Fuelled by Fire:
Ascending the Damning Paradox of Fossil Fuel Energies in our Communities

By

Michael Johnson Steeves Wilson

A Thesis
Presented to
The University of Guelph

In partial fulfillment of requirements
for the degree of
Master of Arts
in
Sociology

Guelph, Ontario, Canada
© Michael Johnson Steeves Wilson, December, 2016
Abstract

Fuelled by Fire:
Ascending the Damning Paradox of Fossil Fuel Energies in our Communities

Michael Johnson Steeves Wilson
University of Guelph, 2016

Advisor:
Professor J. Varghese

Resultant of structural-cultural constructs, fossil fuel energies continue to dominate material life. However, as anthropogenic climate change is afforded increasing legitimacy, communities across North America are beginning to advance mitigation efforts. Accordingly, I seek to shed light on those processes, their challenges, and how to go about navigating such issues, with the intent of expediting such processes for all communities. As such, I examine Guelph’s extensive experience with implementing their Community Energy Initiative, through document review, attending various community meetings, and conducting interviews with key informants. Results show that reducing emissions in communities is much less a technical issue, but rather, primarily socioeconomic in nature, where finances, ideologies, and spurring broad public action are central issues. Accordingly, I advance a three pillar, solution focused framework, consisting of the concepts of enablement, guiding principles, and community engagement. It is hoped that this framework helps communities navigate the rocky road of decarbonisation.
‘In the desert, the only god is a well’ – Vera Nazarian...

......

‘Every daring attempt to make great change in existing conditions, every lofty vision of new possibilities for the human race, has been labelled Utopian’ – Emma Goldman...

......

I dedicate this to all those digging wells, preserving our hope for, and creating, those Utopias...

To you, I pledge my shovel.

......
Acknowledgments

In no particular order, I thank…

Mimi, for being a friend who kept me grounded and gave me perspective that has stayed with me while in and outside of your presence. As you told me, all one can do is try. Fear and doubt plague me on a daily basis, but your words have been invaluable to moving forward. Thank you.

Tim Haney, for always having your door open to talk, and being a hugely inspirational friend and Teacher. Additionally, you cemented environmental matters in my heart, and were the catalyst behind my becoming the avid gardener I am today. Thank you, for helping me sow those seeds. You are an amazing person.

Vivian Shalla, for being a warm presence throughout my time in Guelph, and for genuinely empathizing with my woes regarding graduate level work, and my place within it. Your words were instrumental to my staying, and thus instrumental to the work that followed. Though I rarely sought academic advice, you provided me much time and emotional labour that many others in a position as busy as yours might have wholly avoided. I cannot thank you enough.

Jeji Varghese, for being a passionate, interested, and embracing person from the moment we met. Early on I expressed my pessimism surrounding worldly affairs, and where others might have brushed that off, you offered me the chance to talk, whenever I needed. The world needs more people like you. Additionally, you gave me much space and freedom throughout the writing process, as well as then willingly edited monstrous documents you had never seen before. On top of such dedication and accommodation, you made me feel valued, smart, and an equal, where any criticism was always warm, and any praise always genuine. Thank you Jeji.

Shelagh Daly, for being the brightest light on the sixth floor, and a student resource I daresay no other University could match. Before I came to Guelph, you catered to me like I was very special, and during my time here, nothing changed. I hope I speak for everyone in the Guelph Sociology camp in saying that you are a life changer.

Kate Parizeau, for volunteering to co-supervise my work at the last minute, when you had neither met me nor anything beyond a faint idea about what this research might look like. Considering that most of my time in the graduate program teetered on packing it in, your stepping up at a critical time to help allow me to register was likely instrumental to my engaging with the second year of the MA. Additionally, you were willing, embracing, and prompt with reviewing my work. Like Jeji, every few months you were presented with extensively long documents with which you had no familiarity. Still, you met the reading head on. Finally, you were very enthusiastic and encouraging of my work and thoughts, which went lengths to me carrying on. Thank you so much.
Jairus, for tipping the domino on my coming to Guelph, for your long time and ongoing support, and your enthusiasm about my interests. Having sat on the fence about graduate studies for a long time, it’s likely I would have rejected all my offers had it not been for you explicitly reminding me about the nature of hindsight. Despite that leaving Calgary was poised to be hard, you spoke with heart and intellect. Now I’m back, and the work I’ve brought is just as much yours as it is mine. Additionally, I thank you for being a genuine voice and ear regarding any and all personal trials I contended and contend with. This all while carrying your own plate, itself being very heavy, for now. Finally, I thank you for always making me feel intelligent, apt, unique, and valued. You are a true friend, and will never be alone. Trellis.

Sarah, for being an absolute totem regarding true dedication to the cause. Both this and ours, you demonstrate unflinching passion, and are a character model we should all aspire to, as well as better yet realize, as you are a living example of the fact that autonomy exists, and we cannot hide behind scriptural influences. Fiery passion is what drives you, and it is there that you stressed I start my work. Thank you, and may we all know that our value in death rests upon having actualized such passions.

Aidan, you were and are the busiest person I know in our program. Like Sarah, you prioritize your passions, while also working diligently within the confines of academia. That said, where others made themselves busy, you made time to spend time. You are a great friend and mentor, as well as an activist in practice, though you don’t give yourself enough credit, as is the case with many humble giants. Go forward knowing I do and that you should. Also, keep sticking it to assholes on the road!

Joel, you are a great friend, a hard worker, and a very solid person. I thank you for always being interested, enthusiastic, and encouraging throughout this process, and long before. Regarding my time in Guelph, I especially thank you for consistently calling, providing a listening ear, much needed local updates, and a chance for me to stretch my vocal cords. Without you, I fear I may have lost them. Thank you.

Caitie, for being a great skype buddy, and a smart person who is genuinely interested in what I talk about. Even the fact that you actually read some of my work has gone a long way. Thank you, and I hope and expect to have many more exciting conversations with you going forward.

Family. Dad, for always being positive (despite my resistance), catering to my needs, and generally doing your best to keep me afloat mentally. It has made a big difference, and I cannot thank you enough. Additionally, thank you for helping me out of some very sticky situations. Mom, for working on yourself, and sharing the many lessons you learn. You have been inspirational, and I hope we can continue to grow together (up not out). Grammy, for being the foundation upon which our family hinges, and for ensuring that the ship never sinks. Specifically, thank you for the many non-material gifts you have given. You are an amazing person, the hardest worker I know, and I cannot fathom another Grammy that could compete. Thank you, I don’t know where I’d be without you.
Grampy, for being smart, caring, and helping me survive this process. You always offer constructive advice, have picked me up from jail, and helped make sure I could watch the Flames reach the playoffs again. Thank you. Julian, for caring, coming to visit, and being a role model in all ways of life. Though you are my younger brother, I look up to you, and expect I always will. Nigel, for being interested, engaging me in conversation, and bringing those conversations to the dinner table in my absence. You are an ally, and I praise you for such enthusiasm. Virginia, for calling when mom isn’t around, telling me about the true nature of your days, and for being honest about your feelings. That you open up to me means the world, and is hence a bright spot in my often dark world. I love and thank you so much.

Participants of this study, I wish to thank you all for your demonstrated passion and dedication towards fighting climate change, a situation that often feels hopeless. Witnessing such passion and optimism has been truly inspiring, and has legitimately compelled me peek outside my pessimist cave. You have inspired me to abandon apathy and go forward knowing that doing something and doing nothing each have an effect on our world, something I often forget. Relatedly, you were all instrumental to showing me there is hope. Before engaging with this research, I was passionate about environmental affairs, though knew little about community energy planning, as well as did not act on such passions beyond personal practice. Additionally, I was quite certain the research would pan out as an exercise in graduate studies rather than something applicable and that I could be proud to have spent my time on. You all were instrumental to everything I learned, and all the conclusions advanced in this document, where I can say with certainty that I am now proud and optimistic about this study’s potential to spur real progress. Along with everything you have given me, you thus allowed me to recognize hope beyond self-insulation, and have compelled me to participate accordingly. Thank you.

To myself. You have worked hard, often without hope for any useful outcome, but yet, have seen this endeavour through, and made it something valuable. You often put yourself down, yet once again, have proved your doubt a fallacy. Rid yourself of such, go forward feeling the world’s equal, participate, and actualize. Let no day be a waste, and no poisonous thought colour your world. We all actively negotiate our realities, so take off your blindfold, recognize your gifts, and put them to use with confidence. Do not forget.

~To everyone here mentioned, as well as those not, know that I will always be grateful for the gifts you provide. I could write the world of you all, and as far as word count, have proved that in this thesis. I hope these few leave you knowing that.
List of Acronyms

CEP
- Community Energy Plan(s)

CEI
- Community Energy Initiative (Guelph’s CEP)

CE
- Community Engagement (forms of interaction between governments and publics)

COP21
- 21st Conference of the Parties

CO₂
- Carbon Dioxide

DE
- District Energy

EV
- Electric Vehicle

GEERS
- Guelph Energy Efficiency Retrofit Strategy

GHG
- Greenhouse Gas

GiG
- Green is Green (phenomenon that reducing emissions is profitable)

IPCC
- Intergovernmental Panel on Climate Change

LIC
- Local Improvement Charge(s) (a financing mechanism)

NGO
- Non-Governmental Organization

PE
- Public Engagement (a theory of alternative governance)

RGF
- Revolving Green Fund (a concept geared towards investment scheduling)

ROI
- Return on Investment (environmental, economic, social, other)

SEC
- Sustainable Energy Community/Communities

SIS
- Smart Implementation Scheduling

SPER
- Scheduled Performance Evaluation and Reporting
List of Figures

Figure 1. [p. 140]
- Per Capita Energy Usage and GHG Emissions from 2006 to 2012 [in Guelph]

Figure 2. [p. 160]
- Reducing Greenhouse Gas Emissions in Communities: A Framework for Going the Distance
Table of Contents

Abstract..................................................................................................................................ii
Foreword..................................................................................................................................iii
Acknowledgments......................................................................................................................iv
List of Acronyms........................................................................................................................vii
List of Figures..............................................................................................................................viii
Table of Contents.........................................................................................................................ix
Chapter Guide..............................................................................................................................xi

Introduction................................................................................................................................1

Ch.1
Why We Eat...............................................................................................................................4
  Wide Eyes & Floored Jaws... An Opportunity.................................................................
  And Then There Was the Dollar... Rat Races & Economic Dogma.........................6
  New Tricks: Mechanization..............................................................................................8
  In the Palm of Their Hands: The Global Village.........................................................10
  Learning: Propaganda & Gorging...................................................................................11

Ch.2
Oh the Places We’ll Go... Dystopic Ends, Utopic Visions.................................................15
  Because We Don’t Think About Future Generations,
  They Will Never Forget Us... Inferno..............................................................................19

Ch.3
The Case for Communities... Fails, Wins, Bane & Boon.................................................25
  Talking a Big Game: Global Front..................................................................................30
  The Mighty Have Spoken: Persistent Wrenches...........................................................35
  Looking to Communities as Foundations: Tetris..........................................................38
  Never a Yellow Brick Road... Cracks & Fissures..........................................................38
    Political.........................................................................................................................41
    Financial.......................................................................................................................43
    Technical......................................................................................................................43
    Human Capital and Community Capacity...............................................................44
    Social.............................................................................................................................45

Ch.4
Probe & Service (Investigative Methodology).....................................................................69
  Ways of Knowing: Engaging...........................................................................................71
Ch.5
Interrogating the Self… Reflections
The Abstractions of Self… Positionality
Approaching & Interpreting the Data – Methodology and Biases
Questioning Our Schemas: Rigour
The Essence of Self… Strengths & Weaknesses

Ch.6
A Mile in Their Shoes
Looking Ahead: A roadmap for Round Two
Making a Dent: Progress & Achievements in Guelph
Guelph: What’s the Hold Up?
The CEI ‘Update’
Local Improvement Charges (LICs) & GEERS
Into the Pipeline
Reducing Emissions in our Communities: Challenges, Connections & Strategy
How We Move… Buses, Bicycles, Batteries & Bunions
Picking Winners & Beating the Bookie
We’re Only Human… Playdough & Prisons
That Damn Dollar!
Beyond the Green Picket Fence
Building Tear
Leprechaun’s Plight: The Race to Rainbow’s Edge

Ch.7
A Decade of Implementation: Guelph’s Community Energy Initiative – Applying the ‘Public Engagement’ Approach to Governance & Social Change

Ch.8
Emerging Victorious:
‘Ascending the Damning Paradox of Fossil Fuel Energies in our Communities’ -
A Framework for Going the Distance
Enablement
Policy
Programs
Infrastructure
Guiding Principles
Community Engagement
Returning to the Roots: Summarizing Findings & Conclusions

From Fire a Phoenix Rises: ‘End Note’
Chapter Guide

Ch.1
*Drawing primarily on academic literature, this chapter explores why fossil fuels are the dominant energy source, and why we continuously increase their volume of use. Includes a discussion of the industrial revolution (4), capitalist economic organization (6), how materially productive labour is increasingly done by machines (8), the increasing globalization of commerce and ideologies (10), and finally those same ideologies as they relate to material consumption and the amount of fossil fuels burned in the process (11).

Ch.2
*In the context of our fossil fuel diet, two visions of our future are explored. First, our ongoing climate shift, including its current and potential manifestations (15). Second, what sustainability in the energy sector might look like regarding communities of varying sizes, including a vision of what I term ‘sustainable energy communities’ (19).

Ch.3
*In the context of climate change and its established perils in chapter two, we first explore what has been proposed and done at the national and international levels surrounding reducing emissions (25), and accordingly why there has been little progress over the past half century, and hence why local efforts might be better suited to achieving progress (30). Second, we take a look at community level efforts in a Canadian context including aspirations and progress (35), as well as a review of some factors that can hinder local mitigation processes (38). Finally, this chapter explores theories of environmental change as related to climate change mitigation, ultimately arguing for and settling on the idea that a Public Engagement approach to governance and social change is most promising for drastically reducing emissions in our communities (48).

Ch.4
*In this chapter (69), I expand upon the introduction regarding the questions I seek to answer with this research, the methods through which I have gone about doing so (including a brief description of two separate levels of analysis performed), and the intended purpose of carrying out this endeavour.

Ch.5
*Here, I reflect on how I as a person may have affected the nature of the research and the results (77), how I have attempted to establish this study’s contents as credible and sound (83), and some of the potential strengths and limitations embodied in this inquiry (85).
Ch.6
*As the first level of analysis, this chapter explores the breadth of primary data on its own terms, including Guelph’s progress with de-carbonization (90) as well as some challenges the City is currently grappling with (95). Further, starting on page 106, this chapter explores seven content areas regarding challenges to emissions reductions, as well as strategies towards moving forward, in their respective order as follows: Personal transportation (107), project selection and maintaining financial viability (110), ideologies (113), direct financial barriers (118), reducing emissions beyond municipalities as corporations (122), landscape development and regulations (126), and achieving scale/succeeding over the long-term with emissions reductions (129).

Ch.7
*As the second level of analysis, here, the CEI implementation process is situated within the Public Engagement approach to governance and social change (133). Having established the strength of the Public Engagement theory at the end of chapter three, I attempt to locate where and to what degree the CEI implementation effort has mirrored the approach, as well as what the result with emissions reductions emissions has been. In doing so, I both further confirm the value of Public Engagement, as well as make specific recommendations to the CEI based on apparent discrepancies between the forms implementation has taken to date, and the dictates of the Public Engagement approach to governance, community engagement, and effecting social change.

Ch.8
*This chapter (147) brings both analyses under one roof, expands on the issue of achieving scale and significant widespread emissions reductions, and puts forth a framework towards achieving carbon-free communities that is based on the most stressed and prominent insights the data and analyses have granted. If as a reader you have limited time, I recommend you start here. Following such (164), I leave readers with a brief note of hope, direction, and optimism.
Introduction

At this point, climate change is arguably the most pressing of contemporary issues that are global in scope. Further, questions about how to approach mitigating its effects have in many circles increasingly assumed center stage during the recent past. As worldwide coordination to reduce greenhouse gas emissions has achieved little beyond attractive rhetoric, there is an increasingly powerful case to be made that localities themselves might be best positioned to engage in energy reforms aimed at harm reduction, where communities across North America have begun to take up the cause. Though community level strategization to reduce local greenhouse gas emissions is generally in its infancy, the City of Guelph was an early innovator regarding such efforts, where their ‘Community Energy Initiative’ (CEI) was finalized in 2007. Being a 25 year plan, Guelph now has extensive experience with the process of implementing their proposed reforms, and realizing reductions targets. Accordingly, Guelph is well positioned to offer itself as a ‘process model’ from which other communities engaging in similar efforts might draw experience and strength with regards to seeing their own energy transformations through. As such, I use this research to examine the Guelph CEI, along with gathering insight from independent initiatives that are naturally supportive of CEI targets, to answer the following three questions:

1. When attempting to systemically reduce greenhouse gas emissions at the community level via community energy plans, and/or systems and practice reforms, what is the nature of prominent and potential challenges or barriers that might hinder the implementation process and the realization of the reductions targets?

2. With said barriers identified, what are some effective ways to prepare for, avoid, and/or move past these issues as they come about?

3. [and] To what extent has Guelph been successful with CEI implementation, reducing greenhouse gas emissions, and realizing itself as a ‘Sustainable Energy Community’ (SEC)?

As mentioned, many communities are starting to look at local energy transformations as an effective way to combat climate change, making answering these questions very significant in the context of easing and facilitating those processes. Further, being such an early adopter of systemic community level emissions reductions efforts, Guelph is arguably one of the best Canadian cities to examine where the challenges of the endeavour are concerned. As such, the ongoing experience of the Guelph CEI, alongside that of related supporting initiatives, are the primary venues through which these questions are explored.

In the following I thoroughly explore the context surrounding climate change and the necessity of engaging with local level measures aimed at mitigating its effects. Respectively, I discuss how we’ve found ourselves in a situation in which the dominant energy source we rely on is a problem, how global governing bodies have demonstrated as unable to effectively address the issue, subsequently why community level action is so important in this context, and why investigating the sometimes turbulent process of implementing energy systems and practice
reforms at the local level is essential to broadly reducing emissions. As such, the following pages will give readers a thorough understanding of these topic areas.

First, we explore the ongoing process by which much of the world has become so wedded to climate damaging fossil fuel energies. Moving from the dawn of fossil fuel exploitation to present day, we gain insight into the cultural, structural and frankly ‘chance’ forces that have steered the global diet largely towards these energies. Capitalist economic organization, the ongoing mechanization of material production, the increasing globalization of commerce and ideologies, and engineered consciousness are explored respectively to give readers a picture of why fossil fuels have a monopoly on the energy market, and why many of us have not done anything but consistently increase our volume of their use. Next, we explore what this energy diet means for the climate now and in the future, and what a changing climate means for life on Earth. With this, readers gain insight into the gravity of the situation, and a rationale for why it is so utterly important we move away from ‘business as usual’ with regards to how we ‘keep the lights on’. Following this I make a case for why community level mitigation efforts are most important at present, by examining a sample of global level environmental ‘initiatives’, corresponding greenhouse gas emissions levels historically, and an exploration of why such efforts have consistently failed to realize any concrete progress where emissions reductions are concerned. With this, readers gain a better understanding of why it is important that we take responsibility as individuals and as communities.

Moving forward, I briefly discuss what five Canadian cities have planned and achieved with the intent of emissions reductions, demonstrating that though plans are in motion, there is a lot of work yet to be done at the local level here in North America. I then examine various documented factors that are known to hinder the local mitigation process, and close the section with an exploration of how we might best succeed with mitigation at a theoretical level, ultimately emphasizing an alternative form of governance titled Public Engagement. Moving forward, I launch into a more thorough examination of the questions this research tackles, the intent and significance of doing so, and the way in which this research has been carried out. Finally, we move into the rich body of research findings, whereupon I further explore the vast expanse of challenges communities may face in emissions reductions efforts, as well as discuss strategies towards navigating those challenges, all of which being extrapolated from, and grounded in, Guelph’s extensive experience and the expert insights I was so fortunate to be privy to. Additionally, Guelph’s progress with de-carbonization is further explored.

By moving through this document together, we gain a thorough understanding of why it is important to channel climate change mitigation efforts towards the community level, and, why it is essential that we investigate these efforts for the ‘process’ that they are, where it is emphasized that moving from ‘plan to results’ is not necessarily a straightforward endeavour. As all Canadian communities are running up against challenges when attempting to reduce their emissions, studying the experience of Guelph throughout their ongoing process has proved valuable. As such, I tap this experience and offer concrete insight into the challenges communities should be prepared to face, and how to go about moving forward effectively. This is done through two levels of analysis. The first consists of triangulating participant perspectives with local document reviews and advancing these insights on their own terms, while the second involves taking a step back, analyzing the CEI implementation process within a Public
Engagement approach to social change, and ultimately making recommendations based on the insights gleaned. Further, this research strives to benefit Guelph directly, where I attempt to give advice both about specific challenges Guelph currently faces, as well as advance a three pillar framework geared towards reducing emissions in communities (based on both levels of analysis). My intent is that this framework be both simple and straightforward theoretically, and as such also capable of being applied and manifested in unique and specific ways that will best suit communities themselves, regardless of the stage at which their emissions reductions efforts exist. Accordingly, it is my sincere hope that this research is significant in informing community level energy planning and transformation, helping to make the process more transparent and manageable, and as such advancing the cause of climate change mitigation across North American communities, and potentially beyond.
1

Why We Eat

***

In chapter one, I explore why fossil fuels exist as the dominant global source of energy, and why the volume of their use has increased at a rapid pace over the past two centuries. To do so, I include a discussion of fossil fuel discovery and the industrial revolution; capitalist economic organization and growth imperatives that drive energy use; how materially productive labour is increasingly carried out by machines, again bolstering the energy appetite; the ongoing globalization of commerce and ideologies; as well as those same ideologies as they relate to material consumption. Overall, in this chapter I aim to explain some central factors behind the scale at which we consume energy, and fossil fuels specifically

***

Wide Eyes & Floored Jaws… An Opportunity

They told me to grow big and strong, but today I am fat and weak… Prior to the 18th century, civilization and the elite of the day were primarily bound to the productive labour power of human beings, various animals, the sun, wind and hydrological cycles (Hawken 1993; Nikiforuk 2012). Whether using sails to cross murky waters or bands of slaves to erect structures and till the land, there existed binding limits on productive output that were enforced by both the number of hands available and the whims of climate and weather patterns. The steam engine however, particularly the version advanced by James Watt, drastically and forever changed this relationship. Though coal, one of the primary fossil fuels used today, was discovered some years earlier, it was this machine, powered by the steam from combusted coal that altered the course of civilization where material production was concerned. The steam engine, while being fuelled by coal, was also instrumental to mining its own energy, where more dated techniques could be eliminated from the equation in favour of much faster methods. As such it was in widespread circulation by 1775, and a little over 100 years later, these machines were globally pumping out the energy of about three billion pairs of human hands, while the population had only recently exceeded one billion (Nikiforuk 2012). Without a doubt, the incoming mechanical age of fossil fuel exploitation, otherwise known as the industrial revolution, was vastly outstripping the day’s conventional forms of production.

Petroleum, generally known as ‘oil’, is another fossil fuel culprit in industrialization, where no fuel was its rival in keeping the steam engine running quickly and cleanly (Nikiforuk 2012). The oil boom started in the 1800’s, and continually increased in pace especially during the early years of the 20th century. In North America, the seemingly exponential discovery of oil reserves was the business of the day and made the resource appear inexhaustible. With this, the mechanization of society kept rolling, where from 1860 to 1910, petroleum fuelled mechanical labour effectively reduced the proportion of self-employed males in the U.S. from 88% to about 33% (Hawken 1993; Nikiforuk 2012). The First World War effort also took advantage of this
productive power, where the death machines (planes, tanks and submarines) so instrumental to Western conquest would not have been possibly deployed without it. Oily machines were increasingly taking over production, where by 1920, oil had infected most all aspects of American life. Apart from powering transport infrastructure of all types, oil was used in the production of more than 250 other products during this time, ranging from paints to soaps (Nikiforuk 2012). In effect, we were designing and redesigning infrastructure to take advantage of, as well as become dependent on, this seemingly abundant and god-like resource in order to maximize our ability to ‘produce things’ (Gould 2009). Where input versus output ratios were concerned, no one could logically argue against this course.

Oil “petrolized American geography wherever it was discovered”, and its abundance appeared to be a case of geological luck (Nikiforuk 2012:39). Further, as Nikiforuk (2012) notes, it allowed Western conquering to flourish, where similar to the First World War, the Second World War was in large part won thanks to access to cheap and abundant oil reserves. While Japan and Germany had much less access to the crude, they were forced to employ human hands at much greater rates than their Western counterparts. As the results of the conflict show, oil and its ability to deploy heavy machinery ultimately made the winning difference, where this ‘winning difference’ is what effectively bound up the U.S. government with the growing petroleum industry. Following this marriage, the Marshall Plan was introduced to engage in rebuilding the war torn European infrastructure, where a key stipulation maintained that Europe must move to replace coal with oil. This was a business decision that would secure a market for abundant U.S. petroleum reserves, and along with visible renaissance like prosperity following in European nations, oil alongside other primary fossil fuels, would establish itself as the World’s foremost energy supply. The numbers illustrate this neatly, where in 1857 only about 5% of global energy consumption was derived from fossil fuel combustion, but within a century’s passing, that number had risen to a whopping 93%. Clearly the energy basis of society and production was becoming extremely biased.

This trend of reliance on fossil fuels would continue in full sway, where following this cementation of government and oil industry ties, cheap and abundant petroleum was engineered into the process of making all kinds of products, from fertilizers to clothing to plastics (Nikiforuk 2012). Today it is unlikely to come across any product that has not been brought to life in part via the use of fossil fuels energies. Accordingly, many consumers as well as various industry alike were and are on board with accelerated fossil fuel consumption, as it is a ‘taken for granted’ source of energy that cheaply fuels the many industrial and commodity items we have become accustomed to enjoying. Not only do Americans [and Canadians] on average each “enjoy the services of more slaves [in mechanical input/output ratio as compared to human toil] than were once owned by the richest of nobles”, but our whole food system has also sizeably increased in yield [up to triple by the dawn of the 21st century] due to large machinery, fertilizers, pesticides and herbicides, run and produced with the help of our inanimate fossil fuel partners (Nikiforuk 2012:58). Externalities aside, it has, and in some ways still does make a lot of sense to promote further penetration of fossil fuel energies into materially productive systems, as this keeps commodity prices low, gross domestic product high, and thus a generally strong economy for nations who have and continue to indulge in this energy diet. Further compounding this mindset is the perception of fossil fuel abundance, reflected in the price of filling up our cars to the
endless supply of relatively cheap commodity items we have access to in the Western world (Nikiforuk 2012).

**And Then There Was the Dollar…**  
**Rat Races & Economic Dogma**

With all that said, the productive power of fossil fuels does not dictate their terms and volume of use. Rather, we must examine socioeconomic systems, ideologies and constructs where they oftentimes effectively steer our material based activities (industrial, commercial-consumer, and agricultural goods for example) towards fossil fuel consumption. Capitalism has been the dominant form of economic organization for at least two centuries, and enjoys widespread acquiescence (Gould, Pellow & Schnaiberg 2008). As a system it has championed massive material production and innovation, in large part due to the way in which it is structured (Hawken 1993; Martin 2009). At its core, capitalism’s driving force is the growth of productive output, referring literally to material and commodity production. Behind this ethic is the driving notion of profit (Barbosa 2009; Foster 2003; Leech 2012; Panayotakis 2003). Capitalism is thus in theory, a competitively structured economic system (though in practice the level of competition capitalists endure is certainly unevenly distributed) (Martin 2009), whereby profit and market share directly determine whether one sinks or swims, or in effect, whether a person or business continues to exist and provide itself material sustenance, or is undercut by other more successful enterprises (Hawken 1993).

To illustrate, profit is symbolic of additional return on investment, creating surplus ‘power’ over productive resources, where this power can be used to buy ownership of these resources, and further control market share. Where profit is accrued, it is subsequently invested in ownership over the means of production, and innovation aimed at further amplification of profit margins (Leech 2012). The more a business profits, the more it can grow, and the more likely the chance it can undercut competitors where price is concerned, in either selling a product for less or offering more for a similar investment via having used profits to innovate and upgrade products without significant additional financial requirement, where this is the goal of most business ventures (Hawken 1993; Schnaiberg 2009). This is one of the primary ideological tenets of capitalism, that competition, and an inherent competitive growth orientation will result in ‘efficient’ production (so as to raise profits and continue growing) that translates into cheaper prices for consumers at the end of the production chain, oftentimes alongside more technologically advanced products (Barbosa 2009; Hawken 1993). Ideologically, this is embraced by governments (Humphery 2010) as well as makes some sense, as many of us see benefit in paying less for the things we need, as well as generally enjoy and find use for incoming upgrades, where for example, many would argue for, and not against, dollar store bargains and consistent waves of new cellular phone technologies.

As such the structure of capitalism pits its players against each other in a rat race for limited resources and markets. Each business is looking to increase their market share, being the fraction of potential buyers for their product, and as such is constantly attempting to produce more and better (better thought of as variegated, as ‘quality and durability’ are not on the agenda for many capitalists) for less (Hawken 1993). Increasing profit margins can be done by finding new markets (which relies on producing more material goods to fill them, and/or replacing the
goods that already exist within them), creating and/or ‘taking’ markets via introducing novel products, those of higher quality, and/or lower consumer cost to usurp another’s consumer base, or simply cutting down on production and operating costs (for example through efficiency and innovation, or buying resources in bulk, a sure-fire way to get a discount) again with market theft in mind. The result is an oversaturation of products on the market (Humphery 2010), further driving prices down, and further entrenching the competition, where innovation to reduce costs for the capitalist is constantly on the agenda. In effect then, capitalists must grow in productive output, which is both reliant on profit as well as fuels it. The more one owns, the more one can sell, and the more one sells, the more one can own. If one does not own much, they have limited capacity to invest in capital saving measures, such as the aforementioned innovation and bulk buying; and if one cannot invest in growth, they are more subject to see their market share expunged by ‘larger’ interests, where these parties have capitalized on the capacity to grow and effectively price and/or technologically push others out of the market (Schnaiberg 2009). Capitalism is thus a race to the bottom in terms of capital input requirements and consumer cost, at the same time as to the top of a ceilingless tower in the realm of productive output, technological innovation, and novelty, where it is the capitalist’s goal, by necessity and design, to exponentially exploit resources for profit (Leech 2012; Panayotakis 2003).

Walmart is a good example of capitalism’s growth ethic in practice. This is a chain that sells a host of products at extremely low prices, and, that is known to disembowel neighbouring businesses upon setting up shop. Walmart has grown substantially, and continues to do so. Each new round of accumulated profits allows it to invest in buying more at a time for less per unit, alongside other profit making measures like adjusting the nature of their supply chains for maximum return. This grants them the opportunity to then sell their items for less, effectively stealing business and further increasing profit margins, allowing them to build more stores, continue investing in capital saving measures, and of course then achieve even more market share! It is a linear process, where Walmart is today one of the largest and most profitable companies around. It will continue to grow, or attempt to, and potentially be priced out of the market itself should it fail to sufficiently swell (Greenwald 2005; Vij 2015).

As far as current infrastructure and our ability to readily harvest energy, fossil fuels have presented themselves as the world’s utmost in productive capacity, and therefore have been naturally seized upon and celebrated by governments and industry alike. Both whole-heartedly believe in the growth ethic and competition as being good for themselves (in the interests of capitalists this is certainly true), for the civilian populace where consumption price is concerned, as well as additionally where growth in industry is in theory a way to increase employment for this base, a primary goal of government in preserving ‘welfare’ (Chatterjee & Finger 2003; Gould, Pellow & Schnaiberg 2008; Nikiforuk 2012; Schnaiberg, Pellow & Weinberg 2003). Further, technological innovation resultant of the competitive and growth based nature of the economic system is regarded as fundamentally positive by a great many segments of society, and as such an energy that is currently most conducive to providing such realization has been hailed. Fossil fuels have provided themselves as cheap, and largely abundant energy inputs that help maximize output and profits, chop away at consumer price, and repeatedly ‘update’ the commodity market, and as such have been instrumental to capitalism and capitalists since their onset, as well as cheered by many governments as being the ‘ultimate’ and irreplaceable in productive capacity (Hawken 1993; Leech 2012; Nikiforuk 2012). As such, the domination (and
increasing volume of use) of fossil fuel energies should be regarded as a natural outcome of an inherently growth based economy, that rarely allows a business to survive without consistently expanding production and market share (Gould, Pellow & Schnaiberg 2008).

**New Tricks: Mechanization**

As mentioned, innovation is one way to increase efficiency, profits, and the survivability of a business. Following World War Two, there was a lot of wealth circulating in North America, but being entrenched in a capitalist way of business, of course industries had to continually reduce costs and increase market share to survive, despite the existence of this wealth. As such, this capital was often invested towards innovating the means of production with an eye on heavily ramping up output while simultaneously doing so with input costs to a much lesser degree (Gould, Pellow & Schnaiberg 2008; Pellow 2009). As you might have guessed, this meant investing further in machines that could do work equivalent to that of hundreds of human beings in a fraction of the time and for pennies in comparison.

Allan Schnaiberg (1980) introduced the concept of the ‘treadmill of production’ to shed light on the linear nature of capitalist production, and the role of energy and technology within it. The theory holds much merit, and generally states the following. The competitive nature of capitalism compels business to continually minimize costs while increasing output, in order to secure market share with increased production of material goods for a cheaper shelf tag (Hawken 1993; Schnaiberg, Pellow & Weinberg 2003). Further, this minimization of inputs allows increased profits to invest in growth even if the shelf tag stays the same for some time. This, as previously identified, is the race to the bottom. Technologies of production have been instrumental to these ends, and as such, capitalists have a propensity towards investing profits in productive machine sector innovation (Barbosa 2009; Gould, Pellow & Schnaiberg 2008).

Accordingly, capital, or capitalists, will invest in productive technologies that boost efficiency and output. These technologies however, will often rely on more energy, and as such production must keep up in order to cover the increased cost of input by producing more per time/dollar unit spent (Schnaiberg 2009). Despite that input versus output ratios are getting better in the realm of cost and profit margins, the increased output often inevitably demands more energy than previous, even with gains in efficiency (Barbosa 2009; Schnaiberg, Pellow & Weinberg 2003). As the race to the bottom never stops, successful capitalists apply each new wave of increased profits from technological investment towards further innovation and technological updating, in order to stay competitive. Accordingly, where each new wave of productive technology is aimed at increasing output, it inevitably requires more energy inputs (naturally being fossil fuel energies in the dominant energy economy) (Gould, Pellow & Schnaiberg 2008; Schnaiberg, Pellow & Weinberg 2003). As such, we observe a game of leap-frog played out by energy inputs and machinery that mirrors the growth ethic of capitalism itself. This only makes sense, as there is no ceiling where growth is concerned, and the floor has yet to be reached with regards to output ratio and consumer cost. Telling of the exponentially evolving relationship between energy and productive technologies, we can note that the total of industrial labour performed by a human workforce in the United States, has in the last century [1912-2012] declined from 90% to 8% (Nikiforuk 2012).
This phenomenon is clearly observed in the industrial agriculture trade, where large machinery continues to evolve, further cutting down on labour costs, while simultaneously eating more energy, yet remaining increasingly profitable. Not only is the machinery evolving and growing hungrier, but capital is increasingly investing itself in chemical inputs to thwart pests and disease, further upping productive output, but requiring more energy in the process (Nikiforuk 2012). Finally, I imagine and assume genetic modification is also an energy intense process where research and development are concerned, yet it continues to reap heavy investment, as genetically modified seeds may promise resistance to inclement or other undesirable climatic conditions. All of this acts to potentially increase yield per time/$ unit spent (Nikiforuk 2012), providing a strong competitive basis for those who can invest, or grow, the most. Fossil fuels have, and largely continue to subsidize this, and ‘like’ processes.

As mentioned, while business naturally endorses growth and the growth ethic itself as a means of survival and a potentially extravagant and comfortable life, many governments are equally on board (Chatterjee & Finger 2003; Gould, Pellow & Schnaiberg 2008). In North America, public money heavily subsidizes the fossil fuel industry (Nikiforuk 2012), and big industry in general (Pellow 2009; Hawken 1993). Where fossil fuels are concerned, the idea is to keep prices low to allow big business to continue growing, where again, fossil fuel energy is highly productive and the most widely ‘mineable’ to date, lending validity to attempting to keep its circulation high. Where business is concerned in general, government subsidies are justified in that promoting economic growth will theoretically create more jobs and subsequently lower the price of goods (Gould, Pellow & Schnaiberg 2008; Schnaiberg, Pellow & Weinberg 2003). Yet, while we have seen the cost of some (and not other) goods steadily reduced (consider computer parts versus housing markets), job creation has not materialized to the extent that the growth ethic of the free market would have us expect. Technology, and the treadmill theory of production specifically, explain this well, and serve as prime examples of the way the capitalist system requires its players to seek out and exponentially consume productive energies to stay competitive (Hawken 1993; Schnaiberg, Pellow & Weinberg 2003).

Finally, though energy consumption is increasing in the wake of linear technologically fuelled production growth, the nature and scale of the energy we use does not appear widely regarded as concerning by business or governments in North America at this moment. One reason is the satiability of short term profits in the cut throat competitiveness of the economic system, where despite some evidence that peak oil (a situation wherein the rate of extraction alongside the supplies discovered sees the total known supply steadily decline) is near or has passed (Nikiforuk 2012), concerns about gains made ‘today’ continue to dominate in most government and industry circles (Gould, Pellow & Schnaiberg 2008). As fossil fuels are the most powerful energies where the nature of our ‘built’ productive and other infrastructure is concerned, it then only makes sense to favour their use within such a binding paradigm. Further, they remain the cheapest source of energy where output ratio matters, not only because of heavy subsidization to the industry itself, but because the market does not factor in a variety of ‘externalities’ associated with fossil fuel extraction and consumption (Clapp & Dauvergne 2005; Hawken 1993; Nikiforuk 2012). War and lost lives associated with supply control, desolate landscapes left in the wake of extraction, mortally poisoned habitats resultant of spills, polluted lungs and inflated cancer rates in communities closest to processing areas, and the potential oceanic and atmospheric impact of related greenhouse gas emissions are not applied as ‘costs’
when the market prices the fuel. As such, whether it be those buying fossil fuels in their raw forms, or people buying products that have been brought to life in part by such energies, the price paid for the direct or associated unit is often quite low (paying only ‘extraction’ costs while those and ‘other’ costs are publicly subsidized), and the material returns quite high, being the only things that are considered of primary importance in our growth based economy. Fossil fuels hence dominate material life in North America.

**In the Palm of Their Hands: The Global Village**

Globalization is a term loosely thrown around with regards to its meaning and potential purpose. To make things clear, it refers to a process of connection, where almost every corner of the world is now connected materially and virtually, and where these connections have been largely consequential to our energy diet. Global interconnectedness rapidly increased with the onset of computer and internet technology (Teeple 2000). With this, ideas and capital could be moved around the world at lightning speed. With the ability to move money around at such a pace, industry of all types could more easily set up (or close up) shop anywhere (Hawken 1993). Further, transport and production technologies kept pace, as Allan Schnaiberg’s (1980) ‘Treadmill of Production’ theory would assert, where goods are now travelling thousands of kilometres between raw material extraction, added value processes, and consumption sites (Hawken 1993; Roberts 2009). Like the proliferation of technology however, the extent of globalization was not inevitable, nor did it and does it drive itself. Rather, it largely was and is a conscious capital motivated decision made by industry, to access new markets, lower the cost of production, and generally increase trade, as trade can make production more efficient and cheaper in the long run (Clapp & Dauvergne 2005; Gould 2009). After all, private industry, housing some of the richest people in the world, is quite possibly the only source of adequate funding to produce the technologies that make a dominantly globalized form of commerce economically sustainable (for big industry), and as such we should regard those technologies as quite often, strictly business oriented. For example, consider the ‘Walmart Advanced Vehicle Experience’ – a prototype freight truck meant to significantly reduce operating costs (Goldwasser 2015). Further, policies like NAFTA have largely been engineered by big industry as well, along with enjoying heavy government endorsement, as they promote the globalization of business, and hence the potential for increased economic growth, and the theoretical benefits this can bring to a domestic population (Schnaiberg, Pellow & Weinberg 2003).

Cheap energy ‘fuels’ and supports globalization, and globalization cements our reliance on cheap energy, where if fossil fuels were not so powerful and reasonably priced, it would not make economic sense to do business in such a way (Gould 2009). That said, it is a fact that in many cases (especially with added value processes to do with products intended for consumption in North America), it currently does make much economic sense, as production can be located where labour is less costly, and environmental restrictions more relaxed than what might be domestically in a given nation, and as such a plethora of locations present themselves as readily exploitable towards lowering costs and increasing business competitiveness (Gould, Pellow & Schnaiberg 2008; Teeple 2000). Some experience significant strain resultant of the globalization of business and associated policies (Clapp & Dauvergne 2005), where it is not uncommon for sustainable local markets to experience upheaval when cheaper products are imported, undercutting the price of many locally traded goods. This may force a liquidation of assets to
buy the cheaper goods, as one can no longer sell their own wares for any decent profit, and thus can inevitably result in poverty and misery. Often, we see this happen to already economically disadvantaged regions of the majority world (popularly termed ‘developing’ nations where the majority of the world’s population reside), where for example Mexico saw approximately 28,000 small businesses close their doors in the ten years following NAFTA’s implementation, due to an inability to compete with the invading cheap imports (Leech 2012). However, this often fails to factor into industry actions, as economic growth is in their favour, a necessity by design, and undercutting other markets only further reels in untethered capital that can extend a business’s life. Fossil fuels are the backbone of this system, and the globalization of commerce is itself a clear illustration of the treadmill at work. Further, this exploitative and externally imposing side of globalization is reflective of world systems and ecologically unequal exchange theories (Halsall 1997; Rice 2007), in which wealthy ‘core’ nations and their business conglomerates ‘extract’ value from less developed nations. This in terms of both cheap labour, and razing natural environments, ultimately exporting such value and leaving production sites socially, economically, and environmentally ruined.

Consumers in the minority world (popularly termed ‘developed’ nations where a small fraction of the world’s population reside), though often seeing jobs dry up due to outsourcing among other factors including technological supplementation (Gould, Pellow & Schnaiberg 2008), reap quite a benefit from a fully globalized capitalist system of commerce (Leech 2012). Not only are goods nominally priced, but we in North America have access to luxuries that would have been wholly impossible had it not been for cheap and abundant energy (Roberts 2009). We are able to buy stocks of exotic wine, kiwi, pineapple, and lychee any time of the year, despite Canada’s often unforgiving climate in which the growth or production of such marvels would not be possible domestically. As such, minority world consumers typically revel at the ability to move and consume goods, where, in this way, fossil fuel consumption is indirectly supported through complacency. However, in the hands of their users, the technologies of globalization are not limited to transportation and transforming the production process of material goods. Rather, equally important is their capacity to be used for infecting the mind, by moving specific ideologies around the globe, and settling them in like a blanket fog.

Learning: Propaganda & Gorging

Contrary to popular belief, communication technologies, specifically internet technologies, are themselves heavy energy consumers throughout their lives (Nikiforuk 2012). More importantly however, they are used to play a major role in directly and indirectly promoting energy indulgence, where capital growth depends on increasing production, but cannot grow itself without the commodity consumptive side of the equation (Humphery 2010; Leech 2012). Material consumption beyond basic sustenance is a uniquely human phenomenon. As symbolic creatures with an extensive capacity for culture and creativity, we express and define ourselves, as well as relate to others, through material possessions. As such, material craftsmanship and consumption are innate elements of human demeanour, and often bring us much joy (Humphery 2010). When we think of ourselves as young children, this becomes clear, where the larger the collection of colouring pencils, the more fun we were having. That said, the extent of our consumptive activities is in no way a natural extension of our being human, where, in a largely global fashion, our material desires are to a high degree engineered by conscious
external forces, and are constructed with a specific purpose in mind… profits (Gould, Pellow & Schnaiberg 2008; Humphery 2010).

Big industry owns and operates most mainstream North American news and entertainment media, and as such it is no surprise that these media function to serve their interests, where they have in essence achieved a “domination of public thought” (Campbell 2009; Gould, Pellow & Schnaiberg 2008; Hawken 1993:108; Leech 2012). The news will focus on certain issues, particularly war, economy and jobs at the national and international levels, and trivial crime, weather and ‘feel good’ stories at the local level. Where economy is concerned, progress is defined as growth, and any limits to growth are put forward as dangerous and as obstacles to be overcome. For example, our being consistently reminded about debates over building various pipelines, where the presentation does not get into the meat of either side or the vast grey area in between, but rather superficially puts the issue forward as a ‘yes or no’ deadlock situation, and is of course sure to mention the potential for job creation. The same can be said for climate change, being framed as some kind of debate about whether it is real or not, taking away from any productive discussion about its ‘realness’ and ramifications (Campbell 2009). The local media tell stories of burglary, wet weather, and animals saving their companions from near death situations. Further, they often make room to bring in guests, especially during morning television, that promote the latest things we can buy. None of this ‘informative’ media questions growth or consumption, and in effect promotes the ideology by failing to present critical views on the topic (Barbosa 2009; Campbell 2009; Leech 2012). All told, the news media adheres to no “moral, political, or social obligations to keep the public informed” (Campbell 2009:78), but rather most often elects to dish out what is in the best interest of the big money that funds it, meaning that which does not challenge the growth ethic, consumption, or the fossil fuel diet upon which it is predicated.

Where entertainment media is concerned, television and film advance stories of all types, but rarely do they question capitalism, growth or consumption (Campbell 2009). Popular TV shows, like local news, tend to be ‘light’ in content, focusing on family, relationships, episodes of personal hardship, and more recently ‘reality’ television that allows us to vicariously live lavish lifestyles, showcasing mansion homes, and seemingly middle class couples out ‘house hunting’ or doing renovations. Film does the same, though often also relates struggle to consumption and socioeconomic status. Stories often showcase the classic tale of ‘from rags to riches’, where examples include a focus on ascending the grips of poverty, the self-made man, how a small business was able to become a giant, or how a small town was able to attract big industry which created jobs and prosperity. Speaking to the self-made man and business growth, 2016 will see a ‘strong academy awards contender’ released in ‘The Founder’, a movie celebrating and showcasing how McDonald’s became a hamburger tycoon. In general then, entertainment media both distract us from any critical thought surrounding economic growth and consumption, as well as promote these phenomena directly via repetition of the idea that a good life is one of financial and material plundering, well beyond the exploitation of basic necessities. As the idea of economic growth in our personal and larger spheres is consistently affirmed as something we should hold dear by these media (Barbosa 2009; Campbell 2009; Leech 2012; Nikiforuk 2012), fossil fuel energies are indirectly supported, as we understand that our material luxuries, and the benefits that national economic growth bring (particularly ‘jobs’), have historically been, and currently are largely dependent on such a productive source of fuel, or in
popular opinion, the oil industry itself. This is quite evident in a province like Alberta, where everyone is quite aware that fossil fuels are the backbone of the economy, and where backlash against any talk of fuel switching is rampant.

More directly however, fossil fuel consumption is indulged where we (especially in the minority world) act on our ever increasing engineered material desires, and play our role in a globalized growth based capitalism (Humphery 2010). Accordingly there’s the more ‘in your face’ propaganda of commodity advertising, which, while working alongside the more subtle messaging described above, is creating an increasingly global growth based ‘consumerist culture’ (Barbosa 2009; Clapp & Dauvergne 2005; Gould, Pellow & Schnaiberg 2008; Nikiforuk 2012). This is a culture in which we are taught that our worth as human beings is directly tied to our capacity for, and engagement with, material consumption (Hawken 1993; Humphery 2010; Nikiforuk 2012), despite utilitarian value. Furthermore, we are taught to look upwards, comparing ourselves to those who have more (Humphery 2010), and thus we are taught that there really is ‘never enough’.

Across most of the world, every day and all around us we are bombarded with messages reinforcing the notion that we ‘should’ consume maximally, and more subtly that consumption is an extremely important aspect of worth and identity; where it has been observed that “U.S. citizens encounter up to 3,000 advertisements per day” (Humphery 2010:33). When we go to the movie theatre, no longer do we see ‘previews’, but instead get ads for the newest cars and smart phones, emphasizing both subtly through implied assumptions, as well as overtly through verbal suggestion in many cases, that regular material ‘updates’ are necessary features of the human condition. If we turn on our televisions, the message is the same, where, no matter the day, month or season, we are notified that the ‘biggest sale of the year’ for x/y/z is happening at that very moment and is not to be missed! In August, all we see are ‘back to school’ ads in North America, which focus on marketing items with which most students could do without, including new tablets and wardrobes, implying that our children need these new items on at least an annual basis if they are to keep up appearances and performances amongst their peers. Finally, Boxing Day (or month) takes the prize, where the steepest of savings are marketed relentlessly, leaving department stores swamped, and people bruised and bloody. This is an ultimate illustration of the poisonous character of our consumerist cultural spirit. Locating these consumptive patterns in everyday life to verify the causal effect of this type of marketing does not take a rocket scientist to confirm, where one trip to a North American shopping mall, any time of day, shows that we follow suit. Also telling is that U.S. shopping malls surpass high schools in number (Humphery 2010).

Though overwhelmingly unequal in rates of consumption between the minority and majority worlds, sheer population numbers also drive material pillaging and underlying fossil fuel consumption, where one could also argue that fossil fuels and their productive power have been instrumental to growing the population to its current size of well over seven billion. In thinking back to the window of advent for fossil fuel dominance, we can see a drastic increase in Earth’s human inhabitants. Where about 80 billion hominids have seen their lives commence and end in the past four million years, 28% of these lives existed after 1750. Further, the 20th century alone, though being a mere 100 of these four million years, has been home to about 20% of everyone who has ever lived. Clearly, fossil fuel energies have had a boom effect on the
population, and this massive population can only enjoy the luxuries it does (tiered and circumstantially dependent) with the helping hand of these fuels (Nikiforuk 2012). As such, population numbers aid in effectively anchoring growth and consumption to fossil fuel energies, where arguably, no other could power the system as its infrastructure exists today. Relatedly, the globally circulated propaganda of consumption, and visible discrepancy between minority and majority world wealth, effectively cement a desire to consume ‘like the best of them’ in people of all economic strata, securing a globalized consumption focused cultural ethic (Campbell 2009; Humphery 2010; Lamberton 2005), and an ever deepening appetite for the fuel it all depends on.

Together, these direct and indirect forces of ideological hegemony and economic organization promote the growth ethic and the consumption it is anchored to, and thus in effect secure a dependence on fossil fuels, where we are aware, to varying degrees, that the whole economic system as well as our personal luxuries currently depend on their labour, as well as certainly engage in the ‘demand’ side of the economic equation. Further, the sheer numbers of people on the planet engaging in consumptive activities exacerbates our use of fossil fuels, and the propaganda being circulated is helping to craft the spirit of the global people towards mirroring these practices. As such these systemic and ideological constructs have promoted nothing but exponential growth for some time, where we have simultaneously become culturally oriented to this path. Whether it be the rules of capitalism or the consistent amplification of consumerism, fossil fuels are arguably the only energy that can (in the short term) sustain our current levels of productive and consumptive activities, and as such, we have gotten ourselves into quite a binding relationship with them (Gould 2009; Gould, Pellow & Schnaiberg 2008; Nikiforuk 2012). Structurally and culturally then, fossil fuels play a most integral part of social and economic life, as they continue to exist as cheap, highly powerful, readily harvestable, and in popular perception ‘abundant’ (Clapp & Dauvergne 2005; Nikiforuk 2012), where the world’s productive infrastructure has thus logically evolved to eat these energies at unprecedented levels for these reasons specifically.
2

Oh the Places We’ll Go… Dystopic Ends, Utopic Visions

***

In light of our energy habits, in chapter two I explore two visions of our future. The first vision details the current and projected consequences of continuing with status quo energy activities, where such things as rising sea levels, more frequent and severe storms, heat waves, and droughts present themselves as significant threats to ecosystem livelihoods. The second vision details a move away from the status quo, including an exploration of how sustainability has been conceptualized by other authors, as well as where a vision for Sustainable Energy Communities is operationalized, and put forth as an ideal for which we should strive if we are to preserve this earth for seven generations to come.

