen participation is another popular and longstanding framework that can help planners select appropriate tools (see image 10). See Appendix I for more discussion on these frameworks and the 'Equity Tool Kit'.

7.4 Further Research

Further research into the following topics will increase knowledge within the planning discipline, and improve understanding of equity and inequity.

- Identify exact location of potentially hazardous facilities in relation to low income and racialized communities
- Examine more policy development options and planning tools
- Explore the questions “What is equity” and “What is equitable siting?”
- Research how social pressure influences planning decisions



Image 10: Unlikely setting (Terra Informa, 2015).



7.0 Conclusion

The inequitable distribution of undesirable and potentially hazardous land uses is an issue across North America. As identified by this research, in Nova Scotia, there is a history of environmental racism and inequitable waste disposal facility distribution. Currently, some racialized communities in Nova Scotia feel excluded from site selection decision making processes. No formal legislation in Nova Scotia requires equity in the waste disposal facility site selection process.

Participant feedback suggests three strategic actions governments can take to increase siting procedural equity:

1. Create awareness of equity and inequity in their organization and community,
2. Integrate equity into policy and regulations, and
3. Select and apply appropriate site selection tools.

These actions can be taken before the need for a waste facility arises, and continue during siting processes.

Planners can begin to raise awareness by creating a language around equity and inequity, building capacity for community engagement and conducting engagement that is accessible and inclusive.

There are opportunities to integrate equity into provincial and municipal legislation; policies include the Environment Act, Municipal Government Act, Solid Waste-Resource Regulations and waste site specific guidelines. Municipalities can incorporate equity into their municipal planning strategies, land use bylaws, community engagement strategies, and other planning strategies (see Appendix I for possible revisions).

Procedural and substantive tools can help planners select sites. Tools should be selected on a case to case basis.

More public dialogue about inequitable siting and waste facility distribution may pressure governments to integrate equity into procedures and policy.

Nova Scotian governments have the opportunity to model best siting practices through demonstration, and inspire other local and provincial Canadian governments.



References

- Anderton, D.L., Anderson, A.B., Oakes, J.M., & Fraser, M.R. (1994). Environmental Equity: The Demographics of Dumping. *Demography* 31(2): 229-248.
- Antadze, N. (2013). Substantive and Procedural Equity in Environmental Planning: A Case Example of Planning Thermal Treatment Facilities for Municipal Solid Waste in the Province of Ontario, Canada. Retrieved from https://uwspace.uwaterloo.ca/bitstream/handle/10012/7668/Antadze_Nino.pdf?sequence=1
- Baxter, J., Eyles, J., & Elliot S. (1996). 'Something Happened': The Relevance of the Risk Society For Describing the Siting Process for a Municipal Landfill. *Geografiska Annaler* 81B: 91-109.
- Cambridge Dictionaries Online. (2015). Fair. Retrieved from <http://dictionary.cambridge.org/dictionary/british/fair>
- Canadian Broadcasting Corporation (CBC) (2014a). Leachate Plan for Sackville landfill Draws Opposition. Retrieved from <http://www.cbc.ca/news/canada/nova-scotia/leachate-plan-for-sackville-landfill-draws-opposition-1.2774557>
- Canadian Broadcasting Corporation (CBC) (2014b). Nova Scotia Proposes Banning More Garbage From its Landfills. Retrieved from <http://www.cbc.ca/news/canada/nova-scotia/nova-scotia-proposes-banning-more-garbage-from-its-landfills-1.264191>
- Canadian Broadcasting Corporation (CBC) (2015a). Fall River Quarry Approval Overturned by Andrew Younger. Retrieved from <http://www.cbc.ca/news/canada/nova-scotia/fall-river-quarry-andrew-younger-1.3302335>
- Canadian Broadcasting Corporation (CBC) (2015b). Otter Lake Landfill Accused of Violating Environment Act. Retrieved from <http://www.cbc.ca/news/canada/nova-scotia/otter-lake-landfill-accused-of-violating-environment-act-1.2898287>
- Canadian Environmental Law Association (CELA). (2012). Environmental Health and Equity: Public Participation in Environmental Decision-Making: A Toolkit. Retrieved from <http://www.cela.ca/publications/links-toolkit>
- Canadian Mortgage and Housing Corporation (CMHC) (2006). Gaining Community Acceptance of Affordable Housing Projects and Homeless Shelters. Retrieved from <http://www.cmhc-schl.gc.ca/odpub/pdf/65185.pdf?fr=1390511029097>
- Canadian Policy Research Networks. (2008). Environmental Justice in Canada- It Matters Where You Live. Retrieved from http://www.cprn.org/documents/50875_EN.pdf



- Chronicle Herald. (2012). Departing Council to Meet Secretly During Second-Last Session. Retrieved from <http://thechronicleherald.ca/municipal2012/151492-departing-council-to-meet-secretly-during-second-last-session>
- Chronicle Herald. (2015a). Otter Lake Landfill Operator Gets New Contract. Retrieved from <http://thechronicleherald.ca/novascotia/1326578-otter-lake-landfill-operator-gets-new-contract>
- Chronicle Herald. (2015b). The Toxic Sites of Nova Scotia Racism. Retrieved from <http://thechronicleherald.ca/novascotia/1282706-weekend-focus-the-toxic-sites-of-nova-scotia-racism>
- Clairmont, D. H. and Magill, D. W. (1971). *Africville Relocation Report*. Halifax, Nova Scotia: Dalhousie University Institute of Public Affairs.
- City of Victoria. (2012). Foundations for Success- A Strategy to Improve Civic Engagement at the City of Victoria. Retrieved from http://www.victoria.ca/assets/Departments/Communications/Documents/Civic_Engagment.pdf
- Deacon, L., & Baxter, J. (2013). No Opportunity to Say No: A Case Study of Procedural Environmental Injustice in Canada. *Journal of Environmental Planning and Management* 56(5): 607-623.
- Deep Democracy. (2015). History of Deep Democracy. Retrieved from <http://www.deep-democracy.net/view-page.php?page=History%20of%20Deep%20Democracy>
- Environmental Justice Network. (2008). Delco Alliance for Environmental Justice. Retrieved from <http://www.ejnet.org/chester/delco-ej.pdf>
- Galbuzi, G.E. (2006). *Canadas Economic Apartheid: The Social Exclusion of Racialized Groups in the New Century*. Toronto, Canadian Scholars Press.
- George Julian Consultancy. (2012). Social Media and Citizen Engagement. Retrieved from <http://www.georgejulian.co.uk/2013/01/22/social-media-and-citizen-engagement/>
- Grant, J. L. (2011). Storytelling, Group Dynamics, and Professional Cultures: Lessons from a Focus Group Study. *Planning Theory & Practice* 12(3): 407-425.
- Gunning, C., Harris, P., & Mallett, J. (2011). Assessing the Health Equity Impacts of Regional Land-Use Plan Making: An Equity Focussed Health Impact Assessment of Alternative Patterns of Development of the Whitsunday Hinterland and Mackay Regional Plan, Australia. *Environmental Impact Assessment Review* 31: 415-419.
- Halifax Dartmouth Regional Authority. (1977). Proposed Sanitary Landfill off Highway 101, Halifax County. Halifax, Nova Scotia: Beasy Nicoll Engineering Limited and H.J. Porter & Associates Limited.