***

Because We Don’t Think About Future Generations, They Will Never Forget Us… Inferno

“Every form of energy consumption, from slavery to oil, involves, somewhere, a sacrifice” (Nikiforuk 2012:2). In light of these observations surrounding structural and cultural forces determining the widespread use and reliance on fossil fuel energies, we now examine some data illustrating the degree to which we have historically and currently burn fossil fuels, and the critical side of the equation that is so often absent from ‘informative’ medias. This ‘critical’ angle points to the gaseous emissions that accompany this energy’s consumption, what they mean for life on Earth, and what the observed and predicted effects of a sustained fossil fuel diet are.

With the world population expected to exceed nine billion by mid-century according to ‘Worldometers’ (2016), and the structural necessity of economic growth as strong as it ever has been, we should expect that fossil fuel consumption has been keeping pace. In order to measure fossil fuel consumption, greenhouse gas emissions are typically recorded, as they are the by-product of fossil fuel combustion and have the potential to alter the climate. For the majority of Earth’s four billion year history, the atmosphere’s gaseous composition has been relatively stable and neutral, maintaining temperatures conducive to supporting life (Rosa & Dietz 2003). However today, anthropogenically emitted greenhouse gases have led to atmospheric concentrations unprecedented in the last 800,000 years, and are significantly interfering with this delicate balance. This (the scale at which we use energy and fossil fuels) is primarily attributed to population growth, and more severely to activities associated with economic growth according to the Intergovermental Panel on climate change (IPCC) (Clapp & Dauvergne 2005; IPCC 2014). Greenhouse gases, being Carbon Dioxide (CO₂), Methane and Nitrous Oxide are heat trapping, and have the potential to create dangerous feedback loops within the climate that can lead to widespread and irreversible impacts globally (Omer 2008). Thinking drastically, if we
were to burn all known fossil fuel reserves over the next 500 years, it is likely our climate would come to resemble that of Venus, an uninhabitable hellish furnace (Hawken 1993).

In light of our energy habits, the scientific community concur that climate change is happening (Omer 2008), where the IPCC maintain 95% certainty that it is primarily fuelled by human activities and is quite serious (Gould, Pellow & Schnaiberg 2008; IPCC 2014; Rosa & Dietz 2003). The most abundant greenhouse gas is CO₂, and scientific monitoring has identified a 30% increase in its concentration since the dawn of the industrial revolution (Rosa & Dietz 2003). It is not surprising then that the most recent decades have been the warmest ever recorded, with the ten warmest years coming after 1998 (2015 the warmest so far) (Climate Central 2015) and that we have also witnessed consequential effects on ecological and human systems across all continents and oceans alike (to be discussed) (IPCC 2014). However, the climatic effects of greenhouse gases do not manifest themselves immediately upon release, and the gases remain in the atmosphere for about 100 years (Roberts 2009). Striking then is that about half of all anthropogenic CO₂ emissions since 1750 have come in the past 40 years (IPCC 2014). As such the massive amounts of emissions we pump out today will likely take us for quite a ride throughout the 21st century, where the more dire predictions spell extinction for many species, ourselves included (Leech 2012; Nikiforuk 2012; Rosa & Dietz 2003). The yet unborn will not likely inherit a healthy habitat.

Since 1880 we have experienced an exponential warming trend resulting in a mean temperature increase of about 0.85°C, where the scientific consensus maintains that we must avoid a warming of 2°C above pre-industrial levels to avoid the most severe of repercussions (IPCC 2014). This is frightening, as we have in effect already used up almost half of our budget, and predictions on further warming between now and the commencement of the 22nd century estimate a 1°C increase at a minimum (were we to essentially cut all emissions today), and a potential 4°C (or more) increase in the case of more dire predictions (IPCC 2014; Omer 2008; Rosa & Dietz 2003). As such it seems unlikely we will avoid surpassing the threshold regarded so critical. As these varying predictions are based on projections surrounding potential reductions in emissions, it is disheartening, as noted, that our emissions continue to rise and exist today at the highest levels ever recorded (Clapp & Dauvergne 2005; IPCC 2014). Projections based on a sustained ‘business as usual’ approach to energy without additional mitigation efforts indicate that we will almost certainly reach and surpass the 4°C ceiling. These estimates offer a warming window of between 3.7°C and 4.8°C above pre-industrial levels by the year 2100 (IPCC 2014). Further, the IPCC notes that the warming already set in motion, and potentially amplified by human activity to come, will not stop for centuries even if we completely abandon fossil fuel consumption (Hawken 1993; IPCC 2014). As such, the following centuries are poised to see increased warming and various consequential effects, to some degree, no matter what we do, where the heaviest impacts of our emissions today will likely manifest during mid-century (IPCC 2014; Rosa & Dietz 2003). That said, it is no cause to abandon efforts aimed at harm reduction (to be discussed).

The degree of warming will determine the degree of consequence for all life on Earth, where the resultant effects are many, vary in nature, as well as have the potential to be anywhere from ‘disruptive’ to ‘genocidal’ in severity depending on how we approach the rest of the 21st century. Despite the worst being yet to (potentially) come, we can today identify some striking
consequences of our ongoing climate shift. The mean sea level has risen by about 0.19 metres in the past century, threatening coastlines and their many communities, as well as agricultural land and freshwater aquifers with saltwater inundation. This will continue (Brown 2011; Clapp & Dauvergne 2005; Greenius, Jagniecki & Thompson 2010; IPCC 2014; Nikiforuk 2012; Omer 2008; Rosa & Dietz 2003), and with a business as usual approach to energy, will likely result in a full metre of vertical growth by the end of the 21st century compared to 1900 levels (IPCC 2014:11). This rise is amplified by both thermal expansion created by general warming trends and the consistent glacial and ice sheet shrinkage observed and predicted to continue. Arctic sea ice has for example decreased at a startling rate since 1979, with a loss range of 3.5% to 4.1% every decade since. Together, these factors explain approximately 75% of the mean increase in ocean levels (IPCC 2014).

The oceans have also been undergoing acidification from CO₂ absorption, becoming 26% more acidic since the beginning of the industrial era. As such, marine organisms are experiencing declining oxygen levels and their ecosystems are in some trouble, where ‘oxygen minimum’ zones continue to increase in the Pacific, Atlantic and Indian oceans (IPCC 2014). Biodiversity is thus threatened, where significant disruptions to the food chain may well materialize. If temperatures increase by 4°C (or at all beyond what has already happened), we risk substantial species extinction on land as well, where many non-human species cannot and/or will not be able to adapt to ecological changes in time to survive (IPCC 2014; Rosa & Dietz 2003). Biodiversity is the key to ecosystem health, and as such this is quite troubling, where even a 2°C rise in temperatures may well spell doom for up to 35% of all species (Clapp & Dauvergne 2005).

Rainfall patterns and access to quality freshwater services have and will be increasingly affected (IPCC 2014; Leech 2012; Omer 2008; Roberts 2009; Schnaiberg 2009). Many regions are experiencing changes in their hydrological cycles, where shifting precipitation patterns along with shrinking snowpack is causing noticeable stress (Greenius, Jagniecki & Thompson 2010; IPCC 2014; Rosa & Dietz 2003). When snowpack increasingly shrinks, there is less water downstream from which to draw, and when precipitation patterns change, drought is more likely (Barlow 2004; Clapp & Dauvergne 2005). In Canada for example, the summer of 2015 saw intense drought for many regions, including British Columbia which is generally known for its rain and lush landscapes (Hume 2015). Further, some estimates predict the Bow River in Calgary, a river I enjoy floating down, as well as that paradoxically flooded the City in 2014, to slow to a trickle by mid-century (Barlow 2007). Also troubling, California has been in the midst of a severe drought going on for half a decade now, being the worst the region has experienced in 1,200 years, and seeing legislation mandating that resident’s cut their water usage by up to 25% (BBC News 2015)! Finally, the percentage of the Earth’s land suffering serious drought has more than doubled between 1970 and 2005 according to the U.S. Center for Atmospheric Research (Barlow 2007). When droughts are abundant, the food supply is in jeopardy, and forest fires are more likely. Issues with food supply can heighten starvation, breed violent conflicts in the midst of scarcity (Brown 2011), wreak havoc on the price tag (IPCC 2014) and even drive people to suicide, where for example, in 2010 about 2000 Kenyan farmers took their own lives in response to crop failures resultant of climate change (Leech 2012). Forest fires, that also happened to dominate Canada’s 2015 summer months, and that burned over 500,000 hectares of land between Alberta and Saskatchewan during the spring and summer of 2016 (paradoxically
having their origins in Fort McMurray, the heart of Canada’s oil production) (TWN 2016),
destroy carbon sinks at the same time as releasing more into the atmosphere, in effect advancing
a compounding warming effect (IPCC 2014).

Intensification of extreme weather events, including heat waves and heavy precipitation
have also been observed and are predicted to increase (Clapp & Dauvergne 2005; Hawken 1993;
IPCC 2014; McCormick 2009; Nikiforuk 2012; Omer 2008). The IPCC (2014) notes that it is
likely that heat waves have increased by a factor of two in some locations as a result of
anthropogenically induced climate change. Heat waves can be life threatening, especially to the
erdly and the homeless, as well as perilous where food supplies are concerned. Significant
examples include the 1995 Chicago heat wave that saw 5,000 people lose their lives, Paris in
2003 where more than 13,000 perished and Russia in 2010 where extended record high
temperatures saw grain harvests shrink by about 40% while the world’s price of wheat jumped
up 60% (Brown 2011; Roberts 2009). Further, India is currently (during the Summer of 2016)
experiencing a heat wave of savage proportions, seeing temperatures upwards of 50°C in
multiple cities (the highest ever recorded), in combination with extended drought, that has
resulted in significant loss of life and crop failures. This following a 2015 heat wave that
claimed over 2,500 lives in the region (Smith 2016). Beyond drought, the food supply is also
threatened where heat waves and warming trends are concerned generally, as photosynthesis
diminishes in quality beyond 35°C and completely ceases at temperatures above 40°C, leaving
us all in a potentially dire predicament (Brown 2011). Further, the IPCC states that it is
likely that heavy precipitation events have increased at this time, where these events have the potential
to increase flooding and storm surges (IPCC 2014). Generally, more frequent and extreme
storms are regarded as consequential to global climate change, where this poses a massive threat
to existent infrastructure, agricultural activities and human health (Humphrey, Lewis & Buttel
2003; IPCC 2014; Nikiforuk 2012; Omer 2008). These events and their toll have been visible on
domestic shores, where in 2005, New Orleans saw the wrath of Hurricane Katrina, and a short
seven years later, New York faced Hurricane Sandy. Katrina remains the costliest ‘natural’
disaster the United States has ever contended with, and boasted over 1,800 deaths and a 28 foot
storm surge (Zimmermann 2015). Sandy, though only claiming some 125 U.S. lives and
bringing a storm surge of half that level, has been the costliest since (Do Something N.D.).
Climate change (or simply fossil fuels) does not promise a rainbow after the storm, but rather
simply, more clouds and thunder.

Fossil fuels promised unlimited growth and prosperity, and as such we (to varying
degrees between minority and majority worlds) have been gorging ourselves with them for quite
some time (Nikiforuk 2012). However today, we have not grown big and strong, but rather have
become fat and reliant, as well as weak in the face of accelerating climate change and its perils.
As originally maintained and confirmed by the IPCC (2014), this predicament is largely the
result of our exponential growth based economy. Further, it is the growth economies of the
minority world with whom the overwhelming responsibility lies (Leech 2012). Canadians for
example consume oil at a rate that outpaces global per capita consumption by a factor of five
(Nikiforuk 2012), and the United States, though boasting a mere 4% of the world’s population,
burns through a whopping 25% of the world’s energy diet (Hawken 1993; Leech 2012; Roberts
2009). Globally speaking, wealthy developed countries accounted for 15% of the population but
consumed about 76% of the world’s total materials in 2005, meaning they bore (about) that same
number where emissions are concerned (Clapp & Dauvergne 2005). As such, it seems only right that the minority world lead the way regarding mitigation.

Given that socialism and recession remain words that put a sour taste in most people’s mouths, it is unlikely that capitalist economic organization will be dismantled or retuned within our surrounding mental climate dominated by growth ideology. As such, we must consider energy systems reforms ultimately aimed at ‘sustainability’, if we intend to avoid the catastrophic degrees of warming and related effects that will be cemented should we continue with business as usual. Whether measures are aimed at reducing use values through conservation and efficiency, or transitioning to alternative energies, we must do something to drastically reduce emissions, if only for the benefit of the yet faceless. I now turn my attention to what sustainability in the energy sector might look like.

**Fantasizing About the Other: Constructions & Applications of ‘Sustainability’**

Sustainability has been conceptualized in a variety of ways, each paying focus to a handful of elements, where certain visions place more or less emphasis on these elements depending on the nature of what it is exactly that is to be sustained or sustainable. At the onset then, we must juxtapose and illustrate conceptions of sustainability, sustainable development and sustainable communities, though of course their overlap is a given. In the final piece of this section, I present my own conception of ‘Sustainable Energy Communities’ (SEC) (understood as national, state/provincial, or municipal level communities), to be employed throughout this research as an ideal for which we should strive.

‘Sustainability’ according to Dunn & Steinemann (1998) should focus on equity, economy and environment, otherwise thought of as a steady state of ecological balance and health, stable development and markets that meet people’s everyday needs, and the just distribution of material goods as well as social ills, where some people are not unduly privileged while others disadvantaged. They also emphasize that “central to sustainability is the need to acknowledge the fundamental ecological limits to development, or carrying capacity” (p. 664). In a different light, Buddhist conceptions stress that individual, social and ecological health must take priority over economic growth and profit making activities. Reduction and equitable distribution of consumption is also regarded as necessary in sustainability as opposed to modernization and the implementation of green technologies to ‘protect’ consumerist ways (Lamberton 2005). Broadly, popular conceptions make repeated reference to “the three core dimensions of sustainability, [being] social, economic and environmental sustainability” (Franklin, Newton & McEntee 2011:772).

Specifically related to environmental health however, there are more effective and thorough constructions of this notion which place heavy emphasis on the long-term “viability and health of ecological systems” (Omer 2008:2279). At the onset, a more radical and purposive interpretation notes that processes may only be considered sustainable if the nature of their life-cycles are both beneficial to, as well as non-destructive of, ecological systems, from the time they are set in motion to long after they have ceased existence (Khan, Chhetri & Islam 2007). In other words, both the inputs and outputs involved in such processes must not result in a more
dilapidated natural environment, but rather provide positive functions to ecological systems. Accordingly, four core elements of sustainability are put forth that both complement the former definition on processes, as well as reconcile the social and economic dimensions often mentioned. In this case, sustainability is regarded as a ‘state’ in which nature is not systemically forced to contend with (1) increasing amounts of raw materials extracted from its surface, (2) human produced substances, and most importantly, (3) associated or isolated forms of physical destruction. Further, the final element stresses that sustainability is achieved where (4) human inhabitants of such societies do not have the ability to satisfy their basic needs gradually and consistently expunged (Greenius, Jagiecki & Thompson 2010).

Moving on, we might examine interpretations of this notion called ‘sustainable development’ (‘development’ thought of us infrastructure, economic and livelihood activities). Broadly, it is consistently referred to as development that effectively satisfies our present needs while also protecting and promoting the ability of coming generations to do the same (Dunn & Steinemann 1998; Luke 2005; Omer 2008; Powell 2012). This definition however is somewhat vague, especially where specification of ‘whose’ needs we are speaking of is lacking. As such, I introduce more concise conceptions of this concept. Like sustainability, definitions of sustainable development often focus on three core pillars. According to Dale & Newman (2006), these are ecological, social and economic ‘imperatives’ that stress respecting biophysical carrying capacity and the preservation of biodiversity, promotion and maintenance of a smooth functioning and healthy society, and that the fundamental needs of all people are satisfied. Relatedly, Barber (1996) defines the concept as capital growth that does not adversely affect biological systems and natural resources, and as such embodies benefit to both present and future peoples. Similarly, Kitchen & Marsden (2011) emphasize economic and environmental spheres equally, stating the sustainable development does “not result in a net depletion of resources, but instead provide[s] cumulative net benefits that add value to rural and regional spaces in both ecological and economic terms” (p. 758). Examined within these definitions, sustainable development clearly emphasizes that the satisfaction of needs should include consideration of non-human entities across the globe.

Moving forward, we now explore broad to increasingly specific visions of sustainable communities. Once again, there is often focus on the idea that sustainable communities are those that function to preserve ecological health alongside quality of life, thus in effect ensuring the viability of such life for current and future members (Dale & Newman 2006; Capon & Blakely 2007). Barber (1996) cites prominent themes embodied by this concept including environmental and social sustainability as well as justice, respect for ecological carrying capacity, promoting local economics and markets, and community participation in decision making processes among other things. Additionally, the “internalization of externalities; [and] the promotion of inter-generational equity” are also highlighted (Kitchen & Marsden 2011:759). In action, sustainable communities would likely include energy efficient modes of travel and a focus on public transit projects, local food production, inclusive and democratic decision making, low carbon footprint housing and buildings, and the preservation of ‘ecological integrity’ (Barber 1996; Capon & Blakely 2007).
Finally, I examine conceptions of sustainable communities as they relate to energy specifically, as this is the focus of this research. Following a brief exploration of how this has been approached, I construct my own definition of the community this research strives to aid in realizing. Energy is the focal point of many visions of sustainability as the increasing use of fossil fuel energies is arguably the most detrimental of activities to the natural environment. As such, “designing and implementing a sustainable energy sector will be a key element of defining and creating a sustainable society” (Omer 2008:2282). Further, it is noted that relative to other sources of energy, “only renewables are absolutely sustainable”, as they are both naturally regenerative, and to varying degrees do not extensively pollute the basis for such regeneration throughout their lifetimes, to the point of leaving macro ecological systems more dilapidated at the end of their cycles (Omer 2008:2277; Schweizer-Ries 2008).

Wind and solar for example, though extracting raw materials in construction as well as in some cases producing hazardous wastes (where containing their effects is subject to proper handling and disposal (ProCon N.D.)), do not extensively affect environments during energy capture and distribution. Speaking back to raw materials, long infrastructure lifetime also affords environments space to regenerate such materials, so long as the scale of construction, or energy demand, does not outpace regenerative capacity. A quick look at solar makes this point. First, a solar panel sees its operating capacity decrease by about one percent per year, thus losing its useful value at between 30 and 40 years old (or at an operating capacity of 60-70%). Second, the lifecycle carbon footprint of a solar panel, being that emitted resultant of mining and processing materials, creating the panel, and its operational effects, is far less than fossil fuels. In fact, depending on where and how a panel is made, sunlight availability, and its actual lifetime, 1 kWh of electricity produced by solar may emit as little as 10% to a very unlikely 50% of the carbon than that same unit of electricity had it been generated by fossil fuels (De Decker 2008; Fthenakis, Kim & Alsema 2008). At a minimum, solar power can thus cut our carbon footprint in half, and potentially far outdo even the most drastic reductions suggested by the scientific community. Returning to community sustainability then, the community operation of renewable energy regimes is seen as an effective path towards an environmentally sustainable reality (Khan, Chhetri & Islam 2007).

As the nature of sustainable renewable energy has been established, I briefly outline Schweizer-Ries’s (2008) concept of the ‘energy sustainable community’. Where concepts of sustainable communities are generally larger in scope due to their focus on multiple pillars and inherent need to account for all aspects of environmental health, the concept of energy sustainable communities lends specific emphasis to the community practice of using renewable energy resources in efficient ways. Further, strong versions of these communities (i.e. temporally and physically sustainable ones) embody heightened degrees of engagement with renewable energy transitioning and technology, consciousness and understanding surrounding the nature of renewable energy technologies as well as benefits to the community and environment, and acceptance and welcoming of transitional developments. It is also noted that communities making strides to transition to 100% renewable energy sources can also be considered energy sustainable communities.
As this research is predicated on mitigating climate change and improving environmental health in part through transition to sustainable energies, alongside other emissions reductions measures in key consumptive areas, I have chosen to reword the former concept of ‘energy sustainable communities’, as well as draw up a somewhat unique and applicable definition. For my purposes, I use the term ‘Sustainable Energy Communities’ (SEC) to illustrate and make reference to the community result of which this study seeks to play a part in facilitating and realizing. Drawing on some prominent elements in other literatures’ conceptualizations (Barber 1996; Greenius, Jagnecki & Thompson 2010; Kitchen & Marsden 2011; Omer 2008; Schweizer-Ries 2008) to complement my own understanding of energy and environmental affairs, I first advance five integrated principles. Subsequently, a sixth and final pillar serves as a personal addition to address the transitional process, as well as the new energy regime that follows. In this case then, Sustainable Energy Communities adhere to the following six principles through undertaken actions.

**First**, SEC are committed to the **‘preservation of ecological systems’ integrity and biodiversity’**, and thus also promote inter-generational equity (Kitchen & Marsden 2011). This is resultant of their commitment to absolutely sustainable renewable energy sources that do not adversely affect the climate, and thus the environment, to the point of depleting net value over the course of their lifetimes (as fossil fuels clearly do) (Omer 2008; Schweizer-Ries 2008). Accordingly, the capacity of future generations to satisfy their energy needs and live in a healthy environment is not compromised. Here again, solar and wind serve as examples, where they have low carbon footprint lifecycles, as well as have long shelf lives whereupon the raw materials extracted for their construction are afforded time to regenerate (De Decker 2008; Fthenakis, Kim & Alsema 2008). Additionally, recycling various materials can help extend that regenerative window. Finally, unlike producing energy with traditional fossil fuels, excavating and extracting materials from the earth is contained to raw materials used for creating infrastructure that subsequently harvests decades of actual renewable energy which does not pollut the atmosphere with greenhouse gases. Still, as far as total energy consumption goes, overindulgence with any renewable or other energy regime resultant of increasing total demand has the potential to undermine the regenerative capacity of the raw materials employed in construction. Accordingly, principle six of the SEC addresses this issue.

**Second**, SEC are committed to local **‘autonomy over renewable energy production and distribution processes’**. where these processes are both physically and socially contained and managed (Barber 1996; Greenius, Jagnecki & Thompson 2010). Local economic sustainability is then fostered through independence, self-reliance, and keeping funds and jobs tethered to the local. As a result of autonomy over generation, benefits such as these have been noted as highly important to the social sustainability of community renewable energy regimes (Schweizer-Ries 2008).

**Third**, SEC are committed to **‘energy security’** (thought of as control over, and guaranteed energy supply), through local control and exploitation of renewable energies (Greenius, Jagnecki & Thompson 2010). This functions to ensure the long-term satisfaction of community energy needs, as energies are procured locally without reliance on outside players, infinitely abundant, and readily processed (Barber 1996; Dale & Newman 2006). Autonomy also promotes this energy security by way of local control over policy and process.
Fourth, SEC are committed to ‘democratic management of renewable energy systems’. Here, inclusive democratic decision making is upheld at all intersections of sustainable energy implementation and management processes, and thus the promotion of social sustainability through the fostering of positive social climates via responsibility and democracy. Community inclusion is noted to be a key element in fostering acceptance and embrace towards renewable energy projects (Barber 1996; Greenius, Jagniecki & Thompson 2010; Schweizer-Ries 2008).

Fifth, SEC are committed to ‘using the most abundant and environmentally friendly renewable energy sources and technologies’, and as such are committed to absolute sustainability, and do not settle for renewable energies that over-adversely affect the climate or environment in any phase of development, implementation, production or distribution (Omer 2008; Schweizer-Ries 2008). Accordingly, SEC focus on solar energy wherever possible, as its operationalization is significantly less destructive to the climate and environment than fossil fuel combustion (De Decker 2008; Fthenakis, Kim & Alsema 2008). Again, though initial raw material extractions are of course still necessary and harmful, such materials are afforded decades to re-form (the various components of course having their own regenerative demands), where ‘sustainability’ may be preserved so long as energy indulgence and solar infrastructure construction has a reasonable ‘end point’. To that end, reducing total energy use is addressed in the following pillar of the SEC to ensure this element of sustainability is maintained, where, as Greenius, Jagniecki & Thompson (2010) assert, sustainability requires that the earth not be subject to ‘increasing’ raw material extractions, meaning we must not plan for a forever increasing parasitic situation. Finally, in stressing solar energy and the extent of sustainability, its operation neither consists of nor subsequently externalizes various consequences like those of fossil fuel energies. Lungs are not polluted resultant of fuel combustion, ‘solar spills’ are a comical idea and thus natural environments are less subject to ‘chance’ destructive events (where hazardous wastes still need be handled properly and the extent of raw material extraction minimized, both however better lending themselves to human agency), and wars are not currently waged over sunlight.

Finally, pillar six recognizes that the transition to SEC and complete reliance on absolutely sustainable energies is not an overnight endeavour. As such, SEC also focus on ‘using less of, and more effectively, traditional energies in the transition process’, via investing in conservation and efficiency measures to minimize, as best as possible, emissions throughout the transition (Greenius, Jagniecki & Thompson 2010). Further, according to the authors just cited, focusing on conservation and efficiency remain important upon establishing total renewable energy, as maintaining absolute sustainability requires that we avoid, to the very best of our abilities, extensively extracting raw materials for generation infrastructure to the point of unduly undermining regenerative capacity and ecological systems themselves. Accordingly, we must minimize the extent of our energy indulgence as much as possible.

In recapping, SEC as envisioned for the purposes of this research do address all elements of the three pillar conception of sustainability, however lean on and emphasize the utmost importance and central function of ecosystem health. Energy reforms should be characterized by autonomy that in turn fosters security, giving way to economic viability and opportunity. However, this is sustained by an inclusive and equitable social climate that acts reflexively with
the autonomy gained through local energy generation to maintain the social sustainability of the reforms. Such inclusivity thus lends itself to realizing the democratization of energy generation, and of course the autonomy and security spoken to. Finally, the SEC commitment to absolutely sustainable energy is the basis for ensuring the long term viability of the new economic and social arrangements, and as such ecological health remains the ultimate fundamental support for the other two pillars of sustainability. Accordingly, though an overlapping and supposedly ‘equally’ weighted approach to the three pillars involved in conceptions of sustainable communities and development is evidently popular amongst those involved in mainstream environmental discourses, this definition of SEC treats the three spheres as embedded instead, where we recognize that economic systems exist only in human social realms (more specifically that viable economic systems exist only in stable social realms) which in turn may only exist where a healthy ecosystem provides a sustainable material foundation (Varghese 2005). SEC thus focus on energy production and management that is absolutely sustainable, and hence benefits local people now and into the foreseeable future, via adopting a more eco-centric approach to energy than has been the North American norm for as long as I can remember.

As mentioned, SEC is an ideal for which we should strive, but of course, achieving such a lofty goal requires a drastic overhaul of energy infrastructure, and countless hours of deliberation and planning. As such, I concur with Schweizer-Ries (2008) that any community of any magnitude can and should be considered a SEC if they are in fact making strides towards realizing these principles to any significant degree, as it is unfair as well as far-fetched to expect any municipal to national community to achieve total SEC status overnight in an economic climate, as well as built environment, that is so structurally wedded to fossil fuel energies. In the following sections, I explore some of what has been proposed, planned and implemented regarding sustainability and energy, and attempts to achieve SEC status to any significant degree at various levels of ‘community’.
3

The Case for Communities… Fails, Wins, Bane & Boon

***

In the context of climate change and its established perils in chapter two, I use chapter three to explore what has been proposed and achieved at the national and international levels surrounding reducing carbon emissions, as well as various phenomena that appear to be relevant regarding why there has been essentially zero progress as a global community up until this point. With that, I introduce smaller scale efforts (cities, towns, and villages) as potentially better suited to engaging with de-carbonization, exploring the action and achievements of five Canadian cities, as well as subsequently reviewing some factors that have been documented as potentially hindering local mitigation efforts. In the final section of this chapter, I explore various theories of environmental change as related to climate change mitigation, ultimately arguing for a Public Engagement approach to issue governance, which is then used as a theoretical framework within which I situate Guelph’s ongoing Community Energy Initiative implementation effort in the second of two analyses performed on the primary data.

***

Talking a Big Game: Global Front

Climate change is a global problem requiring a global solution (whether imposed from the highest levels of government or resultant of community evolution and networking), where greenhouse gases do not only accumulate at their dispersal sites, but rather surf the winds and settle across the globe in an equitable fashion (despite the distributional effects of climate change predicted to be quite unequitable) (Greenius, Jageniecki & Thompson 2010; IPCC 2014; Leech 2012; Omer 2008; Roberts 2003; Roberts 2009). Further, scientific concerns surrounding energy and climate change are not new, but have been around for many decades, where as early as the first decade of the 20th century, a Nobel prize winning chemist by the name of Svante Arrhenius voiced concern that fossil fuel combustion associated with rapid industrialization was likely filling the atmosphere with gases that resulted in a greenhouse effect (Humphrey, Lewis & Buttel 2003; Mazur 2003). According to the IPCC, we must collectively reduce our greenhouse gas emissions by 40% to 70% below current levels by mid-century to negate warming above the 2°C threshold, where many claim that achieving a sustainable climate will require a 60% to 80% decrease in emissions by the wealthy minority world nations far sooner than this (IPCC 2014; Roberts 2009). In light of this then, we must ask what has been done towards achieving such lofty goals in the recent past and present? I commence with a chronology and examination of some more salient national and international efforts, that have, in their times, achieved significant notoriety. Here, direction is largely taken from Clapp and Dauvergne’s (2005) book ‘Paths to a Green World: The Political Economy of the Global Environment’.
There have been quite a number of global forums, national and international task forces and agreements erected, all concerning the environment generally, and beginning in 1948. At this time, the United Nations created the first international organization meant to coordinate and facilitate global action concerning the preservation and conservation of nature. While initially titled the ‘International Union for the Protection of Nature’, it was later (1956) renamed the ‘International Union for the Conservation of Nature and Natural Resources’ (IUCN), and presently boasts many members including over 750 NGO’s, 100 government agencies and 70 states. Though concern with environmental degradation did exist at this time, it found widespread impetus in the minority world in the 1960’s, a time when activism was thriving. Further, the classic image of the Earth taken from the moon in 1969 advanced the notion that the Earth was fundamentally borderless, interconnected, and fragile. This was likely a driving force behind public environmental consciousness, where the first ‘Earth Day’, on April 22nd 1972, saw over 20 million people rally in the United States alone (Clapp & Dauvergne 2005; Harper & Fletcher 2011). This strong citizen backed environmental consciousness no doubt played some role in fostering the national and international actions surrounding environmental health taken henceforth.

The first global level United Nations forum on environmental affairs was, as it happens, also held in 1972. It was titled the ‘United Nations Conference on the Human Environment’, and held in Stockholm, Sweden, while commonly referred to as ‘Stockholm’. The conference saw attendance from representatives of 113 governments, and Maurice Strong of Canada, a man who happens to have strong ties to industry, was selected to chair the event. The primary proposed purpose of the conference was to identify and discuss environmental problems, and specifically those elements that required internationally coordinated efforts to find remedy. Throughout, debates about the global economy, population growth, and poverty as related to environmental degradation dominated, where the Stockholm conference actually coined the phrase ‘the pollution of poverty’ to point out how poverty can drive environmental pillaging. As such there was a heavy emphasis on how to promote economic development in the majority world while simultaneously engaging with environmental imperatives set out by the already well developed minority world. Conflict festered where less wealthy nations, rightly so, stressed that they should not be restricted in realizing the robust industrial economies of the minority world in order to achieve environmental goals that might benefit the globe in its entirety. However despite these issues and calls for economic reforms, official conference documents did not go beyond acknowledging these concerns, and did not offer any concrete solutions. Instead, Stockholm produced a document titled the ‘Declaration on the Human Environment’, which included an action plan with 109 ‘recommendations’ and 26 ‘principles’. No signatory was legally bound to these recommendations or principles, and as such the popular term ‘soft’ measures applies (Clapp & Dauvergne 2005).

Though Stockholm failed to advance any concrete progress on environmental issues, it did support and confirm a budding environmental consciousness among international governments. Not coincidentally, almost immediately following Stockholm a variety of organizations were formed. These include the creation of the ‘Environmental Protection Agency’ (EPA) in the United States in 1972, Canada’s ‘Department of the Environment’ in 1973, and the ‘United Nations Environment Programme’ (UNEP) in this same year, seeing Maurice Strong inherit the position of its initial executive director. Though economic woes
surrounding oil supplies and prices in the minority world put environmental concerns on the shelf for a period during the 1970’s, the following decade saw their reinvigoration. In 1980, the ‘World Conservation Strategy’ was put forth by the combined efforts of the IUCN, the UNEP and the ‘World Wildlife Fund’ (WWF). The report lent its focus to emphasizing population pressures and the conservation and management of natural resources. In relation, it spent time detailing the ‘goals and targets’ we should collectively strive for in order to protect and maintain species and genetic diversity, and ecosystems and natural processes. Though far short of advancing ‘hard’ measures that might legally bind any set of given parties, the report was successful in introducing the concept of ‘sustainability’ to a global audience (Clapp & Dauvergne 2005). It is quite interesting that a term so pervasive in environmental discourse today was not in popular circulation until so recent a time.

Four years later, the ‘World Commission on Environment and Development’ (WCED), most popularly known as the ‘Bruntland Commission’ was erected by the United Nations with the expressed goal of delving into the relationship between economic development and environmental health. In 1987 the commission published a report titled ‘Our Common Future’, outdoing all international documents prior by advancing a vision of development that considered the environment to be of primary importance (at least on paper). The report re-affirmed that poverty was a key ingredient to environmental degradation, that it must be contended with, and therefore sought to satisfy both minority and majority world imperatives. As such, the report made clear that continued economic and industrial growth were not necessarily at odds with environmental health, so long as they were done ‘sustainably’. The report then proposed that we should continue to pursue economic growth, so long as it aligned with their newfound concept of ‘sustainable development’, being that which satisfies the needs of the present while also preserving the capacity of future inhabitants to do the same (Foster 2003). ‘Recommendations’ for adhering to sustainable development and achieving environmental harmony included that nations should seek to foster education and regulate population levels, while also pursuing energy conservation and ‘greener’ industrial technologies to name a few. The term ‘sustainable development’ dominates enviro-economic discourse to this day, is very open to interpretation, and as such favours a business as usual-growth oriented approach to economic affairs. Governments and industry, while touting the term, see and pursue economic growth as the eventual solution to environmental problems that continue to manifest in real time as a result of this ongoing growth (Clapp & Dauvergne 2005). Sustainable development thus appears to be something that is to be achieved in future, rather than a present day transformation of practice. Accordingly, the phenomenon favours present day government and industry business interests, where it is often used to essentially claim its users will address environmental issues and ‘achieve’ sustainability in development, but that the status quo must persist in order to realize that result. As such, where participants in global conversation settle upon the validity of this argument, using the term sustainable development gives a green light to business and governments surrounding status quo economic growth activities.

In 1989, my birth year, as well as 17 years the anniversary of the first major global forum on the environment (Stockholm) and Earth Day, the United Nations elected to act on the Bruntland Commission’s recommendations. Accordingly, three years later (1992) the ‘United Nations Conference on the Environment and Development’ (UNCED), popularly termed ‘Earth Summit’, was conferred in Rio de Janeiro, where Maurice Strong was again appointed a
prestigious position, being the secretary general of the conference in this instance. This turned out to be the largest United Nations global forum to date, seeing 179 countries, over 110 heads of state, and an excess of 2,400 delegates for NGO’s in attendance. Naturally, the concept of ‘sustainable development’ was pervasive in the discourse, where Earth Summit re-advanced the notion that economic growth and environmental protection were not only compatible, but actually nurtured each other. Accordingly, economic growth (on its own terms, and unbridled by its current link to environmental harms) forewent challenge and welcomed promotion (Clapp & Dauvergne 2005).

Though the primary result of the conference was a simple repetition act functioning to re-position enviro-economic issues on the minds and agendas of governments around the world, and despite conflicts existing where majority world players contended that already industrialized nations should foot the majority of the bill for ‘green growth’, while minority world representatives were opposed to sharing their wealth, there was some ‘apparent’ progress on paper. The ‘Rio Declaration on Environment and Development’ was adopted by participating nations, and included 27 principles outlining the ‘rights and responsibilities’ of participant nations where the promotion of ‘sustainable development’ was concerned. Further, a 300 page plan of action termed ‘Agenda 21’ was also adopted. Neither were binding however, and as such global coordinated ‘efforts’ were premised to be weak. In light of this the conference also put together the ‘United Nations Commission on Sustainable Development’ for the purpose of progress evaluation and monitoring where the goals of Earth Summit were concerned. However, despite that economic growth has since thrived, global inequality and environmental degradation have seen amplification (Gould, Pellow & Schnaiberg 2008), where a 1997 progress report on Agenda 21 goals indicated that the world was largely off track where realization was concerned (Clapp & Dauvergne 2005). As such, the skepticism of many surrounding the compatibility of further industrialization and environmental sustainability was confirmed. Further, in this same year the Kyoto Protocol on climate change, aimed at reducing greenhouse gas emissions to well below 1990 levels, was adopted by 120 actors. However, as of today, Canada and the United States, two of the biggest culprits for emissions, do not support the accord, nor is it officially in effect (Clapp & Dauvergne 2005). Then, and now, global efforts to remedy environmental harms and mitigate climate change appear very weak in substance.

Another five years later (2002), the ‘World Summit on Sustainable Development’ (WSSD) was held in Johannesburg, South Africa, once again setting the bar for size, where the conference boasted an impressive attendance comprising some 180 nations, and over 10,000 associated representatives as well as over 8,000 members of NGO’s. Its aims were to re-assess progress related to Earth Summit suggestions, and establish hard targets related to achieving implementation of goals. The conference produced more official documents highlighting the need to advance environmental sustainability, as well as a plan for getting there, termed the ‘Johannesburg Declaration on Sustainable Development’ and the ‘Johannesburg Plan for Implementation’ respectively. These documents fingered the challenges and commitments the global community faced, as well as revisited focal areas where additional steps were ‘wanting’ in order to achieve Earth Summit targets. The 65 page action plan was smaller in scope than the 300 page document seen in Rio, however did introduce some increasingly specific targets in key areas including biodiversity, agriculture, water and energy (Clapp & Dauvergne 2005).
Further, the forum introduced and advanced the novel idea of ‘public-private’ agreements between industry, NGO’s and governments, as a means for achieving sustainable development. These were non-binding agreements, to be negotiated between stakeholders, where the conference stressed the ‘duty’ of industry to realize development sustainably via ‘responsibility’ and corporate accountability. In the end, more radical parties were quite disappointed with the outcome, while industry was generally content, as little was added in the realm of global ‘commitments’. The result was more official documents made up of vague non-binding statements, essentially premised on ‘good will’ and ‘good faith’. As binding agreements might limit economic activities, for example as far as energy usage is concerned, it is clear that the notion of ‘sustainable development’ (as popularly put forth in global discourse) favours economic growth over immediately and directly addressing the associated environmental harms. Binding agreements to directly address ecological issues are thus not manifesting (Clapp & Dauvergne 2005).

Finally, the 21st ‘Conference of the Parties’ (COP21) was held in Paris, France from November 30th to December 12th 2015, seeing 196 parties in attendance. The explicit goal of this latest round of international talks was to reach an agreement on mitigating climate change via greenhouse gas emissions reductions. Promisingly, attending parties did reach a consensus outlining a commitment to limit warming to below 2°C above pre-industrial levels, aiming to achieve net zero emissions by sometime during the latter half of this century. Further, the agreement outlines that participants will ‘pursue efforts’ to keep warming below 1.5°C, despite some in the science community claiming that net zero emissions would need to be achieved as early as 2030 and no later than 2050 in order to realize this result. That said, no explicit timeline or nation specific targets were penciled into the agreement, as well as the language remains vague and non-binding, where for example, nations have agreed to ‘do their best’ to honour even the 2°C target. In order for the agreement to become binding, 55 nations representing 55% of total emissions will need to officially sign on and ratify the agreement by April 21, 2017, however even in such a case, again, the agreement does not include country specific targets, and thus ratification continues to give nations unlimited breathing room, where specific targets will be voluntary. Further, there is much skepticism that big emitters will actually sign on and ratify, and compounding is the fact that the agreement has not advanced any type of punitive mechanisms for non-compliance, instead putting faith in the effectiveness of ‘name and shame’ enforcement (Wikipedia Contributors 2016a). As I write this, 177 parties have signed on, while only 22 have ratified the agreement, and as such it has not officially entered into force (Wikipedia Contributors 2016c). Further, that action will be voluntary in this latest case is indicative that ‘sustainable development’ continues to greatly inform global discourse, and that the ‘development’ part of the term continues to take precedence over ‘sustainability’.

Leading up to COP21, approximately 600,000 people worldwide took part in demonstrations (The Guardian 2015) calling for substantial action on the climate crisis (with many more working ‘off the streets’), however despite this massive grassroots push, as well as target recommendations from the scientific community, the agreement appears to be a lot less than one might have hoped for. Instead, the Paris talks more resemble an act of ‘saving face’ directed at those who are less aware of the reality of climate and climate action thus far, where targets have in effect been increased (1.5°C), however once again, nothing is binding and much of the agreement is premised upon good faith. Further, we have already warmed almost 1°C
since 1880 (IPCC 2014), and are certainly premised to see that continue if we consider that our emissions today are at record levels, and take years to see their full atmospheric effect (IPCC 2014; Roberts 2009). This while even the most promising of IPCC estimates, premised upon ambitious change to the status quo, indicate further warming of at least 1°C by the end of the century, pushing us right up to around the 2°C threshold. As such it seems almost unfathomable that there is even a remote chance of limiting warming to below 2°C within this century, let alone 1.5°C. Finally, economic growth was seemingly able to once again evade the chopping block, despite that the IPCC has identified it as the primary driver of anthropogenic greenhouse gas emissions and resultant climate change.

It has been a tremendous 44 years since the first global conference on the environment in Stockholm, where many salaries have been received, process monies spent, and hours expunged, yet somehow, contemporary greenhouse gas emissions dwarf any other period in history. Between the time of this first forum and 2005, emissions resultant of burning fossil fuels have in fact increased by a factor of at least four (Clapp & Dauvergne 2005), where, as of 2014, this number sat at its highest ever (IPCC 2014)! As such, we can in no capacity claim that our global ‘community’ is developing sustainably at all, and by extension is, or is en-route to becoming a SEC, despite the seemingly well intentioned efforts of worldwide government ‘coordination’ or how satiable the contemporary global dialogue appears. Currently being a far cry from officially entering into effect, COP21 will need to prove itself in the wake of dismal failures over the course of the last few decades. As such, while economic growth continues to thrive, we must ask ourselves how and why these efforts have failed to effect substantial positive returns where energy and the climate are concerned.

The Mighty Have Spoken: Persistent Wrenches

At the onset, as mentioned, the notion of sustainable development dominates global environmental discourse, and this serves the interests of big industry and governments alike, where both believe in the necessity of economic growth and competitiveness (for a variety of reasons) (Chatterjee & Finger 2003; Luke 2005). As observed, following the recommendations of the Bruntland commission, the idea that economic growth will be a key component in reducing environmental harms gained much traction, whether that be achieved via poverty reduction, or innovation and technological green evolution made possible by increased capital. As such, binding policy to reduce energy consumption are seen as counterproductive to promoting the capital intensive methods of addressing environmental health put forward in global forums, and therefore have not been advanced (Gould, Pellow & Schnaiberg 2008; Nikiforuk 2012). Currently, this mental paradigm means that economic imperatives have enjoyed the ‘upper hand’ in global discourse, where environmental initiatives are increasingly scrutinized within economic constructs (Lamberton 2005; Schnaiberg, Pellow & Weinberg 2003). Accordingly, belief in, and promotion of the Environmental Kuznet’s Curve (EKC), or the ‘ecological modernization’ thesis, appears popular, whether genuine or out of self-interest, where in the short term economic growth will continuously damage ecosystems, but hypothetically a tipping point will be reached where incomes per capita will become so high that environmental health becomes important to people, and new ‘green’ technologies resultant of wealth may be pursued, in effect reversing destructive environmental trends (Clapp & Dauvergne 2005; Leech 2012; Rosa & Dietz 2003; Schnaiberg, Pellow & Weinberg 2003).
Despite the ideological dominance of economic growth however (a growth reliant on cheap energy and hence fossil fuels), big industry has a vested interest in thwarting any attempts to limit fossil fuel consumption and associated emissions (Nikiforuk 2012), as to do so would potentially wreak havoc on their competitiveness and bottom lines. As such, a good sized portion of profits is invested in protecting this interest through a variety of mechanisms that result in blocking substantial binding action on fossil fuel use, among other environmental initiatives raised at global forums, where money has considerable influence in dictating how much any particular group is allotted space and reception to promote their ideas about environment and economy (Brulle 2009; Hawken 1993; Leech 2012; Nikiforuk 2012). Industry giants have consistently been extremely active in negotiations, by both contributing to debates directly and moulding the ‘opinions’ of governments behind closed doors, or literally in the hallways of the host structure (Clapp & Dauvergne 2005). For example, at Earth Summit, the definition of an eligible NGO attendee was very vague, basically allowing anyone not formally associated with government to represent themselves in this way. As such, both radical activists and organizations that were in reality promoting industry doctrine were able to contribute to the debate (Chatterjee & Finger 2003). That said, big industry, using its capital and already existent highly organized networks, was able to preach ‘louder’ thanks in large part to the special interest think tanks it sponsored and the reports produced that support a growth approach to environmental health (Campbell 2009; Hawken 1993).

For example, the ‘Business Council on Sustainable Development’ (BCSD), operated and populated by the most wealthy of industry leaders, had huge clout in shaping Earth Summit discourse. At the onset, they ‘sponsored’ the conference to a significant degree (a phenomenon far from unique to ‘Earth Summit’, where COP 21 is rumoured to have enjoyed at least 20% in private sponsorship) (Isatis Cintron 2015), and as such were already in a favourable position to dialogue with Maurice Strong about how deliberations would play out. Accordingly, they were able to successfully install and maintain the idea that greener technology given rise through competitive markets and unfettered economic growth was the most promising solution to environmental degradation. Success was clearly demonstrated where Agenda 21 did not seek to enforce constraint on economic activity, but rather hailed business as being central to sustainable development. Further, by lobbying delegates within the conference they were able to squash recommendations that called for regulating and monitoring their activities, and instead advanced the notion that it was best if business be left to police itself, acting on good-faith resultant of a common concern for environmental health. As mentioned, economic and emissions growth today speak for themselves concerning the victory of industry at these forums, where the BCSD has comically been termed the ‘Sustainable Council for Business Development’ by critics upset with their ability to preserve the status quo (Chatterjee & Finger 2003; Clapp & Dauvergne 2005; Hawken 1993).

Industry also uses its massive wealth to in essence ‘trap’ governments and their representatives into advancing industry interests, by creating a debt of sorts through ‘handshake’ deals. In the 1886 case of Santa Clara County v. Southern Pacific Railroad, the United States Supreme Court deemed corporations be regarded as ‘natural persons’ who should enjoy all the same rights and responsibilities as any citizen protected by the Bill of Rights. This was in part made possible, as well as predicated on the Fourteenth Amendment that was added to the Constitution in 1868, which aimed to protect the rights of former slaves. This was a game
changer where political clout was concerned. Where corporate ‘donating’ to political parties and/or individual politicians was at one point considered criminal, corporations seized the opportunity afforded by their newfound identity to expand upon the right of free speech, claiming that prohibiting such ‘donations’ was infringing upon their own rights as ‘persons’. As such, industry was granted ability to inject corporate money into politics without being subject to any penalty or recourse. Today, big industry thus has quite a stranglehold on political affairs (Campbell 2009; Gould, Pellow & Schnaiberg 2008), where large campaign contributions are often welcomed, but contingent upon being vocal in some ways while silent in others, dictated of course by the interests of donors (Hawken 1993). The second ‘Bush’ for example received more money from the fossil fuel industry than any former president to support his bid for presidency, and following his election, anointed more than 30 industry executives and talking heads to important positions (Nikiforuk 2012). As industry interests lie in economic growth largely predicated on a fossil fuel diet, it is not surprising that governments so often fail to challenge this energy path, due to the fact that they have dined on another’s dollar, as well as are also quite interested in growth and surviving within competitive capitalism. This is a major factor blocking progress where emissions reductions are concerned at the global level, where business successfully advances the economic priorities of ‘sustainable development’ far above the ‘social’ and ‘environmental’ sustainability touted in its definition, using the voice of ‘elected’ officials (Campbell 2009; Gould, Pellow & Schnaiberg 2008; Nikiforuk 2012).

Instrumentally speaking, many nations derive a great deal of their gross national product from big industry as well, where oil revenue itself provides the largest source of income for more than 90 nations, as well as upwards of 30% of revenue for more than 30 nations (Nikiforuk 2012). Being big believers in economic growth and trickle-down theory, they thus have a stake in supporting industry goals regardless of the extent to which big business engages in convincing them of their aims. As such, the economic power of the largest companies translates indirectly into serious political power against environmental legislation that might damage profit margins (Clapp & Dauvergne 2005; Gould, Pellow & Schnaiberg 2008; Hawken 1993). Further compounding the global stalemate is that fact that wealthy minority nations routinely refuse to treat with the majority world in an equitable fashion, often by recourse to the idea that it is unfair to expect them to reduce emissions while allowing the majority world to continue to industrialize, as this would hurt their economic competitiveness (Roberts 2009). Of course it appears completely reasonable to demand such, as the minority world is primarily responsible for the climate predicament we have today, however these types of arguments are nonetheless advanced to reinforce resistance to change, in a bid to protect bottom lines in the competitive capitalist jungle. Further, predictions indicate that wealthy nations will suffer least as far as the effects of climate change are concerned (despite that some segments of minority world society are and will be much more vulnerable than others), where a study on climate related deaths and loss of shelter between 1980 and 2002 illustrated that less wealthy nations had rates up to 300 times those of the United States! The minority world also has significantly more financial capacity to insulate themselves against the effects of a changing climate via disaster management plans among other factors. As such, their governments are less likely to support binding energy reforms that might hinder economic growth, and more susceptible to the arguments coming from fossil fuel industries stressing the economic pitfalls of embarking in such reforms (Harper & Fletcher 2011; Roberts 2009). Once again, global action on greenhouse gas emissions has largely failed in part thanks to this reality.
Returning to industry and government motivations, one should not consider the two separate regarding their demeanour or population by any means (Gould, Pellow & Schnaiberg 2008), where despite the radicalizing effect of industry money on government positionality, and the hegemonic ideology of economic growth being shared by both parties, their fused intentions and often complimentary actions are compounded by a revolving door effect, wherein our government representatives are often former ‘important’ industry people, and vice versa (Hawken 1993). The case of Maurice Strong illustrates this well. Strong, as mentioned, has been a key player in global environmental forums, as well as directly in industry, where a short chronology of his career says a lot about public-private interest overlaps. Starting out as an entrepreneur, he climbed his way up to the position of presidency over the Power Corporation of Canada. In 1966, he achieved director of Canada’s External Aid Office which was subsequently named the Canadian International Development Agency. Six years later he was appointed secretary general for the Stockholm conference, and a year following assumed the position of executive director for the United Nations Environment Programme. Then, between 1976 and 1978 he returned to industry, specifically the energy industry, where he served as president of Petro Canada! Following this he became the chair for the International Energy Development Corporation as well as the Canada Development Investment Corporation during the 1980’s. Further, he then went back to the public domain where he served as a member of the World Commission on Environment and Development, and then as the secretary general for Earth Summit. Following this he assumed the position of chair and CEO for Ontario Hydro, and then in 1995 became the senior advisor to the president of World Bank (Clapp & Dauvergne 2005).

There is clearly a pattern here showcasing the revolving door I had mentioned, where we must note that this is not a singular case, but rather just a strong illustration of public-private intimacy. As such, it is not surprising that government stances towards energy and other reforms that might hinder economic activities tend to favour a business as usual approach, where it is difficult to draw a line between public and private interests at this point. Though Stephen Harper was recently ousted from office, he is also widely known for embracing the interests of the fossil fuel industry as synonymous with the interests of Canada. Under his leadership for example, the Canadian “government has actively suppressed the release of vital information regarding the spread of tar sands contamination by muzzling federal scientists” (Linnitt 2012:1), and further, in 2013 the International Monetary Fund has estimated his federal government as having doled out up to $34 billion per year in “direct support to [oil] producers and uncollected tax on externalized costs” (Lead Now 2014:1). Finally, big ‘environmental’ groups (non-governmental organizations whose expressed mandate is some angle of environmental sustainability) often share high level staff with the very corporations we would expect them to fight against (Gould, Pellow & Schnaiberg 2008), and as such, ineffective global efforts to reduce greenhouse gas emissions, if they can even be called genuine efforts at all, can be largely explained by the above illustrated intimacies.