- Harris Ali, S. (1999). The Search for a Landfill Site in the Risk Society. *Canadian Review of Sociology and Anthropology* 36(1): 1-19.
- Hird, M. (2013). Waste, Landfills, and an Environmental Ethic of Vulnerability. *Ethics & the Environment* 18(1): 105-124.
- Hird, M.J., Loughheed, S., Rowe, R.K., & Kuyvenhoven, C. (2014). Making Waste Management Public (Or Falling Back to Sleep). *Social Studies of Science* 44 (3):441-465.
- Huang, I.B., Keisler, J., & Linkov, I. (2011). Multi-Criteria Decision Analysis in Environmental Sciences: Ten Years of Applications and Trends. *Science of the Total Environment*. 409: 3578-3594.
- International Association of Public Participation (IAP2) (2006). Planning for Effective Public Participation. Retrieved from www.iap2.org/resource/resmgr/imported/Inno_Planning%20Manual.pdf
- Lang, R. (1990). Equity in Siting Solid Waste Management Facilities. (Originally in Plan Canada 39(2), p 12-5). In Jill Grant (ed), *A Reader in Canadian Planning: Linking Theory and Practice*. Scarborough, Ontario: Thomson Nelson Education, p. 83-90.
- Lawrence, D.P. (1996). Approaches and Methods of Siting Locally Unwanted Waste Facilities. *Journal of Environmental Planning & Management* 39(2): 165-188.
- Metrolinx. (2015). Eglinton Crosstown. Retrieved from <http://www.thecrosstown.ca/fr>
- Metropolitan Authority. (1991a). Impact Management: Mitigation and Compensation Policies and the Use of Siting Agreements. Halifax, Nova Scotia: Griffiths Muecke Associates.
- Metropolitan Authority. (1991b). Initial Siting Review Waste to Energy Plant. Halifax, Nova Scotia: Metropolitan Authority.
- Metropolitan Authority. (1992). Environmental Assessment Act Guidelines for SG-R. Halifax, Nova Scotia: Metropolitan Authority.
- Miao, Q., Chen, D., Buzzelli, M., & Aronson, K. J. (2015). Environmental Equity Research: Review With Focus on Outdoor Air Pollution Research Methods and Analytic Tools. *Journal of Environmental & Occupational Health* 70: 47-55.
- Mowatt Centre for Atkinson Foundation. (2015). Community Benefits Agreements. Retrieved from <http://communitybenefitsagreements.ca/#page1>
- NACCHO Aboriginal Health News. (2015). Categorize Social Determinants. Retrieved from <http://nacchocommunique.com/category/social-determinants/>
- Nazari, A., Salarirad, M.M., & Bazzazi, A.A. (2012). Landfill Site Selection by Decision-Making Tools Based on Fuzzy Multi-Attribute Decision-Making Method. *Environmental Earth Science* 65: 1631-1642.



- Nova Scotia Community Counts. (2011). Visible Minorities (National Household Survey 2011). Retrieved from <http://www.novascotia.ca/finance/communitycounts/topicview.asp?tnum=107&gval=pro&s=Demographics&yval=2006>
- Nova Scotia Environment. (2009). Application for Approval. Retrieved from <https://novascotia.ca/nse/forms/docs/Application-MunicipalApproval.pdf>
- Nova Scotia Environment. (2010). Composting Facility Guidelines. Retrieved from <http://www.novascotia.ca/nse/dept/docs.policy/Guidelines-Composting.Facility.pdf>
- Nova Scotia Environment. (2015a). Facilities. Retrieved from <http://www.novascotia.ca/nse/waste/facilities.asp>
- Nova Scotia Environment. (2015b). Municipal Waste Approval: Solid Waste. Retrieved from <https://novascotia.ca/sns/paal/nse/paal173.asp>
- Nova Scotia Environment and Labour. (1997a). Construction and Demolition Debris Disposal Site Guidelines. Retrieved from <http://www.novascotia.ca/nse/dept/docs.policy/Guidelines-Construction.Demolition.Debris.Disposal.pdf>
- Nova Scotia Environment and Labour. (1997b). Municipal Solid Waste Landfill Guidelines. Retrieved from <http://www.novascotia.ca/nse/dept/docs.policy/Guidelines-Municipal.Solid.Waste.Landfill.pdf>
- Nova Scotia Environment and Labour. (1998). Guidelines for Siting and Operation of Salvage Yards. Retrieved from <http://www.novascotia.ca/nse/dept/docs.policy/guidelines-siting.and.operations.of.salvage.yards.pdf>
- Nova Scotia Environment and Labour. (2006). Guidelines for the Siting and Operation of Waste Transfer Stations. Retrieved from <http://www.novascotia.ca/nse/dept/docs.policy/Guidelines-Waste.Transfer.Station.Operations.and.Siting.pdf>
- Ohri, A., & Singh, P.K. (2013). GIS Based Environmental Decision Support System for Municipal Landfill Site Selection. *Management of Environmental Quality: An International Journal* 24(5) 583-598.
- Organization for Economic Co-operation and Development (OECD). (2003). Environmental Equity and the Siting of Hazardous Waste Facilities in OECD Countries: Evidence and Policies. Retrieved from <http://www.oecd.org/greengrowth/tools-evaluation/38436943.pdf>
- Otago Daily Times. (2015). Council Suspends Seagull Poisoning. Retrieved from <http://www.odt.co.nz/news/dunedin/70337/council-suspends-seagull-poisoning>



- Outfront Minnesota. (2014). Next Steps in the Movement for LGBTQ Equality. Retrieved from <https://outfront.org/strategicplan>
- Pennsylvania Source Water Protection. (2015). Overlay Zoning. Retrieved from http://www.sourcewaterpa.org/?page_id=133
- Petts, J. (2005). Enhancing Environmental Equity Through Decision-Making: Learning from Waste Management. *Local Environment: The International Journal of Justice and Sustainability* 10(4): 397-409.
- Province of Nova Scotia. (1994-5a). Environment Act. Retrieved from <http://nslegislature.ca/legc/statutes/environment.pdf>
- Province of Nova Scotia. (1994-5b). Solid Waste-Resource Management Regulations. Retrieved from <https://www.novascotia.ca/just/regulations/regs/envsolid.htm>
- Province of Nova Scotia. (1998). Municipal Government Act. Retrieved from <http://nslegislature.ca/legc/statutes/municipal%20government.pdf>
- Province of Nova Scotia. (2007). Environmental Goals and Sustainable Prosperity Act. Retrieved from <http://nslegislature.ca/legc/statutes/environmental%20goals%20and%20sustainable%20prosperity.pdf>
- Province of Nova Scotia. (2015). Bill 111: An Act to Address Environmental Racism. Retrieved from http://nslegislature.ca/legc/bills/62nd_2nd/1st_read/b111.htm
- Pulido, L. (2000). Rethinking Environmental Racism: White Privilege and Urban Development in Southern California. *Annals of the Association of American Geographers* 90(1): 12-40.
- Rabe, B. G. (1992). When Siting Works: Canada-Style. *Journal of Health Politics, Policy and Law* 17(1): 119-142.
- Race, Poverty and the Environment Journal. (2008). Removing the Poor through Land Use and Planning. Retrieved from <http://reimaginerpe.org/node/1825>
- Ramirez-Andreotta, M. D., Brusseau, M. L., Artiola, J. F., Maier, R. M., & Gandolfi, A. J. (2014). Environmental Research Translation: Enhancing interactions with communities at contaminated sites. *Science of the Total Environment* 497(498): 651-664.
- Regina Public Interest Research Group. (2015). What is a Working Group? Retrieved from <http://rpirg.org/funding/working-groups-parent/working-groups/>
- Ross, C.L., Leigh, N.G. (2000). Planning, Urban Revitalization, and the Inner City: An Exploration of Structural Racism. *Journal of Planning Literature* 14(3): 367-380.
- Save Lincolnville Campaign. (2007). Environmental Racism? Retrieved from <http://savelincolnville.h-a-z.org/background.php>



- Siver, S. (2009). *Deep Democracy: A Process-Oriented View of Conflict and Diversity*. Retrieved from <http://stanfordsiver.net/wp-content/themes/twentyten/pdf/DeepDemocracy-POVCD.pdf>
- Statistics Canada. (2013). Waste disposal by source, province and territory (Newfoundland and Labrador, Prince Edward Island, Nova Scotia). ANSIM table 153-0041, Catalogue no. 16F0023X. Retrieved from <http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/envir25a-eng.htm>
- Tattie, J. (2010). *The Hermit of Africville: The Life of Eddie Carvery*. Lawrencetown, NS: Pottersfield Press.
- Terra Informa. (2015). Exploring the Relationship Between Environmental NGOs and Corporations. Retrieved from <http://terrainforma.ca/tag/environmental-politics/>
- The City of Halifax. (1992). Review of Waste Management Systems Options: The City of Halifax Waste Management Task Force. Halifax, Nova Scotia: Angus Environmental Limited.
- The ENRICH Project. (2014). In Whose Backyard? Retrieved from <http://www.enrichproject.org/resources/#IWB-Video>
- The ENRICH Project. (2015). Interactive Map. Retrieved from <http://www.enrichproject.org/programs/interactive-map/>
- Toronto Star. (2015). Is Toronto-area transit the next frontier for the private sector? Retrieved from <http://www.thestar.com/news/gta/transportation/2015/05/22/is-toronto-area-transit-the-next-frontier-for-the-private-sector.html>
- US Environmental Protection Agency (US EPA). (2003). Addressing Community Concerns: How Environmental Justice Relates to Land Use Planning and Zoning. United States Environmental Protection Agency. National Academy of Public Administration.
- US Environmental Protection Agency (US EPA). (2015). Environmental Justice. Retrieved from <http://www.epa.gov/environmentaljustice/>
- Vasiljevic', T.Z., Srdjevic', Z., Bajc'etic', R., and Miloradov, M.V. (2012). GIS and the Analytic Hierarchy Process for Regional Landfill Site Selection in Transitional Countries: A Case Study From Serbia. *Environmental Management* 49:445–458.
- World Health Organization (2010). *Hidden Cities: Unmasking and Overcoming Health Inequities in Urban Settings*. Switzerland, WHO Library Cataloguing.
- Yiftachel, O. (1998). Planning and Social Control: Exploring the Dark Side. *Journal of Planning Literature* 12(14): 395-406.
- Young, M.I. (1999). Residential Segregation and Differentiated Citizenship. *Citizenship Studies* 3(2): 237-252.



This page is intentionally left blank



This page is intentionally left blank



Appendix I: Equitable Siting Strategy



Image 11: Land rehabilitation in Atlantic Canada (Angele Clarke, 2015)



Conducting site selection in a manner that facilitates equitable decisions may be easier if tackled in manageable pieces. Taking a strategic approach can help this process. Following a strategy can be an effective means to incorporate equity into siting procedures and policies, and monitor actions. Starting the process early, before a site needs to be selected may help governments test different options and find the best strategy for their unique municipality. This pilot Equitable Siting Strategy offers a possible framework for governments and planners.

The Equitable Siting Strategy describes:

1. Three key actions governments can take to prepare for and conduct equitable siting
2. Principles that can guide and dictate these actions
3. Selected tools and approaches based on the principles and research

Based on research including feedback from participants, three important actions planners can take to help integrate equity into site selection processes are:

1. **PROCESS:** create awareness of equity and inequity in organization and community,
2. **POLICY:** integrate equity into policy and regulations and
3. **TOOLS:** use appropriate site selection tools.

The strategy is organized into sections that reflect these three actions.



Process

Governments can begin developing an organizational culture that understands and values equity, and building capacity for engagement within community before conducting site selection. The first step is building awareness of inequity and equity. Following awareness, education can help build capacity for engagement. Capacity building practices should be done with government (Staff and Council) and the public. Capacity building is supported by provincial policies including the Environmental Goals and Sustainable Prosperity Act (Province of Nova Scotia, 2007, 7.1.e). The Solid Waste-Resource Management Guidelines supports the creation of technical steering committees (Province of Nova Scotia, 1994-5b, 45.1), and the Environment Act supports research on the location of waste sites (Province of Nova Scotia, 1994-5, 94.1.a).

Interview participants felt that many people don't understand how second generation landfills are operated, and that waste management is a public responsibility. Facilitating understanding of issues through education is helpful for planners, politicians and citizens. Creating multiple avenues for people to voice their opinions can encourage communication and participation. Building partnerships for engagement with municipal politicians and community 'champions' can be a great way to reach a representative public.

Following through with promises can build and maintain relationships; honest communication, and on-going partnerships can help to create understanding around the practical challenges that local governments often face.



From interview feedback, I extracted direct and indirect answers to the question 'how could site selection be more equitable?' and developed a set of '**Equitable Siting Principles**'. These principles are to:

- **Educate**
- **Engage Early**
- **Customize Communication**
- **Assist & Facilitate**
- **Foster Partnerships & Relationships**
- **Use Local Knowledge**
- **Be Open & Transparent**
- **Be Honest, and**
- **Be Practical**

Principles like these may help guide equitable site selection processes.



Policy

Many participants feel that it is essential to integrate equity into guiding policy and regulations to ensure a transparent process, and consistent processes. Strong, well-written policy to guide decisions will support recommendations to councils. There are policies and regulations that may be amended to include equity. These include possible amendments at the provincial and municipal levels (see below). Policies that can and do influence waste siting are listed and described on pages 19-22. A summary of the below opportunities to increase equity in policy are on pages 35-37.

Provincial

Bill 111: An Act to Address Environmental Racism

- The Act to Address Environmental Racism was debated in the Nova Scotia Legislature on November 30th, 2015. The Act did not pass the second reading. Bill 111 requested the creation of a panel (with three members chosen by the Minister of Environment, three members from the Nova Scotia Human Rights Commission and three community members [one Mi'kmaq, one African Nova Scotia and one Acadian]) to examine environmental racism in the province (Province of Nova Scotia, 2015, 3.1-2). Re-consideration of Bill 111 would be a good start, and acknowledge Nova Scotia's history of racial inequity.

Municipal Government Act (see section 5.1.2)

- Develop a Statement of Provincial Interest in 'Equity' to regulate and monitor siting decisions

Environment Act (see section 5.1.1)

- Integrate health and equity into regulations and standards criteria for the locations of waste storage and disposal

Solid Waste-Resource Management Regulations (see section 5.1.3)

- Require information about nearby communities to be submitted to the Minister of Environment. Information could include demographic information and potential social and health outcomes of proposed projects.