Finally, though this is no reason to avoid enacting ‘hard’ measures on a global scale, there exists a very real technical difficulty associated with energy reforms implementation and enforcement at the international level. This difficulty is two-fold. First, though we can measure the atmospheric concentration of greenhouse gases on a global scale, it is at this point difficult if not impossible to identify what exactly the share of responsibility for each nation or community is, despite it being quite evident that minority world nations bear the brunt of the responsibility.
This is especially the case where transnational corporations officially based in a given nation often set up manufacturing in a variety of locations across the world, either directly, or by contracting their work out. As such, even if we were successful in advancing a binding agreement on emissions reductions, it would be very difficult to regularly measure compliance with the measures. Second, enforcing compliance and delivering penalties for disobedience to global policy is also generally difficult at this point. Though the United Nations exists as a form of international roundtable, it does not possess the powers of a world police. As such, non-compliance with hypothetically advanced ‘hard’ measures taken to reduce emissions would suffer in that such measures have little authority from which to seek recourse. Regarding international pacts, “it is exceedingly difficult to design effective agreements and enforce compliance” (Clapp & Dauvergne 2005:73; Gould, Pellow & Schnaiberg 2008).

Clearly, global ‘efforts’ to mitigate climate change via energy policy reforms are failing for a number of reasons, with Paris having potentially suffered the same fate for these reasons. Whether they be the entrenched hegemony of growth ideology for its own sake (as well as for that of socioeconomic necessity), that it is popular among decision makers to put faith in expanding capital to ‘green’ the economy, that industry has been successful in preserving their own interests at international roundtables, or that government and industry are in effect one voice at this point, whatever the international forum or agency, the for-profit market has successfully “penetrated all forms of government decision making in a subtle and pervasive way…. [where] recently the private sector has had unparalleled power over public policy making” (Gould, Pellow & Schnaiberg 2008:95). It is disheartening, to say the least, that with each new round of talks, a steep climb in emissions has visibly followed (Clapp & Dauvergne 2005; IPCC 2014), barring what positive returns COP21 negotiations may bring about.

As such, the most that can be said for these global environmental forums, resultant agencies and institutions, and associated policies, is that they been weak in effecting positive change, while very effective at shedding light on the powers and private interests standing in the way of progress, especially where energy and climate are concerned (Gould, Pellow & Schnaiberg 2008; Hawken 1993). That said, Canada has been enjoying new federal governance since late 2015, where Trudeau’s Liberals appear, on the surface, highly embracing of climate change mitigation. At COP 21 for example, the Canadian government committed the nation to reducing emissions to 30% less than 2005 levels by 2030 (Sagan 2015). As such, the possibility of breaking the historic and enduring state of global and national level stagnation just described does exist, in Canada at least. However, clearly, the evidence tells us we should not become too hopeful and stagnant ourselves. Further, Canada’s COP21 commitment does not reflect the more drastic reductions the scientific community has called for.

Accordingly, the “patterns of healing and design must arise from all levels of society, [and] not merely the top” (Hawken 1993:218). Thus, if the global community is failing to act (again, assuming COP21 negotiations have simply been a repetition act of former ‘efforts’, and that as Canadians, we need continue to be cautious about putting our faith in the ‘intentions’ of the federal government), it may well be that smaller, local initiatives, provide the best opportunity for (eventual) collective energy reforms and climate change mitigation en-route to becoming SECs. At the very least, local level efforts are generally in their infancy, and thus have not yet demonstrated the same clear pattern of failure that global efforts have, giving us
some reason to focus on them. In the following section then, I explore some local level efforts towards energy reforms in North America, as we continue to claim the overwhelming responsibility for emissions levels today (Gould, Pellow & Schnaiberg 2008; Leech 2012). Despite global failure, and emissions being their highest ever at this point (IPCC 2014), we must continue to attempt mitigation wherever there is opportunity, as continuing to do nothing only guarantees further aggravation of the degree to which climate change will impact life on Earth in the future. Despite success, it is imperative that we do the ‘right’ thing, as our lives attain meaning in this way (Nikiforuk 2012), not to mention that choosing the option that preserves the most ‘options’ in future is a fundamental rule of living for the savvy person.

Looking to Communities as Foundations: Tetris

Canadian communities (i.e. cities, towns, and villages – including both the broader publics and ‘municipal governments as entities’ that populate them) represent almost three fifths of the national energy diet, where a business as usual approach would see an estimated 75% increase in energy consumption by 2050 (Evenson, Margerm & McDonough 2013). This is a scenario we must avoid, especially if we are not fully transitioned to sustainable renewables, and even in such a case, such high consumption would not promote absolute sustainability. Accordingly, communities in Canada have been taking matters into their own hands where emissions reductions are concerned (Greenius, Jagniecki & Thompson 2010; Tozer 2013); where in terms of planning, there is much progress to be excited about. Community energy planning and transitioning off fossil fuel energies has real benefits, including but not limited to keeping money in the community by localizing generation and reducing total consumption expenditure, job creation that accompanies infrastructure retrofitting, reduced long term costs for energy via conservation and efficiency while especially resultant of local renewables production, improving energy security via local generation, heightened energy and ecological literacy, and of course environmental benefits associated with air quality and lessening our contribution to global climate change (Greenius, Jagniecki & Thompson 2010; Khan, Chhetri & Islam 2007).

Across Canada 180 communities, representing approximately half the population, have engaged with constructing a community energy plan (GTI 2016a). While the other half of communities have failed to reach this stage, this can and should be considered a good start where realizing the nation as a SEC is concerned. Using Tozer’s (2013) work that examined Calgary, Vancouver, Halifax, Pickering and Guelph, who as Tozer notes, are generally representative of Canada both demographically and geographically when taken together, we can gain some insight into what it is these communities are planning, what their energy goals are, how they have planned to achieve such goals, and what progress has been made and noted as of 2013, effectively painting a picture of Canada’s local efforts and progress (Tozer 2013). In the following, as well as throughout this work, note that ‘municipal level/municipality/municipal operations’ is used to refer to municipal government controlled structures, activities and services (including vehicle fleets), while ‘public’ refers to the broader public and to emissions resultant of their activities, including for example transportation and household energy consumption. In simple terms, and to identify social actors, the distinction between a municipality/municipal actors and ‘the public’ refers to the distinction between ‘local government owned and operated – as an actor itself, and those within it who have jurisdiction over the municipality as a corporation (mayors and city councillors) as well as various civil servants, in this case working on anything
energy related or a CEP itself”, versus, the activities and possessions of a community’s public citizenry (including businesses, civil society organizations, other public organizations, and individuals) that are outside of local government’s’ direct control regarding reducing emissions.

Calgary, Alberta (my hometown) is a city of approximately 1.2 million people, and is also known for its intimacy with the fossil fuel industry. Still, it finalized its community energy plan (CEP) in 2006, where its aims are to reduce greenhouse gas emissions to well below 1990 levels in the realm of municipal operations, and 2005 levels where the entire ‘public’ is concerned. The intent was to realize a 50% reduction by 2012 for municipal operations, and 20% by 2020 as well as 50% by 2050 at the public level. In order to achieve this, the plan details that certain technologies will be targeted towards the realization of heightened energy efficiency and conservation, as well as generation of renewables (Tozer 2013).

Vancouver, British Columbia boasts about 600,000 people and published its CEP in 2005, where, also using 1990 as a baseline, it intends to reduce its municipal emissions by 20% by 2010, and 6% by 2012 throughout the broader public. According to the plan, Vancouver intends to go about this via transportation planning, purchasing renewable energy in bulk, employing solar and bio-energies for municipal operations, and increasing efficiency and conservation (Tozer 2013).

Halifax, Nova Scotia is a little over two thirds the size of B.C., sitting at about 400,000 residents, and published their CEP in 2007 using 2002 emissions levels as baseline. They intend to focus on research into conservation, efficiency and renewable energy generation, along with land-use planning and transportation management. Further, this CEP considers introducing wood, solar, biofuel, and micro-hydro energies into municipal operations. Their target is an emissions reduction of 20% below baseline by 2012 at the levels of municipality and public wide (Tozer 2013).

Pickering, Ontario is a city of about 92,000 and published its CEP in 2006, where 1995 emissions levels are used as baseline. Pickering’s CEP did not include any recommendations about local generation of renewable energy, and instead simply focuses on measures to increase efficiency and conservation. With those, they intended to reduce municipal emissions by 50%, and public wide emissions by 35% against baseline by 2016 (Tozer 2013).

Finally Guelph, Ontario is a city comprised of some 118,000 people, and published its CEP in 2007, later renamed the ‘Community Energy Initiative’ (CEI) to reflect a transition to implementation stages. The CEI considers average global 2006 emissions and energy consumption levels per capita as baseline, and being a 25 year initiative, strives to realize some drastic reductions by 2031, at the same time as accommodating the energy needs of an estimated 50% increase in population (City of Guelph 2007). Guelph’s methods for achieving their targets are quite robust, and include a focus on efficiency and conservation, producing and employing bio, wind, solar, and micro hydro energies, and more effective private and public transportation management (Tozer 2013). Guelph’s CEI states that “energy use per capita and resulting greenhouse gas emissions will be less than the current [2006] global average” by 2031 (City of Guelph 2007:81), being quite an ambitious, but promising goal. More specifically, Guelph intends to meet the following targets (not exhaustive): Guelph will reduce energy use in the
transportation sector by 25% alongside the population increase via facilitation through alternative transport options and careful urban design (City of Guelph 2007); by 2022, at least 25% of the community’s (public and municipal) entire energy appetite will be satisfied by locally produced renewables (City of Guelph 2007); and by successfully employing all energy and emissions reductions techniques, by 2031, Guelph will consume a mere 50% energy per capita compared to baseline (2006), and emit approximately 40% of baseline greenhouse gas emissions accordingly (note that Guelph’s CEI targets apply to the municipality and broader public together, as previously defined) (City of Guelph 2007). Again, this is quite ambitious, and exciting, especially when considering the predicted population influx.

It appears that Canadian communities have been and are making significant commitments towards mitigating climate change and attaining SEC status, and as such we now examine recent progress on these five plans to paint a picture of just where we are at. Progress at this point (Tozer 2013) is apparent, though not as promising as the sometimes steep targets these communities had intended to achieve. As of 2008, Calgary’s municipal operations had achieved a 34% emissions reduction below baseline, bringing them increasingly close to realizing their 2012 target, however their public level emissions were significantly higher (31%) than 1990 levels in 2003, where recent data does not appear available (Tozer 2013). That said, I would caution against attributing these reduction numbers to their CEP, as the 2008 recession may have been significant in slowing economic activities, and hence energy use. Moving on, in 2008, Vancouver had achieved similar municipal level emissions reductions of about 33% below 1990 levels, however at the public level were slightly (0.2%) above baseline (Tozer 2013), which is not all bad in that ‘leveled’ emissions are hopeful in a global climate that has seen nothing but emissions growth. Further, some data suggests that as of 2010, Vancouver had realized their public target of a 6% decrease below baseline (Province of BC 2016). For Halifax, data on public level reductions is unavailable, however as of their target year, municipal emissions had been reduced to approximately 10% below baseline (2002), indicating significant progress. For Pickering the story is bleak, where in 2008, municipal level emissions had soared to 35.2% above baseline (1995) levels, and public wide emissions had seen a net increase of about 18% also against this baseline (Tozer 2013).

Finally, Guelph is making great progress, where, as of 2012 per capita energy use had been reduced by 17.6% below baseline (2006) and greenhouse gas emissions by 26.3%, despite a population increase of 21.7% in those six years (City of Guelph 2013a). Guelph had proposed some very deep cuts, as well as predicted significant increases in populace, and as such, it appears they are seriously on track to meeting their 2031 emissions reductions targets. Further, in 2014 Guelph received the Sustainable Communities Award for energy from the Federation of Canadian Municipalities (FCM), confirming their progress (City of Guelph 2014). Similar to Calgary however, Guelph’s reduction numbers may be misleading, where the 2008 recession may have resulted in diminished energy use values. Further, much of the credit may be at the provincial level, where Ontario moved from coal to hydro-electricity, effectively decarbonizing the majority of electricity across the province (Herhalt 2013). Nonetheless, in 2016, this research continues to follow up on Guelph’s noted progress.
There appears to be a lot to celebrate where Canadian community energy plans and greenhouse gas emissions reductions are concerned, where four of these five cities, being representative of Canadian communities and the 180 existent plans and progress, are realizing some significant advances towards attaining SEC status, well beyond the planning stages. This suggests that it is in fact true that ‘local’ measures aimed at energy reforms and climate mitigation may be most fruitful in addressing this most pressing contemporary issue. However, Tozer (2013) notes two important points, being that these community energy plans do not line up with the drastic reduction targets that the scientific community stresses in order to achieve climate sustainability, and further, that despite the progress observed in municipal operations, public wide emissions reductions have not materialized to any significant degree. As such, these, and all communities, have a long way to go. Despite the existence of 180 plans across Canada, and some good progress, plans are generally experiencing a ‘lag’ where implementation is concerned, where it is noted that “all communities are facing challenges when it comes to implementation” (GTI 2016b:1). As such, this research is premised upon facilitating that implementation, where the next section explores some commonly identified barriers to community energy planning and reforms that may arise during any phase of implementation. Following this, I discuss the nature of this research in more depth.

Never a Yellow Brick Road… Cracks & Fissures

Most community energy plans premised upon energy sustainability have been drawn up post 2008 (Community Energy Association 2013), and all are running up against barriers throughout the implementation process, regardless of whether the plans are drastic and spanning multiple decades, or less severe in scope and intended to see implementation more quickly. Further, community energy plan implementation, is not, as it sometimes sounds, a process that is either solely in the hands of municipal governments, or achievable if it was (if significant emissions reductions beyond municipalities as corporations is the goal). CEPs are themselves plans, but the realization of their goals requires a great deal of collaboration, whether planned and intended, or by way of various efforts simultaneously reducing emissions in their own ways. It is thus the culmination of dispersed, yet connected efforts, that ultimately achieves CEP goals, and as such, when considering the ‘implementation’ process and associated challenges to it, we must approach it as if a CEP is an umbrella housing many individual emissions reductions efforts (or lack of them where there is need), where the challenges to reaching reductions targets will extend beyond the realm of city hall (as we have witnessed in Tozer’s (2013) work demonstrating that broader public level emissions reductions has been a significant issue).

Moving forward with the following review of literatures that explore community energy planning and transitions then, whatever the initiative under the umbrella, these barriers will range in their nature, as well as take on a unique form dependent on the community and situation. Still, barriers can generally be categorized being of a political, financial, technical, human capital and community capacity, or social nature, where spillover between categories is inevitable.

Political

Politics and variegated priorities can be an issue, where at the onset, despite the formulation of a hard plan, disagreement about the best course of action at any step of implementation can be an issue (Tozer 2013). Whether it be the location of a wind farm or the
selection of projects of scale, municipal actors (heads of government, city councillors and civil servants) may not agree, and this can stifle implementation. Relatedly, interdepartmental communication can become an obstacle to implementation if it is lacking, where for example, when energy planning is not necessarily incorporated into the everyday vision and decision making of all departments (especially those directly related such as finance, transportation and engineering), competing interests may arise, and support for CEP implementation may encounter opposition (Evenson, Margerm & McDonough 2013; Littlejohn & Laszlo 2015; Tozer 2013). Not only can this opposition slow down realization of a CEP directly, but a lack of communication between camps may naturally result in a lot of time being wasted, where similar efforts are not cohesive (Tozer 2013). For example, if one department (transportation planning) is working on bringing forth an initiative related to transport energy sustainability that involves say an extension of public transit systems, while another is more intimately associated with the CEP itself (for example, civil servants who are officially tasked with handling a CEP) and had similar ideas involving ride sharing and bike lanes, a lack of communication may result in competing visions and a need to spend extra time re-aligning interests that could have worked as one should these parties have been on the same page about energy and the CEP from the get go. Conflict between different levels of government, specifically regarding authority, has been recently noted, where a review of 30 CEP’s in Canada saw 48% of them cite this issue as a barrier to implementation (Community Energy Association 2013).

Further, this is not a uniquely intra-governmental phenomenon, where a lack of communication between and among the government and public (businesses, civil society organizations, public institutions, individual citizens) may also fail to locate and address conflicting visions, leaving no room to work through and unite each other’s existent differential priorities, and therefore stifle CEP progress (GTI 2016c; Getting to Implementation: Project Update 2014). Relatedly, realizing CEP goals may go less smoothly when important stakeholders (i.e. parties outside of government that will need to take action to support CEP goals) are not involved in both the planning and implementation processes. If these stakeholders, for example the real estate and development sectors, are not privy to plans nor given opportunity to offer their voices, support for a CEP may be diminished in spirit and practice (Greenius, Jagniecki & Thompson 2010; Littlejohn & Laszlo 2015; Omer 2008). As municipal governments do not necessarily have any massive authority over various privately owned lands or development projects, excluding key actors may solicit a stalemate political climate (Tozer 2013), in which for example developers do not, or refuse to see the long term benefit in energy reforms, and thus while working to maintain the lowest cost for themselves (and potentially their customers in terms of securing business and thus furthering their bottom lines) in the short term, may refuse to build and operate in ways that would better support CEP targets (GTI 2016c). Closing off the lines of dialogue and effectively excluding some voices may result in a communicative climate that becomes hostile and thus counterproductive to CEP implementation. Further, advancing a CEP without room to accommodate where competing interests are concerned (very much tied to open lines of communication) may certainly breed contention with key stakeholders, and stifle cooperation, blocking progress on implementation (Greenius, Jagniecki & Thompson 2010).
The absence of a solid political leader dedicated to advancing a CEP, as well as support from both the mayor (potentially that leader themselves) and from city council broadly, can seriously hinder the realization of the vision. A government energy culture that fully (i.e. across public servants, departments, councillors and the mayor) believes in and supports energy reforms may be lacking, and these factors can act as roadblocks to implementation (Community Energy Association 2013; GTI 2016b; GTI 2016c, IPCC 2014; Littlejohn & Laszlo 2015; Tozer 2013). If for example the culture is heavily geared towards business attraction and job creation, and there is no strong voice to introduce and maintain a link to energy as fundamentally related (for example, in building the ‘brand’ of a city, or making the link between the retrofits that need to be done and the large amount of employment that might follow), CEP implementation may end up relegated to the backseat despite its potential to work with and benefit other visions and initiatives. Additionally, if a clear long term vision for a CEP does not exist with those in or outside of government attempting to advance the plan, it may deter support from some key voices (Greenius, Jagniecki & Thompson 2010), as objectives may not appear to line up with more holistic community building initiatives (for example, improving public health, which could certainly work with emissions reductions through encouraging walking and cycling), and support for other more far reaching propositions may take precedent. In this domain, a lack of prompt information sharing (between and among municipal and public actors), and high governmental staff turnover (especially where long-term visions like Guelph’s 25 year plan are concerned), may result in little cohesion in the implementation process (GTI 2016c), where this process ends up fractured and slowed down due to uninformed and thus unmotivated decision makers and other actors in both the government and the public sector. Issues with sustaining momentum amongst those involved are prominent, again especially where a CEP is extended in time-scope (Community Energy Association 2013).

Jurisdiction, municipal authority, and energy policy at the provincial and national levels are also key barriers that can adversely affect the implementation process (Community Energy Association 2013; GTI 2016b; Littlejohn & Laszlo 2015; Omer 2008; Tozer 2013), despite how robust and promising a CEP is on paper. Where measures aimed at increasing conservation and efficiency are concerned, municipal governments generally have the freedom to allocate their funds and efforts accordingly, and in the public sector, it becomes a matter of convincing stakeholders to get on board as well, where this is not uneasy as financial returns are in effect immediate. However, the local generation of and transition to reliance on renewable energies can become messy. It is sometimes the case that higher level government policies may favour traditional energy providers, where binding long term agreements between provincial and/or national authorities, and large scale energy providers may prevent the realization of certain elements of a CEP because they legally conflict with existent arrangements (Greenius, Jagniecki & Thompson 2010). For example, if a CEP intends on centrally sourcing a large fraction of its energy diet from local renewables, it may encounter conflict where a private organization has already claimed the provision related rights through a deal signed with the provincial government that spans multiple decades. Further, public solar uptake might be stifled if higher level policy does not encourage distributed generation (for example, allowing individual solar outfits to sell surplus energy back to the grid at an attractive rate, which makes the economic case more attractive). As such, policy that effectively facilitates the transition to renewable energies, especially when generated locally and independently, may be lacking and act as a serious roadblock to implementation for some aspects of CEPs (GTI 2016c; Littlejohn & Laszlo...
Further, if a municipal government lacks the political capacity and expertise in human resources to effectively treat with such regulatory challenges, CEP practitioners (i.e. municipal actors attempting to implement a CEP) may find themselves all but stuck in realizing some of what had been planned (Greenius, Jagniecki & Thompson 2010). Higher level policy that hinders local energy reforms is a prominent barrier to CEP implementation (Omer 2008), and municipal governments can have a difficult time maintaining sovereignty over energy affairs when issues of ‘legality’ are introduced (Tozer 2013). Finally, municipal ability and authority also finds its limits when it comes to changing community wide energy culture, the nature of consumption patterns, and behaviour in general, especially where regulatory mechanisms do not exist (Littlejohn & Laszlo 2015; Tozer 2013). Local governments may thus encounter significant issues related to changing individually determined public wide energy practices, where governments cannot necessarily ‘mandate’ that measures aimed at increasing energy efficiency, conservation or transitioning to clean renewables be adopted, which may significantly stifle overall progress on CEP goals and implementation. This has been clearly demonstrated in Tozer’s (2013) examination of public level emissions within the five Canadian cities previously discussed. Overall, municipal authority has serious limits, and this can damage the realization of CEP targets.

Financial

Of course politics and financial matters are intimately bound up together, and it is no surprise that municipalities can run into serious hurdles when it comes to securing and applying funding to energy infrastructure overhauls (GTI 2016b; IPCC 2014; Tozer 2013). At the onset, CEP implementation may be slowed down or halted because of a disagreement between city staff (both public servants and city councillors/mayors who, as per their authority, ultimately evaluate and make choices based on the recommendations of public servants) about how existent funds should be spent (IPCC 2014). At the onset, these parties may have different ideas about what the public want, which politicians generally try and carry out in an attempt to preserve their seat in government (Lenihan 2012). For example, some city councillors, more than others, might perceive that emissions reductions are not a public priority (and indeed they may not be). Additionally, the value of moving away from fossil fuels might not personally resonate with all decision makers, in terms of fossil fuel use being a problem, or, recognizing the variety of benefits embodied in reducing greenhouse gas emissions (economic, environmental, human health, employment, social equity). Speaking to economics, despite that CEPs often promise economic gains in the long run, short term issues, like personal vehicle infrastructure, may be regarded as more pressing, and thus more immediate projects may enjoy favour. Long term investments are generally more difficult to sell to investors, in this case being the municipal civil servants of various departments (and the councillors and mayor that ultimately make the decisions), where CEPs often require large up-front capital commitments, while the return on investment can take significant time to manifest on paper. As such, politics can be dividing where the allocation of municipal funds is concerned (Greenius, Jagniecki & Thompson 2010; Littlejohn & Laszlo 2015; Omer 2008).

On that note, CEPs (municipalities and public participants) often pick ‘low hanging fruit’ (conservation and efficiency) as a first order of business, where less dramatic acts, such as replacing lightbulbs in city hall may take priority over more fundamental, high impact reforms to
energy circulation and consumption systems and infrastructure (Tozer 2013). This is understandable, as it is a great way to demonstrate early success to garner support, as well as practical and necessary to the larger energy and emissions targets. However, some communities may encounter hurdles when it comes to moving beyond these initial initiatives (GTI 2016c; Getting to Implementation: Project Update 2014), where (as alluded to above) for example it is much more costly as well as difficult to convince stakeholders (municipal or public) to invest in renewable generation than it is to better insulate their buildings (assuming renewable generation would be higher impact in reducing emissions in most places, however as mentioned, Ontario’s electricity generation is largely carbon free). This brings us back to return on investment, where low hanging fruit usually deliver quite quickly, while the latter do not (Tozer 2013). As such, communities may find it difficult to move beyond only incremental emissions reductions in this way.

This barrier is further compounded by the often limited and squeezed budgets municipalities are already constrained by (Greenius, Jagniecki & Thompson 2010; GTI 2016c; Littlejohn & Laszlo 2015). As such, local governments might turn to private, provincial or national bodies in order to secure funding for CEP implementation. When soliciting higher levels of government however, things may be easier said than done. Provincial and national infrastructure visions often play a key role where securing funding for a CEP is concerned. Access to this funding can be inhibited where higher level governments see the funds as going above and beyond the traditional infrastructure budget, rather than considering CEP actions as natural extensions and thus integrated pieces of necessary infrastructure (Greenius, Jagniecki & Thompson 2010; Tozer 2013). As such, provincial and/or federal governments may decide against allocating money towards CEP implementation, as they may consider it a misuse of the budget, if their developmental visions do not embody and embrace energy reforms. Higher levels of government have significant discretion over where transferred monies are spent, and the nature of their vision for such funds can act as a huge financial barrier to CEP implementation.

Short term cost effectiveness is a very real and legitimate concern, where traditional energy sources, being primarily fossil fuels, are heavily subsidized by our governments to keep the price low and consumptive industries booming (Pellow 2009). As such, again, it is not ‘apparently’ cost effective to spend monies on non-competitive energies that CEPs often envision, where sticking with traditional fuels will surely save money in the short term (Greenius, Jagniecki & Thompson 2010; Hawken 1993; Omer 2008; Tozer 2013). This is another way that municipal staff (civil servants, city councillors, and mayors) may become torn in their support for CEP initiatives, as the economic climate clearly favours a business as usual approach to energy. Further, CEPs generally incorporate a vision for a public-communal (business, civil society organizations, public institutions, ordinary citizens) role in carrying out the overall plan, however given the economic paradigm, it can become quite difficult to convince these external stakeholders to adopt the reforms envisioned, despite the eventual return on investment (project dependent) (Greenius, Jagniecki & Thompson 2010; Tozer 2013).

In a nutshell, a lack of federal and/or provincial subsidization of clean renewable energy technologies and transitional efforts alongside a heavy subsidization of traditional fuels promotes opposition to energy reforms in theory and practice (Clapp & Dauvergne 2005; GTI 2016c). As such, the realization of CEP goals both within and outside of municipal jurisdiction can be
hampered via these economic disincentives. Given that municipalities might be heavily reliant on effective cooperation with higher levels of government and public stakeholders for seeing their energy transition manifest as imagined, it is clear that the reality and perception of cost effectiveness can position itself as a substantial barrier (Schweizer-Ries 2008; Tozer 2013). The money must come from somewhere, but the day-to-day competitive nature of capitalism does not favour such long term investments (for most people, as most people don’t have a lot of capital ready to liquidate as an investment), where for example real estate developers tend to answer to their customers first (which is often in effect themselves). As such, CEPs face significant barriers related to financing overhauls, whether they be a literal lack of initial funds, an unfavourable economic climate, and/or an unwillingness to sacrifice in the short term on the parts of any and/or all levels of government (and the decision makers within such governments), and public actors who also consume various amounts of fossil fuels (Community Energy Association 2013; Greenius, Jagniecki & Thompson 2010; Omer 2008).

CEP practitioners (municipal actors attempting to implement a CEP) may feel quite isolated as far as their energy visions are concerned, largely resultant of practical economic constraints that inhibit the existence of supportive partners and participants, where various city councillors and public actors are not motivated to participate in achieving CEP targets in which a financial loss is guaranteed in the short term, while profits may only be barely visible on the horizon (for example, generally speaking a solar outfit will take 10 years to pay itself off in Ontario). To illustrate, the City of Guelph (in this case, the public servants who oversee the CEI implementation process) might have (and may in fact have had) a tough time convincing Stone Road Mall to invest in measures geared at energy efficiency and conservation, where a business as usual approach is already working quite well for them. Helping to finance a municipally run renewable energy operation, or for example, outfitting the roof with solar reception to aid the City in advancing the CEI goals, would cost significantly more than the former measures, as well as take much longer to deliver where financial gains are concerned. Accordingly it is easy to see how opposition to participating in and carrying out CEP initiatives might breed in an economic climate that not only fails to factor in various externalities associated with traditional fuels (discussed in the context of climate change), but actually sees their price tags kept artificially low.

Technical

CEP target realization may also face various technical barriers that can stifle the implementation process. Currently, energy infrastructure promotes centralized generation and distributional patterns; however, attempting to introduce non-centralized pocketed renewable generation hubs (distributed generation) can pose problems. As such it is the case that some communities may experience significant limitations where the ability of existent infrastructure to accommodate new modes of production is concerned (Greenius, Jagniecki & Thompson 2010). Whether that be related back to finances and additional burdens of remodeling infrastructure to integrate new generational processes, or limits to the existent distributional capacity, technology can become a barrier to energy reforms and transitions. Further, communities must confront the issue of storage when dealing with renewable energies (Greenius, Jagniecki & Thompson 2010; Omer 2008), which also relates back to financial and technological constraints that may hamper CEP target realization.
Additionally, globally speaking, renewable energies such as wind and solar have the capacity to supply the energy needs of the world over, however, as CEPs focus only on the scope of energy consumption within their geographical boundaries, issues related to the availability of these energies can also pose a problem to CEP goals where generation and capture are concerned (Omer 2008). Each community will have to contend with the weather, where in the cases of wind and solar, some get a lot more than others! As such, geographic region can pose a threat to the promise of local renewables generation. To illustrate in relation to solar energy, Calgary, being the sunniest city in Canada, averages about six and a half hours of rays per day, while on the opposite end of the spectrum, Prince Rupert, B.C. only gets meager half of that (Wikipedia Contributors 2016b, 2016d). Additionally, transportation is also a primary focal area in CEPs as it accounts for a large portion of greenhouse gas emissions, however for some communities, addressing it in a practical and environmentally friendly manner can ‘technically’ be quite onerous, presenting itself as a barrier to the realization of overall CEP energy and emissions targets. This is especially the case in the northern regions of Canada, where communities are very small, and remote, and where the necessity of commuting to acquire basic goods such as healthcare or education is only amplified because of it. As such, CEP energy targets can be hampered where there is limited viable opportunity to accommodate the transport needs between distant pockets of community actors and services. Low density combined with high distance between communities or areas within them may act as a deterrent to, for example, a municipality building robust public transportation systems that would get people out of cars, where the investment is simply not feasible based on projected ridership.

**Human Capital and Community Capacity**

Achieving CEP targets may also be burdensome where communities possess limited degrees of social actor ‘experience based’ and personnel resources. First, broad support for a CEP may dwindle where a community (municipality and broader public) either lacks the human resources or technological tools to monitor emissions changes and financial gains, and/or, simply does not allocate resources to engage in timely monitoring and reporting of significant and relevant data related to early CEP results (GTI 2016c; IPCC 2014; Littlejohn & Laszlo 2015). When progress is not made apparent, due to either an inability or failure to track and communicate such progress, key stakeholders (including government decision makers and the broader public) may be less inclined to continue lending their support, and thus implementation efforts can lag resultant of becoming caught up in political conflict (coming from municipal or public actors) stemming from the lack of clarity where return on investment is concerned (Greenius, Jagniecki & Thompson 2010). Data, monitoring, and progress reporting can assume themselves as significant barriers to the implementation process, slowing momentum, should they be lacking, especially where demonstrating early success is concerned.

Human resources are key to any project, and where they are lacking, communities may encounter hardship related to CEP implementation and maintenance (GTI 2016b). At the onset, municipal resources may be strained, where a municipality simply does not have enough people or money (potentially perceived) to create enough dedicated positions related to the CEP and aspects of implementation (Community Energy Association 2013; IPCC 2014). CEP implementation is a lot of work, and a lack of public servants whom can dedicate their full attention to soliciting public support, monitoring progress, treating with provincial and/or federal
governments as well as private industry to name a few, can manifest into ‘weak’ results on all fronts, where those who are assigned may be significantly ‘time poor’, diminishing both the quality and quantity of work that can be done. Further, the capacity of a municipality (public servants, city councillors and mayors) to effectively engage with CEP initiatives may also be ‘less then’ adequate, where despite dedicating the human resources, those charged with various duties may not possess the experience to get the job done in a timely manner as well as to a high degree of quality (GTI 2016c; Littlejohn & Laszlo 2015; Tozer 2013). This is a barrier specific to the personnel mosaic of various municipalities.

Additionally however, this challenge can naturally extend beyond municipal personnel, where experience and capacity within the extended public may also be lacking, leading to the same issues, being a weakly backed CEP initiative (Greenius, Jagniecki & Thompson 2010; Tozer 2013). Where a community is rather void of expert technical energy advice and skills, not only can the planning and implementation/transitional processes run up against hurdles, but there is also the very real issue of actually installing, running and maintaining new technologies that are often at the heart of efficiency, conservation and generation. If dedicated and competent persons are not immediately available, a CEP can fall on its face despite how promising it appears on paper (Greenius, Jagniecki & Thompson 2010; GTI 2016c). Furthermore, and directly related to the robustness of a CEP, some plans may amplify these human resource related roadblocks by overextending themselves, where engaging with too many initiatives composing the CEP targets may place significant strain on a municipality’s ability to effectively advance the process, whether that be engaging the broader public and soliciting support and participation, overseeing the transformation of the municipal corporation, monitoring and reporting progress (i.e civil servants towards city councillors and mayors, and the municipality towards the public), or maintaining new infrastructure (broader public, in coordination with the municipality) (Community Energy Association 2013). Human resource constraints can clearly hamper the ability to demonstrate early success and maintain support, and CEPs may thus encounter serious threats to realizing their targets when communities lack adequate human resources to effectively engage with the entirety of the transformational process.

Social

Finally, there are social barriers, often reflected in the broader public, however also existent within decision maker circles that, as noted, often pervade political and financial domains. First, support for a CEP amongst key stakeholders (public actors, civil servants) and decision makers (city councillors and mayors) may be adversely influenced where there is a lack of simple and straightforward data related to energy use and associated finances. Our governments are busy, and thus long reports dressed in technical language can function as deterrents to even engaging with the idea of implementation. Further, when a CEP is going through the implementation process, progress in financial and energy sectors can be difficult to demonstrate, where access to more specific data illustrating energy consumption patterns demographically and geographically can be difficult to come by, as energy providers or landowners may withhold it while touting the paramount importance of confidentiality for their consumers (Evenson, Margerm & McDonough 2013; GTI 2016c). Therefore, even if a CEP is in effect making good progress where emissions and financial savings are concerned, ongoing CEP
support among municipal and public actors may be compromised due to an inability to actually demonstrate success in a specific manner.

Moving on, public support itself has the potential to make or break the realization of CEP initiatives, as in the end governments do (or are supposed to) answer to those they are tasked with representing. At the onset, energy literacy can present itself as a serious roadblock (Greenius, Jagniecki & Thompson 2010; GTI 2016c; Omer 2008; Schweizer-Ries 2008). Despite the scientific consensus, there are parties actively working to advance a myth that climate change is not resultant of our energy habits, where this type of propaganda has enjoyed a ‘not insignificant’ degree of success for a variety of reasons not indulged in this research. Accordingly, there are social pockets of all communities who do not perceive a problem, where this can result in active opposition towards energy reforms (Franklin, Newton & McEntee 2011; Hawken 1993; Roberts 2009). Public culture, and the degree to which environmental health and sustainability are integrated and exist as legitimate issues, can thus act as a barrier to garnering support for CEP initiatives (Greenius, Jagniecki & Thompson 2010; GTI 2016c). Further, where there is little belief in an ecological issue with the energy we use, there may be faith in the economic superiority of fossil fuels. Luckily, these people are the not the majority, at about 39% in Canada according to recent data (CBC 2016), however public opposition to CEP initiatives may come about via other venues of manifestation. If cohesive social networks or, strong ‘communality’, is weak, and solid community leaders whom are intimate with the populace are non-existent, engaging and sustaining community support can be difficult (Dale & Newman 2006; Greenius, Jagniecki & Thompson 2010), especially when a CEP is long term. As such, CEPs may lose priority in the public eye as new issues come forth. As mentioned, voter base support for any initiative is key to success, and a lack of communication and solidarity building within the public surrounding CEP aims can diminish such backing (Dunn & Steinemann 1998).

Additionally, if municipal staff (including civil servants and city councillors who are in favour of advancing energy reforms) are unable to, or simply do not, effectively engage the public in the construction and implementation processes, support is likely to dwindle while suspicion manifests. Democratic progression of a CEP can be empowering and garner serious support, however failure to communicate with and ‘hear’ the greater public has the potential to foster opposition (Dunn & Steinemann 1998; Greenius, Jagniecki & Thompson 2010; Khan, Chhetri & Islam 2007). Failure to share key information, be transparent about CEP initiatives, and give the public a real voice in the planning process may result in a misperception of the benefits of the plan (leading to disbelief in its merits), as well as for example that public funds are being squandered on unnecessary projects, effectively creating the perception that the government is not working for the public at all (Greenius, Jagniecki & Thompson 2010; Schweizer-Ries 2008). This can be a serious threat to gaining and sustaining support, especially where it is the case that part of achieving CEP targets often includes direct investment in emissions reductions (and associated financial savings) in municipally owned buildings (the municipality itself), where the larger public does not necessarily reap direct benefit. Of course a big part of this reality is that municipalities do not have control over privately owned lands and thus are effectively relegated to retooling their own infrastructure; however this may be irrelevant to public opinion, where public money is expected to translate into public benefits.
On the topic of public benefits, opposition to a CEP can gain momentum where there is either a misperception of the actual benefits, a lack of them, and/or that they are unevenly distributed despite being resultant of public monies (Greenius, Jagniecki & Thompson 2010; Schweizer-Ries 2008; Tozer 2013). For example, despite that CEPs tout job creation, pockets of the public may not swallow the argument so easily, where a belief in cheap energy as supporting a trickle down economy might be strong. A lack of public benefits may materialize where municipally owned infrastructure retrofitting does not result in energy savings for the public, or, where investment in renewables at the level of municipal utility providers will not immediately translate into lower consumer costs, fostering opposition to such investments. Further, it may be the case that certain pockets of the community are selected over others for projects of scale, where despite a vision that includes the community in its entirety, the perception may be that some are enjoying favour at the expense of others (Greenius, Jagniecki & Thompson 2010; Schweizer-Ries 2008). This can be apparent for example, where extending public transit services are concerned. In Calgary, initial extensions that took years to complete certainly favoured more affluent neighbourhoods. Despite that there are arguments to be made about who gets picked for initial CEP initiatives, it is the case that everything cannot be done at once, and this inevitably leaves some pockets of the public feeling ignored, regardless of the fact that they may indeed have a place in line. These types of barriers are intimately bound up with those that emerge resultant of quiet communication lines between planner and the public themselves.

There are also techno-social related barriers to CEP implementation regarding environmental aesthetics and quality of life, where a failure to be cognisant of such factors can seriously stifle public support (Greenius, Jagniecki & Thompson 2010; Schweizer-Ries 2008). For example, while there may be support for renewable generation and a genuine belief in the ‘down the line’ financial as well as environmental benefits, the misplacement of infrastructure can foster public dissent and even outrage. Visual and auditory intrusions can significantly impact a person’s perceived and/or experienced quality of life (where perception and experience are all but the same), where for example, large solar or wind farms that expunge previously enjoyed views or create a constant ‘humm’ where there was previously serene silence, have significant potential to create opposition to CEP activities (Schweizer-Ries 2008). As mentioned, a failure to involve the public in the planning and implementation processes has great potential to act as a barrier to implementation, by evoking opposition directly (via mistrust), or indirectly such as in the scenarios above.

Finally, there is the issue of successfully realizing behavioural changes, and/or the uptake of various programs, initiatives or technologies within the greater public in order to line up with and succeed in realizing CEP emissions reductions targets. Where small changes are concerned, such as taking shorter showers, engaging with blue bin programs, or choosing to walk to work, action is largely out of planners’ hands (Tozer 2013); where individual and group consciousness, as well as social practices related to environmental health may in part determine adopting these changes (Hargreaves 2011; Reckwitz 2002) (while other social factors certainly have a role to play, including for example physical ability to walk, location of residence in comparison to work, and even the quality of public transit in a given neighbourhood). As mentioned, a failure to engineer a popular ‘progressive’ environmental consciousness can contribute to hampering the achievement of CEP emissions targets where individual behavioural change is concerned (Greenius, Jagniecki & Thompson 2010; GTI 2016c). Behavioural change
is not however the end of it, where significant emissions reductions across the public may depend on updating personal infrastructure. For example, encouraging the installation of low flow toilets to energy efficient appliances to outfitting one’s roof with solar panels may be part of a CEP’s vision for the public. However, the realization of public level emissions targets may be hampered due to financial constraints, perceived cost effectiveness and necessity, and a failure of public actors to take advantage of initiatives that facilitate such activities (Greenius, Jagniecki & Thompson 2010; GTI 2016c; Schweizer-Ries 2008).

Citizens may be quite interested in saving energy as well as ensuring that which is consumed is clean and renewable, however some pockets are deeper than others, and as such immediate financial security, despite savings in the long run, may assume primary importance. Further, there may be disbelief that certain activities are in fact cost effective. For example, purchasing an electric vehicle is popularly regarded as environmentally friendly, despite the fact that charging stations across Canada still derive their much of their energy through coal combustion, barring Ontario, who happens to tip the Canadian average to over 50% of electricity produced being coal free. Nonetheless, these cars are significantly more expensive than those powered by traditional fuels, where a person who drives an average amount of kilometres per year would have to drive the car for between ten and fifteen years before recouping the additional investment and actually realizing a savings (Loiseau 2013)! Few people keep a car for that long, and this is reflective of the scenario where certain energy savings measures, such as substituting efficient appliances, may not be perceived as, or actually be, cost effective in the long run. Most people move several times throughout their lives (on average every five years here in Guelph), and in this case, the savings down the line would be accrued by incoming tenants! To indulge the case of solar roofs, the value of one’s property would likely increase significantly, however again, it would cost in the realm of $40,000 to do so (with the investment potentially recovered in as little as ten years however, via generating and selling additional unused energy) (Eco Alternative Energy 2013). Upfront costs are a big part of social opposition to individual behavioural modification and infrastructure updates within the home unit, and further, it has been noted that the end user uptake of initiatives aimed at facilitating change, such as subsidization for low-flow toilets or LED lightbulbs, is often weak (Greenius, Jagniecki & Thompson 2010; GTI 2016c). All of this together may result in a failure, to varying degrees, to reduce emissions across the public, and/or a lack of support for municipal initiatives, effectively undermining the full implementation and realization of CEP energy targets. The barriers to implementation are many, and appear given rise to by a failure to collaborate with all necessary parties, associated competing visions and priorities, a lack of techno-social capacity, and finite financial resources. However, barriers need not necessarily bury us, and being aware of such obstacles is of primary importance should we intend to avoid succumbing to their weight.


In order to avoid and overcome various challenges to emissions reductions, and ultimately reach the targets we set, a guiding strategy, or approach, is useful. As such, I use this section to discuss some ways in which effecting environmental change has been conceptualized, and specifically, what various approaches identify as effective ways forward regarding emissions reductions. Moving from market oriented individualistic approaches to collectively based
strategy, I illustrate who and what might best move us forward, and how various approaches work. Further, I discuss some ways in which various approaches might be limited in their ability to fully and effectively engage with the issues of this research (i.e. effect a substantial shrinking of carbon footprints), ultimately allowing me to argue for and settle on an alternative form of local energy governance (the ‘Public Engagement’ approach) as a highly promising venue for drastically reducing emissions in our communities. This final approach (theory of social change) is then used to inform one of two analyses performed on the primary data, and the recommendations that follow.

Ecological Modernization Theory posits that reducing emissions will be primarily the result of competitive consumer markets, capitalism’s impetus towards reducing costs, and individual economic rationality (Mol, Spaargaren & Sonnenfeld 2001; Mol & Spaargaren 2000; Spaargaren & Mol 1992; Young 2014). Accordingly, while the business community, along with ordinary citizens, act to minimize unnecessary capital expenditures, they will seek to reduce energy use by adopting technologies that improve efficiency, promote conservation, and even produce renewable energies. Also known as Spontaneous De-carbonization, the assumption is that economies will gravitate towards producing reductions in greenhouse gas emissions if attractive market conditions exist, where investment will follow revenue generating opportunities linked to reducing fossil fuel consumption (Whitehead 2013). In other words, if the price and associated return on investment are favourable, technologies that help mitigate climate change will naturally be adopted, and, the price will in fact be favourable (eventually) as market competition facilitates efficiencies and in theory, lower consumer costs. In this scenario, technology is the key to reducing emissions, and the market itself is the primary agent of change (Fisher & Freudenburg 2001).

Accordingly, the public appear regarded as consumers alone, and their primary role is to invest in themselves (including the business community, civil society organizations, and ordinary citizens). As for governments (of all scales), apart from also adopting technologies, their role is primarily bound to enabling favourable market conditions, or in other words, incentivizing the business community and broader public to invest in environmentally friendly technologies. Here, governments focus on policies and programs that make investing in emissions reductions more economically attractive than sticking with the status quo. Direct subsidies, targeted tax breaks (or increases), and special loan programs directed at both producers and consumers of technologies, are examples of what exist in this realm (Fisher & Freudenburg 2001; Whitehead 2013; Young 2014).

While there is of course a role for markets in the mitigation process, where competition and innovation will certainly be important, Ecological Modernization theory, and Spontaneous De-Carbonization, are in a number of ways, potentially limited in theory and practice. First, market focused theory such as these are passive insofar as action is concerned (where I argue that ongoing climate change certainly requires active, deliberate, and immediate responses) (Klein 2014). Mitigation is not so much treated as a set of deliberate and pro-active endeavours, but rather is more regarded as, and embodies a sort of wishful thinking that the drive for profits and bottom lines will naturally steer the for-profit market (which touches almost every aspect of our lives) towards energy sustainability, and that consumers will uptake products accordingly (Buttel 2000). On that note, it assumes that minimizing costs will coincide with minimizing emissions,
which is certainly not always the case, especially when we look for short-term return on investment. Additionally, market centered theory such as these seem to ignore how the thrust of capitalism has played a determining role in the energy crisis on our hands at present (Gould, Pellow & Schnaiberg 2008; Klein 2014; Mol & Spaargaren 2000), which further problematizes the thinking that ‘things will take care of themselves’ (albeit with some government intervention). Further, this type of thinking seems to ignore the necessary role and work of civil society organizations, including advocacy, education, and helping induce behavioural change such as taking public transit or actually spending less time and money in shopping malls (for an example of these roles/actors in practice, see Cummings (2013)). As such, this passive mode of mitigation also seemingly casts aside the value of collective human and social capital (especially closer to the grassroots level) in inducing change, instead primarily putting faith in the business elite. Finally, this type of thinking ignores the question of access to markets (power and social contexts (Blowers 1997; Leroy 1996)), seemingly assuming that everyone has the necessary capital to uptake, and/or that the market (along with some government intervention) will ensure that products are affordable for everyone, at least at some point. As such, while there is of course a role for markets in producing increasingly affordable environmentally friendly technologies, Ecological Modernization appears limited in theory and practice (Fisher & Freudenburg 2001), and therefore to approach mitigation solely in this way appears dangerous, and less than poised to effectively address the climate crisis. Accordingly, I now turn to more active theories of environmental change.

Moving away from a market centered approach, we now examine the individual as both the active and passive negotiator of change, with a focus on behaviour (which of course might include consumer activities associated in part with technologies that reduce emissions). First, a Theory of Planned Behaviour (Hargreaves 2011) posits that individual actions are resultant of intentions, and, that intentions (what one wants to do or accomplish) are comprised of how an individual views and evaluates a behaviour (a function of subjectivity and their perception of what others think), as well as the extent to which they believe they have agency. Accordingly, to change a behaviour from anti to pro-environmental (for example, from driving to cycling), this way of thinking posits that the primary focus be on changing the way individuals think about various actions (including what they think, know, and why), and the differential value awarded to various personally negotiated understandings of their behaviours (Hargreaves 2011). Basically, this theory posits that inducing pro-environmental behavioural change is primarily dependent on creating an understanding of the link between an individual’s behaviours and ecological systems, as well as scaling up pro-environmental valuation in social actors.

In this light, reducing emissions centers on education directed at a broad spectrum of social actors (seemingly anyone whose actions contradict the principles of environmental sustainability, however that is defined). As such, governments, businesses, media, public institutions, civil society organizations, and ordinary citizens’ role is defined as comprising of research on how to effectively change attitudes, and then carrying out the associated educational agenda, each according to their respective capacities (human, social, financial capital) and interests. Regarding such roles and capacities, they are often actor dependent and specific, where different social actors often perform different tasks, but where there is also overlap and collaboration (for an example, see Cummings (2013)).
On the somewhat abstract flipside, a Theory of Social Practice tries to turn behavioural change on its head, leaning more on collective norms. Basically, this theory advances the idea that the way in which people behave is not so much the product of individual beliefs, knowledge inventories, and values, but rather, of an unconscious conditioning to, as well as active negotiation of, socially sanctioned routines. In simple terms, Social Practice Theory posits that behaviour is the result of sustained collective ways of doing things (for example, discarding all our ‘wastes’ into a single bin versus separating them into recycling, compostable, or landfill bound) – habits, routines, norms – where the individual is both regulated (unconscious) by the practice as well as actively negotiates their relationship to it. Here then, the creating behavioural change (low carbon) moves beyond individual education and value shifting, to actually transforming the routine as it is collectively practiced (normalizing different ways of doing things, including the actions and associated understandings/meanings attributed). In this way, behaviours and routines are not seen as primarily personal qualities, but rather of unconscious and active negotiations of patterned behaviours to which a person is a carrier (for example, the ‘pattern’ and norm of what ‘falling in love’ ‘is’). Regarding changing patterned collective behaviours, it is thought that there must be some sort of ‘upset’ to the routine that forces a re-negotiation and understanding of the practice/pattern itself, where this can come internally (from within a community of practice) or externally (where different practices and/or communities of practice come into contact). In essence, the behaviour itself (not the individual mind) must be problematized and re-constituted in mind and practice, leading to alternative routines, and associated meanings and understandings (Hargreaves 2011; Reckwitz 2002).

Regarding social roles and responsibilities, Social Practice theorists seem shy about identifying who might spearhead the upsetting of various practices. This seems natural given its proponents’ opinions on how behaviours happen and are maintained, where in essence, it appears they are regarded as a blend of chance events, culture, and agency. This way of thinking thus provides little immediately applicable direction on how to actively change ‘social practices’. Despite that both Social Practice Theory and a Theory of Planned behaviour do provide important theoretical insights as to how we might (or should) approach reducing emissions as individuals and collectives, they have shortcomings that make me wary that their approaches are unfit (at least alone) to effectively address the climate crisis. First, in narrowly focusing on changing individual attitudes and understanding towards human-environmental relationships, a Theory of Planned Behaviour fails to account for the differentially imposing forces of larger contexts in which individuals operate (Hargreaves 2011), overlooking that knowledge and attitudes do not determine behaviours in a vacuum, and as such overlooking that a focus on creating pro-environmental knowledge and attitudes will not necessarily result in matching behaviours (Kollmuss & Agyeman 2002). To illustrate, we might again consider how socio-economic status affects access to markets, as well as how acting according to personal values is sometimes foregone in favour of cultural norms (for example, wrapping gifts to serve tradition – which would appear to lie in the domain of Social Practice Theory).

Moving back to Social Practice Theory, I argue that its shortcomings regarding inducing pro-environmental behavioural change lie in its level of abstraction. As mentioned, investigating and understanding behaviour using Social Practice Theory certainly appears to be quite interesting and valuable, however in my opinion, its method of interrogation is not suited to producing prompt, applicable advice on how to go about inducing a significant change in the
way we ‘practice’ life, and on a scale that is needed in a timely manner in order to effectively mitigate the climate catastrophe. As such, though Social Practice Theory may indeed be able to accurately and thoroughly describe how behaviours occur, are maintained, and changed, I don’t believe that the reality of ongoing climate change itself affords us the time to both primarily investigate, as well as apply, the insights of the theory. In other words, I argue that this level of abstraction, and appealing to the idea that we need the change the ‘practice’ and not the person, may be of less immediate use to many of the people working on, or looking to work on, mitigating climate change, which itself does demand an immediate and drastic response (Klein 2014). As such I will not appeal to this theory in my own critical interrogation of local emissions reductions efforts (to come). Still, fully addressing climate change will require a range of knowledge and strategies (something I discuss shortly), and as such I encourage parties interested in this theory to engage, share, and apply their insights accordingly.