Waste Site Specific Guidelines (see section 5.1.4)

- Require municipal approval for salvage yards and municipal solid waste landfills
- Require information about nearby communities to be submitted with Application for Approvals

Municipal**Municipal Planning Strategies** (see section 5.1.2)

- Develop equity based community goals, values and/or objectives
- Identify local inequities
- Offer community grants and invest in healthy infrastructure near waste sites

Land Use Bylaws (see section 5.1.2)

- Regulate locations of waste sites through regulatory tools such as zoning
- Create additional development agreement controls

Secondary Planning Strategies: Equity Strategy

- Create specific plan for prioritizing and increasing equity

Community Engagement Strategies

- Involve and collaborate with citizens before making decisions that can affect their lives



Tools

Equity tools are policies and instruments that can assist equitable site selection. There are two types of equity tools: procedural tools and substantive tools. Procedural tools affect the behaviour of people, and the process. An example of a procedural tool is community engagement method 'Deep Democracy'. Substantive tools are instruments that directly affect content. Substantive tools include geographic information systems (GIS) and overlay zoning.

Tools can assist the site selection process and the use of appropriate tools can increase equity in site selection. Planners should also be cautious that planning tools such as zoning, if used improperly, may perpetuate inequitable siting practices (Young, 1999; Pulido, 2000, Ross, et al., 2000).

The type and number of tools to use should be chosen on a case to case basis. For example, some **conditions that may influence the type of tool selected** include:

- Whether the facility is publicly or privately owned and operated
- The level of existing public trust and engagement
- The available time, resources and expertise
- The willingness of citizens, government staff, municipal councils, and developers to participate

Tool selection will be influenced by many considerations. Participants indicated that some criteria should always be considered. For example, equitable site selection must include technical and environmental considerations. Also, involving the public early in the siting process is fundamental. Participants feel as though decisions should not be made before going to the public, but there should be some recommendations in mind. When engaging with communities, governments need to be open, honest and transparent.



Most interview participants do not think that including income or property value as a site selection criteria would be helpful, or equitable. By contrast, workshop participants felt as though the reasons for focusing on equity and equitable siting need to be explicit. One interview participant suggested that including 'community impact' as a siting criteria could make the siting process more equitable.

Within some of the 'successful siting' stories, financial contributions seemed to have resulted in good relations between municipalities and communities. Some participants said that it is important to assist people who aren't able to voice their opinions because of lack of money or education. Translating technical and political jargon, and customizing communication for the community is essential.

Municipal staff understands the community more than people from outside, so site selection processes should be completed in-house, rather than by consultants or the provincial government.

Interview participants' experiences helped me develop the Equity Tool Box. The principles listed on page 51 helped me select the seven tools described on the following pages.

All tools involve the public in different capacities. The International Association for Public Participations 'Spectrum of Public Participation' is a popular and highly regarded engagement framework used by governments and organizations world-wide. The concept behind the Spectrum of Public Participation is that, as the level of impact on people increases, the level of public participation should increase (IAP2, 2006). If people may be affected, they should have the opportunity to voice their opinion.

For example, starting on the left hand side of the spectrum and example of a situation where citizens would be 'informed', is if peoples weekly waste collection day changes. This likely will have a low level of impact, so people may be informed by a notification in the local newspaper. In the middle of the spectrum, is the level 'involve'. For example, a municipality may involve citizens if they



are proposing the development of a community park over a closed landfill site. Municipal staff can invite citizens to participate in a design charrette to share ideas and draw pictures of what they want in the park. This type of project, could also be 'collaborative' and community volunteers can help with park development. On the right side of the scale, 'empower' is used when there is a high level of impact. A development with potential health impacts may require this type of engagement.



Image 12: IAP2 Spectrum of Public Participation (IAP2, 2006)

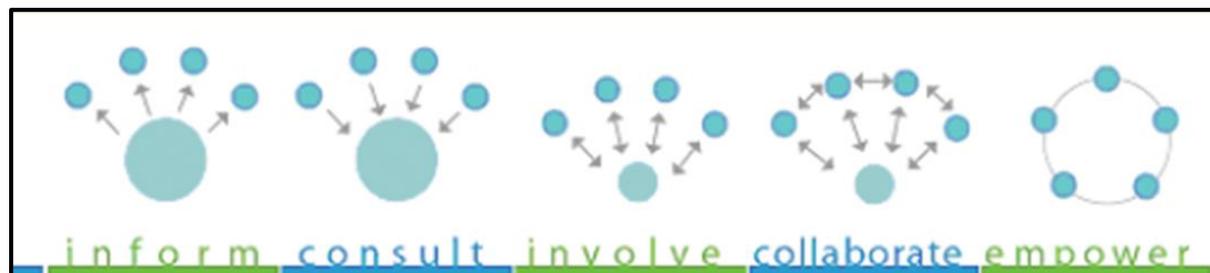


Image 13: Spectrum of Public Participation relationships (City of Victoria, 2012, p. 10)



If the IAP2 framework is used, the term 'Impact' must be defined. Impact may include potential health outcomes (high, medium, low; positive, negative), or potential socio-economic outcomes (high, medium, low; positive, negative).

Another framework that can help guide the appropriate selection of equity tools is the 'ladder of citizen participation' (see image 9 below). The ladder was developed in 1969 by Sherry Arnstein, an American sociologist who worked as chief advisor on citizen participation for the US Department of Housing and Urban Development. The ladder of citizen participation indicates that when citizens participate, they are empowered. If citizens are consulted, they are not involved in the decision making process and are not empowered (see image 14). Arnstein's ladder has become a baseline framework for much citizen engagement work world-wide.



Image 14: Ladder of citizen participation (George Julian, 2012)



Equity Tool Box

The Equity Tool Box describes the seven tools selected for analysis. Information about tools include what the tool is, when it should be used and how it is used. Each tool description includes a case study; case studies describe examples of tool application during LULU site selection or for addressing environmental racism. The perceived strengths, weaknesses, opportunities and barriers to using tools are taken directly from workshop participant feedback.

The equity **tools included in this tool box** are:

- Conditional Uses and Development Agreements
- Overlay Zoning
- Host Community Group
- Deep Democracy Facilitation Method
- Community Economic Benefits Agreement
- Analytic Hierarchy Process with GIS
- Health Equity Impact Assessment



Table 1 below lists each of the tools and basic information about each tool.

Table 1: Summary of Equity Tools

Tool Name	Procedural or Substantive	Requires Public Participation (y/n)	When to use tool in the process
Conditional Uses and Development Agreements	Substantive	No	Develop policy at any time; will regulate all potential LULU applications
Overlay Zoning	Substantive	No	Develop policy at any time; will regulate all potential LULU applications
Host Community Group	Procedural	Yes	Incentive before site is selected; implemented after site is selected
Deep Democracy Facilitation Method	Procedural	Yes	When specific site(s) are suggested, but before decision is made
Community Economic Benefits Agreement	Both	Yes	After region or specific site(s) are suggested, but before decision is made
Analytic Hierarchy Process with GIS	Both	Yes	After region is selected, but before a site is selected; during siting process
Health Equity Impact Assessment	Both	Yes	After region is selected, but before a site is selected; during siting process



Conditional Uses & Development Agreements

What: Conditional uses and development agreements are regulatory techniques that give municipalities more flexibility to address issues of equity. Conditional uses can restrict as-of-right uses in certain areas where siting may be inequitable. Development agreements are similar to conditional use agreements, except are typically used for uses that are not allowed as-of-right.

When: If there are clear areas where certain uses should not be located. Policy can be developed at any time and can regulate all potential LULU applications.

How: Revise the municipal planning strategy and municipal land use bylaw to include additional requirements for projects which are potentially toxic or locally unwanted land uses.

Case Study: East Austin, Texas 'East Austin Overlay Ordinance'

The neighbourhood of East Austin in Austin, Texas is a historically marginalized black community. Before the Civil Rights Act was passed in 1964 racial and industrial segregation was reinforced by zoning laws. Within the neighbourhood there was a close mix of residential and industrial uses. In order to make it difficult to site any future industrial uses within the neighbourhood, the 'East Austin overlay ordinance' was created in 1997 (US EPA, 2003, p. 16). The overlay ordinance requires developers to submit a conditional use application for proposed locally unwanted land uses. Any new future industrial use has to achieve setback limits. Achieving such limits in a pre-existing, mixed-use neighborhood is very difficult (US EPA, 2003, p. 97).

Source: US Environmental Protection Agency. (2003). Addressing Community Concerns: How Environmental Justice Relates to Land Use Planning and Zoning. National Academy of Public Administration.



<p>Perceived Strengths:</p> <ul style="list-style-type: none"> • Already enabled to some extent in legislation • Flexible and responsive • Provides predictability to residents and developers • Can re-zone or designate an area • Explicit regulation of the issues of inequity 	<p>Perceived Weaknesses:</p> <ul style="list-style-type: none"> • Needs to be well defined in terms of the situations in which it applies • Targets an area and places a boundary around it saying ‘not of high value’ • Subjective and open to interpretation
<p>Perceived Opportunities:</p> <ul style="list-style-type: none"> • Possible through Municipal Government Act • In area with existing ‘concentration of use’ (e.g. apartment buildings) • In secondary ‘phases’ or when preparing a new municipal planning strategy • Where the existing inequity is clear and compelling 	<p>Perceived Barriers:</p> <ul style="list-style-type: none"> • Difficulty of drawing boundaries • Enabling policy needs to exist so that the tool can be used • ‘Notion that all should be treated equally’ may be difficult for some people to accept



Image 15 (above): Where municipal decisions are made (Chronicle Herald, 2012)



Image 16 (right): Citizens in East Austin, Texas (Race, Poverty and the Environment Journal, 2008)



Overlay Zoning

What: Overlay zones can impose additional requirements to provide for additional protection (environmental, social, etc.). Zoning is one of the most commonly used 'planning tools'.

When: Overlay zoning can be used to protect human and environmental health. It is often used in combination with conditional use agreements or development agreements.

How: Identify areas susceptible to environmental hazard and not socio-economic issues. Revise the municipal planning strategy and municipal land use bylaw to reflect the zoning changes.

Case Study: Chester, Pennsylvania 'Waterfront Overlay District'

During the late 1980s and early 1990s five waste disposal facilities were approved in a predominantly African American (73.6%) neighbourhood in Chester, Pennsylvania. "African-American residents began organizing to fight the increasing number of waste facilities being permitted in their neighborhood. They filed a racial discrimination case under Title VI of the Civil Rights Act of 1964, bringing national attention to environmental problems in Chester" (US EPA, 2003, p. 119). In 1994, the city developed a waterfront overlay district as part of a comprehensive plan and development strategy to address this environmental racism. The waterfront overlay district is encouraging voluntary down-zoning of existing heavy industrial properties (US EPA, 2003, p. 137). The zone, however, does not address the issues associated with some existing land uses.

Source: US Environmental Protection Agency. (2003). Addressing Community Concerns: How Environmental Justice Relates to Land Use Planning and Zoning. National Academy of Public Administration.



<p>Perceived Strengths:</p> <ul style="list-style-type: none"> • Requires clear enabling policy to allow/exclude certain uses • Use early in the process to justify the area within which a LULU cannot/ should be located • Might be less problematic to draw boundaries based on technical criteria • Simple to administer and a good analytical tool 	<p>Perceived Weaknesses:</p> <ul style="list-style-type: none"> • Two layers of zone can be confusing for the public • Addresses an environmental perspective though not directly a socio-economic perspective • Less reflective of the reason for intervention • Rationale can be lost, but can be couched in more objectives/goals
<p>Perceived Opportunities:</p> <ul style="list-style-type: none"> • For industrial uses such as wind energy, construction and demolition debris sites, or in well head protection • Use to provide greater clarity/definition as to where LULUs are okay to site in wide areas • Use if there is new information or understanding 	<p>Perceived Barriers:</p> <ul style="list-style-type: none"> • Arguing for how to apply it

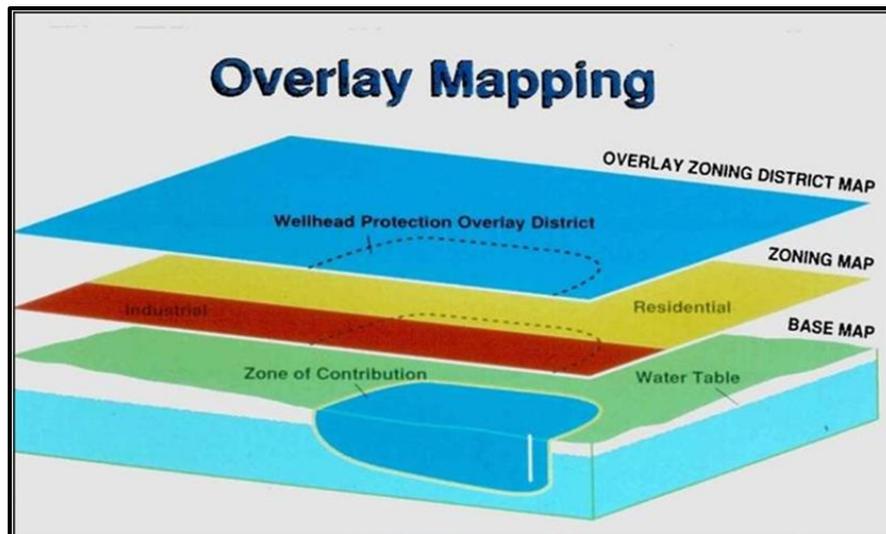


Image 17 (above): Overlay Zoning (Pennsylvania Source Water Protection, 2015)

Image 18 (right): Children in Chester, Pennsylvania (Environmental Justice Network, 2008)



Host Community Group

What: A group of citizens, municipal staff and facility management staff who meet regularly to review 'LULU' management, monitoring, etc.

When: When potential sites are identified, before a decision is made. All parties must be willing to participate and collaborate.

How: Establish a representative community group before the siting of the LULU. If possible identify a 'champion' from within the community. Meet regularly and maintain an 'open door' policy.

Participant Case Study: The Host Community

A municipal waste site (in Atlantic Canada) was selected in a process through which the newly created regional waste management authority had identified several viable candidate sites. The number one site inside the boundaries of one of the municipalities was chosen through a careful site selection process. During the later phases of site selection, nearby residents protested the site and even attacked one of the geo-technical crews taking soil samples. After this violent attack and other threats the Municipal Council backed out.