Moving forward, I now explore how effecting ‘effective’ pro-environmental change has been theorized in the context of governments and governance specifically, as local governments across Canada have become increasingly involved with emissions reductions efforts, or as formally termed, community energy plan implementation. As such, we now focus on a few ways governments might best facilitate substantial emissions reductions, who might be involved, and how. Ultimately, I end this section with a discussion of an emerging alternative form of governance, which is used as a theoretical lens with which one of two analyses of the primary research data is conducted, and, to inform associated criticisms, recommendations, and conclusions.

According to Lenihan (2012) North American governments are currently in the business of practicing what he terms a Consumer Approach to Politics. Because politicians and their parties are as much working towards staying in office as they are towards advancing societal welfare and public interests, they tend towards concocting and subsequently implementing targeted small scale initiatives that are manageable for governments (especially municipal) according to their resources, while then avoiding tackling the complexity of big issues we face today, and thus in effect failing deal with such issues to the extent required (note that governments also avoid taking a stance and action on ‘big issues’ in order to avoid the wrath of public division that might put them on dangerous political ground). Governments then frame these initiatives under the higher order, complex problems we wish to combat. Consider the issue of ‘crime’ in a broad sense; governments might appeal to the problem (and voters) by dedicating more police to certain neighbourhoods, or passing harsher sentencing laws (both being things that are within their power and reach to achieve), and then package such initiatives as ‘crime fighting’. This may then win the affection of some of their populace, as well as have some effect on crime levels, but it is likely to be negligible. Why? Because crime, like climate change, is a big, complex issue, wherein there are many causes, many solutions, lots of interconnections, and where dealing with any single angle alone will not come close to ‘fixing’ the problem. Crime for example, might be connected to education, income, mental illness, abuse, community and familial attachment, or peer networks. Thinking in this way, it becomes clear that focusing on making arrests and deterring criminal activities under threat of punishment will not effectively lower incidence rates to the scale that we desire. For climate change, the issue is the same, where there are many reasons behind why we create emissions at the scale we do – culture and religion, economic market organization, built environments, and social markers
like class and age – where government interventions alone (for example, imposing a new personal vehicle tax, and/or building more public transportation infrastructure) will not be able to address the complexity of the issue. The point, is that this is the way our governments are making change these days, and as far as climate change or any other ‘big issue’, the approach will not yield significant results.

In this transactional approach, Lenihan (2012) points out that governments tend to act in a vacuum, and as the ultimate authority and brain behind policy and initiative implementation. Governments will consult experts, employ public opinion research, and occasionally take input from the public directly with a view towards gauging the diversity of what the public wants. From there, the heads of government and their body of councillors will withdraw and debate ideas drawn from such consultation, as well ideas drawn from public servants. Upon settling on something, heads of government pass mandates down to the public servants to carry out. These mandates are typically those types of targeted initiatives that are achievable with the limited resources of governments, and as such generally focus on laws, bylaws, zoning and area development regulations, programs, funds allocation, and transportation infrastructure (Parag, Hamilton, White & Hogan 2013). As such, heads of governments (or governments themselves) are in the role of decision maker and responsible for implementation, while the public (including civil society organizations, the business community, and individual citizens) are expected to passively receive initiatives in return for their votes, while continuing to take on an advocacy role when they are engaged, or feel willed to contact their governments. This form of governance works well for politics, but not for the big issues that press us, and it is primarily there that this approach to change is limited.

According to Lenihan (2012), the nature of politics and governments as currently popularly practiced makes tackling big issues in a holistic and effective way just about impossible. First, in constructing and advancing mandates while being relatively isolated from the public, it is too politically dangerous to take big leaps on big issues because the public opinion has not meaningfully shaped the decisions. If such leaps are made, the response will be fragmented, and often hostile and reactionary, undoubtedly playing teeter-totter with partisan interests while threatening political careers in the balance. In effect, in failing to take steps to unite the public opinion in some meaningful way during the process of coming up with a ‘big initiative’, the opinion continues to exist as splintered, which then functions to maintain the Consumer Approach to Politics as most desirable in purely political terms. As such, complexity (and in effect ‘big progress’) is ignored. Second, and closely related, uniting voice and gaining broad support for an initiative (big or small), is as a very first step contingent upon transparency (increasingly demanded by publics in our evolving world). Here again, the issue is ‘process’, and failing to involve the public in a meaningful way means that governments position themselves against broad support, as the public has little idea what is happening until it is done, and no real say in making real decisions about what it is that is done.

Finally, as put forth, big issues are complex, and governments do not have the capacity to fully address such complexity and actually ‘solve’ such broad issues alone. Whether it is human, social, institutional, or financial capital, government resources alone are not adequate, and the real resources exist as dispersed throughout public bodies, which in their entirety are much more likely to succeed at big change (Lenihan 2012). For example, governments are not the experts of
SUSTAINABILITY, ENERGY, COMMUNITY, PLANNING, CHANGE

54

the world (and no single ‘expert’ is either – human capital, access to information and effective initiatives), cannot dream of seeing their messaging resonating with entire public citizenries or let alone reach them (it has been theorized that information from our larger worlds is better received and validated through personal networks and connections than ‘official’ sources like governments – social-personal capital), and of course don’t have the deepest of pockets (financial capital) (Kania & Kramer 2011; Lenihan 2012; Parag, Hamilton, White & Hogan 2013). Further, and also a resource that is dispersed in different forms and groups throughout communities, governments don’t have the authority to effect needed changes in many instances. Considering climate change specifically for example, while governments possess direct authority over urban planning and public transportation (design), their capacity to decisively and directly change individual behaviours or create certain actions and propensities in ordinary citizens is very much absent. As such, considering that combatting climate change clearly requires such things as changing habit behaviours (unplugging, taking public transit), and technological uptake (towards energy efficiency, conservation and generation) on the part of many, if not all citizens of communities and of society (Lenihan 2012; Parag, Hamilton, White & Hogan 2013), it is clear that the current form of governance is unable to fully address big issues, being climate change for the purposes of this research. As far as governments and effectively addressing climate change then, it is clear that “energy issues in a low carbon society [will need to be] governed differently, with a greater role for local actors and networks” (Parag, Hamilton, White & Hogan 2013:1065).

If governments, people, and society are to succeed at reducing emissions to sustainable levels, it should at this point be clear that we are going to have to work in tandem, together, in collaboration. As such, in having established that various ways of understanding and addressing climate change are limited, and that the current government-public relationship insofar as tackling big issues will not be successful, I now move into theorizing making pro-environmental social change in the context of a different form of governance, ultimately settling on a specific framework for public-government collaboration towards ending our mutually parasitic relationship with carbon.

A Network Approach to local energy governance recognizes and focuses itself on the idea that the delivery and materialization of the solutions to climate change must involve broad stakeholder collaboration. In light of the fact that governments (and other isolated actors) do not have the resources or authorities to create a carbon free society alone, a Network Approach to local energy governance recognizes that the solution is in our collective numbers, working together, combining and sharing resources. As such, Parag, Hamilton, White & Hogan (2013:1065) state that “area-based partnership projects between LCCG’s [low carbon community groups], local government, and other actors have produced wider benefits [than a top down government approach], such as an increase in local renewable energy generation, [and an] increase in eco-retrofit trades”, and that in pursuing such types of partnerships “more energy and climate related practices, knowledge, initiatives and solutions will emerge, spread through, and be legitimized by different social actors and through different channels than the current ones [top down government approach]”. In essence, the Network Approach spells out that governments can only reduce emissions to the degree that their resources and authority permit, and that in order to go further, human, social, institutional, financial and other types of capital present throughout broader publics must be brought together. With this, efforts become more
collaborative, better ideas come to bear, funding may become less of a problem, entire citizenries can be reached through a diversity of social networks and their members’ representatives in the network, and we have a much better shot of achieving the widespread behavioural modification and technological uptake that is necessary to substantial emissions reductions, where “local governing networks, via their own unique characteristics, might improve the public’s willingness and capacity to reduce or change their energy consumption patterns” (Parag, Hamilton, White & Hogan 2013:1066).

In this type of arrangement, though the roles and capacities of various social actors (government, civil society organizations, businesses, and individuals) remain much the same according to their resources and interests, there is a shift in power between public actors and governments. That is, the approach details that governance of an issue becomes less centralized, more democratic, collectively focused, meaningfully inclusive, and thus empowering. As such, actors outside government gain considerably more influence towards constructing action plans, and in being empowered and formally involved, “collective experience and knowledge [and other resources] can be accessed and harnessed to facilitate specific strategic interventions” (Parag, Hamilton, White & Hogan 2013:1066). In real terms, acting as a network instead of a top down centralized government helps align and put use to the resources we collectively possess. Actors in the network can engage their social circles with education, and promoting understanding and uptake, as well as for input on a plan of action and specific needs that inform solutions; having an established network is a venue through which social and technological information is shared to help achieve reductions targets; and financial and institutional resources may be shared and combined towards mutual benefits that would not happen had there not been such a collaborative relationship (Parag, Hamilton, White & Hogan 2013). Accordingly, networking will be more effective at for example addressing differential market access, changing values and behaviours, and addressing the general complexity of climate change (or any other big issue), both in the sense of tapping into diverse resources outside of governments, and, seeing those resources voluntarily and collaboratively deployed. This is largely premised on the empowerment that is resultant of being meaningfully involved in such a working relationship with governments, where “conceptually, networks provide an alternative to hierarchies” (Parag, Hamilton, White & Hogan 2013:1066). Having established that working together, shifting public-government power dynamics, and effectively changing the nature of governance itself as essential to achieving low-carbon communities, I now shift our attention to two specific, and very similar conceptualizations of the Network Approach, where it is emphasized that working together to produce big results involves more than just ‘loose networking’ (Kania & Kramer 2011).

Like the Network Approach, Collective Impact Theory posits that “large-scale social change comes from better cross-sector coordination rather than from isolated intervention of individual organizations, [where there is] scant evidence that isolated initiatives are the best way to solve many social problems in today’s complex and interdependent world” (Kania & Kramer 2011:38). As such, Collective Impact (Kania & Kramer 2011) builds on the Network Approach, but stresses that collaboration be a formal, broadly inclusive (governments, civil society organizations, businesses, public institutions, and publics – essentially representatives of all stakes and stakeholder groups related to the issue), and ongoing relationship and process – in other words, a systemic and deliberate approach to working together that fosters quality working
relationships, constructive dialogue, and aligning interests and resources towards a commonly shared vision of change (nature of the problem and solutions), itself developed in the context of healthy relationships and the dialogue that flows from within such an environment. This is based on the premise that again, big issues like climate change are complex, where the causes and solutions are by no way singular or isolated from each other, and where no single individual or organization possesses the resources or authority to engineer and implement the changes that are necessary. Solving complex issues demands that just about all individuals take action and modify their behaviours, and Collective Impact Theory (in practice) lends itself towards deploying such actions, once again drawing on the empowering force of shifting how governance is done (ultimately motivating individuals to act, resultant of that they are actively shaping agendas, which is motivational and implies taking responsibility), and combining a variety of resources and authorities in a way that lends itself to results and benefits unfathomable in the operations of isolated efforts (once again, consider social network access, opportunity visibility, knowledge and experience, institutional leverages, financial capital, and even a social license to operate on the part of government initiatives) (Kania & Kramer 2011; Lenihan 2012). As such, Collective Impact Theory does not look to propose the solutions to issues themselves, but rather, to promote a method of collaboration through which the best solutions can be reached, and the largest impact made. Regarding the solutions, broad inclusion and collaboration in a meaningful way means that the diversity of social-communal realities may be effectively addressed, being the opposite of the form (and often result) of top-down decision making. As a rationale for how to make change, I argue that this angle is huge, and, will say in advance that the final theory of change (coming next) wholly lends itself to addressing such diversity in the same way.

As to the nature of Collective Impact, its vision for collaborative governance towards realizing substantial and effective change is contingent upon the following five conditions for success (as put forth by Kania & Kramer (2011)), that “together produce true alignment [understanding of the issue, subsequent vision, and resource deployment] and lead to powerful results” (Kania & Kramer 2011:39).

First, a ‘common agenda’ – effectively working together and seeing substantial change requires that participants develop a common understanding of the nature of a problem, and work through differences in the definition of both the issue and the ways forward – a shared vision for change. Though the minutian nature of various angles need not necessarily be completely settled on, it is important participants come to an agreement on the higher level nature of the solution and the nature of how to approach it broadly. This is essential should resources, capacities and activities be combined in a way that enhances the value of what they would have been as standalones.

Second, participants must develop ‘shared measurement systems’ – in agreeing on and employing a common metric by which progress on the vision can be evaluated and reported (including the schedule by which evaluation is conducted), participant accountability for whatever responsibilities they take on may be better maintained, participants can more easily learn from each other (resultant of tying specific exercises to universally adopted measures of progress), and the data lends itself to evidence-based decision making.
Third, ‘mutually reinforcing activities’ – participants should focus on activities they have experience and skill with, in a way that also supports and reinforces the activities of other participants – i.e. aligning efforts (for example, a retailer marks down a product like LED lighting, while civil society organizations work to raise awareness about both how much energy and money LED lighting can save, and, raises visibility surrounding the opportunity at that retailer). Essentially, participant efforts must become coordinated so that all efforts are advancing the broader goals of the plan while also supporting other actions where there is opportunity, which will emerge out of the dialogue process.

Fourth, ‘continuous communication’ – the nature of the working relationship must be long-term, as solving complex issues naturally demands, where participants formally meet on a frequent basis (at a minimum once a month). Effective collaboration (that produces the best results) requires that participants trust each other, understand their peers’ opinions and point of view, believe that the decision making process is equitable (a pre-requisite to being empowered and subsequently taking responsibility), and that participants come to speak the same language about the issue as far as definition and understanding. Basically, the quality of the dialogue and relationship is developed through frequent communication, and this leads to mutually beneficial and effective collaboration, and a participant populace that is truly empowered and hence motivated to take responsibility for action in some way.

Finally, Collective Impact stresses that the success of the relationship and results that flow from it is contingent upon a ‘backbone support organization’ – effective collaboration is underscored by the quality of the dialogue and working relationship (including trust, perceived fairness, and truly understanding where each other are coming from regarding views on an issue). Without a healthy relationship, there can be no teamwork. As such, it is important that one of the participants be an external actor or organization specifically trained and skilled in the art of communications facilitation, where their primary role is to mediate deliberations and conflicts among actors, help participants mutually define and frame issues (so as to agree on what they are, which will inform a collaborative and effective solution), and to facilitate reaching mutually agreeable solutions for which all actors are inclined to take respective responsibility (again, the process of reaching solutions is very important). Regarding this final condition of success, Kania & Kramer (2011:40) note that “the expectation that [effective] collaboration can occur without a supporting infrastructure is one of the most frequent reasons why it fails”.

Herein once again, the public (business, civil society organizations, public institutions) are not passive consumers (and sometimes advocates) of top-down government policy initiatives, but rather, are actively shaping such policies, programs and initiatives, where there is a clear shift in power, seeing governments and publics genuinely share and collaborate throughout decision making, motivating participants to act, and to spread those actions throughout their own unique networks. As the public is meaningfully involved on an ongoing basis, initiatives will better lend themselves to broader public support, action plans will be better informed and thus of higher quality, action plans will be mutually beneficial (achieved through dialogue of how to work together for a cause), and resultant of the ongoing broadly inclusive empowering process, participants will collectively reach entire citizenries by carrying information in and out of their personal networks in real time – including gathering input in an informal way, asking people what they need, and promoting visibility and understanding of initiatives, programs,
opportunities, or simply options. Once again, this diffusion and infusion process is also naturally a personalized communication between working team participants and their personal networks, and as such better lends itself to seeing message resonation, uptake, and general participation (as opposed to information and solicitation coming from the sky – distant entities) (Kania & Kramer 2011; Lenihan 2012; Parag, Hamilton, White & Hogan 2013).

Moving on, I wish to close this section with a look at Lenihan’s (2012) theory of government–public collaboration as (he argues) the only effective way to tackle complex issues like climate change. Similar to Collective Impact, this theory stresses formal, ongoing teamwork and public empowerment, and is called Public Engagement. Lenihan (2012) recognizes that the Consumer Approach to politics and change is ineffective for complex issues like crime and climate change, and like Collective Impact, posits that the nature of governance itself must shift. In Public Engagement, the roles of social actors shift. Unlike the Consumer Approach, power is dispersed horizontally, where governments are no longer the sole authority on direction, nor the body solely responsible for effecting change. Instead, like Collective Impact, the relationship between governments and publics regarding decision making and action is characterized by partnership instead of paternalism, implying democracy, dispersed control, and mutual responsibility. Like in other approaches to change, the capacities and roles of various actors will be subjective to their positionality. The heads of government still have the ultimate authority over policy implementation, transportation planning, and urban design for example (Parag, Hamilton, White & Hogan 2013), while civil society organizations, public institutions, businesses, and ordinary citizens have power to the extent that their social, human, financial, institutional and other capital permit. These groups (including government) can effect change to the extent that they fund it, educate, promote awareness, change understandings and values, and shift behaviours within the networks with whom they are intimate.

However as mentioned, the real shift in roles regards power, and a new working relationship between governments and publics. In Public Engagement, power (to construct and implement decisions) is symbolically, and in practice, relatively equal between participants in the working relationship, and thus by extension, relatively equal between the broader public as a whole and the government, as the broader public is uniquely tied to participants in intimate ways. Regarding power, the government no longer assumes the role of primary decision maker, but rather, their role consists primarily of establishing and leading a process in which relevant social actors may unite around issues, and ultimately mutually agreeable and effective solutions, where governments (as ‘partners’) also make appropriate contributions to the action plan. Governments are thus enablers, facilitators, and partners, while public participants move beyond advocacy and into the position of partner as well. In Public Engagement then, each party has a legitimate seat at the planning and implementation table, and acts according to their capacities and the responsibilities they commit to. As such, there is a genuine give and take between participants, where ultimately, any decision or action officially implemented is borne of, and thus supported by, participants (including governments) and their constituents – something drastically different from the traditional Consumer Approach to politics and social change (Lenihan 2012).
The Public Engagement approach is premised on the rationales of Collective Impact and the Network Approach, as well as those arguments against the Consumer Approach to politics and social change that were previously discussed, and include the following (as per Lenihan 2012)).

First, no single entity alone has the resources (human, social, financial, institutional etc capital) or authority (to engineer broad behavioural change) to tackle complex issues wherein the nature of the problem and solution is multifaceted and interconnected – Public Engagement, in being broadly inclusive, lends itself to holistic solutions and enhancing individual resources and authorities through effective collaboration, which leads to solutions that work.

Second, Public Engagement can overcome the endemic partisan bickering and tip-toeing that goes on in the Consumer Approach (and inhibits proposing and implementing big ideas for fear of political reputational loss), as the public (representation of all relevant parties) has a meaningful role in defining and addressing issues, where any actions are thus legitimately rooted in the public will. In having a legitimate seat at the planning and action table, the public (together) come to directly inform the initiatives that follow, rather than local government actors deciding how to tackle a range of public opinion with isolated interventions, in which some voices are of course left unaddressed.

Third, the Public Engagement approach is holistic by nature (public representation and power), and thus instead of trying to identify the solution up front (for example, with Ecological Modernization), or in a vacuum (Consumer Approach), the approach is a way to build solutions from the ground up, thus lending itself to actions that will address the complexity of a problem, and the subjectivity of the communities in which the problem is dealt and felt. This is very important as far as for example addressing intersectionality (race, class, gender, age etc) and associated abilities to participate in solving the problem (for example, taking advantage of energy efficiency technologies).

Fourth, in giving the public a meaningful voice and a seat at the table as a genuine partner, Public Engagement empowers participants (and their constituents) by changing power structures, which implies and promotes taking responsibility. In that sense, it is a very active and inclusive approach to change, where feeling valued, and literally being empowered (with control over the issue at hand) helps create a willingness and motivation to be pro-active. Similar to the workplace, if participants (employees) feel genuinely valued for their intellectual capacities, they will identify with that workplace, and seek to advance its mandates. In contrast, the Consumer Approach to change is wholly passive (where the public is an advocate at best), and does nothing to spark the conversations and other actions that are needed to stabilize the climate.

Fifth, in that the public is increasingly demanding government transparency, the Public Engagement method gives it to them in real time, where broad representation lends itself to information flowing in and out of diverse social networks, to the point of literally reaching entire populaces. Further, these communications happen in a personal way (as opposed to from distant entities – governments to publics), which has been theorized as highly important to message validation, resonation, and action on the part of receivers (Parag, Hamilton, White & Hogan 2013). This real time flow of information is also born of the motivation to act that is itself the
result of genuine empowerment. Full participation (by public actors) is contingent upon a sense of ownership, which both assumes taking responsibility, and, translates into feeling and being valued, empowered, and hence motivated to put in work (Lenihan 2012).

As asserted, according to Lenihan (2012), Public Engagement is a strategic method to unite publics and governments around complex issues that require meaningful collaboration and broad participation in the solution(s), where the process itself is fundamental to producing effective holistic solutions and such broad participation. This collaborative process (specifically discussed following this paragraph) is iterative, cyclical, and ongoing (as complex big issues demand), in which participants collectively identify and define the nature of the myriad of causes (relevant to a specified issue), and tap collective experience, opinion, and expertise to collaborate on a multifaceted but effective solution. In coming to and implementing such solution(s), participants in the Public Engagement method work to align interests and understandings, combine resources and strengthen each other’s efforts, as well as build trust and community that will underscore the effectiveness of the working relationship and ultimately its results (as also asserted by Kania & Kramer 2011). Meaningful dialogue requires respect, trust, empathy, and reciprocity, and if these can be achieved, than effective solutions and full participation (taking responsibility) will materialize. That said, building and achieving these qualities in the working relationship will be an ongoing process, like the relationship and communications themselves, where the quality of the dialogue should improve as participants come to better understand each other’s opinions and rationales, subsequently become more trusting, and continue to develop new and more effective ways of working together (Kania & Kramer 2011; Lenihan 2012). Further, the frequent and ongoing dialogue and process embodied in the Public Engagement approach not only lend itself to enhancing working relationships, but also to strategic adaptation regarding actions and addressing the broader issue the team is contending with. By enhancing the quality of the working relationship, the team will be better equipped to work through competing views, and arrive at multifaceted solutions that all participants can get on board with, and thus take some responsibility for implementation. Finally (before getting into the stages of Public Engagement), and as alluded to in various instances of this discussion, Public Engagement stresses broad public representation in the working group, which lends itself to creating holistic and effective solutions, and to producing and employing the vast amount of resources that are required to effectively engage with, and ultimately solve, big social problems like crime and climate change. All public bodies (whether businesses, public institutions, civil society organizations, or ordinary citizens) who are relevant to or touched by the higher order issue at hand need to be represented on the working team if the solution(s) is to be adequate. Finally, because the process is cyclical, ongoing, inclusive, and predicated on taking responsibility and action, the Public Engagement method helps communities create and unite the ‘network of networks’ around the issue, which is ultimately how resources will be leveraged, and broad participatory action engineered (Lenihan 2012). The Public Engagement process follows four steps.

(1) – Views – This stage is purposed towards attaining a broad and representative cross-section of opinion on the issues, causes, and solutions. Here, governments should establish forums (town hall, online, or otherwise) for discussing the issue in a broad sense, where collecting views occurs until saturation is perceived to have been reached. Regarding representative participation, governments need to put out broad and targeted invitations to
participate, where media can certainly be an asset in this sense. During these forums, participants are encouraged to share their views (nature of the issue(s) and solutions) with each other as well as the government, where this type of dialogue is a first step away from the Consumer Approach wherein information and opinion is generally only flowing one way. Finally, governments must appoint an agent (or multiple) to record and compile the diversity of views, which come into play in the following stage of Public Engagement.

(2) – Deliberation – In this stage, the meaningful public role starts to materialize, where participants inherit their power to shape agendas via being not only involved directly in actual deliberations (beyond expressing views, but now negotiating a plan of action), but actively shaping the agenda, where government is simply an equal partner in the process. Participation here is distilled to the ‘working group’ (anywhere from 30-50 people in successful examples of the Public Engagement method), and it is the task of the initiator and facilitator of the process to attempt that all public bodies (whether businesses, public institutions, civil society organizations, or ordinary citizens) who are relevant to or touched by the higher order issue at hand be represented on the working team if the solution(s) is to be adequate. Still, because Public Engagement is a cyclical process, the composition of the working team should naturally evolve towards the proper array of representative bodies as participants identify missing voices through deliberations. Moving forward, the working group are now tasked with deliberating over the ideas and opinions expressed in the views stage. Views are thus consolidated, illustrated against evidence (or lack thereof), renegotiated, and distilled to produce a mutually agreeable definition of the higher order nature of the issue as well as broad direction and solution (not detailed plans - process is iterative). In this stage then, the working team work through tensions and possibilities, make compromises with each other, and ultimately reframe the issue (and subsequent broad solution(s)) in a way that is workable as compared to dealing with the compilation of views as is and was.

(3) – Action – In this stage the working team take deliberations further, by discussing their proposals from stage two, ultimately coming up with a mutually agreeable action plan (wherein all voices have been treated fairly) that fits within the higher order vision of the issue and solution. In this stage, participants also take on (voluntary - self designated) responsibilities in relation to the plan. The action plan should be specific, attainable, and effective. Speaking back to taking on responsibilities, participants will naturally be considering their own capacities and role in owning and effecting the results to which the team strive throughout deliberations, however it is important that these responsibilities are ultimately taken on officially. In this stage, the nature of the Public Engagement method is precisely what promotes taking responsibility, where participants have been empowered with a genuine role in creating the plans, and are thus motivated, and in some sense obliged to participate beyond the planning stage. Following this, the working team sets out to fulfill their responsibilities in the realms in which they operate.

(4) – Evaluation – In this stage, the working group convenes to assess both the progress on the action plan and higher order goals (as outlined by Kania & Kramer (2011) in Collective Impact), as well as equally importantly, the quality of the dialogue and collaborative working relationship. Accordingly, the team must adopt a commonly agreed upon set of indicators with which to evaluate both of the former domains, allowing adjustments and attempts at improvement to be made where wanting. As discussed in some detail, the quality of the dialogue
and working relationship is essential to effective collaboration, including both the quality of the solutions and a willingness to take responsibility. All parties must feel heard, valued, and respected. As such, in adopting a set of indicators with which to evaluate the relationship, the group can actively strive to improve the dialogue by identifying and working through specific areas of concern. Lenihan (2012) proposes five indicators for this purpose including trust, openness, mutual respect, inclusiveness, and taking personal responsibility (see appendix of Lenihan (2012) for examples of how these indicators might be operationalized). The evaluation stage is also a time to reflect on the working group’s composition, and ensure that all relevant parties are represented. Finally, though Lenihan (2012) has proposed that the government essentially act as the official facilitator in the cyclical process of Public Engagement, I argue (as per Kania & Kramer’s (2011) assertions) that a skilled external actor take on the role of moderator, which is important to the dialogue at all stages, but potentially especially so in stage four, as discussing personal gripes may easily get out of hand. Further, having an external moderator involved with the working team from the start (and on an ongoing basis) may help neutralize the sentiment (to the degree that it might exist) that the government is running the show, and that public participants don’t actually possess the authority they should in such an approach. This sentiment is certainly a real possibility, considering the way politics and governance has traditionally been carried out, and could be very damaging to the working relationship.

(4a) – Ongoing Dialogue – As emphasized, the working group and the process of the Public Engagement method is to be maintained, ongoing, and cyclical, which is naturally necessary to tackling any big complex issue that will not be solved overnight or by a single entity. As such, the working group meets on a regular basis (not too often, but recommended at least once, if not twice per month – where participants will also naturally spend time thinking about the issues outside of formal meetings), moving from evaluation back to views (now additionally gleaned through the networks and goings on of participants – the network of networks), deliberation, action, and evaluation again. The working group thus adjusts their actions and plans as necessary to achieve the mutually agreed upon ‘bigger picture’ result (solving the problem) to which they are dedicated. Learning is always on the table, and the multifaceted nature of the issue continues to be addressed on the ground in an effective manner, as per the nature of the public-government relationship, governance, or the Public Engagement method itself. Further, the fact that the process is ongoing and cyclical ensures participant accountability, transparency (including towards the broader public who are interacting with participants), and lends itself to improving the quality working relationships, the dialogue, and thus the solutions (and results) themselves (Lenihan 2012).

Whatever the big complex issue (climate change, crime, poverty etc), the Public Engagement method facilitates a dramatic shift in the nature of governance and the public-government relationship itself. Instead of top-down, Public Engagement shifts governance to be more citizen based, empowering, and broadly action oriented, and thus better positions publics and their governments to effectively tackle big issues that demand far more than what any single isolated entity might dream to offer. Public Engagement assumes that the diverse citizenry of a community have a critical role to play in identifying and implementing solutions to complex issues. Regarding this citizenry, if fully participating, the working team carries information into and out of communities in real time, and thus by extension, entire publics are being empowered
(in a personal manner) and subsequently involved in informing and participating in the solution. “Public Engagement is the only real answer to complexity, [and it] works. It helps citizens, communities and stakeholders work together with government to frame [or define the nature of] issues, identify solutions and share responsibility for implementing them” (Lenihan 2012:141, 153). Every community is different and requires flexible and responsive solutions, and complex problems do not respond well to isolated intervention. Public Engagement seeks to mobilize entire community citizenries with an eye towards tackling these realities head on.

Given the established strengths of, and rationales for, the Public Engagement approach to governance and social change described above, I will be using its broad dictates to situate and analyze the CEI implementation process within it (being the second of two analyses that help inform the primary research questions). Generally speaking, the Public Engagement approach stresses that we will most effectively tackle complex issues like climate change if governments meaningfully involve and collaborate with the diversity of public citizenries, in a formal, broadly inclusive, empowering, and ongoing way. At a broad level then, according to the Public Engagement approach, a fundamental condition for success in tackling complex issues is an ongoing, broadly inclusive, meaningful, collaborative working relationship between governments and publics, in which the ‘power to contribute and decide’ is more democratically dispersed (symbolically and in practice) (Lenihan 2012). Accordingly, it is with that broad condition for success that I approach and evaluate the nature of Guelph’s almost decade long CEI implementation effort (in chapter seven), and subsequently make recommendations.

Before moving on to discuss research methodology, and subsequently explore the primary data, I now take this time to briefly return to the barriers to community emissions reductions identified in ‘Never a Yellow Brick Road… Cracks and Fissures’, to examine in theory, how and where a Public Engagement (PE) approach to governance might be a useful method of overcoming various challenges. As discussed, PE will also be tested in practice (against the CEI implementation process itself) in the second analysis of the primary data to come.

In a political context, there appears to be multiple ways in which a PE approach might be useful for facilitating smooth CEP implementation. First, regarding conflict within governments about the best course of action that can slow down and stifle efforts (Community Energy Association 2013; Tozer 2013), PE is a way to ground decision making in the public. Accordingly, though working team participants will need to deal with conflicting ideas throughout deliberations on an ongoing basis, partisan political bickering might be better overcome, as a variety of views inform action plans directly, as opposed to two or three distinguished political camps who might stall each other’s efforts as a result of allegiance to party values. In other words, employing a PE approach to governance transforms the decision making process from an insulated ‘compete and cut’ scenario to a more broadly cooperative and constructive endeavour, as citizens have a real hand in decision making, thus helping to extinguish partisan bickering that can slow down progress (Lenihan 2012). Additionally, I had spoken to the idea that failing to involve public stakeholders in the energy conversation can detract from both support for a CEP, and a willingness of various public actors to voluntarily act in ways that further CEP goals (Greenius, Jagniecki & Thompson 2010; GTI 2016c). In this sense, PE is purposed towards creating a large scale conversation, where working team
participants are empowered and become public ambassadors, working to gradually scale up the dialogue, which itself includes broader citizenries through various social networks of working team participants (Lenihan 2012). Accordingly, PE helps democratize the conversation, which also aligns with the fourth principle of SEC discussed earlier. Further, I had spoken to government staff turnover and a lack of prompt information sharing (between and among municipal and public actors) that can lead to little cohesion in the implementation process (including for example, understanding and buy in for a CEP, as well being aware of progress that is important to garnering support), and thus slow it down (GTI 2016c). PE works to ease those challenges directly, where the governing team is based in the public (meaning that though participants may come and go, the working team composition is more stable than potentially seeing entirely new sets of public servants take office), and where the governing team meet often to discuss the specific issue, as well as carry on an extended public conversation in real time (the result of empowerment) (Lenihan 2012). Accordingly, pertinent information about a CEP is better set to circulate in a timely manner, and maintaining familiarity and understanding with decision makers (the public working team) is naturally more viable. Finally, where I had mentioned that governments can run into hurdles surrounding changing public practices (the result of a lack of authority) (Littlejohn & Lazlo 2015; Tozer 2013), PE helps overcome this, where participants themselves deliver and solicit information within their own social networks, and where this more personalized form of communication is more capable of resonating, and being further transmitted, helping better facilitate voluntary public action than what governments can do alone (Lenihan 2012; Parag, Hamilton, White & Hogan 2013).

Moving on to financial barriers, a first area of application might be disagreements between municipal staff about how money should be spent, as they may have different ideas about what the public want (IPCC 2014; Lenihan 2012). Further, the fact that governments currently tend only towards public consultation without deliberation, means they only get a topical idea of public sentiment, which creates more space for differing interpretations of that opinion with municipal decision makers (Lenihan 2012). PE helps address this, where the public are in the driver’s seat as far as deliberations and subsequent decision making, and thus again, rather than seeing politicians compete over interpretations of public opinion (stalling, and potentially undermining the effectiveness of any spending), the public is there working through it together, where cooperation (rather than partisan political competition) thus lends itself to making decisions everyone can get on board with, and at the same time, decisions that better address the range of public opinion – the result of having created a space to work through differential views together, rather than leave it to governments where there is no dialogue (Lenihan 2012). Moving on, I had mentioned municipalities having difficulty moving beyond ‘low hanging fruit’, as other investments are pricier and take longer to pay off (Tozer 2013). In that regard, though a public working team in a PE approach might decide that pricier investments are off the table, the fact that the public have a significant role in governance may help overcome this in two ways. First, if the working team ultimately decide to pursue big investments (or whatever else they settle on), there is more of a social license to operate, and thus in effect whatever decisions are made are more likely to be accepted by the extended public (Lenihan 2012). Second, where financial barriers to investment are present with many social actors and entities, having broad public representation in issue governance (beyond consultation), means more ideas (human capital) are brought to bear, and thus we better position ourselves to find innovative ways to overcome financial hurdles (as opposed to leaving it to the limited mental
capacities of governments alone) (Lenihan 2012). Further, where dramatic emissions reductions require widespread public investment, PE helps create a large scale conversation that resonates (Lenihan 2012), and as such we better position ourselves to create an understanding (and subsequent set of actions) of the idea that emissions reductions can be profitable, and novel ways to participate that help nullify financial deterrents to doing so.

As far as technical barriers to CEP implementation, a PE approach is primarily useful in that it increases the human capital informing decision making (Lenihan 2012). As such, because the public is involved (ongoing) at the deliberation and action planning stages of emissions reductions efforts, there may be a better chance that we keep up with evolving technologies that can ease technical barriers (for example, potentially novel renewable technologies that are viable for places with little sunlight), and, create effective ways to address transportation between distant pockets of communities, in which establishing a more standard form of public transportation (for example, buses every 30 minutes to 1 hour) might not be economically viable. As mentioned, a big plus of the PE approach is bringing together a diversity of knowledge and experience that ultimately helps make action plans more holistic and effective than if governments had been deliberating alone (Lenihan 2012).

Moving on, PE appears quite relevant regarding community capacity, where this capacity continues to relate to human capital, as well as additionally to human resources. As discussed, municipal resources may be strained, where fully and effectively delivering and soliciting information to the public, monitoring progress, and taking responsibility for CEP implementation may be hampered due to a lack of human resources and time, as well as experience to be most effective with emissions reductions (Community Energy Association 2013; GTI 2016b; GTI 2016c; IPCC 2014; Littlejohn & Lazlo 2015; Tozer 2013). As Lenihan (2012) makes clear, governments do not have the resources alone. Accordingly, PE meaningfully expands issue governance, where empowerment means taking responsibility (including nurturing a large scale dialogue within the public), which is purposed towards putting many hands to work. Additionally, and as mentioned already, a PE approach helps bring other resources to the table, including a diversity of knowledge and experience, and thus action plans may be more effective than had governments been acting alone (Lenihan 2012). As such, PE helps bolster the human capital and personnel capacity behind an initiative, and thus in theory, leads to better results.

Finally, PE sees applicability regarding overcoming various social barriers. At a broad level, I had mentioned that public support has the potential to make or break a CEP initiative, as in the end, governments are supposed to answer to the citizenry first (Greenius, Jagniecki & Thompson 2010; Schweizer-Ries 2008). As such, grounding issue governance in that citizenry (PE) means that whatever decisions are made are legitimately rooted in the public voice (beyond consultation), where in theory, entire publics can meaningfully contribute to the dialogue through the ‘network of networks’, meaning an initiative is positioned for social sustainability (Lenihan 2012). On that note, I had discussed that a failure to be transparent (municipal to public) to some meaningful degree has the potential to undermine CEP support (Greenius, Jagniecki & Thompson 2010; Schweizer-Ries 2008). With PE, it is premised that information flows in real time, as working team participants become the public ambassadors, nurturing the scale of a conversation. Accordingly, transparency is an inherent part of the implementation process, and further, that the information is delivered in a more personal sense lends itself to dispelling public
suspicions (Lenihan 2012). Moving forward, regarding the idea that there can be public opposition stemming from a misperception of the benefits of a CEP (mostly as a result of quiet communication lines between municipalities and citizenries) (Greenius, Jagniecki & Thompson 2010; Schweizer-Ries 2008; Tozer 2013), a PE approach further helps overcome this in the same way as advancing transparency, where information flows between the working team and extended public in real time, through personal channels, and thus there is an ongoing dialogue that is better set to resonate, and see the public understand and get on board with the direction and purpose of a CEP. Returning to my Calgary Transit example, while train line extensions may have focused on certain areas over others initially, seeing a real time dialogue manifest through a PE approach might help quell the feeling that some pockets of the community were being ignored, as the public may gain a better understanding of the strategy, helping nullify opposition. Additionally, if we return to the idea that initiatives in PE are actually grounded in a large scale public dialogue, the action plan is once again better positioned for social sustainability. On that note, I had mentioned techno-social barriers to implementation regarding environmental aesthetics (Greenius, Jagniecki & Thompson 2010; Schweizer-Ries 2008). Once again, a PE approach sees a diversity of voices work through the issues, and come to mutually agreeable solutions (Lenihan 2012), where in theory, factors involved in techno-social barriers will have been considered, where action plans thus avoid the repercussions of for example, outfitting a historical building with solar panels. Finally, though I had briefly mentioned the trouble governments can have with engineering voluntary behavioural change and technological uptake (Tozer 2013), PE once again helps overcome this, by deploying a large scale conversation that resonates. Through Lenihan’s (2012) ‘network of networks’, information and action solicitation and delivery has a greater chance of both reaching the extended citizenry, and seeing that citizenry act on it, where personal-relational authorities in the dialogue are key. Accordingly, where community consciousness plays a role in determining everyday behaviours (Hargreaves 2011), and governments have a difficult time ‘showing’ the public how investment can be cost effective (i.e. reaching and resonating with the public), as well as gaining a high degree of visibility for things like opportunistic programs, a PE approach once again helps deploy a large scale conversation that resonates, thus in theory leading to better results than had governments been acting alone.

In conclusion then, it appears that in theory, Public Engagement might be useful for tackling a variety of barriers to CEP implementation. As Lenihan (2012) outlines, it appears this is the result of bringing together dispersed public resources that substantially bolster those of governments (human and social capital, personnel capacity, and authorities beyond limited municipal legislative abilities); subsequently creating more holistic and effective solutions, and seeing large scale action voluntarily deployed as a result public empowerment and nurturing a sizeable dialogue that resonates and travels. Additionally, employing PE helps create and maintain the social sustainability of emissions reductions efforts, as decision making is grounded in extensive public voice (beyond consultation), rather than partisan interests that lead to isolated interventions, and more space for public backlash.

With that said, it is important to theorize and acknowledge a few ways in which Public Engagement may be limited in practical applicability, as well as in an ability to see its intended results manifest as easily as I (as per Lenihan (2012)) have described thus far. First, Lenihan (2012) appears to assume that the quality of the interpersonal working relationship can be
maintained, and subsequent debilitating conflict avoided, so long as purposeful steps are taken to assess and improve relationships on a regular basis. Though this is certainly a step towards creating and maintaining healthy relationships, it is not a given that it will result in its intended purpose. It is certainly possible that discussing personal gripes leads to their amplification rather than seeing them absolved, and thus ultimately a complete breakdown of the working relationship. Further, relationship breakdown is certainly possible regardless of whether there is a deliberate attempt to discuss the interpersonal relations themselves, as competing views may lead to defensiveness, antagonism, and a standstill that is ripe to see the collaborative process evaporate (Cheng & Mattor 2006; Rowe & Frewer 2000; Talisse 2004). Second, Lenihan (2012) appears to assume that all relevant parties can be successfully brought to the table, which is a prerequisite for the holistic solutions a PE approach is purposed towards. Though Lenihan’s (2012) examples of PE in practice certainly appeared to confirm this assumption, we once again cannot take this as a given. Non-participation from important social actors is certainly possible, where this phenomenon may also be amplified if previous (or current) attempts at collaborative governance have been perceived as unfair or counterproductive by specific populations, leaving them disenchanted with the idea of participating again (Cheng & Mattor 2006; Parkins 2009; Rowe & Frewer 2000). This could be quite detrimental to the impact and success of an initiative. In relation, despite that he acknowledges that different social actors may have different ideas about the nature of the problem and solution(s), Lenihan (2012) definitely seems to assume that the issues we strive to tackle universally resonate with all to some degree, and that the task is to cooperatively mobilize. One of Lenihan’s (2012) examples of PE in practice surrounded poverty reduction, however I would argue that unlike that issue, climate change as a problem that is resultant of human actions is a far less universally validated idea, where in Canada, only 61% of people are of this mind (CBC 2016). As such, it may be that the issues themselves have a significant amount of determinacy over the degree to which a PE approach is viable to manifest smoothly and produce intended results, where some may be less suited to various forms of collaborative governance (Cheng & Mattor 2006).

On that note, Lenihan (2012) does not appear to consider the power differentials between various social actors and groups, which could certainly have a detrimental effect on the collaborative process and results. For example, some members of the working team may have significantly more social and financial capital (as well as status) than others, and thus where there is disagreement about the nature of the issues and solutions, the deliberative process may turn into more of a competition than a cooperative endeavour, ultimately seeing some voices consistently silenced because of this power differential (Parkins 2009; Parkins 2002; Rowe & Frewer 2000). Further, Lenihan (2012) does not explicitly discuss and address the possibility that if we fail to get all relevant parties on board with the idea of addressing the issue in some way, some more powerful entities (for example, home builder associations) might be able to externally shut the process and efforts down as a result of substantial lobbying capacity that other voices simply do not have. In essence, Lenihan (2012) does not factor ‘power’ into his discussion of how PE leads to big results. Being a social scientific researcher myself however, this is clearly problematic, as a PE approach is highly social by nature, and ‘power’, is a significant determining force in social interactions, where the results of interactions and relations often more reflect the subjective interests of those who wield it most. This was clearly demonstrated in my analysis of the reasons behind the failure of global climate change mitigation initiatives discussed early on in this chapter.
On an entirely different note, where Lenihan (2012) emphasizes that the working team meet on an ongoing basis (and often), he does not discuss the idea of ‘burnout’ (Gotlieb 2009), or that the unpaid public members of the working team might simply get tired and subsequently severe participation. This could certainly result in a fractured process, and hinder the success of an initiative, where Cheng & Mattor (2006) have noted that ‘spending time’ is a highly influential factor on initial and ongoing stakeholder participation in collaborative endeavours like Public Engagement. As such a PE approach may be further limited in this way. Finally, though Lenihan (2012) demonstrates successful examples of PE in practice at various scales of community (provincial and national), there is no critical discussion of PE’s viability insofar as community size, which is certainly relevant considering his central idea about creating the ‘network of networks’. As such, despite evidence of success, it seems Lenihan (2012) assumes PE is viable in communities of all sizes, which could certainly be problematic, as that may simply not be the case. Additionally, and also not discussed by Lenihan (2012), community size may be relevant to the viability of a PE approach insofar as citizens’ sense of personal attachment and investment in their communities, which might then affect the degree to which the public is inclined to participate in PE style issue governance, and/or to simply participate in tackling issues like climate change at the local level. For example, Laskow (2015) outlines that people who live in small and large cities demonstrate a higher degree of emotional attachment to those places than those who live in medium sized cities. As such, a PE approach might be better suited to a place like Guelph or Toronto than it is to Calgary. In closing, though the analysis of the CEI as PE in practice (chapter seven) does not explore any of the dynamics here identified, they would be valuable areas of future inquiry, as despite that Public Engagement sounds promising in theory (and practice in Lenihan’s (2012) examples), this latest discussion has identified some potentially problematic assumptions, as well as other phenomena that might hinder the practice and results of a PE approach, that Lenihan (2012) had not explicitly acknowledged or discussed. With that in mind, we now move forward to discuss the research methodology, and then finally, the real meat of this endeavour!
In this chapter, I expand upon the introduction to this research, by highlighting the higher order research questions I sought to answer in this endeavour, including a discussion of the methods with which I have gone about doing so, a description of the two separate analyses I have performed, as well as the intended (applied) purpose of carrying out this research.

***

Ways of Knowing: Engaging

Social scientists should seek to produce and apply knowledge with the intent of improving real world affairs (Humphery 2010), where in a contemporary context, praxis is essential to achieving climate sustainability. Accordingly, this research is ‘applied’ in nature, as well as was carried out according to some of the principles of ‘Community Engaged Scholarship’ (CES). CES criterion include that academic research and methods be purposed towards the public good and social change, that they are tailored towards addressing community needs as expressed and designated by members of such communities, and that the research design and implementation be done in collaboration with community partners (Morton 2013), so as to best address those needs according to their definition within the community. This research, though not collaborating with any community partners in design, as well as taking the liberty of defining community need itself (i.e. emissions reductions), thus adheres to the two former principles of CES, where it is wholly about community applicability, and therefore social change. Though not fully collaborative, this study was thus done in, with, and for the community, with the express intent of improving communal affairs in Guelph and across localities, by tapping into local knowledge and experience, and triangulating that knowledge itself, along in part with academic literature related to communities, energy and sustainability. As this research engaged with people working on energy and sustainability in Guelph, it is accordingly purposed for, tailored towards, and is intended to result in, effectively enhancing their capacity to carry out initiatives aimed at greenhouse gas emissions reductions, by both informing and facilitating the process generally via triangulated insights and advanced conclusions, as well as supporting the 2017 CEI update (to be discussed). Further, this research uses such engagement to make the Guelph experience more transparent, and hence accessible to other communities and initiatives doing similar things, thus in theory (and hopefully effect) offering itself as a facilitative and enabling tool. As such, where academic research is often pie in the sky, this endeavour is intended to inform, and result in, application. Accordingly, academic research methods have been applied to ‘on the ground’ issues, with the intent of helping involved community actors move them forward wherever possible, as well as engaging in two analyses that together hopefully embody the potential to directly benefit other communities that are, or will in future, be doing similar things, and/or be in similar situations regarding challenges to emissions reductions. Whether creating awareness,
offering novel insight, or simply functioning to cue memory, it is my sincere intent that any reader interested in reducing emissions, including of course the study’s participants and Guelph itself, will reap significant practical benefit where their abilities to mitigate climate change are concerned.

Further, in support of my participants’ aims, an early draft of the research was given to CEI staff to support the 2017 update, as well as an official final copy forwarded to all participants. Additionally, I wrote a detailed and passionate letter expressing my personal support for continuing with CEI activities, which was forwarded to each member of City Council at a critical time when CEI implementation may have been slowed or stopped, resultant of the 2017 update being debated by that Council. This potential delay being due to some skepticism in City Hall, specifically, though not solely coming from the Mayor (and not borne of ill intent, but rather of concern about honouring taxpayers with effective spending of their moneys), about the nature of implementation and the merits of the initiative itself. Without getting too far ahead of myself (into the results), I will say that the worst of outcomes during this critical time was avoided, where City Council (including the Mayor) unanimously voted for ‘updating’ the CEI. In undertaking these actions, I strove to support my participants’ efforts, where this is illustrative of the give and take process I consider this research to be. As such, I again assert that the nature of this study aligns with some of the principles of CES, as well as largely with the principles of applied research. Though community need was externally identified, that need is very real, existent, and was acknowledged by the participants in this study. Accordingly, this research is fundamentally geared towards addressing that need through praxis, by engaging with issues that matter to communities and my participants, and specifically, bolstering the toolbox with which we tackle climate change, in a tangible way meant to spur action in Guelph and elsewhere.

Moving on to the specifics of method, this study is qualitative in nature, and drew its primary data from a variety of sources. These included four City of Guelph produced documents, being a 2012 annual report on the CEI and progress, a 2012 report detailing emissions reductions data in Guelph, a 2016 report detailing CEI progress as well as the framework for a proposed update, and a 2016 report outlining the nature of a proposed pilot program to do with the CEI. Data was also collected via personal attendance of two (2016) public City Council meetings discussing the CEI and the proposed update, a community group meeting in discussion of the CEI and in anticipation of the vote on the update, and a speaker event surrounding financing energy retrofits. Further, data was collected via two blog posts, from the Mayor and a City Councillor respectively, and four online news articles and their public comments sections, all in relation to the CEI. Finally, nine in-depth semi-structured interviews with key informants were conducted, lasting from 27 minutes to one hour and 50 minutes, where the average length was slightly over one hour, being 62 minutes. These interviews loosely followed a set of guiding questions (to be discussed in the following section), though the official questionnaire was essentially abandoned about ten minutes into each, as they morphed into rich conversations about the process of reducing emissions in Guelph and in communities generally.

Participants were initially identified via reference to the consortium responsible for the CEI’s conception. This naturally led to others being identified through internet searches surrounding who currently held various positions related to CEI activities. Participants were also identified via word of mouth from both other participants and the research team, and thus a
combination of snowball sampling and internet research resulted in the total participant list. All participants have been and are formally or informally intimate with the CEI, as well as are certainly well versed in their respective endeavours as they relate to reducing greenhouse gas emissions, where participants comprised the following (each having agreed to being identified in this research):

- Alex Chapman, Program Manager for ‘Corporate Energy’ at the City of Guelph
- Rob Kerr, Manager of ‘Community Energy’ at the City of Guelph
- Kithio Mwanzia, CEO of the ‘Guelph Chamber of Commerce’
- Evan Ferrari, Executive Director of ‘eMERGE Guelph’
- Karen Farbridge, Mayor of the City of Guelph from 2001-2003 and 2006-2014
- Dan Gibson, City Councillor for the City of Guelph and Senior Environmental Specialist with ‘Ontario Power Generation’
- Steve Dyck, President and CEO of ‘Guelph Solar’
- Yvette Tendick, President of the ‘Guelph Coalition for Active Transportation’ (GCAT)
- Mike Schreiner, Leader of the Ontario Green Party (OGP).

Across document review, attending various forums, and interviews with the above named key informants, I have attempted to be robust, and capture the breadth and depth of the nature of emissions reductions efforts in Guelph, with the intent that much may be applied to other Canadian communities (and potentially beyond). In doing so, I bestow high credit and praise upon each of this study’s participants, as they were and are knowledgeable, passionate, insightful, and ultimately instrumental to allowing this research to become what it is. Moving on, I now discuss specifics surrounding the nature of the interview content, the intended purpose of asking such questions, as well as further elaborate on the potential applicability this research embodies.