So, a facility was constructed on the 'second best' site. The community beside this site, however, felt put upon. In response, the regional authority created a 'host community committee' of people from the immediate area, including a local 'champion' respected and trusted by the community. The regional authority went into a formal agreement with the host community committee which included as-of-right access to results and findings of any monitoring work, and discussions on programs, facilities and technologies. The doors were open to provide transparency. The regional authority also created a community funding program. A set amount of money from tipping fees (approximately a dollar per tonne), was granted to community improvement projects each year. This \$75,000 (indexed based on the ups and downs of consumer price index) of funding per year was available to any organization in the community through a formal application proposal process. Some rules were developed, such as grant money had to be for capital works, and not operational costs. Also, the regional authority would administer the projects' procurement process to ensure money was properly managed. Lastly, it included an implicit warranty; if something didn't work, the authority would deal with the contractors.

This experience got off to a difficult start and residents were initially upset, but it became a positive process in which the community benefited, and felt included. Starting the process before making a final siting decision could help mitigate any negative feelings at the outset.

Source: Personal communication with a participant, October, 2015



<p>Perceived Strengths:</p> <ul style="list-style-type: none"> • Good for building buy-in, consensus, understanding and trust • Ongoing relationship with community • Contextual information • Community driven engagement 	<p>Perceived Weaknesses:</p> <ul style="list-style-type: none"> • Limited by abilities and flexibility of members • People may join to end the project • Wouldn't work when site is chosen by a private applicant • May not be sufficiently representative of a community • Time consuming
<p>Perceived Opportunities:</p> <ul style="list-style-type: none"> • In any siting or planning process • Only for highly contentious projects or ones with true commitment • In municipally initiated projects for which siting can be determined after initiation • When undertaking a master plan • When community is fearful 	<p>Perceived Barriers:</p> <ul style="list-style-type: none"> • Time consuming, potential for deadlock and NIMBYism • Needs to be funding to help community groups/representatives • Getting people to commit and contribute • Lack of education in community • May not be someone willing or able to champion • Political resistance, sharing power and agreement on approach



Image 19: Community working group meeting (Regina Public Interest Research Group, 2015)



Deep Democracy Facilitation Method

What: A large group facilitation and change management method that aims to create understanding between groups of people with conflicting perspectives.

When: When there is a controversial or contentious issue where there are two or more differing opinions or 'sides'.

How: A skilled facilitator trained in this method is essential. The facilitator guides participants through a systematic conversation that encourages uninterrupted, open sharing of perspectives. Throughout the process, the facilitator helps illuminate the 'wisdom of the group' and an understanding of both sides of the argument.

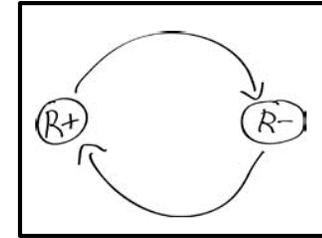


Image 20: Understanding different perspectives (Siver, 2009)

Case Study: Post-Apartheid South Africa- Shifting Organizational Culture

In the 1990s South Africa transformed from an apartheid, racially segregated country, to one that was breaking down racist structures and institutions. Most corporations founded on racist and sexist actions and values were still struggling with this culture. Post-apartheid, South Africa's national utility company wanted help to make the change to an inclusive workplace for their 5,000 employees. They hired Deep Democracy facilitators to lead them through the necessary conversations to break down the culture of inequity. After the process, it was expected of workers to make cooperative decisions and support each other in implementing them. Employees and management worked through the transition, and the company prospered in the new democracy.

Source: Deep Democracy. (2015). History of Deep Democracy. Retrieved from <http://www.deep-democracy.net/view-page.php?page=History%20of%20Deep%20Democracy>



<p>Perceived Strengths:</p> <ul style="list-style-type: none"> • Encourages broad input and all voices • Useful in existing conflict situations • Able to build consensus, trust and make other perspectives clear • Creating broader awareness of concerns 	<p>Perceived Weaknesses:</p> <ul style="list-style-type: none"> • Potentially too confrontational and very time consumptive • Don't want to exacerbate the existing disagreement • May not reach a consensus • Requires facilitation expertise • May end in "agree to disagree" state (which is ok too)
<p>Perceived Opportunities:</p> <ul style="list-style-type: none"> • Too many perceived weaknesses for most municipalities • Never: it would be too risky politically, financially and legally • When siting a necessary LULU in a limited area • May work better for smaller communities • Where there are deep differences in values or objectives, or people are fearful of each other 	<p>Perceived Barriers:</p> <ul style="list-style-type: none"> • Less structured than others • Requires a very experienced facilitator • Time frame for development- depends on how the application comes forth. There are legislative time periods for decisions • Number of people: whose opinion matters? Who gets a veto? • Participants may insist on majority rules so initial discussions may be best focused on expectations and rules of dialogue

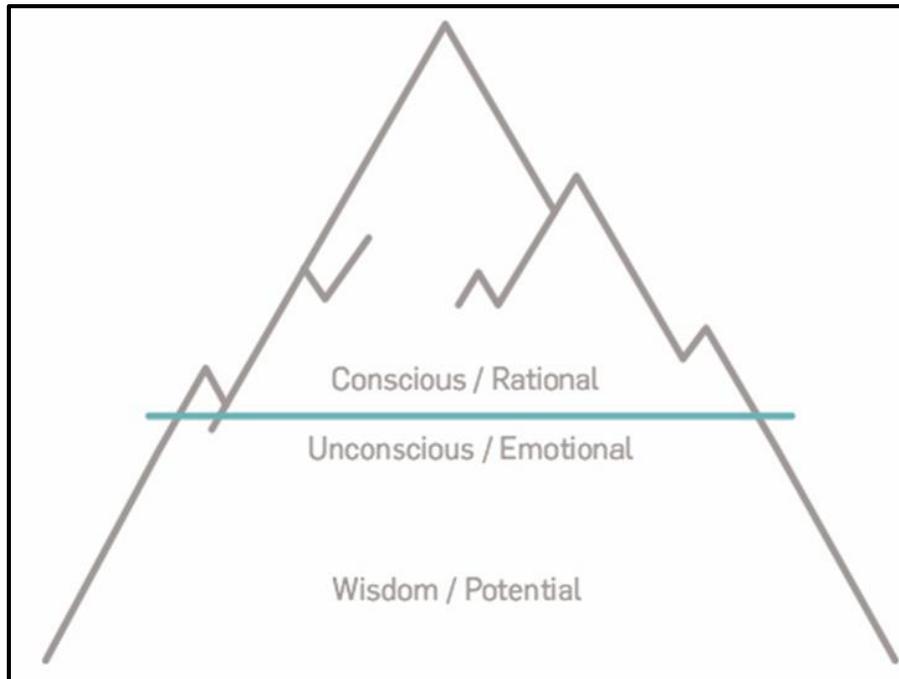


Image 21 (left): Wisdom below the surface (Deep Democracy, 2015). Image 22 (above): Deep democracy facilitation (Deep Democracy, 2015)

Community Benefits Agreement

What: Negotiated agreements between a private or public development agent and a coalition of community-based groups. The agreement outlines the benefits the community will enjoy from the project. These benefits usually include some combination of jobs, training or apprenticeships, business opportunities, affordable housing, as well as neighbourhood and environmental improvements. Most agreements reflect the interests of people who are not already benefiting from economic growth, such as young workers, newcomers, foreign-trained professionals and low-income communities.

When: Agreements give a voice to people in infrastructure planning and land development processes – especially those individuals who have been historically excluded or marginalized from processes and decisions that affect them. Agreements seek to maximize economic opportunities offered by development projects – particularly those subsidized with public funds.

How: Form a coalition and develop a platform for negotiation. Conduct collaborative implementation planning that focus' on outcomes.

Case Study: Eglinton Crosstown Light Rapid Transit (LRT) Community Benefits Agreement in Toronto, Ontario

Metrolinx and the Toronto Community Benefits Network have signed a Community Benefits Framework derived from the community benefits agreement model. Eglinton Crosstown light rapid transit (LRT) new line crosses through or near five neighbourhoods identified by the City of Toronto as Neighbourhood Improvement Areas. The coalition's aim is to ensure the \$5.3 billion infrastructure project creates economic opportunities for residents as well as for low-income Torontonians across the city.

As part of the agreement, Metrolinx is developing pre-apprentice and apprenticeship programs, initiatives that enhance job awareness for local residents in the communities along the transit lines, require contractors to access qualified local resources.

Source: Mowatt Centre for Atkinson Foundation. (2015). Community Benefits Agreements. Retrieved from <http://communitybenefitsagreements.ca/#page1>



<p>Perceived Strengths:</p> <ul style="list-style-type: none"> • An incentive to accept • Very strong and successful • Clearly a win-win approach; both municipal and community group gain a benefit • Provide community opportunity to determine their future • Gets community to think about what they really need and may help to define the ‘public good’ • May help realize a community need as a trade-off • Sense of equity and compensation for being a “host community” 	<p>Perceived Weaknesses:</p> <ul style="list-style-type: none"> • Always some resistance • Greedy communities- small town politics with big private sector entities • Lack of negotiation on community end • Makes process more cumbersome by having more players • Selling equity in favour of other benefit; need to think about long-term • Could lack credibility if seen as being paid off for being quiet
<p>Perceived Opportunities:</p> <ul style="list-style-type: none"> • Siting of municipal infrastructure and necessary LULUs such as a solid waste facility or sewage treatment plant • Should be only one element in the relationship- it should begin with access and openness from beginning of the process • Opportunity if benefit of agreement needs to go to the community (e.g. recreation centre) as opposed to individuals 	<p>Perceived Barriers:</p> <ul style="list-style-type: none"> • Lack of funding or clear benefit that community can agree on • Lack of willingness of developer • Burden on developer and de-incentivize investment • Reaching agreement • If suspicion and fear is so deep rooted that it will not be seen as credible

Image 23 (right):
Light Rapid Transit
(Metrolinx, 2015)



Image 24 (far right):
Construction of
Eglintown
Crosstown LRT
(Toronto Star, 2015)



Analytic Hierarchy Process with GIS

What: This method combines the Analytic Hierarchy Process (AHP) and mapping with geographic information systems (GIS). AHP is “is an analytical tool that enables researchers to explicitly rank tangible and intangible criteria against each other for the purpose of selecting priorities” (Vasiljevic', et.al., 2012, p. 447). AHP is a type of multi-criteria decision analysis (MCDA) method. AHP is the most commonly used MCDA in North America, and globally it is the most commonly used MCDA in the field of waste management (Huang, et.al., 2011, p. 3584, 3586). The purpose is to analyze qualitative and quantitative factors for landfill site selection that includes experts, governments and communities perspectives. AHP can address equity and inequity by involving stakeholders, such as community members. Also criteria related to equity may be included (e.g. vulnerable populations).

When: To help solve spatial management problems, in particular when there are subjective attributes to consider.

How: (Method can vary depending on needs of specific project and type of software used. The following steps are simplified). **Step 1:** Define goals and identify important considerations for landfill site selection. Categorize considerations into three groups: criteria and sub-criteria, restrictions or dual factors. Assign the criteria a rating on a scale, and map layers with the defined ratings of alternatives (from very low suitability to the most suitable) for each sub-criterion. **Step 2:** Identify key stakeholders in the landfill site selection process (e.g. governments, experts and communities). Host a series of meetings with stakeholders to determine the significance of the siting criteria. Use the experts' rankings to compare at different hierarchical levels. **Step 3:** Conduct equations to determine the ratings with respect to each criterion. **Step 4:** Layer maps at hierarchical levels. Create suitability map and restriction map by combining map layers (each representing different siting considerations). See example image 24 on right. **Step 5:** Combine suitability map with pre-defined restrictions to form the five

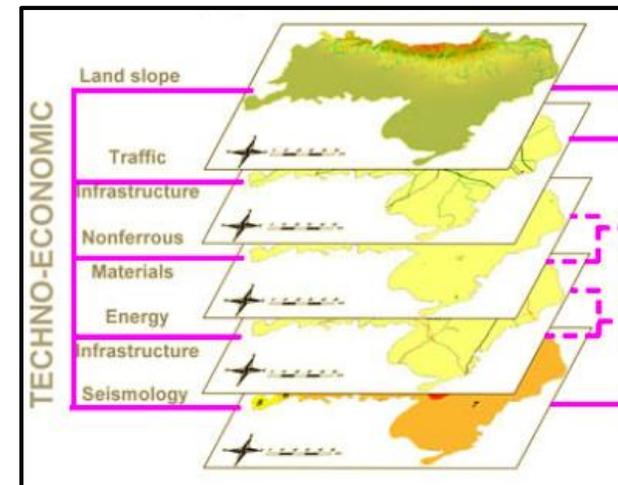


Image 25: Maps in hierarchy (Vasiljevic', et.al., 2012)

classes final suitability map (most suitable areas for regional landfill siting, suitable areas, areas with low suitability, very low suitability areas, and unsuitable areas) (Vasiljevic', et.al., 2012, p. 447).

Case Study: 'GIS and the Analytic Hierarchy Process for Regional Landfill Site Selection in Transitional Countries: A Case Study From Serbia'

The Serbian National Waste Management Strategy mandated new, strict requirements for landfill sites. An AHP study was conducted to provide a proposed alternative siting method that meets the new requirements and includes qualitative and quantitative factors. The software used was Arc GIS 9.3.1 with the AHP extension for Arc GIS ext_ahp.dll. The study objective was to establish a "landfill siting framework that could be applied more broadly to areas with similar geo-natural conditions" (Vasiljevic', et.al., 2012, p. 447).

The 5 step process described above was used. Seventeen factors were selected as criteria including geomorphology, surface waters, land use and protected areas, settlements and recreational sites, traffic infrastructure, etc.

A final suitability map indicated that approximately 80% of the study area was unsuitable for landfill siting, 2.97% had very low to low suitability, and 14.38% was suitable and most suitable. Overall five sites close to two large urban areas were possible landfill site locations. The authors state that before making a final decision there needs to be further field investigation, a public acceptance survey, and consideration of the ownership and price of land.

Source: Vasiljevic', T.Z., Srdjevic', Z., Bajc'etic', R., and Miloradov, M.V. (2012). GIS and the Analytic Hierarchy Process for Regional Landfill Site Selection in Transitional Countries: A Case Study From Serbia. *Environmental Management* 49:445–458.

Perceived Strengths:

- Visual and open
- Technical and transparent
- Involves both a technical and community based views in the one process
- Relies on broad data set and ensures informed thinking

Perceived Weaknesses:

- Weights assigned to each criteria could be skewed or political
- Can exclude public if left with experts
- Various community groups might have very different views to feed into the evaluation (ranks and layers)
- People will not necessarily feel engaged as thoroughly
- May find optimal outcome, but depends on having 'optimal' inputs
- Needs policy basis

Perceived Opportunities:

- Never- don't have the capacity or the information
- Land use planning
- Best for watershed based planning

Perceived Barriers:

- May be too complex for some of the public
- Availability and validity of data
- Capacity to undertake analysis (high cost and level of expertise)



Health Equity Impact Assessment

What: An assessment of the potential impacts of a development on a community to understand the potential impacts a land use decision may make on different communities.