Asking Questions, Moving Forward…

“Though communities across Canada are beginning to take leadership when it comes to Community Energy Planning, there is still a long way to go on implementation” (QUEST 2016: 1). Those 180 communities that have adopted a CEP are all facing unique challenges (GTI 2016a, 2016b), along with their various independent CEP supporting efforts geared towards reducing emissions. However, there are initiatives aimed at tackling such issues in order to speed up the implementation process. These types of projects, aimed at CEP facilitation, are key should we desire to keep global warming below the most drastic ‘business as usual’ approach estimations to any significant degree. In Canada, one of those initiatives is ‘Getting to Implementation’ (GTI). GTI is an effort being advanced by the Community Energy Association and ‘Quality Urban Energy Systems of Tomorrow’ (QUEST) in partnership with ‘Sustainable Prosperity’. GTI was launched in 2014 and aims to help communities navigate associated barriers and accelerate the implementation of CEPs nation-wide, where a primary aspect is the identification of challenges and the most effective ‘ingredients for success’ for realizing a successful implementation process. Accordingly, this initiative set out to embark on a pilot project in order to produce a framework, or guide, intended for use across communities, geared at navigating the emergent challenges communities may face during various stages of CEP implementation. As such, GTI selected three communities, being Campbell River, British
Columbia; Calgary, Alberta; and the Region of Waterloo, Ontario where challenges will be identified and ‘best practices’ applied in order to best facilitate the implementation process. This initiative got underway between November of 2015 and January 2016. Further, being an extremely young but promising initiative, GTI expressly welcomes and invites contributions that tell of related experiences and stories (GTI 2016b; QUEST 2016), which brings us back to this research and the specifics of this inquiry.

Accordingly, this study is premised on doing similar things, using Guelph and its extensive experience with the CEI implementation process as a case study, along with other local initiatives attempting to reduce greenhouse gas emissions that are naturally a part of realizing the CEI targets. Following up on Tozer’s (2013) findings related to progress and challenges to emissions reductions processes in cities, three primary research questions drove this project. Though not taken directly from Tozer’s (2013) work, these questions are purposed towards similar ends, and read as follows:

1. When attempting to systemically reduce greenhouse gas emissions at the community level via community energy plans, and/or systems and practice reforms, what is the nature of prominent and potential challenges or barriers that might hinder the implementation process and the realization of the reductions targets?

2. With said barriers identified, what are some effective ways to prepare for, avoid, and/or move beyond these issues as they come about?

3. [and] To what extent has Guelph been successful with CEI implementation, reducing greenhouse gas emissions, and realizing itself as a ‘Sustainable Energy Community’ (SEC)?

Though CEPs and other emissions reductions initiatives are often regarded as officially independent from one another, both generally embrace the same cause in environmental terms, and as such are theoretically examined as unified processes, where independent initiatives naturally support the realization of CEP energy goals, and are also essentially instrumental to achieving overall CEP targets. As such, studying the challenges to the process of reducing emissions is approached in a way that regards CEPs and related initiatives of equal theoretical importance, and in essence, existing ‘under one roof’ where understanding the emissions reductions process is concerned. In effect, the challenges to one are challenges for the others. Still, for the purpose of inquisitive clarity, the primary research questions were broken down into the following, which served as the interview guide.

- In relation to CEPs and Guelph’s CEI specifically:
  - Since the CEI’s inception in 2007, what progress has been made with reducing emissions and CEI implementation generally?
  - Since 2007, what challenges to achieving CEI targets have arisen, and what was their nature?
  - How were these challenges dealt with and overcome, and/or how should cities go about navigating these challenges effectively?
What are the current challenges to CEI implementation in Guelph, and what is their nature?
What are some effective ways of navigating these challenges in Guelph or elsewhere?
What are the biggest challenges to reducing emissions in cities, and what are some effective ways of navigating those challenges?

In relation to independent but supporting emissions reductions initiatives:

What are the challenges to reducing emissions through independent but supporting emissions reductions initiatives, and/or the work you do specifically?
What are some effective ways of navigating these challenges, in theory or practice?
What are the biggest challenges to reducing emissions in cities, and what are some effective ways of navigating those challenges?

Asking and answering these questions serves multiple purposes. By following up on the CEI’s progress thus far, the intent is to participate in keeping up to date on the progress of Canadian CEPs and the extent to which SEC status has been realized at this point, where this is important both as far as record keeping goes as well as to demonstrate progress that might be motivational as well as resourceful to other communities, where existent progress means that these other communities may be motivated to indulge in understanding how that progress has been made, bringing me to the purpose of the next question. Identifying the challenges that have come about in the past nine years, as well as the precise form they took, allows this research to contribute valuable information to related literature and initiatives, by both confirming the possibility of encountering various obstacles, as well as demonstrating some additional ones to be aware of. Moving on, identifying the ways in which these challenges were overcome, as well as recommendations for how they might be, allows this research to further contribute to the literature and related initiatives, giving insight as to the value, effectiveness, and most importantly, scope of various techniques, and as such offering potential solutions to concrete issues. In identifying challenges the CEI is currently confronting, this research continues to honour its commitment to informing CEP focused literature, CEPs and related projects, by continuing to add to a comprehensive list of potential challenges to be aware of. Answering this question also positioned this research to focus on advancing the Guelph CEI specifically, as well as to delve deeper into strategies for overcoming various challenges, which was done in the following question. Here, participants had the chance to again share their thoughts and experiences surrounding challenge navigation, which allowed me to triangulate their perspectives and in effect offer concrete advice to both Guelph, and emissions reductions efforts in general, where these advices are generally advanced without specific reference to Guelph, but rather as principles to follow.

The remainder of the interview questions are broader in scope, and allowed participants to discuss challenges to local emissions reductions processes in general, as well as effective ways of navigating associated challenges in theory or practice, regardless of whether the barriers were CEI/CEP specific, or related to any number of less formally CEI related initiatives under the umbrella that is community energy plan implementation. The intent here is to make the analysis
of the GHG emissions reductions process, whether specifically through CEPs/CEI or other similar efforts, more robust, and to reflect the reality of emissions reductions processes in communities. This is important, where the reality I speak of embodies that challenges to reducing emissions that independent initiatives face are in effect challenges to the CEP/CEI implementation process itself. This is resultant of the fact that any and all efforts to reduce emissions in communities are complementary and instrumental to realizing CEP/CEI reductions targets, that independent initiatives may be and were/are often in partnership with official CEPs/the CEI, and that a lack of success for any given group naturally holds back the others where their fundamental goals are the same. As such, inquiring about the challenges to reducing emissions outside of the official CEI bulletin is most important to shedding light on the rocky road that is ‘de-carbonization’. Together, it is hoped that these lines of questioning effectively amount to a thorough exploration of what the challenges to reducing emissions in communities are, and the identification of some valuable strategies for avoiding and overcoming such challenges, all being extrapolated from, and grounded in, the extensive experience with, and knowledge of, that Guelph has with the process of de-carbonization.

The analysis takes on two distinct forms, wherein the research questions apply to both. In the first, I spend time bringing together participant perspectives and insights on their own terms, to offer a broad and hopefully highly applicable sense of the challenges to reducing emissions in communities, and some of the ways we might effectively navigate such issues (naturally based on Guelph’s ongoing process, as per the participant pool demographic and experience). In this first analysis, my role is primarily that of uniting voices from the frontlines, and packaging them in a way is thorough, accessible and hopefully effective. In this first analysis, though I apply some personal interpretation regarding how participant voices complement one another (which in part culminates in a framework for reducing emissions in communities that is established as this study’s final chapter), participant voices themselves command the ultimate authority regarding the conclusions and recommendations put forth. Once again, though participants were not given the chance to shape the research itself, or a hand in interpreting and constructing the results (as per CES principles), I have attempted to empower them in this way, by maintaining an accuracy towards their understandings of their insights, and treating them as highly knowledgeable authorities from which we all might learn directly. As such, the first form of analysis embodies a consultative approach to the issues this research tackles, and is advanced as singularly such, albeit with some reference to confirming literatures.

In the second analysis, the Public Engagement approach to social change is used to interrogate that which I have gleaned about the ongoing process and form of the CEI implementation effort. Having extensively argued as to how and why the Public Engagement approach is an effective way of realizing substantial social change, in this analysis my role shifts from consultative to constructively critical, where I adopt and apply the grounded insights that Public Engagement has to offer. As such, I use this section to illustrate where the CEI implementation process has converged with the Public Engagement approach, diverged, and to what degree where possible. Within, as well as in concluding such exploration, I make recommendations towards uniting the CEI effort with the dictates of the Public Engagement approach, with the intent of better positioning the local community for success, while also informing other North American communities, and potentially beyond. Finally, the insights of the Public Engagement (and of positioning the CEI implementation effort within it – the second
As a person who is genuinely passionate (and worried) about ecological health, I sincerely hope and intend that the results of this research are valuable in informing Guelph, communities across Canada (and potentially beyond), and initiatives that are striving to reduce carbon footprints and realize climate sustainability. Accordingly, this study culminates itself as a document that is intended to assume the form of a tool, illustrating potential challenges and their nature, as well as effective approaches, in both theory and practice, for confronting and moving beyond such obstacles. The breadth of this is first outlined across the two analyses, where subsequently; a more focused framework for success is advanced along with a Venn diagram reflective of that framework, for simplicity and easy reference. The totality of this document is thus intended to inform and facilitate community energy planning, implementation, and greenhouse gas emissions reductions processes in Guelph and hopefully beyond, by engaging with the Guelph CEI and related local initiatives. As such, it might lend itself to being drawn upon by governments, academics, energy activists and any party or person working on reducing greenhouse gas emissions in Guelph or elsewhere, whether via CEPs or related supporting work. In doing so, I hope that these parties may at the very least be made aware of some of the many potential challenges to emissions reductions processes, and thus at least in part, use the document to anticipate, plan for, and move past various challenges to these processes most effectively in their unique communities.

This research also adds itself to a generally young but growing body of academic and other literature (including being forwarded to GTI) related to energy and sustainability at the community level. Further, the City of Guelph is currently undertaking an ‘update’ of the CEI, meant to identify and explore the progress, gaps and challenges, among other things such as engage in a restructuring of the initiative, to be completed by early 2017. This study, as per its nature, is intended to directly support this effort, and as mentioned, has accordingly been shared with the City of Guelph, both officially, as well as where a draft was provided to CEI staff in June 2016, in order to support the CEI restructuring in a timely manner. This thesis has also been given to each of the research participants, all of whom had been interested in receiving a copy to inform and facilitate their own aims, where this was one of the primary initial purposes of the project. Further, this study will be forwarded to appropriate persons across Canadian cities, as I deem it well positioned to add value regarding emissions reductions processes, and thus feel compelled to share it as widely as possible. As this research is intended to be immediately applicable in various ways across settings, I sincerely hope it can lend itself to the production of tangible benefits for communities and society at large, by helping us mitigate the potential effects of climate change, as well as facilitate the realization of ‘other’ benefits that reducing greenhouse gas emissions in communities can bring about. As made clear, emissions are at their highest levels ever today, and despite the big promises recently made at COP21 in Paris, it is imperative that smaller, local communities take energy and climate into their own hands if we wish to retain hope for an ecologically sustainable future. As such, this research, and related initiatives, despite being potentially too late, remain timely and important. Moving forward, I now briefly discuss and reflect upon researcher subjectivity, how data was approached and evaluated, establishing rigour, and some strengths and limitations of this research.
Following such, I finally turn my attention to the many gifts my participants provided me, and strive to return the favour…
In chapter five, I take the time to reflect on how I, as a uniquely positioned social actor, may have affected the nature of the research, the way in which participants interacted with me, and the results and conclusions I ultimately put forth. Additionally, I reflect on how I have attempted to establish research rigour, to ensure that this study’s contents are credible and sound. Finally, I also take the time to explore some of the potential strengths and limitations embodied in this inquiry, as well suggest areas for future research based on such limitations, that might help us better understand the process of community level de-carbonization, and as such be more effective at it.

The Abstractions of Self… Positionality

As social scientists, we are but people ourselves, where accordingly, our own subjectivities of course shape the nature of the research. Design, the way our participants react to us, the nature of the data they subsequently elect to share, as well as our interpretations of such data are thus all subject to the influence of who we are (Finlay 2002). Accordingly, I now reflect on my own subjectivity, and how it may relate to and have influenced this study. I am a student who is very much intent on getting my hands dirty for causes that matter, predominantly towards social and environmental justice, equity and health. Being someone who cares deeply about environment and climate change then, I live my everyday life in a personally activist way, where I am an avid gardener, cook, environmental and social advocate in everyday conversation, and someone who is intent on ‘using less’ of everything material, barring internet bandwidth.

Accordingly, this study was certainly shaped by these subjectivities, arguably positively in various ways. First, the direction of this inquiry was largely shaped by my personal philosophies and genuine passions I had acknowledged above. Hence, my electing to investigate how to reduce emissions in communities was a direct extension of my desire to make applicable use of my time at the University of Guelph, to direct that use of time towards producing something that embodied a potential to benefit all of the world’s people, and as such to advance and participate in realizing a sustainable ecological foundation. This is consistent with Moustakas (1990:27), where he states that “the task of the initial engagement is to discover an intense interest, [and] a passionate concern that calls out to the researcher”.

On that note, my communications with participants may have been positively influenced by my subjectivities, where the following factors may have helped build rapport, which Jorgenson (1992:148) sees as an “aid in the elicitation of “candid” and full disclosures of information from the research participants”. The participants in this study were all my elder, working professionals, busy, as well as people who appeared to be genuinely passionate about
reducing GHG emissions and environmental sustainability, and, whose daily lives appeared to revolve (to varying degrees and in different forms) around getting their hands dirty for the cause. Accordingly, though our communications started off in a more formal fashion in some instances, through conversation, I felt that a significant degree of rapport, trust, and even potential friendship was established in most cases. As my motivations behind doing such research as well as life philosophies in general became transparent, participants may have been moved to become more relaxed, honest, and open, where for example I made clear, a number of times, that my intent was not to ‘vilify’ anyone in the results and analysis, but rather to be as constructive as possible surrounding our mutual desire to realize a sustainable environment, where this appeared to be honestly acknowledged as legitimate. In other words, in my opinion our conversations quickly evolved beyond ‘this is a study’, and into a discourse about the things we were mutually interested in, where my ‘true self’ (including genuine passions, but also in some instances other ideological and biographical information largely unrelated to the specific contents this research tackles) was able to shine, and where I believe this subsequently helped make us comrades rather than strangers in many instances. This is consistent with Hollway & Jefferson (2000), where points of mutual self-identification (i.e. similar interests or circumstantial factors) can be uniting factors that help establish rapport.

As such, participants appeared to recognize that I genuinely care for and attempt to live the cause. Accordingly, my ‘comrades’ appeared to willingly (and often excitedly) provided rich information, where I am quite positive that any filters on their thoughts were minimal. This is consistent with Finlay (2002:215), where “unconscious processes [here being participant negotiations of my identity] structure relations between the researcher and participant[s]”. Further, most provided ample time for conversation, and even the opportunity to re-engage in future, despite their clearly busy lives. My own transparent positionality was, in my opinion, a primary factor behind this attention I was so lucky to be afforded. Many an inquirer have delved into the plethora of considerations with which we might approach interviews and our own positionality within them, however in keeping with the ‘tone’ that I advance my own positionality and conduct as having contributed to, the in-depth interview requires “sincerity, cooperative mutual disclosure, and warmth” (Douglas 1985; Miller & Crabtree 2004:196). Accordingly, in being genuinely interested, truthful about my motivations (as well as somewhat unrelated gripes in some instances), excited to learn, and hence friendly with participants, I again assert that each interview appeared to be positively influenced by the nature of my positionality and how I subsequently carried myself, lending itself to conversational depth.

Additionally, to the point of establishing trust, rapport, and subsequently nurturing the conditions for conversational depth, there are three other factors that, before and during the course of carrying out interviews, may have helped me become regarded as more of an insider, and thus someone who could be trusted. First, before soliciting various participants for interviews, as part of my process for becoming familiar with the setting, I introduced myself to a number of them at different community meetings, thus establishing face to face contact, as well as a brief discussion of research intent, prior to any formal invitation to participate. On that point, I was also quite visible, where I and various participants each attended multiple community meetings, and as such in ‘bumping into each other’ various times prior to interviews, my genuine interest in the subject may have become more legitimized with some. Second, most of my participants were either friends with, or had
formal or informal working relationships with each other, and as such, with each interview I carried out, my status as an insider within the group itself may have been bolstered as a result of my name and their experiences with the interviews (again, seemingly quite positive) coming up in conversation. Lastly, and directly related, though I did make email contact directly with each participant (forwarding the official letter of invitation to participate), I was at the same time referred to five of my nine participants by other participants themselves. In these instances, not only did these referees give me other participants’ contact information, but they actually took the time to send an email to those they had referred me to, while copying me on the email, and thus in effect threw their support behind me, helping legitimize me as someone who could be trusted, which in turn may have helped strengthen rapport with subsequent participants. Together, I argue these were important to gaining conversational depth.

Finally, where they were the experts, and I, a genuinely passionate and enthusiastic investigator, ‘lab coat’ power dynamics appeared to be largely absent, and thus hopefully did not affect the nature of our conversations to any significant extent. Throughout interviews, this type of investigator-investigated hierarchal climate did not appear present to any impactful degree. Though of course, seeing as “the interviewer initiates the process and sets the opening scene with a question” (Miller & Crabtree 2004:188), where a semi-hierarchal climate is hence initially established, I argue that these first moments of the interviews were the only time at which such a climate existed, where I subsequently made efforts to demonstrate myself as a comrade and a student of each participant. As a result of this, if anything, participants appeared to recognize their positions as experts, as well as appeared genuinely interested in helping me learn, as they acknowledged the legitimacy of my expressed intentions behind such learning. Overall, my positionality as an individual and investigator played an instrumental role in the construction of this research, as well as appeared to have had a very positive effect on the nature of my relations with participants.

Beyond the positives laid bare above, there is of course the potential that my position as a social actor adversely affected the quality of the relationships and dialogue between myself and participants, as well potentially affected the sample size and who agreed to participate. At the onset, despite that I attempted to demonstrate myself as a student of each participant (and that they were all my elder and working professionals), the fact that I am working at the graduate level, and that (I posit) it is unlikely that all participants possessed the educational status that I do, might have contributed to maintaining a hierarchal climate in which some participants may have felt ‘sampled’ (i.e. primarily subject to power) rather than ‘approached’ (i.e. primarily wielders of power). This is consistent with Ballinger & Payne (2000), where participants may regard a researcher as a professional who wields significant authority and influence, which can then influence any subsequent interactions. Despite that this did not appear (to me) to be the case in any of the interviews, it may well have manifested as such, especially when we consider that participants were fully aware that I would ultimately command authority over how their voices were construed. Accordingly, my position as a graduate level researcher may have manifest into a ‘guardedness’ with some (or all) of this study’s participants (despite not appearing so to me), which would naturally affect the type of information participants were willing to share (something I will likely never be able to confirm). Additionally, I am a tall, white, and seemingly economically privileged (something we often assume of those fortunate enough to attend university) male (where participants were not all white, male, or possessing of
large and imposing physiques). Accordingly, this may have further contributed to an uneven power dynamic in which some participants may have shared their thoughts in a more insulated fashion. This is consistent with Wasserfall (1997), where interactions are very much subject to being shaped by different social markers such as race, class, and gender, which can act to unite or distance researchers and participants.

In approaching the world through the lens of my own positionality in this sense, I regress to the fact that participants were aware that I ultimately had authority over how their thoughts would be construed, and they may have been inclined to take a guarded approach to our conversations, where for example there may have been some degree of concern that a ‘graduate level white male researcher mind’ might unduly and problematically ‘colour’ how they truly felt. In addressing such power dynamics however, and beyond my attempts to demonstrate myself as a student of each who would not betray what they intended to construe, I believe that the interview settings and times at which they were held helped ease this sense of imbalance where it may have existed. As far as setting, I made it clear that participants had ultimate authority, where participants themselves ultimately proposed and selected the majority of the nine locations at which the interviews took place. In giving participants this power up-front, a sense of being ‘approached’ rather than ‘sampled’ may have better manifested. Regarding the time at which interviews took place, it was I who was accommodating of participants from the start. Rather than propose a time that worked for me, I asked this of each participant, while also providing a wide window in which I would make myself available to accommodate their schedules. As such, regarding interview setting and times, I sought to empower participants with an ownership of the research process that went beyond agreeing or disagreeing to participate, and in doing so, attempted to ease the power dynamics that my own positionality as a researcher and human being may have contributed to creating and maintaining.

Approaching & Interpreting the Data – Methodology and Biases

Regarding sifting, sorting, and interpreting the primary data, I now briefly turn my attention to a discussion of both my methodology specifically, as well as an additional exploration of my own positionality and biases, as these of course might have naturally affected my interpretations and conclusions.

Primary data came from the observation of public forums, engaging with news and City print documents, as well as interviews. I approached the data with few pre-conceived notions about what I was looking for specifically, where what those that did exist tended towards keeping an eye out for phenomena that might be categorized as being of a political, financial, technical, and/or social nature, as per the groupings that came about in my review of challenges to implementation spoken to in various literatures. Moving on, I now discuss data types and how they were handled specifically.

Speaking to community forums, I took extensive notes while in attendance, jotting down anything I thought might be even slightly relevant to the primary research questions I am attempting to answer. As such, I was looking for content that included points of CEI progress, challenges, and ways to move forward. In doing such, I came across both phenomena that was being explicitly named, as well as gleaned from the nature of the conversations being had
(primarily emotional-ideological challenges it appeared the CEI was facing, as per the nature of interpersonal conflicts unfolding before my eyes). Following this, I condensed such notes into word documents that outlined the nature of the relevant data in bullet points, as well as identified the phenomena that was most prominent or emphasized (namely, specific phenomena that was either mentioned multiple times, and/or accounted for a significant [beyond brief] portion of the discussions). These more emphasized pieces of data were bolded within the document, and helped me identify and create the seven thematic areas within which the results are framed.

Regarding print (City and news media) documents, I was of course continuing to look for anything pertinent to answering the research questions, including points of progress, challenges, and strategies for success. Regarding City documents, most of the information gleaned had to do with the state of the CEI’s progress, and thus I did not weigh or theme it. However, the news articles tended to present themselves as primarily an embodiment and description of some of the challenges the CEI was facing. Descriptions of some of the happenings within the public forums I attended, as well as direct glimpses of citizen opinion within the public comments sections further informed this research regarding challenges to implementation. Here, I once again made a word document that outlined anything relevant in bullet points. In doing so, I bolded anything that appeared central to the news piece (which helped inform the seven theme areas), as well as took note of public commentaries that could be used to answer the primary research questions.

The primary method of data collection was interviews. Interviews were first transcribed verbatim, upon which they were reduced to 1-2 pages of bullet points (interview summaries) that both captured all the relevant information, and drew specific attention to the most prominent and stressed elements (i.e. ‘biggest issues/ways forward’ = x/y/z) to emerge during the interviews (as far as I perceived). Each participant was sent a copy of their interview summary, and six of nine participants wrote back confirming the validity and accuracy of my interpretations, allowing me to confirm that various elements had in fact been stressed and emphasized more than others. These interview summaries thus played a pivotal role in allowing me to identify and construct the seven theme areas within which the results are situated.

Overall, the strategy for sifting through and organizing the data was a broad content analysis, wherein I both attempted to capture all relevant data, while also identifying phenomena that seemed most central to the respective source. These phenomena helped inform and label the seven theme areas employed in this analysis, where the rest of the relevant content was then placed accordingly (with much overlap and interconnection, and thus multiple placements). For example, where a participant(s) had stressed home-stay, up-front costs, and knowledge about the scope of potential investments and financially savvy implementation scheduling as barriers to technological uptake, a City Council meeting being dominated by conflicts of opinion surrounding return on investment and whether the CEI should continue to receive financial support, and a news article on that same meeting seeing the public comments section dominated by uproar over perceived wasted tax dollars, I was able to both identify the higher themes of financial and ideological barriers to implementation, as well as use these information (in part) to fill in those sections. I did not apply a quantitative approach in identifying themes and sorting the data, but rather treated the endeavour in a more artistic fashion in which I spent time making maps by hand (based on the word documents described above), and in part using personal intuition regarding the bigger picture of the data I was collecting while I went through the
process, as I naturally got a better sense of this as time passed (possibly problematic as per my own inherent biases, which are acknowledged shortly).

In writing up the results I have attempted to advance each participant’s ideas (as well as those data gleaned from other sources) according to the nature of how the original source appeared to understand them, and thus put aside some of my own biases. Regarding questioning and putting aside my own biases in the interpretive process for example, I had originally come at the research as an anti-capitalist (which I still am – to be discussed), and with a mindset that we must (and should) bankrupt ourselves in the short-term to drastically reduce emissions. However, some data showed me that this may not be the case, where for example tinkering with the market via special loan programs can actually turn immediate and significant emissions reductions into an immediately profitable endeavour. In this case, instead of actively ‘not listening’ to, or attempting to understand how this might work (as it might threaten my views), I attempted to do just the opposite, both including this, and other ideas in the analysis on their own terms, as well as allowing the way I think to be challenged and changed. On that point, my critical interpretive role came where I determined how to best tell the story fully, coherently, and accessibly, as well as in the second level of analysis in which I apply the Public Engagement approach to the CEI’s ongoing journey. Speaking further to my interpretive role, both levels of analysis are then used to inform the framework towards reducing emissions in communities that concludes this research. This framework is thus born and illustrative of inductive analysis.

As I have clearly played a role in interpreting the data and forming conclusions, I close this section by taking the time to further explore and acknowledge my own positionality. According to Finlay (2002), this is important, and common practice in qualitative research, towards enhancing the transparency and accountability of the analysis and conclusions, as we understand that the stories we tell are actively shaped by our own subjectivities, and that personal introspection can thus provide a starting point for a more holistic understanding of the interpretations we ultimately make.

Though I have attempted to be view the data in a bias free manner, it is ultimately impossible for any of us to do so, and as such the following may have had some bearing on the form and nature of the analyses and results in this research. First, I am quite critical of the capitalist economic system. Second, as stated, I am very much an environmentalist in the sense that I believe preserving ecological health should ultimately come first, no matter the cost, as is it ultimately the basis upon which all human activities are supported. In that sense, the lens through which I view the data is likely different than someone who is supportive of capitalism, or for example considers a healthy economy as equally important to ecological health. Third, my positionality as a white, not underprivileged male may have had bearing on the analysis, and even the nature of the conversations I participated in. For example, I did not actively bring up intersectionalities (race, class, gender, etc) as related to mitigation efforts and capacities during my conversations. Additionally, though I do discuss economic access, I have not made any attempt to incorporate other intersections into the analyses (which is actually acknowledged as a limitation of this study). Fourth, I approached the data with the idea that I wasn’t going to ‘damn’ anyone (which also came up in interviews), and as such my analyses may be less critical than they could be in some senses, where I avoid discussing the individual in favour of discussing roles and processes. Fifth, and directly related, is the comradery I felt I established
with participants. In doing so, my critical eye may have been diminished in favour or preserving relationships, and further, taking their insights at face value rather than interrogating them. Regarding overcoming this issue, directly applying the external eye that is the Public Engagement approach (in the second analysis) helps advance a more critical eye.

Finally, and also related to the relationships I felt I established, my status as an insider (someone trusted, welcomed, and familiar with the people and community that one is studying) vs outsider may have had some bearing on interpretations. In one way, this may relate to the former point in that in becoming more of an insider with each participant during (and sometimes following) interviews, I may have become more inclined to take their insights at face value as well as averse to painting them in a bad light, as per the nature of the social contract we sometimes have with personal acquaintances (this in comparison to for example, Maurice Strong, with whom I have no personal relationship and thus felt free to criticize in a previous section). In another way, as I became increasingly familiar with the situation in Guelph while conducting interviews with various participants who often frequented the same social circles, my view of the situation may have become more insulated, as each participant was a CEI proponent, many of whom having direct working relationships. As such, a critical perspective may have been diminished in this way. Further, in actually analyzing the data (especially in the first form conducted in the next chapter), my views likely converged with those of participants because of the fact that I had participated in the conversations that I was now analyzing. In this sense, it is entirely possible that if a different social actor had carried out the analysis using the transcriptions of the interviews I had conducted, their conclusions would be different. Again however, engaging in an additional second level of analysis, in which the Public Engagement approach is applied to critically interrogate the CEI implementation effort (chapter seven), helped me draw conclusions in a different light that hopefully works to ease the effect that my personal biases may have had on the interpretations and conclusions drawn in chapter six. Though it would take a study in and of its own to analyze the ways in which my own positionality may have coloured my interpretations of the data, I here acknowledge some of my biases so as to give a sense of who I am and where I am coming from to readers.

Questioning Our Schemas… Rigour

Especially regarding qualitative research, it is important we examine and justify that we have satisfactorily answered the questions we sought out with, and that analyses are reflective of ‘reality’. Being thorough, accurate, and hence applicable, is thus highly important. Accordingly, I now briefly examine how I have attempted to achieve these qualities.

Speaking again to my own subjectivity, participants appeared to be quite willing to be open and thorough resultant of (what I perceived as, as well as was often acknowledged) our mutual interests becoming transparent and hence aligning. Further, though the sample size is somewhat small, participants are each well-versed in their fields as they relate to the contents of this research, as well as many being heavily involved with the CEI itself. Accordingly, I believe the sample is effective as far as participants being knowledgeable and practiced in phenomena that this research deals with (i.e. reducing emissions in a variety of ways, and community energy plan implementation). Speaking more to ‘expertise’, the site of the study lends itself to the strength of the findings, where, as discussed, Guelph is a very early Canadian adopter of
systematic city wide emissions reductions efforts. Guelph is thus a pioneer in this regard, and almost a decade of implementation naturally embodies a degree of content related to this research that most other Canadian cities would be hard pressed to offer. Returning to my own subjectivity and this study’s participants, I believe this research was able to thoroughly access that experience, where participants appeared to be quite willing to share, as well as informed. Speaking additionally to the data set, triangulation was employed, where the results of this research are thus based on an array of investigative venues. In doing so, I have attempted to be thorough and multifaceted with regards to contents, analyses and conclusions. Relatedly, in my attempt to approach, interpret, and advance the data in a way that lets it speak on its own terms, I have striven towards ensuring that the contents of this study purvey truthfulness, insofar as my accounts of the insights that participants elected to share.

In speaking more to truthfulness, the concepts of credibility, confirmability, and affective sincerity apply, where I now outline these concepts and then illustrate how I have attempted to honour them. Credibility is established where the results, analysis, and conclusions brought forth are reflective of participant interpretations of the data they offered, and are thus also supported by and grounded in evidence. Confirmability is about attempting a high degree of objectivity, and thus that personal subjectivities do not unduly bias the results and how they are advanced (Bryman, Teevan & Bell 2009). Finally, affective sincerity is increasingly considered a strength of qualitative research, where in part, research may be grounded in subjective moral pursuits, thus embodying altruism, and hence a genuine desire to honour participants’ interpretations of their thoughts, as well as accordingly aid in their related pursuits (Northcote 2012).

Regarding achieving credibility, I have spoken extensively to my having attempted to honour participant interpretations of the phenomena they spoke of. To illustrate, I did receive feedback on the early draft I had sent to specific persons, which was highly positive and encouraging regarding content. Accordingly, I argue there is much ‘truth’ in these analyses. Confirmability has (hopefully) been achieved in much the same fashion, where the data provided to me has not been altered to fit various ends, but rather, has been advanced as speaking for itself, where I have attempted to set aside my personal biases (for example, despite that I personally lean more towards expanding and improving public transportation as a means of reducing emissions resultant of personal vehicle travel, I did not omit or devalue participant ideas surrounding promoting electric vehicles). On that note however, my being reflexive in having attempted to identify and acknowledge my personal subjectivities is a way in which I have facilitated and invited readers to, for themselves, gauge my success in having achieved confirmability. Additionally, applying a Public Engagement lens to the CEI implementation effort helped me step away, potentially becoming more critical and externally grounded in the conclusions I have drawn, yet in a different way. Regarding affective sincerity, I again draw on my own positionality, and desire to help each participant succeed in our mutual interest towards realizing a sustainable environment. Accordingly, the analysis has been constructed with the intent of applicability, bringing together, but not altering (rather ‘adding to’, especially where the Public Engagement approach is applied), participant perspectives and experiences, with the intent of further informing participants as well as the world, regarding a noble cause. As such, my personal investment (past, present, and going forward) in the content this research tackles has driven me to attempt to ensure this study is thorough, and hence valuable regarding issues that matter to me, my participants, and a great many others, where I have intended to establish rigour.
in this way. Here, credibility and confirmability also again apply, where in pursuing such ‘value’, I have assumed and embraced my position as both a novice and a witness, as well as critical theorist. In this sense, I have attempted to both treat participants as the credible people that they are and thus stay true to their own interpretations of various phenomena, as well as step back and apply a grounded external eye (the theory of Public Engagement) in order to situate and ‘add to’, but not alter, participant perspectives and the CEI experience as construed throughout primary the data. Engaging in two separate levels of analysis was instrumental to my being able both give participants a venue through which to speak and be heard, on their own terms, as well as then subsequently apply a more critical interpretive eye. Taken together, I argue and intend that the above lends itself to thoroughness, accuracy, and applicability, and as such to establishing research rigour.

Finally, regarding achieving transferability, or the idea that the findings brought forth are applicable across various setting, much qualitative research often has a hard time, due to dealing in ‘forever unique’ social situations and subjectivities, as well as that the sample size is often small (Bryman, Teevan & Bell 2009). Still, I argue that this research has achieved at least some degree of transferability for a number of reasons. First, participants often confirmed such generalizability themselves, where many phenomena were stressed as being existent across communities. Being that they are well versed in their areas of expertise, I am inclined to place credence in such statements. Second, the analyses embody ‘thick’ description, where in-depth, detailed account of participants’ thoughts and experiences (including the CEI process in its own right, as per other forms of primary data) are advanced. As such, readers have a great deal of breadth regarding what may be applicable in their worlds, where this is one way in which transferability can be achieved in qualitative research (Bryman, Teevan & Bell 2009). Finally, the second level of analysis advanced in this research is done against the grounded literature of the Public Engagement approach, and as such findings and recommendations put forth may better lend themselves to generalizability. That said, despite that I am inclined to argue that a significant degree of transferability exists, as well as that the analyses are often written in a way that purveys that assumption, all qualitative studies are inherently plagued by the question of applicability outside of the setting in which the research is done. Accordingly, though I argue that many insights likely apply across communities, it is ultimately for the readers and energy practitioners to decide for themselves. In closing then, I argue that all together, the above lends itself to a thoroughness of inquiry, accuracy, and hopefully applicability across settings, as we desperately need to move the needle on emissions reductions quickly and drastically.

The Essence of Self… Strengths & Weaknesses

The nature of this study and the strength of the analyses and conclusions brought forth are of course limited, as well as aided, in a number of ways. Speaking first to limitations, a primary issue manifests in the broader potential applicability we had just discussed, yet in a different form. Though the entirety of the research and analysis may be highly applicable here, today, and hopefully across settings, the ideological terrain surrounding energy and climate change is rapidly shifting. With COP21 having just recently occurred, as well as Canada seeing a much more ‘professed’ environmentally friendly federal leadership, the realities surrounding municipal and national mitigation efforts are changing quickly, and appear likely to continue at such a pace into the foreseeable future. Accordingly, the first way in which the strength of this
research may be limited concerns the following. As realities surrounding policy, action, and mental terrain appear to have evolved on a daily basis since I started this project in late 2015, I was not able to physically keep up with the breadth of new developments, and hence incorporate them into this document. As such, parts of this research, for example where I had spoken to the failure of global governing bodies to act, may apply to a lesser degree, or not at all, as of today, tomorrow, or the next. Many studies suffer much less from this limitation, but, the fact that climate change is such a global issue, that it has achieved significantly more legitimacy extremely recently, and that there are thus tens of thousands of policies, initiatives, and efforts aimed at stopping it going on at any given time, while also continuing to multiply, makes certain parts of this research very much subject to becoming irrelevant. Still, I have done my best to keep current, and the fact that things are changing is a very good thing. Speaking to a shifting cultural consciousness however, Trump was just elected, and only his tiny hands know what that means for our aspirations surrounding mitigating climate change in both sentiment and practice.

Moving on the strength of the conclusions put forth in this research is additionally limited according to the following. First, as I had discussed, casting a critical eye on the situation in Guelph may have been hampered to some degree as a result of the comradery established with participants, making me much less inclined to criticize them personally, and as such may have diminished my ability to be critical. One way in which I have attempted to be more critical is carrying out a second level of analysis (chapter seven), in which the official CEI implementation process and form itself is situated within the grounded theory of Public Engagement.

Second, the sample is fairly elite, and thus the information gleaned is more subject to narrowly reflect the views of those people who possess a certain degree of power and authority, beyond the ordinary citizen (note that when I say elite, I am saying that each participant was in a professional position that commanded the power to make decisions that many ordinary citizens don’t have [this degree of power is still differentially distributed across this study’s participants]). As such, while neglecting to speak to actors at all levels of the social hierarchy, this study may have failed to capture some important perspectives that would help us better understand and advance community energy reforms.

Third, and directly related, this research did not deliberately set out to, and thus did not to any significant degree examine, intersectionality (social markers) as they might relate to vulnerability to climate change, and a capacity to participate in mitigation efforts. Though financial capacity is discussed very briefly at points, things like race, gender, class (more in-depth), and age (for example, in terms of ability to walk, bike, or take public transit as opposed to a personal vehicle) have not been directly analyzed in this endeavour, despite certainly being important areas of study and consideration should we effectively position ourselves to fully address climate change at the community level (for contemporary insight into intersectionality and climate change, see Godfrey & Torres (2016a, 2016b)).

Fourth, and an offshoot of intersectionality, this study did not focus on or differentiate between social actors who owned their homes and those who were renting space. As such, I acknowledge that the nature of much of the discussion and conclusions put forth reflect an assumption that everyone owns their homes, and that homeowners (even if renting the dwelling out) are the focus of the recommendations (though I do not explicitly claim this assumption –
rather, I recognized it after the fact, and thus here acknowledge it as shaping the way the analysis is written).

Speaking to the elite sample, lack of focus on intersectionality, and failure to be mindful of and examine the circumstances of home-owners versus renters insofar as participation in mitigation is concerned, I strongly recommend that future studies on community level energy transitions pay focus to the former, thus helping to expand our discussion of community energy reforms, and ultimately better position us to together advance community level climate change mitigation most effectively.

Regarding its strengths, this research benefit from the time and context in which I was collecting primary data, which I acknowledge was in no way foreseen and planned regarding study design. Guelph was in the midst of a turbulent time for the CEI literally weeks before I started conducting interviews. However, and to be discussed shortly, CEI proponents emerged victorious, and my participants’ moods towards the CEI certainly appeared to reflect optimism and energy because of it. Accordingly, part of the reason my participants appeared to be so open and accessible may have been resultant of their enthusiasm and optimism surrounding Guelph’s future, and that of mitigating climate change in general. As such, I assert that this context was instrumental to the insight I was granted (as participants appeared well emotionally positioned to have a thorough talk about the CEI, as opposed to being narrowly focused on the immediate issue of seeing the vote to update the CEI pass in City Hall, and potentially keeping the CEI alive as an official initiative). Further, this turbulence also helped make the analysis more thorough, where various issues became highly visible to both me and my participants, thus putting them on both our radars. Accordingly, participants had a great deal to speak to. Additionally, this turbulence may also have assumed itself as a uniting factor regarding our rapport, where, resultant of my attending various meetings that many participants had also been a part of, being thus quite familiar with the political climate in Guelph, and also being on their same page regarding support for the CEI, we had lots to talk about right off the bat. As such, I argue that context facilitated comradery being established, lending benefit to this research by helping me access information and perspectives based on that rapport. Further, seeing the CEI update motion pass in City Hall may have contributed to expanding the scope of the contents of the primary data I was able to access, where I posit that if the update motion had failed, its failure would have dominated most of the conversations I had for obvious reasons (still, I can’t say definitively that focusing only on the CEI update itself would have been less valuable, rather only that it would have significantly changed the course of how my analyses and conclusions turned out).

Additionally, I draw our attention back to how I have attempted to establish rigour (confirmability, credibility, affective sincerity and transferability), as well as that the primary data included interviews as well as participatory research, news media and municipal document review. Accordingly, through my attempts to be rigorous, employing triangulation of the data itself, as well as conducting an additional analysis in which the CEI is interrogated within the context of the grounded theory of Public Engagement, I argue that that the strengths of this research (and the recommendations/conclusions put forth) also consist of it being thorough, truthful, applicable, and hopefully (as well as in my opinion) generalizable, as per the steps taken. Moving forward, we now finally move on to the very exciting results and analyses!
Regarding such results, I wish to once again thank and praise each participant immensely, as you (they) and your insights have collectively formed the backbone upon which this project’s value hinges.
6

A Mile in Their Shoes

***

As the first level of analysis, I use this chapter to explore the breadth of primary data on its own terms, including Guelph’s progress with de-carbonization, as well as some challenges the City is currently grappling with. Beyond that, this chapter explores seven content areas regarding challenges to emissions reductions, as well as strategies towards moving forward, in their respective order as follows: Personal commuter transportation; project selection, implementation, and maintaining financial viability; ideologies; direct financial barriers; reducing emissions beyond municipalities as corporations (i.e. throughout the extended public); landscape development and regulations; and achieving scale/succeeding over the long-term with emissions reductions. As such, coming from a Guelph context, this chapter gives a broad look at experiences and perspectives regarding community level de-carbonization.

***

Looking Ahead: A Roadmap for Round Two

In the sections to come I do the following. First, I discuss Guelph’s progress to date, and the degree to which SEC status has been realized. Then I get into some of the challenges Guelph is currently grappling with. These challenges are of a more ‘official’ type, in that they are popularly spoken of, visible, and in some cases incorporated into official City documents surrounding the CEI. Following this I discuss a CEI ‘update’ initiative as well as a financing mechanism and local program (known as the Guelph Energy Efficiency Retrofit Strategy [GEERS]) aimed at facilitating residential energy investments. The point here is to give some additional context surrounding the state of implementation to date, as well as to outline the nature of both the update and the financing mechanism, as I make fairly frequent reference to both in sections that follow. Next, I advance the first analysis, being a broad, yet in-depth discussion of the challenges to reducing emissions in communities that is based in the primary data set and its insights. Here, challenges (and solutions) are brought forth as potentially, likely, and ‘transferrable’ in and between North American communities (as per my previous arguments in support of achieving transferability, however I here again acknowledge that social actors themselves will ultimately decide what applies in their communities), where the majority if not all are thus also present in Guelph (as per the data coming from people in Guelph), though again, not necessarily popularly recognized or regarded as so. Throughout this section, I also discuss various methods of navigating such challenges, both in communities generally (again, as per my arguments that the insights I have gleaned in Guelph are transferable), as well as in Guelph, where the intent is to honour my commitment to providing awareness and insight surrounding emissions reductions processes, in a way that makes them more transparent and easier managed. Throughout this analysis readers will recognize a good deal of overlap my review of other literatures, as well as equally if not more,
additional insights. Further, I take the time to indicate where various previously identified theories of social change appear relevant and in practice in Guelph throughout this analysis.

Moving forward, I direct my focus to one specific, yet broad and imposing barrier to realizing CEP reductions targets, and significant emissions reductions in general, once again being directly extrapolated from the triangulation of primary data insights. Addressing this barrier then becomes the focal point of discussion in the final chapter of this research. Following this, and before the final chapter, I delve into the second analysis (chapter seven), in which the Public Engagement theory of social change is used to interrogate the CEI process, illustrating how it has done well, and where there is room for change and improvement according to the dictates of Public Engagement, and towards effectively addressing climate change at the community level. Following this, in the final chapter of this research I interpret and bring together participant insights (composing the first analysis), as well as the content of the Public Engagement approach and the recommendations put towards the CEI (and communities at large), and advance a framework for drastically reducing emissions in our communities. The form and nature of this framework’s applicability are discussed in conversational style as well as illustrated in a Venn diagram for ease of reference. Accordingly, I emphasize my belief in this framework’s potential for facilitating broad community emissions reductions (public and municipal), as per its grounding in both participant insights and the Public Engagement approach to social change. As per its apparent value (though ultimately up to readers themselves), I conclude in offering readers a note of advice, direction, and optimism.

Making a Dent: Progress & Achievements in Guelph

Guelph has made some significant achievements to date, and though far from reaching complete SEC status, is certainly laying important groundwork as well as has realized various more visible results. As far as groundwork, one of the most significant achievements (and capital expenditures) has been the integration of CEI policies and principles into Guelph’s other official City planning frameworks, including the City’s ‘municipal land use planning’ documents (including the ‘secondary land use’ plans), the ‘economic development investment attraction’, and ‘business retention and expansion’ programs and strategies. Accordingly, CEI principles inform all planning and development in Guelph, effectively moulding any municipal initiatives and works to also help achieve CEI energy targets going forward. For example, certain sections of land require a degree of density should they be residentially developed, and cycling lanes are mandatory on any newly paved roadways, as well as where stretches of road are torn up for maintenance or other purposes (K. Mwanzia, personal communication, May 18, 2016; Kerr 2016a; R. Kerr, personal communication, May 12, 2016). As such, Guelph appears to have set itself up for long term success in this way.

As I have just noted cycling infrastructure, we might naturally move into discussing progress in the transportation sector. Guelph has allocated significant investment toward reducing carbon in the transportation world via helping facilitate mobility alternative to the gas powered automobile. First off, the City of Guelph built an electric vehicle (EV) charging station at Stone Road Mall in 2012, and is currently awaiting a response from the provincial government about an application for funding to build three more (Kerr 2016a). On that note, Guelph saw the number of EV and hybrid vehicles sold jump 78% in a single year, going from 60 in 2011 to 107
In 2012 (City of Guelph 2013a), where recent data is unavailable. Seeing as Ontario derives its electricity primarily through carbon free means, this is great progress in electrification of personal vehicle transportation (where emissions are in fact reduced from fuel switching), both as far as public uptake and facilitation on the part of the City.

In terms of taking cars off the road via helping the public get out of them, Guelph is also making significant progress. Speaking to public transit, Guelph saw a record seven million individual rides in 2012 (City of Guelph 2013a), where it is likely ridership likely continues to increase according to the following. Though population influx may be a significant factor behind the increase in filled seats on buses, the transit system itself is also a major factor. Though public transportation can always be better, Guelph has managed to create quite an effective system in which there are two central bus hubs/transfer stations, where buses run every 20 minutes during peak hours, while every 30 minutes otherwise. The hubs are located at the University of Guelph and downtown respectively, where the downtown hub is a mere step (literally) from the GO Train. As such, seeing as service is frequent, the hubs are strategically located in the highest traffic areas, and that one of them neighbours Ontario’s cross province train service, getting around on public transportation in Guelph is fairly convenient and attractive.

Moving on, Guelph has also done well facilitating non-motorized transportation. To date, the City has built well over 100 kilometres of bicycle lanes, as compared to only 54 kilometres in 2009 (Kerr 2016a), thus at least doubling this infrastructure in seven years. Further, this will continue, as per CEI policy integration into other official planning frameworks I had spoken to previously. Additionally, bike mounts have been installed on every City bus, facilitating the hybridization of alternative to personal vehicle transportation. Relatedly, the City has a myriad of bicycle parking (racks) in high traffic areas, including the downtown core, and most visibly, at the University. On campus, there are a great deal of options to park a bicycle, where they are strategically located in central areas, meaning students, staff and teachers don’t need to choose between parking at a bike rack and walking ten minutes to their destinations, or locking their bikes to a tree that puts them closer. Further, 2015 saw the construction of a new covered, multi-level bicycle parking ‘facility’ on campus. As such, the attractiveness of biking is poised to continue growing, where riders need not worry about rain, rust, space, or convenience. Though I do not possess numbers on bicycle trips in Guelph, I can attest to the fact that it is very popular on campus, where the racks are consistently at about 90% capacity, barring the summertime student exodus. Overall, Guelph has and continues to do great work facilitating the landscape for the reduction of gasoline burned in personal transportation, and is thus progressing well where reducing emissions is concerned. These transportation focused efforts are consistent with a Consumer Approach to politics (Lenihan 2012), in which governments apply their limited resources to targeted initiatives they can achieve alone.

As far as local renewable energy generation goes, the CEI target is 25% of total City energy consumption by 2022, and though there is a long way to go, Guelph is making great headway. Speaking to solar, the public uptake of the provincial solar micro-fit feed in tariff program is 38% higher than the provincial average, and as such Guelph has one of the highest per capita solar installations in Ontario (E. Ferrari, personal communication, May 3, 2016). As a result, Guelph currently has about ten megawatts of solar generation capacity dispersed across...
community rooftops, where solar roofs totalled over 1100 in 2013 (Herhalt 2013; Kerr 2016a). Further, Guelph has taken advantage of gaseous energy produced in landfills, where it has two generation units at its Eastview landfill, with a current total generation capacity of 1.85 megawatts, though this will naturally decline over the next decade as per the nature of waste produced gases (Independent Electricity System Operator 2015). Still, this puts Guelph’s local generation capacity at almost 12 megawatts. According to Evan Ferrari (personal communication, May 3, 2016), speaking overall, Guelph produces 3% of its total used energy from local renewable sources, which is a far cry from four years ago when that number was a mere 0.23%. Further, this number is approximately 50% higher than the provincial average, where similar jurisdictions tend to hover around 2%. As such, Guelph generates about 50% more of the electricity used during peak demand than communities of ‘like’ composition. Seeing as Guelph spends, or effectively sends ‘out’ about 500 million dollars buying energy each year (without pursuing these local generation projects), we can infer that at least 15 million dollars are now staying in the community annually, helping make a plethora of businesses thrive, and a more prosperous Guelph overall (where one of the core ideas behind the CEI is economic development). As such, despite the need to ramp up local renewables generation about eight times by 2022 to meet their target, Guelph is making great progress reducing emissions, and increasing local energy security in this way.

As far as progress towards the CEI high level goals of reducing energy use and emissions by 50% and 60% respectively, Guelph may have moved beyond the 2012 numbers (17.6% and 26.3% respectively since 2007) I spoke to earlier in this document, though data does indicate a ‘levelling off’ of these reductions in recent years (where hard numbers are not currently accessible, but should be available in early 2017) (Kerr 2016a). Still, this should be considered progress, where it is noted that Guelph has continued to improve its energy efficiency and conservation as a community, which has allowed it to offset the total energy the City consumes in the context of continuing and significant population influx that naturally heightens total energy demand. In terms of efficiency and conservation, I wish to highlight a few items. First, in 2012, Guelph Hydro Electric Systems Incorporated (GHESI) installed ‘smart meters’ on approximately 40,000 homes (Kerr 2013), allowing residents and utilities to track energy consumption by the hour, where this information is automatically relayed to the utility company, as well as of course available to consumers in their homes. For utilities, this allows demand forecasting (again by the hour), thus from a conservation and efficiency perspective, they are better able to match generation with consumption at specific times, resulting in money saved via energy generation, and emissions being reduced. For consumers, the result is much the same, where they can track their energy use by time of day, match it to their bills, and thus adjust their habits to reduce their consumption and save money. Generally, we are all motivated to save money, and the results of smart meters installations show that on average, household electricity consumption is subsequently reduced by 3-5% (McKerracher & Torriti 2013). Considering that 40,000 homes account for approximately two thirds of Guelph’s population, it is likely that this move was instrumental to ensuring energy use and emissions levelled off rather than rose in recent years, where Kerr (2016a) notes that gains in efficiency have helped offset the growth in emissions that have come parceled with a population that continues to expand.
Moving on, other progress on conservation and efficiency include Guelph having moved to LED lighting in a number of its corporately owned buildings, and the installation of two district energy (DE) systems (A. Chapman, personal communication, May 5, 2016; Hallett 2016). LED lighting is a massive energy (and hence money) saver compared to conventional bulbs, where I know this well in that I use an LED grow light to get my plants started months in advance of the last frost. DE works to conserve energy via the way the end product (hot air, hot water etc) is generated and transmitted, where instead of houses and buildings requiring individual boilers and furnaces for example, DE systems centrally generate energy products, and have the capacity to transmit to a multitude of structures. Avoiding delving deeper into technical specifics, DE systems are much more energy efficient, thus saving end users money, and reducing emissions via less total use (including direct consumption and the waste associated with transmission of other more conventional systems) (E. Ferrari, personal communication, May 3, 2016). In closing on the topic of conservation and efficiency, Guelph is also successfully advancing its ‘Guelph Energy Efficiency Retrofit Strategy’ (GEERS) program, which has the potential to reduce energy use and emissions significantly in the residential sector (described in more detail in a section to come, along with the higher order ‘mechanism’ from which it was borne and takes direction). Though the program has not yet been implemented (for a variety of reasons discussed in pages to come), a pilot framework is being actively produced as I write this, and should be ready to roll out by 2018 at the latest (Kerr 2016b). Overall then, each of these projects facilitates saving energy and reducing emissions, via conservation resultant of our increased ability to use it more wisely by way of technology and habit. Accordingly, Guelph has and continues to make excellent progress with emissions reductions via various approaches, despite that current higher order data is not available, and/or that evidence indicates emissions reductions in Guelph have slowed or stalled in recent years. Additionally, these technological approaches to emissions reductions are consistent with the theory of Ecological Modernization (Fisher & Freudenburg 2001), where technology, tinkering with markets, and the opportunity for financial savings are posited to be instrumental to de-carbonization.

Finally, Guelph’s progress is reflected in two other significant areas, being ‘brand’ and ‘learning’. As far as brand, Guelph has maintained, and continues to further develop its reputation as a Canadian leader in energy and community energy planning. Apart from the reputational benefit itself, this appears to have also translated into a public culture that values sustainability, itself a huge potential barrier to reducing emissions and CEP implementation I will speak to later in this document (note that I base my assertion about a ‘green’ public culture on my experience living in the Guelph for over two years – conversations and observations, as well as per the results of Varghese, Skardzius & SOAN*3070 W’12(2) class (2012), which indicate a pre-existing culture of conservation in Guelph). Accordingly, though reducing emissions across the public may still present itself as a challenge to full CEI implementation (again spoken to in pages to come), Guelph appears to have a huge hand up over other communities in which this culture and brand may be wholly lacking (I’m thinking of my hometown… Calgary). On that note, a significant point of progress comes where brand attracts investment, and did so in Guelph with ‘Canadian Solar’. In 2015 Canadian Solar was the second largest manufacturer of solar panels worldwide, seeing $3.47 billion dollars in revenue (U.S. currency), where they have offices and plants across the globe that house their some 8,900 employees. Canadian Solar chose to establish their primary headquarters in Guelph, and with that created a significant amount of local employment, where in 2015, Canadian Solar employed
about 700 people in Guelph, despite that this number has been halved to 350 in the year since (Canadian Solar 2016; Seto 2016). Based on the company’s publically expressed motivation for doing so, I paraphrase in saying it was largely a result of attraction to Guelph’s brand as an energy leader (E. Ferrari, personal communication, May 3, 2016). Reiterating that the CEI is in part about economic development, this is a big piece of progress, where beyond being the second largest manufacturer of solar panels in the world, they have also assumed themselves as a large source of local employment, despite the significant cuts in the past year.

On that note, I foreshadow my discussion of challenges surrounding implementation, where there has been some political division about the effectiveness of the CEI, in terms of return on dollars spent, as the return on investment (ROI) data in environmental, economic and other domains has not yet been made available to council, where this council is of course rightly concerned about effective use of taxpayer moneys. This is legitimate, as it is important to closely monitor any investment in any situation. However, I would argue that the jobs themselves could potentially have a high ROI (financial and social) for the City, and thus whatever has been spent on the CEI thus far, which has also driven Guelph’s brand despite other returns, has in fact reaped significant financial and social return, and will continue to do so with these jobs. Accordingly, despite the cuts, these jobs (former and current) may ‘not negligibly’ justify some of what has been spent (where again, it is still important to ensure direct ROI is unfolding effectively). I do not have the numbers on how much the CEI has spent directly on its various initiatives thus far, though spending has been discussed as being anywhere from five million in general (according to a City Council discussion), to $10 million on Guelph Corporate energy alone (A. Chapman, personal communication, May 5, 2016), to $40 million in total (according to Barker 2016). This ambiguity may be resultant of a lack of in-depth and publically accessible data related to the CEI spending and ROI, to be further discussed shortly. Nonetheless, let us take the economic middle ground to see this argument through. Putting that in the context of social and economic ROI, if the City itself had spent $20 million on paid wages, it could only sustain 500 jobs (an approximate middle ground between 700 and 350) at $50,000 a year for a couple months short of a single year. Further, if we go ahead and say that people pay the City about 2-4% of their earnings in taxes annually (let’s call it 3%), while assuming that the average wage of those jobs created by Canadian solar is $50,000/year, the City has on average reaped an additional $750,000 in tax revenue across 2015 and 2016, along with whatever taxes Canadian Solar pays itself! Therefore, despite that if we assume the City may have spent about $20 million dollars on the CEI in the last decade, the jobs at Canadian Solar (despite recent cuts) have assumed themselves as a sizeable source of new revenue that has the potential to significantly fund CEI activities going forward (assuming job cuts do not continue to materialize as in 2016). Further, it is also likely that at least some of CEI projects, like the solar and LED lighting installations I had spoken to, are also making Guelph a profit. As such, despite some division about ROI and CEI effectiveness that I will get to later, the economic and social ROI of the brand Guelph has created has been significant, and the tax revenue from Canadian Solar jobs could, on its own, provide a significant source of capital to the CEI on an ongoing basis. Once again however, this will be contingent on the level of employment Canadian Solar can create and maintain.
Finally, Guelph’s progress is embodied in a high degree of lessons learned over the course of a decade, which both inform the CEI going forward as well as this research. Participants stressed the importance of trial and error, as far as positioning Guelph for future success, where much of this learning informs and will be incorporated into the ‘update’ to be discussed. Kithio Mwanzia (personal communication, May 18, 2016) put it this way: “We’re [Guelph] a mature community when it comes to executing this type of thing [CEI/CEP], which of course comes with the burden and cost associated with mistakes and assumptions... Because we’ve spent the last 10 years learning, we need to make sure that the maturity of our learning matches the complexity of our plan moving forward”. As such, Guelph appears poised to see its next 15 years of implementation unfold quite effectively, where further activities will be structured according to the trials of the past ten along with the insights that have come out of them, and this, is big progress. Further, I had spoken to the elevated value of studying the Guelph experience with reducing emissions, as they are one of the earliest adopters. The fact that lessons learned was stressed as one of the biggest achievements thus far only confirms and re-affirms the value of this research, the thoughts and experiences of participants, and my sharing those with you. Moving back to the notion of progress then, all in all I consider Guelph to be a SEC, as it is well on its way, and still has 15 years to ‘officially’ implement, where the process will be significantly informed by the tribulations of days past. Still, Guelph faces challenges, as all communities do.

Guelph: What’s the Hold up?

In 2016, Guelph is certainly seeing some issues with implementation. The following challenges, as discussed, are official in that they are popularly spoken of, highly visible, and/or recognized in official City documents. At the onset, Guelph has not, to date, maintained an effective framework for ‘Scheduled Performance Evaluation and Reporting’ (SPER) on its projects regarding ROI in environmental, economic, and social domains, where a big challenge to doing such reporting is that much of the needed numbers, and the process for producing them, are in the hands of third parties (Kerr 2016a). Still, this lack of SPER has materialized itself into implementation challenges in a number of ways. First, the CEI is thus not well, or maximally, positioned to be most effective going forward at this point, in terms of project selection, and ensuring money spent brings the highest ROI in the domains mentioned. As such, a lack of SPER has put the CEI at risk of missing out on opportunities along with chasing lost causes (both to degrees), and in effect potentially doing little or diminished justice to its environmental and social targets, while also undermining its own ongoing financial viability. In other words, a lack of SPER has not positioned Guelph to be fully informed about what is working, what is not, and to what degree, and hence the CEI is somewhat ill equipped to make adjustments, or plan moving forward, to be fully effective where achieving its intended results is concerned (D. Gibson, personal communication, April 27, 2016; K. Mwanzia, personal communication, May 18, 2016). That said, it may well be that Guelph is doing outstanding work and reaping the ROI it wants, however there are currently no hard numbers available to confirm or discredit that possibility. Still, illustrative of this is that it is noted that Guelph is still heavily focused on solar installations; despite that pursuing energy efficiency might be more effective at reducing emissions in the context that Ontario electricity is already almost completely carbon free.
This lack of SPER has also resulted in a degree of divided support for the CEI within City Hall, which has somewhat, and may well continue to stall implementation (Y. Tendick, personal communication, May 1, 2016), where this is illustrated shortly in terms or GEERS and the update itself. Even if Guelph is doing an excellent job and seeing high ROI on its projects thus far, there is no way to demonstrate this to City Council, and thus some assumptions appear to have festered about the CEI’s legitimacy and value. Particularly indicative of these assumptions is a quote from the Mayor during a public City Council meeting surrounding the CEI and the update, where he said: “We’ve been overtaken by this community energy vision, and a lot of it is fantasy… Not vision, fantasy. We’ve made investments, [but] what are we getting out of it?” (as cited in Saxon 2016:1). Clearly, there exists some concern in City Hall about value of tax dollar spending habits (which is always a legitimate concern), and this is resultant of a lack of SPER and hence transparency, where one City Councillor put it this way: “My desire to see an initiative succeed can never supersede my commitment to transparency” (Gibson 2016:1). As such, I restate that ideological buy-in for the CEI in City Hall is not as strong as it could be, and this presents itself as a barrier to moving forward at a good pace. On that note, and seemingly borne of the lack of SPER and transparency, competing interests are at play and are/will potentially slow down implementation where money may be reallocated away from, or not allocated at all to, the CEI (note: I was not privy to the CEI specific budget). Another quote from the Mayor illustrates this well, where he advances that the CEI has received funding and staff resources to “the detriment of fixing sidewalks and cutting grass on our sports fields, [and that there are only] so many pieces of the pie, [where] municipal tax dollars need to go to municipal issues” (as cited in Saxon 2016:1). Once again, a lack of SPER, and associated dwindling political support with some, is currently presenting itself as a challenge to implementation, where of course, unified support within a local government is necessary to the success of a CEP long term.

In relation, and in much the same fashion, a lack of SPER and associated transparency is dividing public support to some degree, where this is of course a huge make or break factor for CEP success, as politics is informed by public opinion (E. Ferrari, personal communication, May 3, 2016)! Despite that there appears to be a great deal of buy in for the CEI (as per a City Council meeting and public delegation turnout I will speak to shortly), Guelph’s brand as a leader in local sustainability practices, and support for ‘going green’ in Guelph generally, money is of highest, and higher order importance to most people, as consistently mentioned during interviews and document review (Kerr 2016b, M. Schreiner, personal communication, May 20, 2016; R. Kerr, personal communication, May 12, 2016). Therefore, the perception that it is being wasted, or that investments are not paying off, can deter support for its spending on CEP implementation, despite people’s environmental consciences. In Guelph, because of a lack of SPER and associated public transparency, it appears that assumptions have begun to fester about the effectiveness of money being spent, and as such public support for the CEI has recently taken a bit of a blow. Though not indicative of overall public feelings and support for the CEI (again, as per my observation over two years, and directly at times throughout conducting this research), a few comments pulled from two news articles that were describing political division in the context of the absence of SPER do well to highlight some of the public’s growing assumptions and mistrust…: “The city of Guelph needs to stop spending like drunken sailors, increasing taxes 2 or 3 times the rate of inflation every year, just to pretend it’s the wonder child steward of the environment, leading the way for all others” (JayT) (as cited in Bueckert 2016:1); “The people
running this show have in the past paid staff to look for awards they can apply for. So the great lengths they are going to to keep everything about CEI secret suggests this is going to be an unmitigated disaster” (George Allan) (as cited in Saxon 2016:1). Once again, the CEI may well be reaping excellent returns on its investments in environmental, economic and social domains, however a lack of SPER means this is unknown at this time, and has left Guelph unable to be thoroughly transparent with the public. As such, some of them are inclined to, and are assuming the worst. Public support, as with political support, appears somewhat divided at this point, which is visibly evident when we triangulate for example these news articles, attached public commentaries, and what I observed at the City Council meetings I attended (to be discussed shortly). As such, this is certainly a challenge to implementation and long term success that Guelph will need to grapple with.

Looping back to SPER, its relation to positioning a CEP to realize its environmental and economic targets, relatedly advancing transparency and accountability, and how these are linked to the necessity of maintaining unified political support that is also naturally dependent on widespread public support, one City Councillor puts things plainly. In discussing part of the necessity, purpose, and intended result of the upcoming CEI update (to be discussed shortly), he asserts that “we [the City of Guelph] need to get as broad based support as possible on this [CEI]. We want people to see their currency in this. No matter if environmental concern is your forefront or if fiscal concern is your forefront, you [public] need to see value and return on investment. [And] that’s my ultimate goal in going through this process [CEI update]. We [the City of Guelph] are going to give a full cost accounting, and full environmental accounting, of what worked, and what didn’t, and we are going to hold the initial plan to account. We owe that to the public. We pursued these [CEI] initiatives on their behalf, they gave us their trust, and we owe it to them to show how we did” (D. Gibson, personal communication, April 27, 2016).

Moving on, and on that note, the ‘CEI update’ itself was a challenge to pass, where if it hadn’t succeeded in doing so, the CEI might have really taken a blow. In much the same fashion as above, political support appeared quite divided, again, based on a lack of SPER and thus transparency about whether the CEI has been effective thus far. Council appeared apprehensive at the discussion and vote, rooted in a fear that the update would simply be another step forward for the CEI where it might continue with a veiled implementation, and potentially continue wasting tax money. Though the update (to be discussed) is actually a positive step forward for the CEI, as it addresses some of its current challenges, Council needed some convincing. Accordingly, the public servants tasked with the CEI were effective at outlining its purpose and value, and, the broader public demonstrated unified support for continuing with the CEI and carrying out the update. About 15 delegations addressed Council, representing a broad cross section of the public (including various representatives of the business community, civil society organizations, and non-profits), each in their own way expressing why they value the CEI, and why taking steps to make it stronger is the right way forward, as opposed to putting the CEI on hold. Further, prior to this meeting and vote, many wrote to Council members expressing their support, including myself.

As mentioned, the vote to update the CEI was unanimous in the end, where I give much credit to the broad fervor the greater public chose to actively demonstrate. On the topic of methods for overcoming various challenges to implementation such as a political unease or a
lack of will, such government engagement on the part of publics is itself noted to be a key component to garnering that will and quelling unease (Citizens Climate Lobby 2016; E. Ferrari, personal communication, May 3, 2016; Y. Tendick, personal communication, May 1, 2016), where sometimes, local representatives simply need be made aware of public wishes as far as CEP implementation, where it is not a given that elected representatives will always fully understand their values. As such, it is important publics actively keep their governments focused on CEPs as priorities, by lobbying and engaging, and organizing themselves in an inclusive and broad manner, where this lobbying does not simply come from the usual suspects, being the ‘hippies’ for lack of a better term. Accordingly, local representatives will be inclined to take heed. In other words, public actors need to consider and act on the fact that “politicians don’t lead, they follow” (E. Ferrari, personal communication, May 3, 2016), in order to maintain ongoing political support for implementation. Moving back into Guelph’s current challenges with implementation, though the update did pass, it was a challenge in itself, and, a bump in the road to implementation where public servants had to spend some of their time constructing reports and bargaining with Council over approval, while that time might have been more effectively spent elsewhere if there hadn’t been such unease about the CEI in the first place, again, based on a lack of SPER.

Additionally, GEERS (its nature to be discussed) has run into barriers to getting on its feet and into the public sphere, where it is an up and coming integral, and I argue hugely valuable, part of the CEI. GEERS has been in the making for some time, though has not yet been officially deployed, where there are a few factors that have held, and are holding it back. First, 2014 saw a new Mayor and City Council take office, where one participant (A. Chapman, personal communication, May 5, 2016) emphasized that a naturally resulting lack of familiarity with the program effectively slowed down its implementation. Further, Guelph doesn’t currently have a formal scheduled briefing process in place to ensure future City Councils understand and are brought up to date about the CEI, which is itself a current challenge to moving forward and realizing CEI goals, where it is then not best positioned to maintain ongoing political support and continuity via an understanding and familiarity necessary for doing so (Kerr 2016a). As per the literature (GTI 2016c), and participants who had experience in this domain, municipal personnel changes can be barriers to implementation via their effects on continuity described above, where the GEERS situation illustrates this well. As far as dealing with such a challenge however, some participants note the necessity of ensuring all parties are promptly brought on board with CEP activities, where understanding is foundational to ideological buy in. As such, there should be a formal process established for achieving this. Further, some stress that public governance and oversight of a CEP, and the CEI, is key for overcoming such an issue, where public groups are naturally much less subject to personnel overhauls (A. Chapman, personal communication, May 5, 2016; R. Kerr, personal communication, May 12, 2016). Members do come and go within these groups, but large swaths of people are not generally substituted in and out. Additionally, and especially resultant of the former, personnel changes that do occur will not typically result in drastic ideological shifts, which, though not speaking to the situation in Guelph specifically, can occur in governments where and when newly elected officials often hire entirely new sets of public servants. Further, these new representatives may be prone to advance significantly different and sometimes openly oppositional ideologies and mandates, as compared to their former counterparts. This is quite clear when examining the four big political parties in Canada at the municipal, provincial, or federal level.
Moving back into current challenges with GEERS implementation however, in the context of the coming ‘update’, City Council appears apprehensive about moving forward too fast without first seeing what the update delivers, and if it does justice to its intended purpose as far as addressing CEI issues and easing their apprehension, primarily regarding SPER, transparency, and if tax money is and has been invested effectively. As such, a current challenge to GEERS implementation is both political hesitation, and, staff resources, where Guelph effectively has two public servants in charge of the CEI, thus where advancing the update requires significant time, GEERS must naturally take a back seat. Consistent with the literature (Community Energy Association 2013; IPCC 2014), multiple participants emphasized the challenge of squeezed human resources in government, where there are only so many hours in a day, and CEP/CEI implementation often suffers because of it. Here again however, participants note that public governance and oversight are instrumental to implementation, where many hands can be put to work, and they need not be paid; resultant of the fact that ideally, those volunteering to participate do so out of genuine motivation to see a CEP succeed, often have a direct stake in its success, whether it be environmental, economic or social, as well as where genuine empowerment spurs motivation to act. Finally, GEERS is novel in the way it works to achieve its intended purpose, where it is stressed that novelty generally breeds apprehension in cases where money must be spent (A. Chapman, personal communication, May 5, 2016; K. Farbridge, personal communication, May 9, 2016). As such, Council may also be wary of its potential for results, as well as lack a good understanding of the program (something I also lacked for quite some time despite regularly reading about GEERS in the news). Further, this apprehension is solidified where there are few similar cases to point to in Canada, both as far as existence and garnering understanding, and, to demonstrate results and its potential, where participants cite these as substantial factors behind apprehension. Accordingly, GEERS implementation appears to have also been stalled in these ways, where a pilot is in the making, but won’t be reviewed by Council until 2017, and may not be rolled out until 2018, acting as a barrier to CEI implementation (Kerr 2016b).

Moving on, Guelph is currently suffering from a lack of community engagement (CE) (note that the term ‘community engagement’ refers to interaction between government and publics from now on), which has been to the detriment of the CEI’s successful implementation (A. Chapman, personal communication, May 5, 2016; K. Farbridge, personal communication, May 9, 2016; R. Kerr, personal communication, May 12, 2016). According to Lenihan (2012), CE (in form) can be as barebones as communicating with or at the public from afar (as a government alone, or through intermediaries), or involve formal, meaningful collaboration in which the public have a real role in the governance and oversight of an initiative. In such a case, the public are ‘engaged’ via being meaningfully included in a conversation, and awarded responsibility and authority (their voice in the conversation). Accordingly they are thus a part of engaging themselves in real time, via information gathering and diffusion throughout participants’ social networks. This latter form of CE has been the case in various instances (described below) during the CEI’s lifetime. Originally, the CEI was developed through significant collaboration with the broader public, where its conception was primarily advanced by a consortium that embodied a strong and diverse public voice, involving dozens of stakeholder groups and individuals. Further, in 2010 the ‘Mayor’s Task Force on Community Energy’ was formed which comprised of a great deal of organizational representatives, many of whom had already participated previously. However, the task force’s mandated term expired in
2012, and further community engagement of this type (formal, meaningfully collaborative, empowering) has not followed or been maintained (Kerr 2016a), where today, even general public awareness of what the CEI is or that it exists is lacking to a degree. In any community, CE brings with it a variety of benefits (the degree of benefit dependent on the form that community engagement takes), including but not limited to transparency and maintaining public support, putting many hands to work, awareness of opportunities (such as with the upcoming GEERS program) and resulting uptake, and helping to inform the nature of how initiatives are implemented to facilitate maximum impact (E. Ferrari, personal communication, May 3, 2016; K. Farbridge, personal communication, May 9, 2016; K. Mwanza, personal communication, May 18, 2016; M. Schreiner, personal communication, May 20, 2016; R. Kerr, personal communication, May 12, 2016; S. Dyck, personal communication, April 26, 2016). Participants stressed its (CE) importance and necessity (both in Guelph and elsewhere) a number of times (especially in that CE should involve at least some formalized level of collaboration, including a degree of public governance and oversight, as has been the case at times in the past), where the following statements do well to illustrate: “The CEI started out with a process that engaged a broad cross section of the community, and I think that a mistake that was made is that the community engagement hasn’t been maintained” (K. Farbridge, personal communication, May 9, 2016); “I’d say that because we [the City of Guelph] have sort of diminished community collaboration and the conversation that comes with that, people are less informed… So that’s [community engagement] a big piece of how community energy plans succeed over the long term, and the long term is a big piece of this” (R. Kerr, personal communication, May 12, 2016); “I think an ongoing vigorous communications plan has to be a part of it [CEI]” (A. Chapman, personal communication, May 5, 2016). Further, various pitfalls of failing to prioritize CE were highlighted in other literature (Greenius, Jagviecki & Thompson 2010; Khan, Chhetri & Islam 2007), lending credence to its pivotal role in realizing community emissions reductions. Accordingly, and as stated, CEI implementation in Guelph is suffering in this context, where other communities are encouraged to take notice of CE’s (some forms more effective than others) central importance as a tool in CEP implementation. This will be discussed and elaborated on a great deal in a coming section.

On another more specific note, Guelph’s investments into District Energy (DE) haven’t panned out as planned. Though DE remains a success and piece of progress in environmental terms, the financial case has recently been revealed as being quite ugly, where the foreseen ROI is not likely to pan out as intended. Simply put, “Guelph’s forays into district energy networks downtown and in the new Hanlon Creek Business Park haven’t worked out as planned, with the result that $8.7 million invested in the two projects has now been written off or written down”; where they “will not generate sufficient cash flows over their useful lives to fully recover the costs of installing [the] assets”; and where Guelph Municipal Holdings Incorporated CFO Pankaj Sardana spoke to the generation capacity of the plants [10 megawatts each], saying that proposing plants of that size “was not the right strategy. We know that now, [and] we should have gone smaller and got a win out of this thing” (as cited in Hallett 2016:1). As such, the CEI is currently challenged by ongoing financial viability, where it may less well positioned to finance itself going forward than had been anticipated. This is a prime example of SPER in action as far as its benefits surrounding structuring a CEP most successfully going forward are concerned, and on the flipside, an illustration of how a lack of SPER can be a serious barrier to realizing reductions targets if communities (whether municipalities or the broader public) are
unaware of what’s working and not. In Guelph’s case, further investments in DE might have been made unwisely without this recent revelation, and as such, I consider DE progress in environmental terms, progress via a big lesson learned (where going forward the CEI is more informed and better equipped to structure itself for success), and a challenge and barrier to CEI implementation in financial terms. Looping back then, it’s clear how a lack of SPER may rightly translate into political division about a CEP, where big investments of taxpayer moneys have the potential to run away on us if they aren’t watched closely. Accordingly, I re-affirm the necessity of SPER to the success of any CEP, being couched in maintaining political and public support, ongoing financial viability, and of course attaining the desired environmental outcome… itself dependent on adequate funding in many cases.

Next, Guelph has had trouble further reducing emissions through its ability to compel developers to build to certain energy efficiency standards, or in other ways that would better support CEI energy targets, via developing guidelines for doing so. As far as legislative authority, Guelph is not currently able to update the Ontario building code. Though this code was updated in 2012, a definite positive, there is still ample opportunity for improvement, yet this is not in Guelph’s hands (Kerr 2013). On that note, Guelph had come at the issue from another angle, where it advanced an energy performance labelling scheme, with the intent of stimulating a degree of efficiency competition among developers, where similar to other green certifications, developers who become accordingly certified as per their practices may see a market advantage, couched in both brand as well as potential energy, emissions and associated financial savings for consumers. The results however did not materialize as hoped, where the City has hypothesized that the program and certification held little value (in other words, perceived market advantage potential) with developers, because of an absence of a provincial or country wide program that would have lent it legitimacy and recognition (Kerr 2016a). As far as new development, various participants cited traditional design practices and regulatory frameworks as major issues to reducing emissions (K. Farbridge, personal communication, May 9, 2016; M. Schreiner, personal communication, May 20, 2016; Y. Tendick, personal communication, May 1, 2016), where most structures continue to be built in environmentally unfriendly ways as a result. This will be addressed further in another section. Additionally, though the energy performance labelling initiative did not work out as planned here in Guelph, this initiative is consistent with Ecological Modernization (Fisher & Freudenburg 2001), whereby governments attempt to create favourable market conditions for emissions reductions, in this case working to stimulate sustainability competition by incentivizing it through brand.

Finally, participants consistently stressed the challenge of achieving scale (K. Farbridge, personal communication, May 9, 2016; K. Mwanzia, personal communication, May 18, 2016; M. Schreiner, personal communication, May 20, 2016; R. Kerr, personal communication, May 12, 2016), or in other words, significant emissions reductions across the broader public (as opposed to only within the municipality and a negligible amount of the public) that are necessary to meet the CEIs ambitious energy targets, where you may remember that Tozer (2013) had mentioned the difficulty cities are having with reducing emissions outside of city hall’s jurisdiction. On that note, I might also posit that this challenge is exemplified where I had spoken to emissions levelling off in recent years in Guelph, compared to the initial drops. These initial reductions may have largely been resultant of the municipality (as a corporation) investing in itself, where the City does not have the authority to mandate greater public behavioural change.
or uptake and investment in other activities that would otherwise reduce emissions. As such, it is stated that achieving the widespread integration of community energy systems and technologies advancing renewable generation, conservation and efficiency, into large scale residential and commercial developments is an ongoing issue to significant emissions reductions similar to the early years of CEI implementation (Kerr 2016a). As we can see, this is a big barrier to achieving CEP sustainability targets in Guelph and across communities (Tozer 2013), where the challenges to achieving such scale are vast in their nature, while there also exists no blueprint for addressing them. Accordingly, I identify and address a great deal of them, as well as scale itself, in the not too distant future (Chapter 8), where an encompassing strategy is put forth.

The CEI ‘Update’

As discussed, the CEI is undergoing an update that should be finalized, released, and otherwise ready to implement in early 2017. As such, I quickly discuss its nature, both to keep readers informed about context in Guelph, and to illustrate how it is poised to address many of Guelph’s current challenges. Accordingly, I stress that other communities take note of how advancing various components of this update in their own CEPs is a tool with which they might avoid some of the challenges Guelph has had to grapple with. Further, this update is illustrative of acting on lessons that have been learned, confirming Guelph’s ongoing pursuit of SEC status. Though officially titled an ‘update’, it might be better termed a ‘CEI revision’, where much of what it will do surrounds an actual restructuring of the CEI implementation process, with the purpose being to retool the CEI for success over the long term, again, based on lessons learned (D. Gibson, personal communication, April 27, 2016). Accordingly, the primary components of the update include the following: First, a thorough audit will be performed to make transparent and determine the progression and status of each project that has been undertaken to date. This will include the total amount of money that has been spent on the CEI, a corresponding breakdown regarding each project, the environmental, economic and social ROI that has been reaped thus far, an accurate forecast of future ROI based on an assessment of each project’s strengths and weaknesses, and the degree to which projects under the CEI have been successful at achieving their intended ROI. Next, Guelph will advance its own form of SPER, where a framework for rigorous analysis, monitoring and reporting of CEI activities will be developed and implemented, including establishing standards (temporal and other) for regular CEI reviews, updates, and repositioning. Here, new reporting protocols will be advanced including establishing baselines against which progress will be measured, an annual assessment of energy use and emissions, individual project progression, and the ROI in environmental, economic and social terms in relation to both each project and against high order CEI targets (Kerr 2016a).

Additionally, the update will re-establish the CEI as a publically driven initiative similar to when it was born, where it will establish a publically based advisory committee tasked with providing direction, oversight and reporting to council (re-embracing a collaborative approach to governance, and putting many hands to work), as well as work to significantly improve interaction and relationships with important stakeholders by advancing a robust framework for CE (Kerr 2016a). Accordingly, effective CE (achieved through a more collaborative approach to governance) should produce a variety of benefits surrounding realizing CEI targets, which will be discussed in another section in which I advance my own framework for CEP success. As such, the update works to address many of Guelph’s current challenges, including a lack of CE,
SPER, transparency, and diminished political and public support, as well as potentially avoiding bad investments going forward, by addressing these challenges directly. Accordingly, the update positions Guelph for future success, by acting on some of the lessons learned thus far, where the CEI may move forward in collaboration with the public, plan according to evidence, and embody itself as an accessible and open book, thus being better suited to achieving its ambitious energy targets. Guelph is doing a great job in this way, and being a Canadian leader in community energy, I recommend that communities take heed of strategies this update puts forth.

Local Improvement Charges (LICs) & GEERS

Having mentioned GEERS many times, it is important to discuss the framework from which it was borne, as it has great potential to address some of the implementation challenges, as well as that the LIC mechanism is referenced fairly frequently throughout this analysis moving forward. An LIC is a novel program, policy and solution to overcoming individual financial barriers to investing in energy generation, conservation and efficiency. Despite that an LIC could be applied to any number of structural adjustments/renovations (if established in such a way), it is discussed in the context of projects and retrofits to do with energy transitioning and otherwise reducing emissions. LICs are about restructuring the loan process, and advance any number of ‘project packages’ to do with energy, where these packages are at the discretion of whomever is planning the LIC program. Basically, LICs allow homeowners to implement various energy related projects (the package), without the deterrent of taking on a big debt from which they might not recover the capital. Accordingly, LIC loans are attached to a property, staying with that property for the term of the loan, and are paid through an additional charge to the property tax. As such, homeowners need not worry about moving and having to continue paying down a debt from which they now reap no benefit. According to the package, LIC loans have the potential to make home owners an immediate profit, where for example LED lighting systems typically have the quickest payback, and LEDs along with other retrofits can see a 50-100% ROI within the first year (Financing Energy Retrofits: Speaker Series 2016). This immediate profit however is also born of the nature of the loan, where exemplary of its novelty, the loan is typically quite long term and low interest. As such, theoretically, if LIC packages are set up effectively, the property tax hike that pays the loan down is more than offset by the monetary gains of using less energy and/or generating it yourself either immediately or within a relatively short period of time. As such, homeowners (and potentially, though not necessarily, renters) are able to achieve an immediate, or very close to it, cash grab, where they had not put any money down. Further, as the loan stays with the property, they need not worry about sunk costs when they move, where a debt does not follow them, but rather, this debt continues to be paid by the new owner, seeing the same financial and other rewards as the former (Financing Energy Retrofits: Speaker Series 2016; S. Dyck, personal communication, April 26, 2016).

As discussed previously in the context of outfitting one’s home with solar panels, or even buying energy efficient appliances, financial barriers exist to uptake (Greenius, Jagneicki & Thompson 2010), whether they be possessing the up-front capital to invest, or uncertainty that the investment will effectively pay itself off in its lifetime/a homeowner’s term in their dwelling. Illustrative of this point is that a recent study done in advance of GEERS implementation found that “cost is a recurring theme when it comes to energy efficiency renovations, [where] it was the most named barrier that residents named for preventing them from undertaking home retrofits,
including the payback period. [Further], price was also the main motivator that would encourage people to make energy efficiency changes, including saving money on their utility bills and to offset future rising energy costs, [where] money trumps other issues such as climate change, local energy security and even home comfort” (Kerr 2016b:50). As such, if structured correctly (loan structure and project package), LICs effectively nullify those financial barriers, and have the potential to enable widespread uptake of emissions reductions renovations. As discussed, LICs are novel in the way they work, where there are only two other cases in Canada, being Toronto’s ‘Home Energy Loan Program’ (HELP), and ‘Solar City’ in Halifax. However, the Halifax example shows their potential, wherein the sample showed a 90% retrofit uptake for homes that were offered the program, compared to only 10% for those homes who were not (Financing Energy Retrofits: Speaker Series 2016). As such, programs based on the LIC blueprint have huge potential for overcoming individual financial barriers to investing in energy, and thus can spur widespread uptake of such activities, realizing significant emissions reductions, where the situation is a triple win, being economically and other for individuals, economically for a financier, and environmentally. Accordingly, participants and I stress their value, where communities are encouraged to pursue their own programs in whatever form those take. Here again, we see a prime example of Ecological Modernization in practice (Fisher & Freudenburg 2001), in which the City of Guelph is attempting to make emissions reductions economically attractive from a technological standpoint, by creating market mechanisms that facilitate participation.

However, in speaking to such ‘forms’, participants emphasize that the ‘project package’ be performance based, so as to attain the highest environmental and economic ROI possible, thus ensuring consumer satisfaction, ongoing uptake and that we achieve our environmental targets (E. Ferrari, personal communication, May 3, 2016). If LICs are too open ended, the package not comprised of the more environmental and economically effective renovations, and the corresponding loan structure poorly designed, the ROI (economic and environmental) will be less than it might have otherwise, which, other than failing to make a large a dent on emissions reductions, may result in dwindling support and uptake, further diminishing efforts to reduce emissions. Further, if there is little uptake, a financier may be less inclined to continue with participation, where long term low interest loans are not attractive unless they are awarded and reaped large scale. As such, communities, including Guelph, are encouraged pay careful attention to how LIC programs are constructed, so as to avoid the potential barriers to success just mentioned, where the GEERS pilot should be structured towards high impact renovations. Further, program uptake may suffer where it is neither visible nor understood in the greater public, which gets us back to the necessity of CE. By engaging in, and helping to facilitate CE (in whatever form that takes), local governments can facilitate uptake in a couple effective ways. First, participants stress that CE is a way to address/achieve visibility and understanding, potentially by way of web based information exchange resources or public engagement meetings to name a couple. Additionally, municipalities may carry out CE by way of targeted stakeholder engagement, where these stakeholders will then ‘deliver’ the program to the public both in terms of awareness and understanding, as well as securing uptake, for a variety of reasons (E. Ferrari, personal communication, May 3, 2016). Stakeholders may be public groups intimate with various pockets of people, both of whom have an interest in reducing their carbon footprints, where there are many such groups in Guelph. Alternatively, and for best results, in tandem, the business community, and stakeholders such as renovations groups and associations should be
targeted and partnered with, where there is a large business opportunity to them carrying the program into the public sphere, via the fact that the program is about investment and renovations, and hence can create business for them. As such, through CE, these stakeholders should be made aware of how an LIC based program works, and the benefits to be had for those who uptake, where they can then effectively deliver it to the public and secure broad investment. Finally, advancing CE as public governance and oversight of an initiative (the CEI in this case), would ideally see representatives of the above named groups (and more) as making up the public portion of the governing team (which includes local government representation). As such, governments would not be engaging these groups in a one off manner, but rather see them continuously plugged into the process, informed, and subsequently acting (here, carrying visibility and understanding of GEERS/LICs into and throughout the public). Again then, CE is essential to achieving uptake for a number of reasons, and I stress that municipalities embrace it for best results with emissions reductions. That said, certain forms of CE are posited to be much more effective than others as far as seeing action with the broader public. This has been previously discussed, but will come up in depth again.

Finally, on the topic of financiers of an LIC based program, there may be issue where lenders have not traditionally been in the business, or interested in, long term low interest lending (as briefly discussed). This is clear, where even a 25 year mortgage has quite a hefty interest rate attached. As such, securing a financier may be an issue. However, participants and other data smartly points out a few ways around this. First, according to the principles to secure widespread uptake described above, it is necessary to ensure that those principles and corresponding processes are in place, so as to be able to convince a financier that buy in will be widespread, where it is emphasized that the low interest long term nature of the loan will matter less to a financier should they be confident about seeing, as well as actually achieve, loan demand on a large scale. If that is achieved, then the profits start adding up, and the smaller percentage point interest rate on each loan appears as less troubling. Alternatively, municipalities themselves might assume the position of lender, by either doing so out of their existent purse, or securing themselves a long term low interest loan based on their (hopefully) favourable credit rating, and then translating that into the program and public (A. Chapman, personal communication, May 5, 2016). Here again however, it is important the program be performance based and the loan structure effectively established in accordance with the project package, so as to quell any political apprehension about its potential for environmental and economic returns, and thus apprehension about becoming the lender. Finally, municipalities might again use CE to crowd fund the lending purse, where many individual public investments in that purse may add up to quite a sum of money. Here, understanding, framing and value proposition resonance are important (ideas I’ll get back to later), where through CE (and whoever is involved in carrying it out), a municipality might secure this crowded funding by appealing to multiple faculties. For example, these might include highlighting both the ROI reaped on donation, and, that it is a way of investing in one’s community (social and physical) and facilitating the landscape for making it better (both where individuals now have the financial capacity to do energy related renovations and make a profit, effectively boosting the local economy, and where emissions are reduced) (A. Chapman, personal communication, May 5, 2016). Once again, CE is of utmost importance to CEP implementation in Guelph and elsewhere, and communities are encouraged to take note.
All told, I foreshadow myself in saying that LIC programs are excellent mechanisms, and well-trodden globally (Financing Energy Retrofits: Speaker Series 2016), for overcoming individual financial barriers to investing in emissions reductions projects. As such, local governments are encouraged to pursue them in their own ways, according to the principles laid out above, in order to enable greater public participation in achieving CEI/CEP goals. Further, where there are barriers to their uptake and operation, municipalities might consider the strategies outlined in this section. Moving forward, we now delve deeper into the challenges and complexity of community energy plan implementation.

Into the Pipeline…
Reducing Emissions in our Communities: Challenges, Connections & Strategy

Guelph has long been working on reducing emissions and realizing CEI targets, where many lessons have been learned. The following (first level of) analysis continues to be grounded in that experience and learning, where local expert insights, City document and news article reviews, and the observation of City Council meetings among other publically accessible gatherings combine to inform all ideas and conclusions brought forth. The discussion is worded to reflect and read as the content being generally existent and applicable across communities, where I argue (as per the case put forward in the methodology section of this thesis) that almost everything spoken to is, to some extent, present in all Canadian communities, including Guelph, and that potential solutions embody broad applicability (though again, this will be for readers to judge). That said, I do loop back to Guelph specifically to better illustrate the nature the content, by grounding theoretical claims in existent realities. Further, I typically shy away from pinning ideas to specific sources, as this both unduly crowds and imposes on the discussion, and additionally because much of the content was named by multiple participants and clearly visible in my other endeavours. Therefore it is the collective mind (mine, participants’, and those behind City documents, news articles and attached public commentaries) that in effect informs what follows, where what follows is advanced as such. Where relevant, I draw on specific quotes from interviews to ground the data (denoted by citing the specific individual, ‘personal communication’ as the method of exchange, and the date at which the communication/interview took place – as per the ASA style guide). Additionally, unlike the previous discussion of challenges to implementation, I elect to sectionalize differently. Reflecting the seven generations for which we should strive to do justice, I advance seven encompassing but related categories. As there is a huge amount of overlap concerning the nature of the content, attempting to neatly box any discussion into and under one of the five labels previously employed would be fruitless. On that note, this analysis is naturally a bit repetitive, where I frequently weave in and out of content topics to reflect their connections. However, this repetition to illustrate connection is highly important to understanding the complexity of community energy plan implementation processes, and as such is advanced to do proper diligence to the purpose of this research. Reiterating Guelph’s position as an early adopter and leader in community energy planning, as well as referencing the methodological rigour I have attempted to establish, I encourage readers to place much credence in what follows. Still, it is of course up to you, the readers, to decide.
How We Move… Buses, Bicycles, Batteries & Bunions

Transportation fuels account for 45% of emissions in Guelph (Kerr 2016a), where for any community, reductions in the transportation sector are consistently cited as one of the most difficult to address. Whether that be achieved via getting people out of cars and onto their feet, using communal transportation, or investing in EVs, significant barriers present themselves. Before moving on with a discussion of such, I share with you some participant quotes that do well foreshadowing what is to come… “Our entire built infrastructure is designed around the car, and you can see remnants of pre-car culture in Guelph, where this is clear in the ward… At one time, people could live in the ward and walk to their job in the ward, where there was a lot of mixed use there” (M. Schreiner, personal communication, May 20, 2016); “I mean I just love living here… I love living in the ward, because you’re very close to all kinds of things” (Y. Tendick, personal communication, May 1, 2016); “It’s difficult to have robust transit that’s cost effective for a city, because there isn’t the density in place to make it worthwhile” (M. Schreiner, personal communication, May 20, 2016); “Things are shifting a bit, but we’re still spending more money on building roads than transit, and as long as we continue to do that, people will likely choose to drive their cars because its more convenient, takes less time, and it’s still relatively inexpensive” (M. Schreiner, personal communication, May 20, 2016); “People are very attached to their cars… and they might say ‘let’s all do this insulation, but don’t you take my car away from me!’” (E. Ferrari, personal communication, May 3, 2016). At the onset, systemic poor urban design is a huge barrier to reducing vehicle travel, where for decades cities have generally embodied the segregation of residential, commercial and industrial areas, barring downtown cores that are often more mixed use, which effectively encourages non-motorized transportation. Still, sprawl, segregation and single use landscapes characterize North American cities (where Guelph is no different), and this ‘fuels’ vehicle dependency (M. Schreiner, personal communication, May 20, 2016; Y. Tendick, personal communication, May 1, 2016). Further, existent physical landscapes cannot simply be overhauled, but rather further development can only strive and be compelled to do differently, where this will be addressed later on.

Moving forward, building robust public transportation systems, and infrastructure designed to facilitate non-motorized transportation, is cited as integral to taking cars off the road (IPCC 2014; NRCAN 2007), where bike lanes/parking and convenient public transportation are a must. Yet, most municipalities neglect these investments, instead opting to build and repave parking lots and roadways, where Guelph is also a culprit, despite the progress noted. Since the introduction of the model-T, a ‘get up and go’ attitude has cemented itself in the North American mind, where a pervasive ‘car culture’ dominates today. As such, there is high demand for vehicle infrastructure, while very little exists for anything different (E. Ferrari, personal communication, May 3, 2016; M. Schreiner, personal communication, May 20, 2016; Y. Tendick, personal communication, May 1, 2016). Accordingly, there is a ‘chicken and the egg’ scenario at play, acting as a barrier to moving beyond this status quo, and reducing emissions in this way. Because little demand for alternative transportation infrastructure exists, local governments invest accordingly. Therefore, demand is never created, as convenient alternative mobility options are not readily available, leaving the public wholly disheartened with the idea of walking, biking or taking a bus. Speaking to bicycle lanes specifically, feeling safe is cited as the biggest barrier to peddling through a city, where a lack of separated lanes then naturally results in abandoning the spokes (D. Gibson, personal communication, April 27, 2016; Y.
Tendick, personal communication, May 1, 2016). If demand is not existent, than one might hypothesize that an absence of uptake would follow, yet uptake and demand largely depend on the existence of the infrastructure spoken to. Still, municipalities continue to neglect the former, and fail to achieve significant emissions reductions because of it. Further, and speaking to urban design, cost presents itself as a significant issue in relation to beefing up public transportation systems, where resultant of landscape segregation, high people traffic in most areas (barring downtown cores) is either non-existent, or comes to fruition at select intervals (often during ‘to and from’ work hours). As such, the level of ridership cannot effectively finance the investment and ongoing costs of running new routes, and so the transit system is not improved, where this is especially evident in Guelph’s industrially dominated pockets. Still, considering that municipalities (using Calgary as example) may spend upwards of 60% of their transportation budget facilitating personal vehicle travel, while only 2% on cycling infrastructure (Haavardsrud 2015) I would argue there is ample room to adjust.

Where getting people out of personal vehicles is an issue, fuel switching and EV uptake is also a challenge for a couple central reasons, where again, though Guelph has seen progress, the EV share of the vehicle pie remains minimal. First, distance anxiety based on energy storage capacity deters investment in EV (IPCC 2014), where naturally, people are hesitant because they do not want to end up stuck on the road. Second, price point is a major ‘roadblock’, where the economic case for EV currently fails to compete with gas powered automobiles, and thus only the wealthy are in a position to invest (M. Schreiner, personal communication, May 20, 2016). Upfront costs are major barriers to investing in emissions reductions in any number of ways, where this was previously discussed, and will show its face again. As far as distance anxiety however, and being that it is a real technological issue, quickly evolving battery technology has a large role to play, and as such, we may have to wait and watch that materialize. However, understanding, awareness, and accommodating infrastructure are also at the heart of this issue, where municipalities are certainly in a position to help address this. Many people are not generally aware of how far an EV can take them, or, how many kilometres they drive on an average day (Y. Tendick, personal communication, May 1, 2016). Additionally, in thinking about EV, as most of us have done, many have never considered that charging stations can actually be installed at their homes, and for a reasonable price tag, where this is largely resultant of our conditioning to ‘stopping to fill up’, a mental construct I too was bound by until I got into this research.

For local governments then, CE is key (in whatever form that takes), where anxiety can be quelled by bridging the knowledge gap in terms of distance demand and capability, as well as when and where charging might take place. In Guelph for example, one public group recently held a free and fun event at which EVs were showcased, taken for test drives, and where experts were present to answer any questions. Though this was (or may have been) in effect a marketing technique, its being advanced as otherwise was successful in getting people to show up, participate and learn. Moving back to CE then, governments can and should do similar things to help spur uptake. Additionally, municipalities can and should build charging stations in targeted locations where people generally park for extended periods of time, as the City has done at Stone Road Mall here in Guelph (K. Mwanzia, personal communication, May 18, 2016; Kerr 2016a). The province of Ontario has also recently elected to go this route, where it plans to build 500 charging stations across the province (The Canadian Press 2016). On the topic of price point
however, municipalities have less tools at their disposal to spur uptake, where they might elect to subsidize the cost of EVs, or better yet, lobby higher levels of government to price carbon. However, municipal subsidization initiatives, especially on bigger investments, are not very financially viable in the context that budgets are continuously squeezed; therefore provincial governments should take the lead here. Accordingly, lobbying for federal carbon pricing (IPCC 2014), and provincial EV subsidization, present themselves as a much better options, where the market playing field is levelled or reversed, and thus consumer economic sense naturally steers people towards the cheapest options (M. Schreiner, personal communication, May 20, 2016). In Canada, the new federal government (Liberal) appears dedicated to doing just that, where Justin Trudeau has recently maintained that “we’re [the federal government] going to make sure there is a strong price on carbon right across the country” (Harris 2016:1).

Moving back to facilitating ‘alternative to personal vehicle’ transportation however, and towards actually seeing uptake, some discussion and suggestions are in order. First, municipalities should hatch the egg, engineering uptake and resulting culture by making alternative transportation convenient and attractive, both in terms of public transit and cycling, where convenience and attractiveness are primary motivators or inhibitors underscoring uptake. Here, municipalities should employ CE, collaborating on the design and placement of new infrastructure (bus routes and bike lanes for example), to maximize initial uptake based both on existent demand, and that which would potentially exist should the infrastructure be implemented and built effectively (Y. Tendick, personal communication, May 1, 2016). Relatedly, people and public groups who are interested in seeing personal vehicles abandoned should organize and demonstrate broad based support for the cause and its accommodating infrastructure, where ‘loud’ lobbying is key to engineering political will, again, where politicians in effect act on their perception of the public voice (this being one of the founding principles of the Citizens Climate Lobby (2016)). Speaking to financial viability and uptake, as well as realizing CEP targets in the long run, ‘Smart Implementation Scheduling’ (SIS) is a concept that might inform spending, where I will elaborate on this a great deal in a following section. For its purposes here, SIS refers to ‘bang for your buck’ in any number of investments, and scheduling/implementing investments in an order that achieves the quickest and highest ROI first (generally in financial terms as far as CEP implementation goes, but also regarding environmental impact) (E. Ferrari, personal communication, May 3, 2016; K. Mwanzia, personal communication, May 18, 2016). Of course cycling infrastructure does not bring any direct financial ROI, though if it gets cars off the road, it is an environmentally sound investment. However, in tandem with beefing up public transit, it is potentially quite attractive according to the principles of SIS, where culture and practice gradually shift away from the personal vehicle, saving municipalities millions of dollars previously spent on roads and parking infrastructure. In that same breath, money will be reaped through burgeoning transit ridership, as it assumes itself as more attractive than what it had been. Further, municipalities should remember that investing in gas powered personal vehicle infrastructure has basically zero potential economic ROI, while also being an enemy of emissions reductions. In light of that, building robust public transit and other infrastructure aimed at reducing personal vehicle trips is actually comparatively much cheaper regarding outcomes, where as one participant pointed out, a single multi-level parking garage tagged in the double digit millions can certainly house a few cars, yet those millions themselves could buy dozens of buses! Sadly, Guelph is planning on building that garage, albeit
with some bicycle parking inside (E. Ferrari, personal communication, May 3, 2016; Y. Tendick, personal communication, May 1, 2016).

According to the principles of SIS and economic and environmental ROI then, municipalities are strongly encouraged to re-think spending practices, and invest heavily in public transportation and cycling infrastructure, where in the transportation sector, CEPs will fail or succeed based on the above outlined factors and principles, including encouraging EV uptake. Further, investing in ‘other than personal vehicle’ accommodating infrastructure is also a social equity issue, where the following quote does this justice: “Hang on a minute… We [the City of Guelph] can do better! We should be able to allow people to get around in more than one way, so that if you’re economically disadvantaged or you just don’t like driving, or you’re not good at it, or you’re old or young… There’s got to be another way to get around” (Y. Tendick, personal communication, May 1, 2016)!

Before moving on, in the case of transportation, it appears that participant thoughts on the issue converge with both Ecological Modernization (Fisher & Freudenburg 2001) and a Theory of Social Practice (Reckwitz 2002). Regarding Ecological Modernization, focusing on facilitating EV by lobbying for carbon pricing, creating understanding, and building charging stations is consistent with attempting to manipulate markets and employ technology to reduce emissions. As well, concerning a Theory of Social Practice, building robust communal and non-motorized transportation infrastructure is consistent with normalizing alternative ways of getting around, as a result of seeing the associated infrastructure increase in scale.

**Picking Winners & Beating the Bookie**

With regards to achieving CEP targets, picking environmentally and economically effective projects, as well as doing so in an orderly fashion, is key to long term success, both in terms of ongoing financial viability, and actually making the dent (or crater) we want to on emissions reductions. Accordingly, I get deeper into the principles of SIS, its purpose, and the concept of a Revolving Green Fund (RGF). Following this I get into some challenges to following such principles and realizing our intended targets, as well as strategies for moving beyond such barriers. As noted earlier, SIS is about ‘bang for your buck’ as far as environmental and economic ROI. Ultimately, as a municipality, group or individual, there are many projects (LED lighting systems, window replacements, and solar installations for example) we can invest in to reduce emissions and save money in the long run. Yet, each embodies a unique degree of potential for emissions reductions, as well as payback period, where reductions in energy use eventually recover the initial investment and see a profit turned. As such, SIS is about long term thinking, and ensuring ongoing financial viability to continue investing, where it is important to lean on more economically savvy projects initially, so a quick financial return may be reaped (while environmental impact may not necessarily be as high – LED lighting for example). If such an order of operations is carried out, a municipality or individual need not worry about capital source for ongoing investments, where the quick and high returns from initial investments may effectively be applied to, and themselves continue to fund, subsequent projects that may have a less attractive payback period (for example, solar panels) and degree of potential profitability, yet that are important to reducing emissions and may well be quite high impact environmentally. Essentially, this is the concept of a ‘Revolving Green Fund’ (RGF), where an individual or organization becomes their own financier, growing and funding themselves going
forward via initial and ongoing profits made from SIS, as any successful business strives to do. Eventually then, all valuable projects will see implementation, and municipalities, along of course with individuals, may realize their emissions reductions targets, as well as continue to reap surplus capital going forward (E. Ferrari, personal communication, May 3, 2016; K. Mwanzia, personal communication, May 18, 2016; M. Schreiner, personal communication, May 20, 2016). Accordingly, if CEP energy goals are to be achieved, staying in the green is necessary to achieving green (environmental and economic), and it is highly important that municipalities and their many citizens adhere to SIS and RGF principles.

Yet still, for municipalities and publics, there are challenges to both following such guidelines, and of course, to overall CEP success should there be deviation from such theory. Participants thus introduce us to the topic… “From a political standpoint, politicians want to stand in front of solar panels and wind turbines, which is a great thing to do. But do they want to stand in front of a pile of insulation? I mean really… and they’re indicative of society” (E. Ferrari, personal communication, May 3, 2016); “The research indicates that we’re far better off [economic and environmental ROI] making investments that actually save us energy, and those might be things like insulating your walls for example…and those aren’t flashy eh,… it’s kind of like buying expensive underwear,… and sometimes people are more likely to invest in putting solar panels on their roofs, or new windows, or new doors, or a big community project” (M. Schreiner, personal communication, May 20, 2016).