When: Typically used to assess health equity, but can be used to look at other aspects of equity.

How: Screening, scoping, identification, assessment, decision-making, recommendations and evaluation.

Case Study: 'Assessing the Health Equity Impacts of Regional Land-Use Plan Making in Australia'

A 20 year Land-Use Plan was developed to guide settlement and development in a region of Queensland, Australia. The plan included five alternative scenarios to accommodate projected populations.

The researchers conducted a health impact assessment (HIA) with the additional consideration of equity for each scenario. When assessing each community, 15 population characteristics were considered including seven which reflect locally relevant aspects of vulnerability where impacts could be differentially distributed. These seven include age, gender, ethnicity/culture, socio-economic position and location of residence. From this information, researchers developed community/population profiles. Researchers gathered population statistics for selected communities and developed population projections for each of the five scenarios. A 'Social Sector Reference Group' composed of representatives from community organizations across the region participated in an impact identification workshop. Researchers provided participants with background information on the core elements underpinning HIA and equity, and the population data. In small groups participants identified the likely impacts of population growth for the proposed eight population groups in each scenario with reference to scoped determinants.

Next, a qualitative assessment matrix was developed; within the matrix, researchers reviewed each scenario by scoped determinant and community. The matrix includes local assumptions about what is known and what is likely to occur, the type of impact (measurable, estimable, or qualitative), and the probability of each occurring (definite/probable/speculative). Researchers made equity decisions against each determinant and community by asking whether any of the eight population groups would experience differential impacts that were avoidable, unfair or could be mitigated. Ultimately, they wrote summary for each determinant, classified according to whether it was positive or negative (or mixed), whether negative impacts could be avoided or mitigated, and whether the final outcome was fair.

Source: Gunning, C., Harris, P., & Mallett, J. (2011). Assessing the health equity impacts of regional land-use plan making: an equity focussed health impact assessment of alternative patterns of development of the Whitsunday Hinterland and Mackay Regional Plan, Australia. *Environmental Impact Assessment Review* 31: 415-419.



<p>Perceived Strengths:</p> <ul style="list-style-type: none"> • Best use of demographic data • Appears to clearly target the vulnerability of particular groups and considers impacts • Community buy-in and understanding of community context • Broad scope and holistic review • Community quantitative data based, scenario based for increased awareness 	<p>Perceived Weaknesses:</p> <ul style="list-style-type: none"> • Access to data to inform community profiles • Subjectivity to the findings and interpretation • Protection of health is not readily recognized by municipality as their responsibility • Who pays for assessment? • How do you hold developer accountable for impacts? • Resources to implement tool (lack of money and/or time)
<p>Perceived Opportunities:</p> <ul style="list-style-type: none"> • Siting of a quarry or pit • Large development that looks at noxious uses • Locating facilities based on need: methadone clinic, library, mobile grocery provision, etc. 	<p>Perceived Barriers:</p> <ul style="list-style-type: none"> • Potential gaps in data or disagreement over what measures matter • Time and money • May be difficult choosing who is the expert • Reaching agreement about the findings

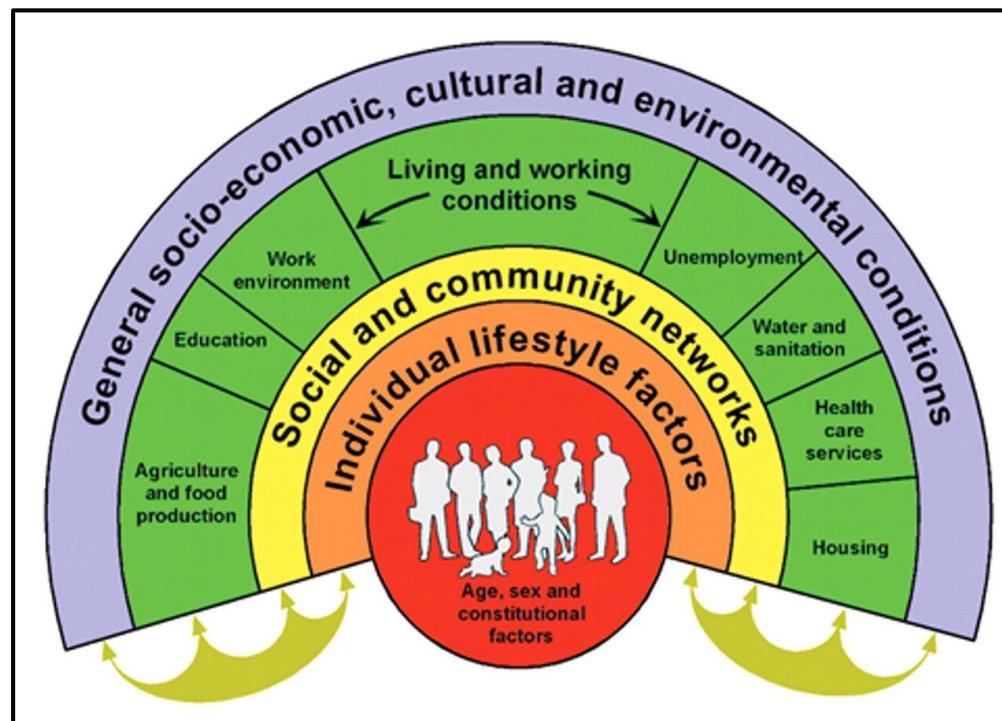


Image 26: Social Determinants of health (NACCHO Aboriginal Health News, 2015)

Appendix II: Interview Questions

Interview Questions

- 1.) Can you please describe any experiences that you have with siting waste disposal facilities?
- 2.) Can you describe any waste disposal facility siting experiences that you are familiar with?
- 3.) If you were asked to select a site for a waste disposal facility, how would you begin the process? What procedures would you follow?
- 4.) The responsibility of siting waste disposal facilities is often shared between municipal and provincial governments. How does the division of responsibility affect the process?
- 5.) What makes siting waste disposal facilities within your level of government different than siting within other levels of government?
- 6.) What kinds of issues have been raised during waste disposal facility siting public consultations, to your knowledge?
- 7.) I understand that communities sometimes feel excluded from site selection decision processes. What kinds of strategies are used to avoid such problems?
- 8.) Researchers suggest that waste disposal sites are disproportionately located near low-income neighbourhoods. What strategies or procedures may help the waste disposal facility site selection process when an issue of equity is raised?
- 9.) What other challenges may planners face when siting a waste disposal facility?



Appendix III: Workshop Questions

Question Guide:

- 1.) Have you, or your department used this tool?
- 2.) Can you name examples of places where this tool may have been used to improve equity?

For assistance in equitable site selection:

- 3.) What are the potential strengths of this tool?
- 4.) What are the potential weaknesses of this tool?
- 5.) What are the potential barriers to using this tool?
- 6.) If the barriers were removed, under what conditions could you imagine a municipality using this tool?

Other Tools:

- 1.) Are there any other tools that may help to equitably site LULUs?
- 2.) If yes, please describe what you know about the tool (such as how it's used, where it's used, etc.).