As a society conditioned according to the individualistic competitive nature of capitalism, status, visibility, reputation and generally nurturing egotism are highly important to us (Fromm 2013), yet these ideological constructs can make us do foolish things, in this case, where investing in emissions reductions is concerned. As spelled out in the quotes above, we (municipalities and individuals) have a cultural propensity for investing in ‘sexy’, visible projects that we can point to and say ‘hey, look at me, look what I did’, yet this may often result in steering us away from SIS and RGF principles. As put forth, this can present itself as a serious issue to CEP success, in terms of maintaining financial integrity and ongoing capital viability, as well as moving the needle on emissions reductions over the long term, where the two are intimately bound. Accordingly, pursuing (at least initially) flashy projects may undermine our ability to fund ourselves going forward, and hence reduce emissions more significantly over the long term, where in a place like Guelph, in which the CEI is envisioned as a 25 year, extremely ambitious effort, deviating from SIS may have major consequences. Further, this propensity for flash is illustrated in Guelph, where I had mentioned the ongoing focus on solar. While this is great for beefing up local energy security, the payback period is about ten years (Eco Alternative Energy 2013), and emissions are not significantly reduced in the context of primarily hydrologically sourced electricity in Ontario.

In the context of ongoing financial viability and actually reducing emissions to a large degree, CEP deviation from SIS principles can undermine political and public support for an initiative. As discussed, this support is quite instrumental to success, where municipalities need to justify spending habits with visible and effective results that satisfy economic and environmental currencies we each deal in, where the respective value awarded is subjective. At this intersection however, there is a paradox… By following SIS principles, municipalities can first reap big financial returns, garnering support for a CEP, and thus setting it up for long term
success based on ongoing capital viability and ideological buy in (GTI 2016c). Yet, as quick return, first order of business projects (those that would be implemented first if honouring SIS principles) do not necessarily assume themselves as totemic (i.e. visible and flashy – in accordance with our bias towards such described above), municipal and public actors’ perceptions of ‘progress’ (i.e. economic and environmental ROI) resultant of time and money spent may become compromised, divided and dwindle, despite the substantial results towards achieving CEP targets (E. Ferrari, personal communication, May 3, 2016; M. Schreiner, personal communication, May 20, 2016).

Here, two suggestions are put forth that dually address the necessity of following SIS principles for ongoing financial and environmental success, and maintaining broad ideological buy in throughout implementation. First, municipalities might seek balance in their investment portfolios and implementation plans, both initially and throughout the process, where as a very first order of business, they might for example focus their energies on the construction of one large solar project, potentially on city hall and/or a public library, and, re-insulating the building envelope as well as retrofitting the lighting systems, again, potentially in these same buildings. This way, ‘progress’ is naturally apparent resultant of visibility and flash (literally, in the case of solar), and, a municipality lays some of the groundwork for maintaining ongoing (and more immediate) financial viability, as well as sees some big gains on emissions reductions. Second, and I would argue equally important, is the role of CE (M. Schreiner, personal communication, May 20, 2016). Whether it is resultant of direct public governance and oversight, or others methods a municipality can employ to maintain transparency and awareness (potentially news media or online municipal resources), the public should be made aware of ‘progress’ and ROI in a timely and consistent fashion, reflecting the necessity of SPER (NRCAN 2007). In this case, the role ‘sexy’ projects might play in maintaining support may be diminished, where instead, all parties are consistently made aware of what has been done, and the environmental and economic ROI that has been the result. Accordingly, if SIS principles have been followed, those numbers will be sexy in and of themselves.

Finally, following SIS principles and hence avoiding its related stumbling blocks may be compromised where there exists a very limited understanding of just what the ROI and payback period on the plethora of energy investments we can make actually is, where most of us, including local government as a whole, are very much in the dark. One participant puts this plainly… “There are a lot of people out there who want to reduce their carbon footprint but don’t know how to do it… In particular, a lot of people I meet and talk to seem to think that the solution to reducing carbon emissions is that ‘we need to build more wind turbines and solar panels and things like that’, and while those are part of the solution, a lot of people don’t realize that the most cost effective things we can do to reduce emissions is to invest in energy efficiency and conservation… And the added benefit being that you can reduce your energy costs because you’re using less and using what you do more efficiently… But a lot of people don’t know that, so I think providing people with the tools and information about the opportunities for doing so can really make a big difference” (M. Schreiner, personal communication, May 20, 2016).

As municipalities and individuals, if we are comparatively unaware of what the environmental and economic ROI of various energy related investments is (or even the scope and diversity of energy investment opportunities), we are ill positioned to schedule implementation
most effectively. Accordingly, our ability to create and nurture an RGF, and ultimately realize significant emissions reductions, may be undermined, where Guelph’s DE scheme is somewhat reflective of this reality. In addressing this issue however, CE is once again, highly important for creating understanding. Local governments should seek out and engage experts to help select projects, and ultimately create a roadmap for implementation that best follows SIS principles. Further, local governments need take steps to create this understanding throughout the public, by engaging the populace in a variety of forms, and educating the public about potential energy investments and their outcomes. That way, people interested in emissions reductions, as well as those who are not necessarily dealing in environmental currencies but whom are (likely) naturally interested in saving money, gain an in-depth understanding of the variety of things they can do and their forecast results, effectively enabling a higher degree of CEP success throughout the broader public, where people possess the tools to ‘act smart’, and hopefully move beyond a propensity for flash (A. Chapman, personal communication, May 5, 2016; M. Schreiner, personal communication, May 20, 2016). Further, if CEP CE is established more along the lines of public governance, oversight and collaboration, local government human resource strain may be eased, where they need not necessarily engage experts themselves (where this is crowd sourced and brought forth through the public), and, the public governance participants might naturally carry an awareness of specifics under SIS principles into and throughout the broader populace, where public actors certainly have important roles to play in driving municipal energy plans forward (Rizi 2012). In reality though, and for best results, these processes should be and generally are collaborative, where there will be guidance from, between, and towards all involved parties. In closing this section then, picking winners, following SIS principles, and subsequently nurturing the RGF are highly important to maintaining financial integrity, digging out a crater in GHG emissions, and hence achieving long term CEP success; and while there are challenges to following such principles, education and transparency assume themselves as useful tools. Municipalities and individuals are thus encouraged to move forward with this in mind. With regards to the content in this section, participant insights are consistent with Ecological Modernization (Fisher & Freudenburg 2001) and a Theory of Planned Behaviour (Hargreaves 2011). Speaking to Ecological Modernization, the idea that we can invest in energy in a calculated fashion is reflective of personally investing based on the drive to reduce costs, as well as being conscious of how we interact with the market in order to make it an economic opportunity. Regarding a Theory of Planned behaviour, promoting a different understanding of emissions reductions (that it can be quite a profitable endeavour if investing according to SIS) is consistent with changing the way we think about de-carbonization, in order to spur action.

*We’re Only Human... Playdough & Prisons*

Being that our cognitive faculties are arguably the most robustly developed of any species on the planet, we embody an extensive capacity for choice, opinion, and personality, where our ‘better nature’ is very much open to debate as far as what that might look like. Naturally then, this can be a stumbling block for CEP implementation in a number of ways, though of course being that we are ideologically malleable creatures, stumbling blocks need not take us out at the heel. Ideological barriers to CEP implementation and reducing emissions are likely present in all communities to varying degrees, where I had spoken to the large disparity I have observed between my hometown (Calgary) and Guelph. Further, these personify themselves in local government circles and the lay public alike, where there are various factors
contributing to their existence and multiple forms they can take, to be discussed shortly. Whatever the reasoning behind a person’s potentially dismissive or actively oppositional attitude towards climate change mitigation and CEP implementation however, such a demeanour acts as a barrier to implementation by detracting from support, uptake and investment, where I once again stress the importance of broad CEP support in the context of how local governments currently work and subsequently take action.

At the onset, some degree of skepticism about anthropogenic climate change exists across social actors in all communities, which of course results in diminished support for CEP activities. Further, many are wedded to a status quo way of life, in this case being the fossil fuel energy economy, and as such are uninterested in and do not necessarily understand the benefits (and necessity) of transitioning away from dominant energies. Further, in relation to a warmth towards the status quo, there are a great deal of people who, though potentially being sympathetic to environmental issues, believe that if we are to save the planet, we must bankrupt ourselves, where economic and environmental prosperity simply cannot exist in harmony. Simply put, there is a common misperception that ‘green is green’ (GiG) is a falsehood, or in other words, that reducing emissions is neither economically viable nor profitable (A. Chapman, personal communication, May 5, 2016; E. Ferrari, personal communication, May 3, 2016; M. Schreiner, personal communication, May 20, 2016). Personally, I must admit I was part of this camp for some time, until this research helped shed light on another reality. Relatedly however, and in this context, many are opposed to the idea that municipalities themselves should take up the task of climate change mitigation, generally citing that it is economically unfair that responsibility be delegated in such a way. Further, and as discussed quite extensively, support may dwindle where various politicians and the lay public perceive CEP spending and activities to be fruitless regarding its visible or actual results. All together then, these ideological constructs may combine to significantly diminish support for CEP activities, and, a propensity and willingness to invest in oneself, thus hampering our ability to achieve energy targets.

Such attitudes are couched in a variety of reasons, but may also be addressed and re-engineered accordingly. The reasoning behind climate change denial is up for debate, and will not be addressed here, though may well in part be intimately bound up with being immersed and believing in the value of the historical norm where energy is concerned. Relatedly, a misperception that green is in fact red may affirm the value of that norm, as well as again, deter support for, and investment in, reducing emissions, where people first and foremost seek economic security. From another angle then, the idea that green (environmental sustainability) is not green (not profitable) (in other words, that reducing emissions is more of an environmental charity case than it is a solid business venture – referred to as ‘green is red’ from now on) certainly supports the idea that municipalities should not be spending money on climate change mitigation efforts, where, as discussed extensively, in the absence of evidence that CEP activities are paying off, whether it be the existence of that evidence or being privy to it, various citizens of communities will be inclined to oppose CEP spending (A. Chapman, personal communication, May 5, 2016). Finally, the media play a part in dividing support in a number of ways. News media principles generally posit that both sides of a story must be advanced, which is a noble and righteous practice. However, in the case of climate change denial, its intricate link to status quo energy ideologies and a disbelief that GiG, the media sometimes play a part in nurturing and creating those opinions, where they may give equal space to the denier and the activist, despite
that the scientific opinion split is about 97% for and 3% against, in effect working to diminish support for CEP activities and the propensity for individuals to invest in emissions reductions themselves. One participant put it this way… “The unfortunate thing about any opposition to this stuff [CEPs and reducing emissions] is that when there’s broad community support, all it takes is one individual saying ‘this is garbage’ [climate change and CEP activities] for them to get equal space in the media, and that’s really problematic” (E. Ferrari, personal communication, May 3, 2016).

At the same time, the media are known for chasing ‘bloody’ stories that embody and/or are advanced as controversial, in pursuit of readership, viewership, and ultimately profits. As such, what they choose to focus on, and the way they frame and advance a story can skew reality in a number of ways (considering that reality is always subjective), inflaming and playing on emotion, where this can be a serious problem to support for, and actual CEP implementation (E. Ferrari, personal communication, May 3, 2016). In Guelph, this occurred where one author chose to focus heavily (almost solely), on the idea that the CEI had been an unprecedented waste of money, based on the Mayor’s comments about it being more of a fantasy than a vision. Neither the story itself, nor the Mayor’s comments were reflective of the broader public (and municipal) feelings towards the CEI (where as I have outlined, there is a range of opinion) or the actual success of the initiative, where the Mayor was in large part speaking out of anger that SPER had been lacking to date. Yet still, this story certainly appeared to cause some controversy, and in the making, detract support, and reinforce the notion that green is red. Quotes from three different individuals in the online comments section of that news article (Saxon 2016) do well to showcase both the engineered and encouraged outrage resultant of this author’s choice of ‘style’, and, that he had not in fact done justice to the nature of the situation here in Guelph, as mentioned above… “Can’t wait until people start getting held accountable for wasting tax payer’s money and start losing their jobs for wasteful expenditures. Cam [Mayor] is working for a better Guelph. Unfortunately a lot of his co workers seem to still keep trying to screw the working class and keep stealing out of our working hands. Unless this mentality changes the city is doomed” (Craig Dool); “This is fraud. The investigation being conducted should be a criminal one [where there is no ‘investigation’, just the ‘update’]” (George Allan); “How has no one talked to anyone actually involved in the initiative? Where is the report Evan is talking about? This feels like half an article…” (Kelly Smith). According to the above, it appears that the media can, and has in Guelph, played a role in shaping public opinion, potentially undermining local CEI efforts, as well as CEP efforts in other jurisdictions if similar happenings are seeing manifest.

Towards addressing and amending the potentially apprehensive and/or oppositional ideology laid bare above, municipalities (as well as public actors) can engage in a variety of ways, where theoretically, efforts should be focused on creating and nurturing a broad understanding, and hence belief, that GiG, which might be realized through picking winners, being transparent and demonstrating the results of such investments (A. Chapman, personal communication, May 5, 2016; E. Ferrari, personal communication, May 3, 2016; R. Kerr, personal communication, May 12, 2016). Further, being generally mindful of ideological framing and the various points or entry for achieving value proposition resonation (being that support and buy in is garnered via the recognition of personally valuable benefits of a CEP or individual investment in reducing emissions that really resonate with an individual or group) is
important (GTI 2016c). With regards to value proposition resonation, support for a CEP and a willingness and propensity to personally invest in emissions reductions, people deal in different currencies (what they value most, as well look to preserve and/or enhance in a practical sense), where in the context of energy, it’s generally a balance of both environmental and economic domains (where economics often reign supreme), but also includes other elements, such as for example, human health. As such, knowing the audience to which we speak is important with regards to how we couch our various propositions. One of the participants in this study (Evan Ferrari) oversees a not for profit agency (eMERGE Guelph) that seeks to show people both how they can reduce personal energy consumption (effectively reducing emissions), and how they can save money doing it, where he discussed that upon entering a home, staff ‘size up’ those living in it by glancing around at the nature of the décor, in effect allowing them to consider how to best frame the benefits of reducing energy consumption. If for example the dwelling is rife with expensive furniture, they might assume a person will most positively respond to an economic argument, whereas if there are a plethora of pictures of children and middle aged adults, and the inhabitants appear to be at or beyond retirement age, they may lend more focus to advancing the benefits of cutting energy use as being grounded in a human health and a generational equity framework (E. Ferrari, personal communication, May 3, 2016). In this context, CE is important for municipalities, where collaboration with public groups and organizations intimate with the greater population allows them to effectively garner support for a CEP, and potential personal investments in energy, where they are better positioned than the municipality itself to know ‘how’ to speak to this audience. Still, in the absence of CE in more collaborative forms, municipalities can and are encouraged to ‘officially’ advance multiple value propositions that support CEP activities and personal investments, in order to successfully seduce all idle hands (A. Chapman, personal communication, May 5, 2016).

As mentioned however, economic currency generally enjoys the top seat in the personal value hierarchy (Kerr 2016b), and as one participant put it, “There’s no ideology involved in our common interest towards a healthy and sustainable economy” (R. Kerr, personal communication, May 12, 2016). As such, municipalities have a role to play in creating understanding and buy in to the concept that GiG. Accordingly, picking winners, SIS, being transparent and demonstrating results is instrumental. Though the nature and necessity of SIS and SPER have been thoroughly discussed, I must restate their importance as far as actually maintaining financial integrity and turning a profit on investments made, where this is naturally necessary to having results to demonstrate. Moving on then, demonstrating positive results regarding primarily economic, but also environmental and other ROIs addresses the many faces of ideological opposition, and resulting lack of support and personal investments made, in a number of ways. First, we come at the climate change denier from a different angle, where, by demonstrating that the reducing emissions is actually an economically sound pursuit, we nullify their arguments against such initiatives, by making the ‘truth’ about the existence or cause of climate change irrelevant to their support for, and potentially personally investing in, reducing fossil fuel use values. Once again, money has been cited as trumping other priorities across a majority of social actors in Guelph (Kerr 2016b), and this presents itself as an opportunity for CEP success. Second, demonstrating seductive economic ROIs on municipal investments (or other) helps quell the belief that green is red, which works to loosen the grip of status quo ideological energy constructs on minds where they exist, as well as shows the environmental sympathizers that we need not pursue environmental health and economics at the expense of one
another. Further, showing that green really is green lends credence to the idea that municipalities should invest in energy, as again, despite arguments to be made about who should take responsibility for climate change mitigation, our common interest towards a prosperous economy dictates that we should strive to for a carbon free world. Additionally, and as spoken to in a previous section, transparency is essential to maintaining support for an initiative (NRCAN 2007), where demonstrating results in a timely and consistent manner is important. According to the above, CE is thus also important in whatever form it might take, where municipalities are encouraged to ensure there are processes and opportunities in place to communicate with the broader public, where local governments create space to demonstrate such results, advancing, instilling and popularizing the reality that GiG (A. Chapman, personal communication, May 5, 2016; K. Mwanza, personal communication, May 18, 2016; M. Schreiner, personal communication, May 20, 2016; R. Kerr, personal communication, May 12, 2016). Here, both the efforts of eMERGE Guelph, and participants’ expressed desires to demonstrate evidence that GiG in order to change ideologies and practice, are once again consistent with Ecological Modernization (Fisher & Freudenburg 2001) and a Theory of Planned Behaviour (Hargreaves 2011). As far as Ecological Modernization, eMERGE and other participants’ ideas once again see a focus on technological solutions and saving money, where individual emissions reductions are posited to be the result of recognizing the opportunity for financial gains, and investing in a calculated fashion. Regarding a Theory of Planned Behaviour, eMERGE also lends significant focus to showing people how they can reduce emissions by appealing to multiple faculties (including the idea that GiG); thus dependent on the audience, they have multiple points of entry purposed towards problematizing and reconstituting individual thoughts surrounding status quo behaviours as related to energy.

Finally, interested local politicians, public servants, groups and other individuals have a role to play in ‘policing’ their media (and according to the Citizens Climate Lobby (2016), ‘building relationships’ with them, where such collaboration will be discussed shortly). It is important that media does not unduly divide support and buy in for emissions reductions initiatives in the ways described previously, and as such, they should be engaged by those willing. Regardless of who does the engaging, and whether it is done in person, by phone, or written, it is important to make very clear what the municipal and public voice actually is (where in Guelph, it appears quite supportive of the CEI, as per the delegations I spoke of, but at the very least, not completely one sided against the CEI, as Saxon (2016) would have us understand), and what the ‘actual’ results of an initiative have been, where even if they are not as positive as initially envisioned, the space for potentially damaging assumptions to inform a story is effectively closed. Accordingly, members of the media tasked with covering city hall matters or other domains that might relate to emissions reductions need to be directly engaged, where we state our wishes that they not unduly cause controversy and divide support, by butchering otherwise ‘clear’ realities in their quest for eyes and plunder (E. Ferrari, personal communication, May 3, 2016). Cognitive dissonance is a powerful personal regulator, where when we think about, or actually do deviate from what we have claimed to be or said we would do, we are forced to either rationalize such deviations, or sit with an upset stomach resultant of guilt in relation to our betrayal of ourselves and/or others (Aronson et al. 2010).
I personally ran a petition to ban bottled water sales on my undergraduate campus, where, additional to students signing a document supporting this ban, I also prompted each to sign a personal declaration that they would refrain from drinking bottled water wherever possible. Of course I was not going to track them down at a later date and ask about their habits post signage, nor was it likely we would actually find ourselves standing next to each other ever again, and they knew this, but signing was symbolic of a ‘handshake deal’, where the results were quite interesting (though not foreseen). Though there was broad support and associated signatures for a bottled water ban on campus, the signage rate for the personal declaration was a mere half of the former. Though the context is certainly different than the community policing of local media, dissonance and its personal regulatory power was thus demonstrated, lending validity to the idea that when we make our wishes known to others, and potentially where we are subsequently acknowledged, these ‘others’ become, to a degree, bound to certain terms we had demanded or informally negotiated (i.e. the social contract). The rule of law is not the only deterrent to any number of actions, where our entire social lives revolve, to a significant degree, around ‘handshake deals’ and expressed or assumed promises and conventions (Appelrouth & Edles 2011). As such, direct engagement of media is a valuable tool towards avoiding their ideologically disruptive power, and any person or party supportive of emissions reductions efforts should closely follow and consistently engage their local news media to ensure they do not assume themselves as pests.

Enduring ideologies, such as the pervasive ‘car culture’ discussed in a previous section, are arguably one of the most difficult challenges to navigate, and in the context of CEP implementation, may assume themselves as substantial barriers to achieving our energy targets. In wrapping up then, I suggest interested municipal actors, CEP practitioners and supportive organizations consider how various oppositional attitudes might manifest, why, and accordingly employ the principles here discussed, where picking winners, communicating evidence and results, effective framing, and knowing an audience to achieve value proposition ressonation are highly important to securing support, and hopefully, uptake and investment, for and in CEPs, projects and activities that help realize their goals.

That Damn Dollar!

Regarding significantly reducing emissions in communities, economics has already reared itself a number of times, however, being a significant challenge to CEP success, it merits its own discussion. Despite bring primarily a review and restating of various ideas previously advanced and acknowledged, the following will both bring a number of issues under one roof, as well as offer additional insights not yet spoken to.

Beyond behavioural change, the upfront cost attached to various emissions reductions activities is a substantive challenge that confronts both municipal governments and the individuals comprising the broader public they govern for (S. Dyck, personal communication, April 26, 2016; M. Schreiner, personal communication, May 20, 2016). As far as municipalities themselves, the issue is quite simple, where coffers are generally tight, and realizing CEP targets is reliant on significant initial and subsequent investments in renewable generation and technologies that increase efficiency and conservation. As well, most individuals possess little or no surplus disposable income, where up-front costs then inhibit them from investing in single
or multiple projects that might help realize energy targets. As one participant put it, “there are a lot of people who are interested in local generation and saving energy, but they may not have access to the financial resources to implement the projects they want to implement, so that’s a serious challenge” (M. Schreiner, personal communication, May 20, 2016). Paradoxically, most all of these projects would actually result in money saved over the long term, where of course the payback period and degree of ongoing profitability is specific to the projects themselves.

For individuals however, the economic barrier manifests itself additionally, where depending on the nature of the investment, it might fail to even pay itself off during a person of family’s tenure in their dwelling. As another participant put it, “you’re looking at a project [solar roof] that on average pays for itself in eight years, but the average stay in a Guelph home is five years… So a typical homeowner would be uninterested in investing if they’re going to sell the house before they get their money back and make a profit” (A. Chapman, personal communication, May 5, 2016). Further, the economic case may be unattractive or otherwise broken for both municipalities and individuals in the context of broader energy market forces. Though oil was supposed to have peaked (and likely has), the price continues to plummet for a variety of reasons not discussed here, where to some degree, and being dependent on the projects themselves, this may undermine the amount of actual money saved as per reductions in total energy use. As such, municipal and individual investments in saving energy may become less appealing, economically intuitive, and fail to continue delivering forecast returns going into the future, where, as one of our experts put it, “with the price of natural gas actually going down, and [where] the price of oil has fallen from $120 a barrel to $40, it [investing in energy] becomes politicized… Like, everybody thought the cost of oil was going to go up, up, up” (S. Dyck, personal communication, April 26, 2016)! Additionally, and getting back to where we just left off, there are ideological barriers to reducing emissions that surround how economics and energy couple, illustrated primarily where many are quite skeptical that GiG, being a fair concern in light of the above on fossil fuel values. For these reasons then, municipalities and individuals may be deterred or barred from investing in energy, where CEP targets are subsequently hampered.

As spoken to in some depth however, these roadblocks need not immobilize us, where there are a variety of ways we can “help us help ourselves”. Though not a strategy per say, we should not let global energy market antics stir us up too much about the economic case for investing in emissions reductions in future, as again, the research tells us oil has peaked (Nikiforuk 2012), and that the price will certainly rise again, continuing so forth. On that note, the tangible evidence illustrates that the price of renewable generation, conservation, and efficiency technologies continues to drop rapidly (S. Dyck, personal communication, April 26, 2016). Like computer parts, which I have a good deal of experience buying, when a technology is new, the price point is generally atrocious. However, naturally, and being one of the few positives of capitalist economics (as well as reflective of how paradoxically, capitalism has driven our use of fossil fuels), market competition breeds further innovation, and prices often drop substantially, where the market for reducing fossil fuel use values is currently in our favour. As such, while the price of both fossil fuels and technologies aimed at eliminating their use plummet together (Fletcher 2016), we should, as municipalities and individuals, buy in to the research and recognize more tangible realities, together, allowing us to rationally assume only one of those two commodity groups will rebound against current trends. That said, it is
ultimately individuals who will decide how current global energy market fluctuations affect their
decisions to invest in emissions reductions projects, and local governments can do little to
address this beyond open dialogue and instilling an awareness about the situation described
above, using some form of CE.

Moving back to initial and ongoing costs themselves, I elect to recapitulate the strategy
and tools at our disposal. For municipalities, picking winners, SIS, accordingly nurturing the
RGF, and SPER are essential to ongoing financial viability (D. Gibson, personal communication,
April 27, 2016; E. Ferrari, personal communication, May 3, 2016; K. Mwanza, personal
communication, May 18, 2016; M. Schreiner, personal communication, May 20, 2016). Initially,
project implementation will of course require an investment of taxpayer money; however, if the
‘smartest’ investment(s) (potentially LED lighting systems) is made first, being that with a quick
and substantial economic ROI, the investment will be recouped quite promptly, whereupon an
ongoing profit is made, which should be used to itself fund additional projects. As discussed in
some depth, best economic practice for a municipality is to make a SIS plan that moves from
implementing the ‘first place winners’ first, to projects that ‘get a medal for trying’ in economic
terms, but that are instrumental to significant emissions reductions. As such, according to the
principles of RGF (if followed), a municipality can essentially fund itself via the profits of
producing and reducing energy, from just beyond initial project implementation, all the way to
realizing its intended energy targets, potentially strengthening those targets in the context of
large capital surpluses resultant of SIS, RGF, and extensive project implementation. Not to be
forgotten however is the necessity of SPER, positioning a municipality to respond and adjust to
any unforeseen ROI mishaps that might unduly undermine the RGF (NRCAN 2007). Relatedly,
CE is important here, where again, municipal personnel may not have the best technical know-
how surrounding the payback on the plethora of potential investments, and thus where it is
essential that municipal actors (likely the public servants in this case) seek out experts in the
broader local public (or beyond) to help construct a SIS plan that is most effective (A. Chapman,
personal communication, May 5, 2016).

As far as individuals and financial barriers, the strategies for overcoming them are much
the same, with some additional elements also involved. Individuals need follow the SIS and
RGF model in order to both justify the initial investment(s) (where it/they will be recouped
quickly), as well as ‘roll’ quick profits over, creating a capital surplus that allows further
investment in emissions reductions if they so wish, where insulation might be a good starting
point (E. Ferrari, personal communication, May 3, 2016). As a municipality, direct subsidization
(to some impactful degree) of high economic ROI and other impact projects is potentially a great
way to get the ball rolling where existent individual purses are light. As discussed however, in
the case of more capital intensive investments like EV, municipalities are financially ill
positioned and should work with higher levels of government. However, subsidizing less pricey
investments like low flow toilets is certainly doable, and again, should be done to ease ‘light
wallet syndrome’, something the City of Guelph is actually doing specifically. Still, financial
barriers may persist where a person or family is uncertain of the term to which they will live at a
specific location, deterring investments resultant of potentially sunk costs. Accordingly, novel
solutions may be in order, where I direct us back to the LIC financing mechanism, existing as
GEERS in Guelph. Resultant of the way the LIC mechanism is structured and operates,
“[because of] this long term [LIC] financing thing, people can do it [invest in energy], and it
doesn’t cost them a dime” (S. Dyck, personal communication, April 26, 2016)! Accordingly, if structured correctly, the LIC mechanism has significant potential for both addressing upfront costs, and of course the issue of ‘home stay’ and reaping the fruits of our investments.

Regarding ideological barriers, most specifically surrounding the idea that green is red, municipalities have a role to play. Resultant of their own adherence to SIS and RGF models, they need demonstrate and communicate the nature of the economic case and investment fallout, effectively instilling that ‘GiG’ within the broader public via real evidence and subsequent understanding, where this assumes itself as a tangent of ‘framing’ and value proposition resonance (A. Chapman, personal communication, May 5, 2016). As evidence demonstration on the part of municipalities is itself reliant on CE in some form, I close in moving back to the essential role municipalities have in advancing CE as it relates to helping individuals help themselves. Like municipal personnel, many of us in the broader public are unaware of the scope and specific ROI of a variety of potential energy investments. Further, most of us don’t run our own businesses, and hence our mental capacities are not geared towards understanding and conceptualizing very ‘business like’ concepts such as SIS and RGF. Additionally, we may not understand or be aware of the opportunities available to us, like the subsidies I had spoken to, or programs like GEERS.

Accordingly, in some form or another, municipal governments need to communicate and collaborate with the broader public. Engineering an understanding of the principles of SIS and RGF, education surrounding the scope of and environmental and economic ROI/payback terms on various potential projects, and promoting an awareness and understanding of various opportunities (like GEERS) at the public’s disposal are integral to helping individuals move beyond financial hurdles, and ultimately securing uptake, which happens to be the core of the next section. Basically, it is essential municipalities help give us, the broader public, the tools we need (programs, ROI education, etc), as well help facilitate our realizing we actually have some of those tools (opportunity awareness and understanding), if we are to ascend the financial barriers that plague us! Before moving on then, CEP practitioners and anyone in pursuit of significant emissions reductions should take heed of the ways in which financial challenges manifest themselves, and potentially address them according to the methods discussed above, where I, and participants, especially stress the importance of the novel but promising LIC mechanism. In this section, the ideas of Ecological Modernization (Fisher & Freudenburg 2001) and a Theory of Planned Behaviour (Hargraves 2011) are once again quite prevalent with participants. First, consistent with the Theory of Planned Behaviour, the idea that teaching people how emissions reductions can be profitable (SIS) is put forth as important for uptake (where without such education, many people might continue to see de-carbonization as a short term sunk-costs endeavour). Second, municipalities offering targeted subsidies to get the ball rolling on SIS and the RGF, as well as advancing an LIC program to deal with up-front costs and home-stay, is highly consistent with Ecological Modernization, where municipalities do what they can to tinker with the market and spur uptake based on economic rationality.
Beyond the Green Picket Fence

Ultimately, emissions reductions activities beyond the municipality as a corporation are essential to further moving the needle towards CEP targets should they be ambitious like the CEI in Guelph. As such, broad individual investment in various projects, participation in enabling programs, and adjustment of personal practice and habit are the foundations upon which this is realized. Regarding investment and program uptake, I have spoken extensively to factors that inhibit individuals from otherwise engaging, where they are generally embodied in ideological and financial worlds, as well as equally grounded in the absence of awareness and understanding of various opportunities. Relatedly, we have, in-depth, discussed various strategies for working against such factors and tearing down the physical and metaphysical walls that present themselves. Considering that those are the primary venues from which emissions reductions in the broader public fail to materialize, they would make up the bulk of the following discussion. In order to avoid extensively repeating myself unnecessarily at this point, I assume readers have internalized the inner workings of various ideas (or will reference backwards), and thus elect to gloss over many of them. Instead, I lend more focus to advancing additional angles and insights involved in public uptake of programs and investments, where in closing this section, I also spend some time discussing behavioural change that is not conditional to spending money.

Individuals rank various currencies according to different hierarchies, though as discussed, economics trump other values in a practical and personal sense for the majority here in Guelph (Kerr 2016b). Accordingly, related ideological and financial feasibility issues present themselves where making investments in emissions reductions are concerned. Attitudinally, the perception that reducing emissions and staying ‘out of the red and in the black’ cannot coexist is a major stumbling block, however as noted, municipalities can and should work to dismantle this ideology via CE and ROI results demonstration (A. Chapman, personal communication, May 5, 2016; R. Kerr, personal communication, May 12, 2016). On the topic of actual financial barriers to investment, such as upfront costs and the potential they are sunk where people move to new dwellings on a somewhat regular basis, education surrounding SIS and RGF principles, and the potential ROI and payback periods on various projects might help motivate various individuals to actually put cash down (again, this education reliant on CE). Further, and especially in relation changing residences and sunk costs, LIC financing mechanisms have massive potential (E. Ferrari, personal communication, May 3, 2016; M. Schreiner, personal communication, May 20, 2016; S. Dyck, personal communication, April 26, 2016). Though novel in Canada, municipalities should work to create similar programs, where they in effect secure their own uptake via making investing in reducing emissions easy, attractive, and most importantly, financially opportunistic, where in effect, working towards sustainability is a personal business opportunity for all (not to mention the ‘no money (ever) down’ part!). In effect, if these programs are designed effectively (according to LIC principles and structured towards high economic and other ROI projects), municipalities may secure broad uptake, investment, and emissions reductions via having ‘enabled’ financial landscapes, and playing on market logic and rational economic choice theory, where uptake is resultant of recognizing the opportunity for personal gain. Accordingly, novel programs such as GEERS work to mobilize personal investments in emissions reductions, where the importance of an enabling policy environment (here, being LIC policies to support the program) regarding technological investment has been noted by the IPCC (2014).
However, securing uptake of such programs and other opportunities is dependent on ensuring the populace is both aware of such opportunities, as well as fully understands how they work. Here again, CE is highly important, whether it be broad and using media, meetings, and online resources for example, or more targeted and strategic (A. Chapman, personal communication, May 5, 2016; E. Ferrari, personal communication, May 3, 2016; K. Mwanzia, personal communication, May 18, 2016; M. Schreiner, personal communication, May 20, 2016). In speaking to strategic targeted CE, achieving program and other opportunity visibility, as well as understanding, may well be done via engaging and collaborating with stakeholders groups who are already quite intimate with the public resultant of the work they do, again, using rational economic choice theory to our advantage. Local governments might for example engage renovations businesses, and focus primarily on ensuring that it is they who are aware of, and understand how an LIC modelled program works. Accordingly, they have a stake in carrying the program into the public realm, where individual uptake might effectively ‘nail’ down additional business and work, making doing so very attractive. Each time this stakeholder agency (in this example, being a renovations company) is in a home then, they have the time and space to explain and ‘sell’ opportunistic programs like GEERS to their clients, and are thus likely to do so based on self-interest.

Further, municipalities might collaborate with residential energy auditors, potentially subsidizing the process (IPCC 2014), and taking steps (some form of CE) to ensure that public actors are aware of such an opportunity. Accordingly, these auditors may reach more homes, and create an in-depth understanding of the opportunities for reductions in energy use, associated financial savings, and of course the payback period on each project. Here again, individuals may be highly motivated to invest after having learned about the opportunities for quick profits. In Guelph, eMERGE exemplifies this scenario, where they perform home energy audits for free, while being publically subsidized (E. Ferrari, personal communication, May 3, 2016). Accordingly, strategic collaboration with stakeholder groups is a way of making light work of many hands, where they in essence become a municipality’s ambassadors to the public (Rizi 2012). As such, in advancing LIC modelled programs like GEERS, other less formal opportunities, and carefully considering the nature of CE (targeted in this case), municipalities can facilitate overcoming economic, visibility, and understanding based barriers to public investment and uptake, resulting in a threefold win, being economically for individuals, economically for key stakeholder groups, and environmentally as far as realizing CEP targets. Regarding this section so far, participant insights continue to converge with Ecological Modernization and a Theory of Planned Behaviour, where education surrounding how emissions reductions is viable and profitable is put forth as instrumental to uptake (changing the way we think about de-carbonization), and, LIC programs, as well as again, advancing knowledge about how SIS works, is consistent with both leaning towards technological solutions to de-carbonization, as well as taking steps to make market conditions favourable to investment.

Moving on, another challenge to individual uptake and investment has less to do with finances and awareness, and more to do with public or neighbourhood culture and internal policing against various actions (S. Dyck, personal communication, April 26, 2016). We have all read news stories that, while making people like me want to laugh and shout in the same breath, clearly illustrate the citizen led policing I speak of, showcasing neighbourhood uproar, opposition, formal complaints and petitioning against such things as edible gardens, backyard
chickens, hang drying laundry, and solar panels. At a first and second glance, there is little municipalities can do directly to change this culture. However, municipalities can lead by example, or as one participant put it, “eat their own dogfood” (A. Chapman, personal communication, May 5, 2016). By investing in reducing emissions across the municipality as a corporation, local governments effectively work to shift the broader (or pocketed oppositional) cultural climate towards being more accepting and embracing of aesthetically or otherwise displeasing and ‘disruptive to the status quo’ structural and landscape changes. Further, and taking us back to instilling the idea that GiG, as a part of leading by example, municipalities may effectively shift cultural opposition, and quell associated public policing, by again demonstrating results and the economic ROI from various investments through CE. This might effectively challenge the naysayer to consider that although various projects their neighbours may want to implement might impose on their subjective construction of bliss, there is an economic case for doing so, where purposefully or effectively limiting someone’s ability to nurture their own economic security is another handshake deal none of us are supposed to break. As municipalities then, eating our own dogfood can be quite useful (and CEP practitioners are in the process of doing so anyway), where this will be brought up again in the context of inducing behavioural change, to which we now turn.

Like enduring personal vehicle culture, or the idea that we need have a living (now dead), or plastic tree in the house over the Christmas season, people are generally wedded to their ideological and behavioural conventions, and this can be problematic (as well as an opportunity) regarding reducing emissions. As one participant put it, “we could retrofit every damn house in Guelph and still not see emissions reductions… So the behavioural aspect of reducing emissions can be huge, but it’s harder to legislate, because you [municipalities] can’t… So a lot of that has to do with education and awareness” (E. Ferrari, personal communication, May 3, 2016). Hitting the nail right on the head, the problem is just that… Where people are governed by habits that are less than desirable from a sustainability perspective, municipalities have essentially zero regulatory power to mandate that things be done differently. Still, there are always tools at our disposal. Speaking first to things we do (and can change) around the house (unplugging idle appliances, turning off lights, saving laundry for nighttime hours etc), CE, employing ambassadors, awareness, education, and value proposition resonation are important to changing such habits and cultures. CE, especially where a CEP is primarily governed and implemented in a municipal-public collaborative form, can be very valuable, where members of the governing team are of course intimate with many pockets of the greater population, and inclined to educate those pockets about the effects of their habits and the environmental and economic results of doing otherwise (A. Chapman, personal communication, May 5, 2016; R. Kerr, personal communication, May 12, 2016). Further, municipalities might collaborate with formally established groups who have a mandate towards reducing emissions (as is the case with eMERGE in Guelph), where these groups are likely already carrying information and guidance into the public surrounding the benefits of adjusting our habits. On that note, and as mentioned, whatever the form CE, awareness and education takes, framing and value proposition resonation remain critical (GTI 2016c), where promoting an awareness that there are utterly simple and wholly ‘not inconvenient’ things we can do that will save us a decent amount of money, is the argument that is most likely to widely resonate and result in behavioural modification. As such, these strategies might present themselves as quite useful to habitual modification.
Speaking to how we get around as another opportunity for behavioural change, education, and awareness of environmental and economic benefits of either fuel switching, or electing to walk, bike, or take public transit remain important, and might also take the forms (CE and frame advancement) laid out above for highest impact, where somewhat surprisingly, most households don’t consider vehicle travel as part of ‘household expenses’, despite that it actually makes up a significant fraction of a person’s total budget. Further, in relation to the construction of bicycle and public transit infrastructure, CE (in whatever form it might take) is critical to securing the broadest possible uptake (NRCAN 2007), where design and placement may reflect public wishes and assume themselves in a form best suited to attract riders of both types (bicycle and bus/rail).

As mentioned, convenience and attractiveness are key to uptake for alternative to personal vehicle transportation, where, beyond the fact that municipalities need to build robust infrastructure of this type, collaboration with the broader public is necessary to make it best suited to embodying such attractiveness (Y. Tendick, personal communication, May 1, 2016). Further, as a quick note on framing and value proposition resonation, advancing the benefits of biking instead of driving might also be framed as a personal health issue, where many of us make our livings staring at screens, and then go home and do more of the same, investing in a gym membership January 1st, and then forgetting all about it. Biking is an opportunity to get our lungs back, and visually reconnect with our toes. On a final note surrounding inducing behavioural change and uptake, I re-advance the notion of eating our own dogfood, where municipalities can help shift culture and practice by making alternatives more routine and thus visually standard in their own endeavours (A. Chapman, personal communication, May 5, 2016). Doing things like electrifying the entirety of a municipality’s vehicle fleet, or potentially mandating or strongly encouraging (through various programs) that municipal employees walk, bike, and/or take public transit to work at least two or three days a week (NRCAN 2007) for example, are potentially quite effective for spurring habit modification, and even uptake (here, in the case of EVs). That said, some communities, like Guelph, see a large number of residents commute long distances on a daily basis between home and work (for example, between Guelph and Toronto), and as such using public transportation may not be a viable option. Still, leading by example is obviously better than doing nothing, as it has been and remains an important tool for habit modification, where despite that most parents do not do it, they try and pretend they do, often garnering intended results. In closing, greater public investment, program uptake, and behavioural modification are essential to moving closer to CEP energy targets (reflective of Tozer’s (2013) conclusions), and though there are certainly challenges to making this happen, municipalities have multiple tools at their disposal. Here again, these ideas are consistent with a Theory of Planned Behaviour, in which changing the way we think about the way we conduct ourselves as individuals (e.g., what it means to leave lights on, or the link between physical health and abandoning the personal vehicle), helps produce pro-environmental behavioural modification. Additionally, participant insights are also consistent with the ideas of Social Practice theorists, where rather than engaging the individual, it is valuable to change the practice itself, by normalizing alternatives. ‘Eating your own dogfood’ (for example, programs that see municipal employees regularly riding public transit) is reflective of this.
A decent ways back, I had spoken to the ‘built environment’ and systemic poor urban design in relation to how we move about our communities. Urban planning, subsequent developmental patterns, and the way structures themselves are thrown together are major stumbling blocks to reducing emissions in communities, where Guelph is certainly not exempt (E. Ferrari, personal communication, May 3, 2016; K. Farbridge, personal communication, May 9, 2016; M. Schreiner, personal communication, May 20, 2016; Y. Tendick, personal communication, May 1, 2016). Accordingly, we now discuss the nature of such issues (generally framed to address municipalities as a whole – as per my discussions with participants, and some other evidence provided), and of course some suggestions for moving forward, beyond and outside the context of how these issues manifest themselves in the transportation sector. At the onset, we uniformly continue to build our cities according to the engineered taste of the post-World War Two era. Generally speaking, beyond downtown cores, cities embody sprawl, and the segregation of residential, commercial, and industrial areas, which as discussed, leads to vehicle dependency. Building ‘smart’ then, being dense, upwards and inwards rather than outwards, and designed for mixed use, is the outlier. Further, the structures we do build are often less than desirable as far as energy performance goes, seeping heat, inviting chill, inefficiently operating, and failing to take advantage of opportunities the Earth provides us (for example, being angled to take advantage of passive solar, where large savings on structure energy use can be reaped) (K. Farbridge, personal communication, May 9, 2016; M. Schreiner, personal communication, May 20, 2016). Accordingly, reducing emissions in communities is threatened where this status quo persists. Despite that the majority of structures in communities will remain standing in 30 years, new development assumes itself as a not insignificant chunk of the built landscape, and as such, an opportunity for, or stumbling block to, reducing emissions (IPCC 2014).

Though many municipalities have established that city limits refrain from expanding, itself a great start to addressing sprawl, developmental regulatory frameworks, zoning bylaws, and building codes often remain at odds with the type of ‘smart’ development discussed above, where these regulatory mechanisms often fail to mandate smart, as well as effectively disallow and deter, and provide no disincentive, to ‘dumb’ development (K. Farbridge, personal communication, May 9, 2016; M. Schreiner, personal communication, May 20, 2016). Beyond the challenge of their existing as such, there is very little demand to change these frameworks, or propensity and willingness to develop differently on the part of individuals, developers or municipalities themselves (well-illustrated in the discussion of personal vehicle culture and allegiance). Further, where there is demand and willingness, municipal legislative authority may be lacking, as well as there being financial-bureaucratic deterrents to doing so. Additionally, there are real technical challenges to addressing such issues, where for example a building energy performance code can only be updated incrementally or else risk leaving the trades people who do the work educationally ill equipped to actually build according to such new standards (K. Farbridge, personal communication, May 9, 2016; Y. Tendick, personal communication, May 1, 2016). As far as legislative authority absence, this is well illustrated where Guelph is currently unable to further update the 2012 Ontario building code. Beyond building codes however, the regulatory framework for what new landscapes look like (which is generally in municipal hands) does not always mandate any significant degree of density or
mixed use (where Guelph is ahead in this area as per CEI policy integration), in essence encouraging the status quo to persist. Additionally, these frameworks may legislatively disallow smart building (for example, being angled for passive solar), as well as deter those organizations who are interested, where time and money must be spent navigating the bureaucracy that is local government, in pursuit of special allowances to build outside of the cookie cutter order. Accordingly, the financial case for building smarter may be broken, where, as discussed extensively, money is our maker (K. Farbridge, personal communication, May 9, 2016). Further, profit-wise, the status quo (sprawl, segregation, and low structural energy performance) works quite well for the industry, where in the absence of incentives or disincentives to do otherwise, the only hope for change relies on developer goodwill and environmental consciousness, itself subject to the economic disincentive described above. One participant put this lack of disincentive quite clearly, where “you’ve [municipalities] got to put in the sewers, open up new schools, send the police out there… so, they’re [developers] not paying the full cost, and the development charges probably aren’t high enough [to spur building inwards and up]” (Y. Tendick, personal communication, May 1, 2016). Together then, the regulatory landscapes surrounding new development are often at odds with minimizing GHG emissions in our communities.

These frameworks are of course complex regarding their inner workings, itself another deterrent to changing them for municipalities, where extensive time and money must be applied. Accordingly, addressing their mechanical parts is well beyond the scope of this research. However, there are principles and strategies municipalities can and should pursue towards enabling a reduction in emissions resultant of built landscapes going forward. Regarding the building code and structural energy performance itself, as mentioned, municipalities largely lack the legislative authority to address the issue. At the onset then, municipalities are encouraged to spend time lobbying and working with higher levels of government to update building code energy performance mandates in an incremental (as is necessary), yet timely and consistent manner (IPCC 2014). Additionally, municipalities might advance energy performance labelling schemes like Guelph had, where although it turned out less than successful here, experience in other communities demonstrates that such programs do in fact give way to somewhat higher quality buildings resultant of a degree of efficiency competition created between developers (IPCC 2014; Kerr 2016a). In this case, and based on Guelph’s experience, working with higher levels of government to advance a provincially or federally grounded labelling program may be valuable, where the program embodies more legitimacy to developers and the public, being that the label is widely recognized, and as such is more effective at enabling sustainability oriented competitiveness in the free market.

Speaking to regulatory frameworks surrounding development beyond the building code (where again, these are generally under municipal authority), municipalities might consider simply amending the frameworks to mandate some degree of ‘smart’ (inwards, dense, up, mixed use) (IPCC 2014), though of course this is not as simple as it sounds resultant of the nature governments, and, their fragile relationships with the private sector. On that topic however, integrating CEP principles into official city plans is a first step of utmost importance, where at least on paper, CEP principles steer all municipal endeavours and allowances towards realizing CEP targets, thus in some form or another likely ‘educating’ development rather than dropping it on its head one more time (GTI 2016c; M. Schreiner, personal communication, May 20, 2016; R.
Kerr, personal communication, May 12, 2016). As discussed, this has been achieved in Guelph, and brought notable results. However, in showing connection here, CEP success is also largely dependent on public perception of value, results and related ideological support, where there is a propensity for visibility. As such, there is a balance to be struck between integral endeavours like the above, and applying resources to something like a solar display on the roof of a public library. Nonetheless, in relation, municipalities might advance special policy amendments that, for example, expedite zoning and development permits for those parties interested in building smart in any number of ways, should their proposed projects meet certain environmental performance standards, helping nullify the financial deterrent borne of having to navigate existing frameworks in pursuit of special allowances to build alternative to the status quo (IPCC 2014; K. Farbridge, personal communication, May 9, 2016). Once again, municipalities should strive to both mandate future development standards as well as facilitate them, where there is arguably a balance to be struck.

Finally, and potentially resultant of CEP policy and principle integration into other city doctrine, municipalities should certainly consider how much money it costs them when they allow building ‘out’ to persist. Developers should not be allowed to piggy-back the public services budget, where the costs of ‘attending’ to and maintaining new neighbourhoods should, to a large degree, be internalized, and policy amended accordingly (Y. Tendick, personal communication, May 1, 2016). Though each city will have its own policies regarding the degree of developmental taxation in relation to residential growth, in agreeing with Yvette, the person quoted above, I argue that ‘sprawl taxes’ should in many cases be much higher (IPCC 2014). In illustrating the lack of economic incentive for ‘smart’ residential development for example, it is noted that building ‘out’ Edmonton’s “last three residential growth areas will leave the city with a bill of $1.4 billion, [being for the additional construction and maintenance of] new roads and interchanges, transit, parks, fire halls, libraries and recreation centres. [This all while being] calculated after all the residential tax new homeowners will pay is accounted for” (Stolte 2016:1). In this case then, sprawl is clearly being subsidized, and amending the situation would go lengths towards building in a smarter fashion, and helping to reduce emissions in this way going forward (i.e. reclaiming lands, building inwards, creating density).

Generally, it appears the private sector is often able to externalize a variety of environmental and social ‘costs’ of doing business, where this was illustrated much earlier in this research when I spoke to the externalities of fossil fuel production not borne by the producer or consumer, and well reflected where we (Canada) still do not have a carbon tax. I digress to make a point, but nonetheless advance that in light of the fact that money runs our lives, amending policy to up the economic ante for developers who traditionally go ‘cookie cutter’ and outwards may be an effective financial deterrent to doing so. Further, in being deterred, developers may elect to build in and up rather than finding another more willing community, which itself effectively realizes more mixed use space, where, as individuals, everything we want to be close to tends to exist in and around downtown, generally the heart and center of a community. Finally, and on that same note, amending policy to lower development taxes and costs for those organizations interested in implementing ‘smart’ projects is also an attractive policy opportunity (IPCC 2014; K. Farbridge, personal communication, May 9, 2016). All told, regulatory frameworks surrounding the ongoing structural materialization of communities are often at odds with minimizing GHG emissions and achieving CEP targets, however, municipalities do have
tools are their disposal, and should put them to work towards changing these systems. Regarding this section, participant insights are consistent with the ideas of both Ecological Modernization and a Consumer Approach to governance. In terms of encouraging ‘smart’ landscape development, amending policy to include sprawl taxes, reducing costs for developers who want to build in a way that furthers the cause of de-carbonization, and advancing energy performance labelling programs are ways in which municipal governments help make emissions reductions more attractive from an economic point of view. Further, these types of policies and programs are reflective of the types of things government resources allow them to do alone. Within the Consumer Approach to governance, this is stressed as a pitfall to tackling big issues (Lenihan 2012), however nonetheless, it appears various isolated interventions (by governments) such as these are essential to reducing emissions, in this case insofar as new development is concerned.

**Leprechaun’s Plight: The Race to Rainbow’s Edge**

In Canada, CEP success stories are few and far between, where in reviewing the some 180 initiatives that are in motion, we’d be hard pressed to identify a single case where higher order energy targets have been achieved, despite many, including Guelph, doing excellent work. In wrapping up this first analysis then, I advance a brief discussion and recap of how municipalities (and their public citizenries) might best position themselves to succeed over the long term (as per the primary data on its own terms). Of course, though every challenge, barrier and strategy put forth thus far are potentially important parts of the journey and sum up as a significant body of knowledge with which we might strive to succeed, in doing justice to readers and the cause of climate change mitigation, a very brief review of some of the higher order insights is wanting. This section thus advances itself as a barebones foundation on which successful community energy plan implementation might be realized, according to the primary data on its own terms. Following this, I carry out a brief second level of analysis, in which the theory of Public Engagement as an approach to social change is applied to the CEI implementation process, and recommendations put forth. Finally, in chapter 8 I re-delve into the notion of achieving scale (the challenge most emphasized across participants), and advance a broad framework to be applied to the issue, that is based on both levels of analysis. Accordingly, I offer this framework as a potential starting point resource with which municipalities (and their citizenries) might position themselves to achieve their energy targets and beyond. This section, acts to foreshadow that framework.

“I like to say it takes 30 years to become an overnight success” (E. Ferrari, personal communication, May 3, 2016); “Policy shifts of this nature take time… and it’s taken time” (R. Kerr, personal communication, May 12, 2016)!; “Even though project ‘y’ might initially at least generate more publicity, and give people something to point to, and maybe have a ribbon cutting ceremony… sometimes doing things like that [flashy/visible] aren’t the most effective ways to go forward in the long run” (M. Schreiner, personal communication, May 20, 2016)… Laying essential groundwork that supports long term implementation is a must, where policy amendments, garnering public and hence resulting political support, and ensuring ongoing financial viability is maintained are highly important.
As far as policy, municipalities are encouraged to follow Guelph’s lead, initially lending their limited resources to integrating CEP principles into all official guiding municipal doctrine. Succeeding over the long run requires that a CEP be officially recognized as more than ‘someone’s kid brother’, where when treated as an equal, energy targets permeate all planning, lending themselves to addressing a variety of barriers to emissions reductions going forward. In other words, integrating a CEP into official policy frameworks gives energy a legitimate seat at the table, where this enables municipalities and the broader public towards ease of action, thus going lengths towards realizing the emissions reductions to which we strive. Additionally, broad public support is instrumental to success for a variety of reasons, where most importantly, a municipal government will find itself hard pressed to continue lending resources to CEP implementation should the greater populace hold a general distaste for the initiative. Accordingly, empowerment, transparency, and SPER are essential to maintaining buy in. In a variety of possible forms, CE is essential, where the greater populace should be consulted and collaborated with throughout implementation (NRCAN 2007), ensuring an initiative is grounded in and driven by broad citizen voice, and nullifying opposition resulting in competing interests. Additionally, CE is essential to maintaining support where transparency is concerned, as veiling the application and results of how municipalities spend tax payer moneys is ripe to breed assumptions that may be unfounded. Even if the results are grim, it is highly important the public is kept up to speed, where, moving back to empowerment, a CEP remains tethered and bound to the public will, and thus structured towards their ongoing support. Accordingly, a framework for SPER is of utmost importance to municipalities, creating the capacity to advance the content that real transparency demands. Further, transparency and empowerment allows groundwork like policy integration to be carried out, where the public may be assured and understand that important steps are being taken, despite being largely invisible.

In relation, municipalities may be inclined towards investing in more visible projects that drum up claps and cheers, though are not the most economically savvy over the long (or short) term. Where visibility is important to securing public buy in, so is maintaining financial integrity, and accordingly, municipalities are encouraged to initially implement one or two more flashy projects (like a solar roof on a public library), while also preserving their purses going forward by subsequently adhering to the principles of SIS and the RGF for two primary reasons. First, the majority of the public award monetary currency the highest seat in the personal value hierarchy. As such, beyond an initial totemic investment, focusing on pursuing the highest (and fastest) economic ROI endeavours is important to keeping their support and trust, as well as overcoming the pervasive perception that green is red, itself a large barrier to CEP support and a willingness to invest in oneself. Second, the long term success of a CEP requires ongoing capital expenditure, where adhering to SIS and RGF theory nullifies the dilemma of closing up shop halfway, or robbing the public blind in pursuit of CEP targets. Relatedly, SPER is instrumental to ensuring that SIS is unfolding as intended, and/or adjusted accordingly, where ROI is concerned. Additionally and again, CE is of utmost importance, where there is space for creating greater public awareness surrounding the theory behind the implementation strategy (addressing potentially festering assumptions about the effectiveness of spending in light of some less visible projects that may follow initial ‘bangers’), and, illustrating how such an implementation strategy is actually in the interest of the public themselves, where adhering to SIS and RGF theory effectively allows a CEP to fund itself beyond the initial tax money applications, eventually reaping back these investments, and potentially creating surplus capital to invest in other public
interest endeavours, such as for example fixing sidewalks and cutting the grass on sports fields. Picking winners, SIS, the RGF, SPER, CE and transparency then are stressed regarding long term ideological buy in and financial viability as they relate to extended implementation windows, broader public investment, and achieving CEP targets.

Moving beyond the municipality as a corporation and maintaining ideological buy in and financial viability that underscore a municipality’s ability to invest in energy within corporate borders, seeing investment in emissions reductions throughout the broader public is essential to moving the needle on scale and achieving CEP targets, where local governments need take steps to facilitate such investments. As individual financial hurdles to investing in energy are widely at play, municipalities have a role towards helping individuals overcome them. First, municipalities should play a part in facilitating education and awareness surrounding SIS, RGF, and the scope and ROI of various personal project investments, giving individuals the intellectual tools to plan their own investments accordingly, where they are then well positioned to maintain their own financial integrity should they desire to help reduce emissions. Further, this education serves to spur investment in emissions reductions regardless of environmental sympathy, where the potential for profit is brought to light on a plethora of potential energy investments. CE then, is thus obviously important.

Still, upfront costs and potential home stay may continue to manifest themselves as significant barriers to personal investment, and accordingly, municipalities continue to have a role to play. Novel solutions like LIC financing mechanisms are hugely promising in this regard, and as such local governments are highly encouraged to invest in their construction and delivery. On that note however, and as per Guelph’s lead, municipalities are cautioned against ‘running downhill’. Baby steps are important to avoid grim mistakes from which we cannot recover, and as such, municipalities are encouraged to first carefully consider the nature of a LIC based or other similar program (as discussed), and second, run a small scale pilot before jumping in with both feet. Pilots are a good way to ‘perfect’ a program, where a municipality can locate potentially disruptive kinks, and amend the subsequent structure and implementation process before the program is broadly delivered. In essence, running a pilot allows a program to avoid significant issues that may arise without testing the water first, such as a failure to deliver on ROI promises, evaporating investor confidence and subsequent failure to achieve widespread uptake (Kerr 2016b). On the topic of widespread uptake, it is important the broader public be aware of and fully understands opportunities like GEERS in Guelph (and similar programs elsewhere), where CE is once again instrumental. In that regard, targeted engagement of, and collaboration with key stakeholders who, as per the nature of the program, might have an active interest in its broad delivery, is recommended. Additionally, a broader level of collaboration between municipalities and publics might be effective, where public actors (coming from, and thus being representative of, various sections of the public – business, civil society organizations, public institutions, individuals with no explicit organizational affiliation beyond their source of employment – where who is involved, and the selection and assembly of this group will be unique to communities) have a meaningful role in initiative governance, are thus intimate with the goings on of a CEP (in this case, programs like GEERS), and subsequently carry related information into the broader public, through their own unique social networks. On that point, I remind us that the CEI has at multiple times approached implementation (and by extension, community engagement) in this way.
Finally, municipalities are encouraged to invest heavily in infrastructure geared towards diminishing personal vehicle use, itself a tangent of initial CEP policy integration and following SIS principles. Using a personal vehicle is often resultant of necessity and convenience, and despite the chicken and the egg scenario, local governments might seek to gradually divest from the construction of new roads, parking and other vehicle related infrastructure. Instead, municipalities are encouraged to enable the use of alternatives, by increasingly investing in robust public and non-motorized transportation systems, thus gradually nurturing and developing their convenience and attractiveness. In doing so, such alternatives will become increasingly competitive and superior to the personal vehicle, effectively shifting culture and practice. Once again, CE is highly important here, where collaboration regarding design and placement will be invaluable to realizing maximum effectiveness and uptake.

Though far from exhaustive, I argue that these principles and guidelines are important starting points to significant emissions reductions and ongoing CEP vitality, and accordingly, offer them as ideas for municipalities to work with across the nation (though once again, it will be for readers to decide). Addressed together, these recommendations may go lengths towards allowing municipalities to smoothly implement CEPs in their own houses, while also facilitating more widespread emissions reductions across the public citizenry they govern for. As corporations intent on operating in pursuit of CEP targets then, acting according to the former insights may help allow municipalities to invest in themselves without undue or unnecessary backlash, maintain their own financial security, create a propensity for abandoning the personal vehicle, and enable investments and behavioural change beyond their borders, thus in tandem with the broader public, hopefully succeeding together at pushing the needle forward towards emissions reductions of scale over the long term.

Moving forward, I now situate the CEI implementation effort within the Public Engagement approach to, and theory of, governance and social change, ultimately allowing me to make specific recommendations to the CEI (and communities at large) surrounding how to succeed with community level emissions reductions. Following such, we close in moving on to more thoroughly examine and discuss how municipalities might effectively and robustly go about achieving large scale emissions reductions (a challenge highly emphasized in interviews), via maintaining their own ability to, as well as enabling and mobilizing the broader public towards, significantly reducing emissions in order to successfully achieve CEP targets, and hopefully, further continue plundering in the carbon dominated energy economy. Accordingly, an encompassing (and hopefully broadly applicable) framework is put forth that brings the entirety of this research together, where I strongly encourage municipalities (and public actors) to actively understand, pursue and implement this guide (according, of course, to the capacities of the social actors wielding the information) in ways that work for their unique communities.
A Decade of Implementation: Guelph’s Community Energy Initiative - Applying the ‘Public Engagement’ Approach to Governance & Social Change

This chapter comprises the second level of analysis in this research. Here, the CEI implementation process is situated within the Public Engagement approach to governance and social change. Having established the strength of the Public Engagement theory at the end of chapter three, I attempt to locate where and to what degree the CEI implementation effort has mirrored the approach, as well as what the result with emissions reductions emissions has been. In doing so, I both further confirm the value of Public Engagement, as well as make specific recommendations to the CEI based on apparent discrepancies between the forms that implementation has taken to date, and the dictates of the Public Engagement approach to governance, community engagement, and effecting social change.

Given the established strengths of, and rationales for, the Public Engagement approach to governance and social change described in chapter three, I now turn to using its broad dictates to situate and analyze the CEI implementation process within it. Generally speaking, Lenihan (2012) outlines that the Public Engagement approach stresses that we will most effectively tackle complex issues like climate change if governments meaningfully involve and collaborate with the diversity of public citizenries, in a formal, broadly inclusive, empowering, and ongoing way. In doing so, the power to construct strategy is more democratically dispersed, and the strategy itself becomes more robust and effective at tackling the complexity of the issue, resultant of working through and combining a multitude of knowledge and experience. Further, in that the public (i.e. its representatives that make up the ‘working team’) has an active and respected voice in defining the problem and shaping the solution(s), they are effectively empowered, which lends itself to taking personal responsibility and action, and thus to public actors deploying their social, human, cultural, institutional, and even financial capital towards addressing the broader problem (its nature democratically defined), in their own unique ways, yet that are part of a collectively established (and ongoing/iterative) strategy. Finally, in empowering the public (working team), and seeing responsibility taken as well as participation embraced, entire populaces can be more effectively deployed with regards to contributing to the solution(s) in both theory and practice, where individuals tend to respond much better to personally transmitted information and solicitation, than they do from entities and actors they have no regular face to face relationship with. As such, in giving the public a meaningful role in addressing pressing issues, they become motivated and willing to engage their own social networks, where personal-relational symbolic
authorities (‘trust’ for example) help spur broad public conversations and actions that governments simply cannot produce alone.

At a broad level then, according to the Public Engagement approach, a fundamental condition for success in tackling complex issues is an ongoing, broadly inclusive, meaningful collaborative working relationship between governments and publics, in which the ‘power to contribute and decide’ is more democratically dispersed (symbolically and in practice). Accordingly, it is with that broad condition for success that I approach and evaluate the nature of Guelph’s almost decade long CEI implementation effort, and subsequently make recommendations. In doing so, I will be looking for if and when the CEI implementation effort has been a meaningfully collaborative (and broadly inclusive) endeavour, to what degree (including who was involved, and the extent that the process was/is democratic as far as I am able to glean from the data), and in relation, attempt to evaluate the success of the initiative against the extent that implementation has (and does) mirror the Public Engagement approach at the broad level described above. To the extent that the CEI implementation effort has fallen short (or mirrored) of the higher order nature of the Public Engagement approach, and the associated level of success in reaching higher order CEI goals, I should then be able to make specific recommendations to Guelph towards realizing success going forward, as well as in doing so confirm (and possibly challenge) the value of the Public Engagement approach. Though I will not be analyzing the CEI according to the (4) stages of the Public Engagement approach specifically (as in many cases, the data I have does not allow for such a forensic level of analysis), the specifics of the theory will inform some of the recommendations I put forth in terms of the nature of the CEI implementation going forward. These recommendations draw on information I was in a position to observe and analyze (for example, the level of emissions reductions, and the extent to which the CEI implementation effort appeared to be broadly inclusive at various points). However, since this secondary analysis was not a part of the original research design, there are pertinent information I don’t explicitly have access to (for example, I am not privy to the inner workings of the process in cases where the CEI appeared to be implemented collaboratively). Nonetheless, in such instances I am still able to draw on this lack of information to make recommendations that enable the CEI implementation effort to align with the PE approach.

In the previous analysis (‘A Mile in Their Shoes’), ‘community engagement’ (CE – interactions between municipal governments and public citizenries) came up often, and I outlined various ways in which CE can potentially take place. Seeing as a Public Engagement (PE) approach to issues or initiatives governance changes the way in which governments and publics interact, it is thus also a specific form of ‘community engagement’, in that the public is both treated as a real partner in deliberations and action plans (i.e. ‘engaged’ - achieved via being represented by various public members on the working team), as well as where this public is also part of contributing to initiatives and/or tackling issues in real time (where members of the working team are carrying information into and out of the community’s citizenry on an ongoing basis, seeing that citizenry then essentially acting out the ‘seven degrees of separation’ phenomenon, based on the fact that they too are being empowered through personal conversation and connection with the working team – whether directly, or indirectly in that they are interacting with various personal acquaintances who are themselves more personally intimate with members of the governing team). Before moving forward, note here that the idea of ‘seven
degrees of separation’ refers to the thought that any person can make contact with any other person that they don’t know personally, by way of up to six acquaintances (Papadopouli & Schulzrinne 2000), and as such refers to exploiting social capital. Further, for its purposes here (as far as public empowerment through a PE approach and seeing information makes its way throughout diverse social networks), social capital refers simultaneously to two approaches to studying and operationalizing it (both approaches outlined in Legh-Jones & Moore (2012)). The first is the social cohesion approach, where social capital is conceptualized as the resources available to social groups themselves (for example, interpersonal trust within a civil society organization). The second is the network capital approach, in which social capital is conceptualized as the resources available to an individual as per their social networks, or social connections (for example, the extent of information channels and sources they have access to). Once again, seven degrees of separation is here conceptualized as embodying both of these conceptualizations of social capital, as both are relevant to seeing connection between distant individuals achieved through a seven degrees of separation phenomenon.

Moving forward, as I have outlined the rationales and value of a PE approach to local initiatives governance (and by extension, to and as a form of ‘community engagement’) in chapter three, we now examine the extent to which the CEI implementation process has been carried out according to the fundamental nature of a PE approach described above, and in that context, how well the CEI has done over the past decade with regards to achieving its higher order goals (reducing energy consumption and GHG emissions levels by 50% and 60% respectively against the 2006 global per capita average, by 2031). In closing, I make recommendations to Guelph, and communities at large, with the intent of further building on and facilitating success with emissions reductions that the first level of analysis (just performed) is also purposed towards.

As discussed briefly, the CEI (2007) was originally conceived in a collaborative effort, through a consortium and process of planning meetings that involved dozens of stakeholder groups and individuals members of the public. Officially, these groups and individuals included the following (as per City of Guelph (2007)):

- **Co-chairs (to planning process)**
  - Art Stokman, President, Guelph Hydro Electric Systems Inc.
  - Janet Laird, Director, Environmental Services Department, City of Guelph

- **Consortium Liaison**
  - Martin Lavictoire, Conservation and Efficiency Technician, City of Guelph

- **Public and Municipal Consortium Representatives**
  - Astrid Clos, Guelph and District Homebuilders’ Association
  - Karen Farbridge, Office of VP Research, University of Guelph / Mayor
  - Ken Hammill, Friends of Guelph
- Participation in CEP Planning Meetings

- Mike Krewski, Channel Account Manager, Commercial/Industrial Markets, Union Gas
- John Loncar, Account Manager, Commercial/Industrial marketing, Union Gas
- Janette Lovesys Smith, Manager Community Development, City of Guelph
- Craig Manley, Manager, Community Design and Development Services Department, City of Guelph
- Don McLaughlin, Director, Maintenance & Energy Services, Physical Resources, University of Guelph
- Gillian Maurice, Sustainability Coordinator, Physical Resources, University of Guelph
- Peter Rodway, Wellington Catholic District School Board
- Charles Simon, Architect & Planner, Architecture Planning Research
- Ian Smith, President, Guelph Chamber of Commerce
- Tom Smith, Chief of Operations, Upper Grand School Board
- Robert Cameron, Manager of Plant Operations, Upper Grand School Board
- Rick Thompson, Board Member, Guelph Hydro Electric Systems
- Andrew Lambden, Guelph Development Association

- Dan Amyot, GIS Supervisor, Guelph Hydro Electric Systems
- Laura Bailey, Councilor, City of Guelph
- Peter Cartwright, Manager of Economic Development Services, City of Guelph
- Lloyd Cummins, Department Head, Energy & Utilities, Physical Resources, University of Guelph
- Janice Folk-Dawson, President of CUPE Local 1, University of Guelph
- Peter Henderson, VP of Finance, Guelph Hydro Electric Systems
- Kathleen Hyland, Facilities Coordinator, Family Housing, University of Guelph
- Mike Joaquin, Senior System analyst, Guelph Hydro Electric Systems
- Geoffrey Keyworth, Transportation Planner, City of Guelph
- Larry Kotseff, Chief Administrative Officer, City of Guelph
- Paul Kraehling, Senior Policy Planner, City of Guelph
- Don McLaughlin, Director, Facilities & Energy Services, University of Guelph
- Nicole Mailloux, VP/Human Resources, Guelph Hydro Electric Systems
- Arlen Molyneaux, Director of Engineering, Guelph Hydro Electric Systems
- Paul Moore, Permit and Zoning Administrator, City of Guelph
- Carrie Musselman, Environmental Planner, City of Guelph
- Katie Nasswetter, Planner, City of Guelph
- Ian Panabaker, Heritage/Urban Design Planner, City of Guelph
- Ken Sleeper, Utility Service Manager, Union Gas, Guelph
- Warren Stiver, School of Engineering, University of Guelph
- Nancy Sullivan, VP Finance & Administration, University of Guelph
- Jim Riddell, Director of Community Design and Development Services, City of Guelph
- Jasmine Urisk, Director, Canadian Energy Partnership for Environmental Innovation
Throughout planning, we can observe that there was a great deal of perspectives represented and contributing within the different groups. Regarding the official consortium itself, there was representation of utility companies, residential developers, civil society organizations, many departments of the City of Guelph itself (including Community Development, Design, and Environmental Services), the University of Guelph (also multiple departments, including the Office of VP Research as well as Physical Resources, including Sustainability and Maintenance & Energy Services), school boards, and the broader business community through the Guelph Chamber of Commerce.
Regarding named participants in CEP planning meetings, a diversity of voices and sector representation continued to inform the CEP discussion and conceptualization. These included further representation of utility companies, the City of Guelph (including the departments of Technical Services, Economic Development, Transportation, Environmental and Policy Planning, as well as City Council), the University of Guelph (including the Department of Energy & Utilities, Facilities and Family Housing, Finance & Administration, the School of Engineering, and CUPE – a union for teaching assistants and sessional lecturers), where these named participant groups in planning meetings seemed to largely embody representation of the City, the University, and utility companies.

Moving on, the named voices who individually interacted with the CEP planning consortium seem to move back towards a more diverse set of representation, more similar to the consortium itself. Here, there was representation of Natural Resources Canada, more civil society organizations, more local businesses, the local media, an individual environmental consultant, a graduate student from the engineering department at the University of Guelph, and even more other representation from both the City and University of Guelph.

Finally, a great many other unnamed participants (from various organizations and companies) attended the planning meetings (‘briefing sessions and workshops’) that took place throughout 2006, making representative participation even more diverse. These included other representatives from the University of Guelph, and local high school students, industry, small and medium sized enterprise actors, environmental organizations, architectural and construction industries, as well as individuals not explicitly affiliated with any specific organization or institution (City of Guelph 2007). Across all of this then, it appears that quite a broad cross-section of municipal and public representation was involved in the CEP conceptualization process.

Accordingly, the CEI appears to have significantly mirrored the Public Engagement approach regarding initiative governance and implementation, where a broad, (seemingly) meaningfully inclusive public-municipal governing partnership took place in the early days. Regarding the ‘views’ stage of the PE approach it is clear that an extensive variety of voices were given forums at which to express themselves (from school boards, to residential developers, to students), where the set-up was such that participants were seated around tables in groups of six to eight people, and thus were in this way encouraged to both dialogue with each other as well as with formal members of the working team (consortium) (City of Guelph 2007). This closely matches what Lenihan (2012) establishes that the first stage of the PE approach should look like. Regarding the next three stages (deliberation, action, evaluation), as well as ongoing dialogue, it is clear that there was a good deal of broad public-municipal representation throughout deliberations, and action plans (16 different individuals on the working team), though I do not have the data on the form that ‘evaluation’ took (or if it did at all, apart from the numbers on emissions reduction between 2006 and 2012), whether there were steps taken to maintain the quality of the dialogue and working relationship, or the extent to which an ongoing dialogue and cyclical process of deliberations and actions was conducted.
Additionally, though Kania & Kramer (2011) stress that such collaborative processes involve an outside body as moderator (trained in that domain specifically), it appears that during the CEI’s conception, the moderators (‘co-chairs’) were both officially affiliated with the City of Guelph. Nonetheless, the composition of the CEIs original ‘working team’ (as well as approach to implementation) appears to closely mirror what the PE approach calls for. That said, there does also appear to have been a lack of public representation insofar as ordinary citizens (those of various social positionalities who are not representing their employer, nor affiliated with any civil society organizations) and civil society organizations on the 16 person team. Having addressed this would have helped represent and give voice to the diverse social make-up and values in Guelph, where a diversity of individuals and civil society organizations might for example help give representation to recent immigrants and those whose native tongue is not English, the renter community, lower end income earners, those in poverty, and the unemployed, the elderly, and women (whose effective participation and inclusion in decision making is often marginalized because of a masculine gender order in certain sectors – for a discussion to do with forest management, see Varghese & Reed (2012)), and thus ensure the CEI is well positioned to have everyone participate in implementation, as well as further, that the specifics of the initiative itself are more effective and inclusive in that they are grounded in social diversity. Once again, when it comes to climate change, we need action from all people and sectors of society (Parag, Hamilton, White & Hogan 2013), and thus they need to be meaningfully included in governance according to the PE approach. As such, in following the PE method, the CEI update is thus advised to address this in how it brings back a public focused (and based) form of CEI governance and implementation (i.e. include a wider cross-section of public representation), where it is currently committed (to be further discussed) to establishing a public based ‘Community Energy Initiative Task Force’, that will inherit the responsibility of guiding, overseeing, and reporting to City Council and the broader public on CEI activities and progress (City of Guelph 2016).

Moving on, though I again state that I do not possess any data to illustrate or confirm the degree to which the CEI implementation effort continued to advance itself as a broadly inclusive and collaborative pursuit in the years immediately following 2007, this type of approach was again officially adopted between 2010 and 2012, at which time the ‘Mayor’s Task Force on Community Energy’ was formed and in motion. The Task Force’s mandate was essentially the same as what the CEI is striving for with its 2017 update (in terms of re-establishing a public based task force, and as such re-establishing the CEI itself as a ‘community led initiative’), and as discussed previously, included many participants that had also been involved in the CEI’s conception (Kerr 2016a). As such, though I do not possess the specifics on who participated (as with the original working team laid bare above), nor the extent to which the task force mirrored the four big stages of the cyclical PE method, it appears on the surface that the CEI was continuing to lean towards a form of energy governance that the PE approach embodies (broadly inclusive, collaborative, and thus empowering), and as such was setting itself up to effectively tackle emissions reductions (as per what Lenihan (2012) has to say about tackling big issues and the nature of governance). Despite doing such however, the task force’s mandate expired in 2012, and the City has failed to bring back any sort of collaborative approach to CEI governance at this point (though in the process of doing so as I write this – to be further discussed) (Kerr 2016a).
Seeing as the CEI started out as a broadly inclusive collaborative effort that mirrored PE dictates to a significant degree, that between 2010 and 2012 this same form of CEI governance and implementation was advanced (but then absent between 2013 and 2016), and that the most current numbers I have access to with regards to emissions reductions are from 2012, let us now examine the extent to which Guelph’s progress may have been enabled or inhibited as per the extent to which implementation efforts have mirrored the PE approach (described above). The following chart (figure 1, as per City of Guelph (2013a), as well as other data, help us answer this question, and by extension either serve to confirm or discredit (to a degree to be judged by readers) the value of embracing a Public Engagement approach to the governance of big issues, in this case being climate change and reducing emissions at the community level in Guelph.

Figure 1 – Per Capita Energy Usage and GHG Emissions from 2006 to 2012 [in Guelph]

As of 2012, total energy consumption and greenhouse gas emissions per capita in Guelph had been significantly decreased below baseline, where energy usage had been reduced by 17.6% and greenhouse gas emissions by 26.3% (City of Guelph 2013a). Though other factors may have been involved, such as Ontario actually having moved to source about 80% of its electricity from low carbon sources by 2012 (City of Guelph 2013a), it appears the CEI’s method of governance and implementation had a significant effect on achieving these results. Based on the above analysis of the extent to which, and timeline of, the CEI having advanced itself in a way that mirrors the broadly inclusive and meaningfully collaborative process of governance that the PE approach stresses, it seems that the level of emissions reductions illustrate its value. First, between 2006 and 2007, the CEI was conducting its planning meetings (the vision stage of PE), as well as the consortium (or ‘working team’) naturally engaging in deliberations, ultimately coming up with a broad action plan that is embodied in the 2007 CEI document. As such, and as described, it appears the CEI was attempting to be broadly inclusive and collaborative, moving through stages two (deliberation) and three (action) of the PE approach. Further, based on the significant reductions between 2007 and 2009, we might infer that members of the working team
did in fact take on personal responsibilities (a part of the action stage in the PE approach, and premised on the motivational force of inclusion and empowerment as ‘partners’ with government) that would advance the higher order goals of the CEI, potentially having spurred some significant action throughout the broader public (as per that the PE approach is premised on empowerment, and hence tapping social networks tethered to the diverse identities of members of the working team). Moving forward, emissions appear to rise slightly between 2009 and 2010, and though I do not possess the data, we might infer that the original working team was not, or no longer officially maintaining the cyclical process of ongoing evaluation, deliberations, and action that the PE approach stresses, or at the very least formal collaboration. In other words, the working team may no longer have been working together in a formalized manner (i.e. at a basic level, maintaining the broad publically inclusive partnership and working relationship between the municipality and public, that defines the PE approach). This point may be affirmed, both in the mere fact that a new working team was established for 2010 (indicating that the City may have recognized an existent gap as compared to how governance was initially carried out), and, that as soon as the Mayor’s Task Force on Community Energy (i.e. a collaborative and broadly inclusive approach to CEI governance) assumed its mandate (2010), emissions started falling again, and continued to do so until the Task Force was disbanded in 2012.

According to the data above describing the CEI approach (to governance and implementation) and results (emissions reductions), the value of the PE approach to governance (and by extension, to community engagement) is confirmed in practice, and the CEI (as well as potentially other communities) would do well to mirror the PE approach going forward. This is especially so in the context that, despite that the hard numbers on emissions levels since 2012 will not be publically available until 2017, Kerr (2016a) has indicated that emissions reductions have levelled off in recent years, being years in which a collaborative, democratic, and broadly inclusive approach to the governance and implementation of the CEI (similar to how it was born, and to the PE method) has largely been abandoned. Seeing as the CEI is intending on reinvigorating such an approach in 2017 (as a part of ‘updating’ the CEI), I now close this section by taking a brief look at the specifics of what the CEI plans on doing, and then accordingly make recommendations surrounding the nature of this new form of governance (and ‘community engagement’) in the context of the CEI, as per some of the some of the specifics of the PE method, and where the CEI appears to have deviated or potentially fallen short (illustrated above), with the intent of supporting the CEI efforts in a constructive way.

As a part of the CEI update, the City intends to re-establish a broadly inclusive, highly collaborative working relationship between the municipality and the public. In other words, they are intending to reinvigorate community engagement through re-grounding the CEI implementation effort in the public realm, empowering that public, and tapping the resources and networks they are a part of and possess. According to a PE approach, this is excellent news, as governments do not have the resources or authority to tackle a big issue like climate change alone (Lenihan 2012). In that regard, the CEI is looking to create a Community Energy Task Force to spearhead the CEI, that will in effect “guide, oversee, and report to the community and Council on the priorities and progress of the Community Energy Initiative” (City of Guelph 2016:1). Speaking to the task force, the City intends it to include 16 participants (the same number as the original consortium), made up of representatives from the following areas (where
members will be selected on the contents of participants’ applications for a position) (City of Guelph 2016):

- Business/industry (maximum 3 members)
- Home builder/development industry (maximum 2 members)
- Energy/environmental interest group (maximum 3 members)
- Academia (maximum 2 members)
- Guelph Wellington Chamber of Commerce (maximum 1 member)
- Provincial/Federal government (maximum 2 members)
- Members of the public/residential rate payers (maximum 3 members)

Though the City put out an online request for applications on September 7, 2016, and the deadline to apply had passed as of October 14, 2016 (City of Guelph 2016), the recommendations I now put forth (based on both the CEI experience just described, and some specifics of the Public Engagement method itself) do apply (to both the working team composition and the way in which the new Community Energy Initiative Task Force conducts itself). This is true in the context that if City’s approach to CEI governance (and by extension to ‘community engagement’ that had been stressed as lacking by multiple participants – in relation to realizing substantial emissions reductions) is to continue mirroring the PE approach, it is to be a cyclical process in which adjustments to form and practice can naturally be made. Moving on then, I put forth five recommendations, based on the CEI experience thus far, and the specifics of the PE approach to change.

First, I propose that the working team (the community task force) be comprised of more (and broader cross-section of) public representation. In the original consortium (i.e. the working team) that effectively constructed the CEI, though there appeared to have been ample time spent on consulting the public in a very broad sense (which according to Lenihan (2012) is indicative of how the first stage of the PE approach (‘views’) should materialize), the working team does not appear to have comprised much representation of civil society organizations (including only one – ‘Friends of Guelph’), or even include a single person that might represent themselves as an ordinary citizen. As per the PE approach, it is highly important to have broad representation of groups of people and organizations that are touched by, or relevant to the issue, as in the end, the point of broad representation and collaboration is to tap and mobilize entire populaces through working team member empowerment, and subsequent penetration and leveraging of their social networks (in effect, looking to exploit the seven degrees of separation phenomenon, and all the different resources embedded throughout expansive social networks). That said, as per the above call for participants that the City had released, it appears they are striving to do just that. On that note however, I also argue that the task force/working team be comprised of more members, so as to widen the potential of that of that representation/inclusion, and the results that have been posited (and shown) to flow from it. To further that point, successful examples of the PE approach being used to tackle complex issues (such as for example, poverty reduction) that were outlined in Lenihan’s (2012) work saw working teams of anywhere from 30-50 members!

Second, the working team is encouraged to engage in a purposeful evaluation stage (multiple times, as per the cyclical nature of the PE approach) that goes beyond examining the results of their efforts towards reducing emissions, but that also focuses on the working
relationship itself and the quality of the dialogue. According to Lenihan’s (2012) Public
Engagement approach, and Kania & Kramer’s (2011) theory of Collective Impact (very similar
to PE), a healthy interpersonal atmosphere (in the working team) is absolutely vital to success
when advancing broadly inclusive collaborative forms of governance and issues handling. Trust,
empathy, and respect (like in any relationship) are key to working together effectively (Lenihan
2012), and thus I stress that the CEI and the new working team take purposeful steps towards
creating and maintaining an interpersonal climate that is friendly, honest, and productive. For
examples of criteria with which to evaluate the quality of the dialogue, and how to go about
operationalizing them, see the appendix of Lenihan (2012). Additionally, where the PE approach
also stresses developing a commonly agreed upon framework with which to evaluate more ‘issue
focused’ progress, I remind us that the CEI update is striving to develop a robust framework of
SPER, and thus does align with the PE approach (and Collective Impact (Kania & Kramer
(2011)) in this way.

Third, and directly related to that described above, the City is encouraged to hire an
external facilitator that is trained in moderation and guiding collaborative processes. In the
original consortium, the City of Guelph appears to have taken on that role itself, and thus I
assume by extension that the 2010-2012 Mayor’s Task Force on Community Energy continued
in a similar form. Though this may not have been an issue to any significant degree as far as
maintaining healthy interpersonal working relationships, it is arguable that there were instances
in which conflicts could have benefit from someone who had no direct stake in reducing
emissions in Guelph, but rather whose role consisted entirely of facilitating healthy relationships
and productive conversations. According to Kania & Kramer (2011), one of the biggest reasons
collaborative endeavours such as embodied in the PE and Collective Impact approaches fail is
blockade style conflicts resultant of not involving actors trained in moderating and facilitating
dialogue, wherein their sole objective and role on the working team is to do exactly such.
Accordingly, I suggest the new CEI task force formally involve such an actor, that this (or these)
person(s) attend every forum at which the working team meet, and that they take the lead at
times in which the conversation is to be squarely focused on evaluating the quality of the
working relationship.

Fourth, I encourage the working team to meet often, where in successful examples of the
PE approach described in Lenihan (2012), teams were formally convening one to two times per
month. Meeting often is purposed towards a variety of ends (as per Lenihan (2012)), where the
cyclical nature of the PE approach is meant to realize such ends. First, meeting often helps with
accountability in terms of whatever responsibilities members of the working group take on,
helping to spur real time action on an ongoing basis (where this action naturally trickles through
a variety of social networks). Second, it encourages adapting strategies in a timely manner to
deal with changing realities (new or disappearing opportunities for example), and unintended
results. Third, meeting often means the dialogue is more fluid and coherent, and thus with
regards to the issue and the working team itself, it will also become more apparent if and when
the working team is missing important areas of public representation that are of course necessary
if the complexity of the issue is to be handled effectively, and to entire populaces being
effectively included and reached. Regarding working team composition, Lenihan (2012) has
suggested that examining and discussing it be a purposeful part of the ‘evaluation’ stage.
Finally, meeting often also relates to building the quality of the working relationship (and thus
results of the effort), where more face to face time allows a better chance of developing the trust, empathy and respect that are inherently a part of healthy relationships.

Finally, at a broad level, I urge that the CEI, and new Community Task Force, consider and carry out the four steps (views, deliberation, action, evaluation) that the Public Engagement approach is comprised of, including additionally the ongoing dialogue (4a) that is to make the process cyclical and ongoing, so as to continue to address the issues at hand, which will certainly not be solved overnight, or even in the span of a year (Lenihan 2012). This final broad recommendation is both based on Lenihan’s (2012) persuasive arguments for, and grounded illustrations of the value of, the Public Engagement approach, as well as where this analysis itself has also contributed to confirming that value. As a form of issues governance, and community engagement (interaction between governments and publics) itself, the Public Engagement approach (public-government collaboration that is broad, meaningfully inclusive, and empowering) is arguably the only effective way to combat big issues like climate change (Lenihan 2012), and as such I recommend the CEI continue to embrace it, while considering the advices herein put forth in order to strengthen their efforts. On that note, it is promising that the CEI is currently attempting to bring a PE style approach back, further indicating PE’s value, and that the CEI has over the years recognized that an inclusive and collaborative approach to ‘community engagement’ and CEI governance, is highly important insofar as the conversations that come with it and the results (emissions reductions) that manifest.

Though the data seems to substantively support the value of a PE approach, I wish to briefly reflect on the current situation in Guelph insofar as it demonstrates one specific challenge to employing a PE approach to CEI implementation. As I had discussed, the call for Community Energy Task Force members officially closed on October 14, 2016, however this was actually an extended deadline (put forth on September 28, 2016), where the original deadline was September 30, 2016. The reasoning behind the extension is a lack of willing participants, where, as of September 28, 2016, the City had “received sixteen applications from members of the public and environmental groups, [where] the search is still on for task force members who represent the business sector, development industry, home builders, academia and other levels of government” (City of Guelph 2016a:1). Accordingly, it seems that getting participation beyond the ‘usual suspects’ (environmental groups) and ordinary citizens is proving to be a problem, where again, a PE approach stresses the importance of having broad participation and representation of differentially positioned social actors. This is interesting, especially considering that the original CEI consortium leaned entirely opposite as far as composition, where I had previously pointed out a lack of ordinary citizens and civil society organizations.

Though Lenihan (2012) did not identify this as a challenge, Guelph (and potentially other communities) will need to grapple with it nonetheless. Accordingly, I draw out attention back to what some participants had discussed in terms of for example achieving visibility and understanding surrounding GEERS (to secure uptake), where they had emphasized the potential value of targeted stakeholder engagement. To that end, the CEI might do well to personally reach out to various representatives of the groups they are currently lacking insofar as participation on the Community Energy Initiative Task Force. Moving back to Lenihan’s (2012) work, he detailed how the private sector has not traditionally embraced a role in big social issues governance (poverty reduction in his specific example), but demonstrated evidence that they can
be brought on board. In the New Brunswick Poverty Reduction Initiative for example (launched in 2008 and that mirrors a PE approach, including having Lenihan himself help design the process throughout 2007), Shawn Graham (the then premier of the province) actually worked with opposition party leader David Alward to reach out, establish rapport with, and achieve participation from the private sector on the working teams and the process as a whole. Though I will not go into detail, as of 2012, this Poverty Reduction Initiative had been a success insofar as sticking to a PE approach and the results regarding addressing poverty. Accordingly, this illustrates that, though getting broad participation may be a challenge, there are ways to achieve. As such, based on this example and current reality in Guelph, I recommend the City be more active (and focused) in its call for participation – as opposed to just the advertisement on the City website.

Additionally, insofar as limitations to the PE approach itself, I draw our attention to Kania & Kramer’s (2011) assertion that formal collaboration most often fails because of a lack of supporting infrastructure (i.e. professional facilitation for the working relationship and quality of the dialogue), where the quality of the dialogue will be instrumental to achieving effective results through such collaboration. PE also stresses paying attention to, maintaining and/or improving the interpersonal quality of the working relationship, however does not specify or suggest external facilitation to help with doing so, and as such it appears that Lenihan’s (2012) PE approach does not identify a lack of supporting interpersonal infrastructure as an issue with regards to the quality of the working relationship, and outcomes by extension. Accordingly, based on Kania & Kramer’s (2011) assertion that external facilitation is vital if the collaborative working relationship is to avoid breaking down, I identify this as a weakness of the PE approach. With that in mind, I encourage the CEI (and other communities) to adopt a supporting interpersonal infrastructure while carrying out a PE approach to big issues governance.

Regarding the higher order questions this research tackles, as opposed to the answers and conclusions drawn from the first analysis, this second endeavour makes them simple and clear. The challenge to reducing emissions in our communities is a failure to meaningfully collaborate (in a broadly inclusive manner), and as such combine and leverage resources and authorities, as well as inspire the widespread actions necessary on the part of entire citizenries (who will be tapped in a personal way through various representatives of that citizenry). Accordingly, the solution is meaningful collaboration from the get go, where governments and publics become partners, and entire publics can be tapped and mobilized. As such, I re-iterate that, in light the above description of the CEI’s progress insofar as they have shadowed a Public Engagement approach to governance and community engagement, as well as Lenihan’s (2012) grounded work itself, the CEI (in its ‘updated’ form) take heed of the recommendations put forth. Further, I recommend the PE approach to all communities, both based on its justifications outlined to this point (Lenihan (2012) and this latest analysis), as well as that in and of itself, the Public Engagement approach starts from the very bottom (and stays grounded as such), which is how addressing unique community realities in the context of big issues needs to be done (Lenihan 2012).

That said, despite that this chapter has made a grounded case for the theory of Public Engagement in practice, chapter six has also made it apparent that the dictates of other theories may be relevant to success with emissions reductions. According to the CEI efforts and
participant insights, each of the theories explored in chapter three are being carried out, and advocated for in Guelph, where some appear to be more prevalent than others. Accordingly, based on Guelph’s progress with emissions reductions (26.3% under baseline as of 2012), we might infer that these other theories have value in practice. Speaking to prevalence, beyond Public Engagement, Ecological Modernization appears most employed and advocated for in Guelph, where a focus on solar power, installing 40,000 smart metres, advancing energy performance labelling schemes, education surrounding Smart Implementation Scheduling, and advancing LICs are reflective of the idea that technology, as well as a focus on tinkering with economic markets and behaviours within them, are central to achieving widespread emissions reductions. Next, a focus on reconstituting the individual mind (a Theory of Planned Behaviour), and changing the way people understand and think about their behaviours is also being employed here in Guelph. Free eMERGE home visits, paid for by the City of Guelph in collaboration with other community partners (eMERGE 2016), exemplify this well, where they focus on a wide range of household behaviours (including the technologies within a home), and attempt to change the way people think about their behaviours as related to emissions reductions, by advancing a variety of value propositions, including human health, generational equity, and of course economics and environment that are tied to using fossil fuels. Finally, though a Theory of Social Practice appeared limited in the degree to which its insights are being ‘practiced’ here in Guelph, some participants certainly identified it as a valuable strategy for producing change, where for example, the idea that municipalities ‘eat their own dogfood’ (e.g., where employees are encouraged to ride public transportation) is a way in which they might normalize alternative patterns of individual conduct, without actually attempting to engage individuals themselves. In that sense, as per Reckwitz (2002), ‘practices’ start the change when one community of practice (the public who consistently drive a personal vehicle around) meets another (municipal employees, who start gaining a reputation for using public transit more regularly). According to this then, though I have stressed the PE approach to tackling emissions reductions, my research in Guelph reflects the idea that elements of various theories of social change have important roles to play. Accordingly, for significant and holistic effect, I encourage readers to keep this in mind when pursuing community level de-carbonization, where it appears that in practice, a variety of theoretical approaches are valuable.

Moving forward, I now close this research in proposing a framework for success (composed of specific actions as well as broader dictates) that is based on both the first and second analyses we have just finished exploring. This framework is largely populated by ideas coming from a Guelph context specifically, and as such it will be for a reader to decide what might apply in their communities, however I will say that the PE approach to governance and community engagement is precisely a way in which such a framework might be borne elsewhere, and as such I once again emphasize its value.
Emerging Victorious: ‘Ascending the Damning Paradox of Fossil Fuel Energies in our Communities’ - A Framework for Going the Distance

In this final chapter, I bring both sets of analyses together. This chapter is solutions focused, primarily towards achieving the large scale emissions reductions across social actors that are necessary if we are to avoid a catastrophic warming of the planet. Accordingly, I put forth a three pillar framework towards realizing carbon-free communities that is based on the most stressed and prominent insights that the primary data has granted, across both levels of analysis. Here, the intent and hope is that this framework can be drawn on by actors in Guelph and communities at large, towards expediting climate change mitigation efforts. Additionally, I close this chapter with a return to the higher order research questions that have guided this endeavour, and a summary of the findings.

This research sought to shed light on the process of reducing greenhouse gas emissions in communities, delving into the extensive experience Guelph has with the endeavour in order to identify potential challenges, as well as advance some effective ways of navigating such issues, both purposed towards making the process more transparent and hence easier managed for all social actors living in our communities whom are interested in mitigating climate change. In essence, the study sought to help speed up the process, via advancing awareness and insight that allow potential barriers to be avoided, and/or overcome less painfully, expediting the journey towards realizing carbon free communities. In that regard, it is my sincere hope that I have been successful, where a plethora of roadblocks and strategy for their dismantling have been uncovered and brought forth. However, whether it be issues surrounding maintaining municipal financial integrity, or seeing broader public behavioural modification and investment, ultimately, the issue is scale, where participants consistently identified this as the primary stumbling block communities face (K. Farbridge, personal communication, May 9, 2016; M. Schreiner, personal communication, May 20, 2016; R. Kerr, personal communication, May 12, 2016). In one way or another then, everything in the aforementioned analyses appears to position itself as inhibitive and simultaneously enabling of municipalities and the citizenries they govern for, transitioning to, and achieving, net-zero energy economies, or in other words, moving beyond the transitional stage, and seeing the full materialization of the ‘Sustainable Energy Community’. For example, community engagement came up a lot, and while a lack of it can be counterproductive to a municipality or public actors participating in emissions reductions, seeing a municipality embrace it in various forms appears to enable, facilitate, and encourage action on the part of municipalities and publics.
Accordingly, I bring the two analyses under one roof, where a mutually nurturing three pillar framework for achieving scale is now brought forth. Once again, this framework is based on Guelph’s extensive experience with systemic emissions reductions, participant insights, as well as those gleaned from having examined the Public Engagement approach to social change, and situating CEI implementation efforts within it. As such, I argue, and hope, that this framework is a good starting point resource for local governments and public actors to tackle de-carbonization – according of course, to the unique roles and capacities of the actors themselves (previously, discussed at length in my review of theories of social change) wherein advancing various parts of this framework, will naturally be more suited to certain actors over others. I now move to introduce the framework.

In the following then, I first respectively introduce and briefly discuss the nature, importance, and intended result or purpose embodied in each pillar, as well as provide a list of the forms these pillars might take in practice. Subsequently, each pillar’s applicability is illustrated in reference to various challenges previously discussed, where, though far from exhaustive (considering that if it were it would be a largely verbatim repetition of the previous analysis), I believe is effective at illustrating its applicability. Throughout this discussion, the interdependent nature of the framework’s pillars is made quite apparent. Accordingly I close with a Venn diagram that is itself illustrative of that interdependency and each pillar’s core features, intended for easy reference. Municipalities, as well as other interested public actors then, are highly encouraged (or at least consider) this framework (as it suits the unique actor and community) in their quests to reduce emissions, and more importantly, to achieve the scale that ‘beyond negligible’ climate change mitigation requires.

Municipalities can construct community energy plans, but are generally at a loss where legislating personal-public investments and behavioural change is concerned. Accordingly, realizing intended targets is ultimately dependent on the greater public voluntarily following the municipality’s lead, and essentially reducing the bulk of the emissions themselves (R. Kerr, personal communication, May 12, 2016), where this framework is geared towards engineering that result. As such, we now move into that discussion. The first pillar is primarily action oriented, the second leaning on guidance and process, while the third largely acts as a bridge between the former, focusing on the interactions (and forms they might take) between local governments and the diverse public. Ultimately however, it is my intent and hope that each pillar, as well as the framework in its entirety, helps facilitate substantial emissions reductions within city hall (figuratively) and throughout the public, where municipalities and the broader public each have significant roles to play. The following quotes serve as introduction: “I think one of the biggest challenges is how do you get people to actually take action... to invest money, and implement change... and I think that’s a challenge for anyone” (M. Schreiner, personal communication, May 20, 2016); “Ultimately, you and I will make our own decisions, but it’s all about understanding and fully implementing our [municipal] ability to enable and facilitate that change” (R. Kerr, personal communication, May 12, 2016).
Enablement

Reflective of the quotes above, I have titled the first pillar ‘enablement’, which refers to facilitating and encouraging emissions reductions for municipalities as corporations themselves, as well as throughout the greater public, via municipalities (with the help of the public in some cases) advancing and implementing targeted and enabling policy, programs and infrastructure. In essence, this pillar is primarily geared at mobilizing emissions reductions activities and investments, by nurturing and creating market conditions and opportunities, as well as regulatory and physical landscapes, in a way that largely plays on public self-interest, where reducing emissions becomes more viable, convenient, opportunistic and attractive (for example, where a municipality establishes an LIC energy retrofit program that helps ease the economic barrier for public actors) (K. Mwanzia, personal communication, May 18, 2016; M. Schreiner, personal communication, May 20, 2016; R. Kerr, personal communication, May 12, 2016; S. Dyck, personal communication, April 26, 2016). Additionally, enablement is also geared towards local governments exploiting municipal authority, where certain municipal mandates might effectively help achieve energy sustainability, by steering their own as well as the public’s activities towards de-carbonization (for example in Guelph, where the municipality has integrated CEP principles into all official planning manifests, increasing bicycle lanes is no longer an issue to be debated, but rather is mandatory with major road maintenance and construction – where the municipality has thus taken steps to facilitate its own actions, while also steering the public towards a more sustainable form of transportation by increasing the convenience, attractiveness, and viability of peddling around the City) (K. Mwanzia, personal communication, May 18, 2016; R. Kerr, personal communication, May 12, 2016). The following then, though not exhaustive of course, is a list of various potential components of the three parts of enablement, where some are specific, while others more principle oriented, where in the end, municipal and public actors in each unique community will need to decide for themselves if and how these components are carried out and look on the ground. Additionally, there is of course overlap, where some elements themselves are inherently a part of all three components of enablement.

Policy

- The official integration of CEP principles into all municipal planning and governance documents
- ‘Scheduled Performance Evaluation & Reporting’ (SPER) – where municipal governments keep a close eye on investments under their CEPs
- Lobbying (by municipal governments and/or public actors, such as is currently carried out by the group Citizens Climate Lobby) provincial and federal governments for costly carbon pricing, and/or provincial EV subsidization
- Special municipal policy amendments (for example, fast tracked development permits) that ease regulatory constraints for developers who want to build ‘smart’ (performance based)
- Working (municipal governments) with provincial governments to incrementally and consistently strengthen and gear the building code towards high energy performance
- Municipalities updating zoning bylaws to mandate ‘smart’ development
- Municipalities increasing development charges and taxes to reflect the internalization of externalized costs associated with sprawl
Municipal policy mandating Smart Meter installations in all structures
Municipalities (and potentially higher levels of government) mandating allowable driving days, potentially enforced via reference to the first two characters on license plates
Municipally mandated (as well as public actors lobbying for) bicycle lane implementation to accompany any construction of, or major maintenance done on, roadways
Municipally mandated (as well as public actors lobbying for) carpool lane implementation to accompany any construction of, or major maintenance done on, highways (70Km/hour and up)
Municipalities allowing backyard chickens (which a Guelph bylaw currently permits, unlike in my hometown of Calgary)
Municipalities (as well as public actors lobbying for) substituting edibles (especially perennials) for inedible greenery on road verge and in other housing the municipalities are responsible for maintaining (for example, planters on sidewalks)
Incremental EV replacement of municipal vehicle fleets as they are discarded

Programs
Municipal (and potentially public) performance based project/investment subsidization or rebates (for example, home insulation, LED lighting, low flow toilets or bus passes—potentially contingent on ridership throughout previous annum)
Municipal subsidization of, and/or mandatory (on a term basis) home energy audits (spurring opportunity awareness, and playing on rational economic choice theory)
Bicycle shares (run by municipalities, and/or public actors of all types if willing)
Community car shares (run by municipalities, and/or public actors of all types if willing, where Guelph has these programs)
Drastically increasing community garden space on unused municipally owned lands
LIC modelled financing mechanisms (performance based), similar to GEERS, HELP and Solar City
Energy performance labelling schemes (advanced collaboratively between municipal, provincial and federal levels of government)
Community engagement programs
‘Municipal Lead’ programs (for example, incentives or mandates towards municipal staff commuting to work without a personal vehicle)
Educational events (for example, surrounding EV, or carbon neutral home tours), advanced by municipal governments and public actors alone, or in partnership
Municipal subsidization and regulatory or other support for the creation and uptake of carbon neutral homes (for example, lowering property taxes, offering rebates, builder subsidization, or reducing development taxes to increase affordability)
Infrastructure

- Separated bicycle lanes
- Extensive bicycle parking
- Carpool lanes
- EV charging stations
- Robust public transportation systems
- Other (for example, district energy piping in advance of large new industrial, commercial or residential developments)

As per its breadth, this pillar has significant potential and applicability regarding various barriers to reducing emissions we had discussed, and enabling local governments and their citizens to move beyond them. As far as policy, CEP integration into other municipal manifests sets a city up for long term success, where all planning is underscored by a direction towards environmental sustainability in the energy sector, which of course pervades every aspect of our lives. Whether it be the construction of bike lanes, facilitating, stimulating and/or mandating ‘smart’ development, or putting a limit on personal vehicle use, policy has a large role to play (K. Farbridge, personal communication, May 9, 2016; K. Mwanzia, personal communication, May 18, 2016; R. Kerr, personal communication, May 12, 2016). Speaking to programs, municipalities have a variety of tools at their disposal to enable investment in emissions reductions and facilitate behavioural change. LIC modelled initiatives, targeted subsidies, and bicycle shares for example work towards overcoming the financial hurdle many individuals face, and ‘municipal lead’ programs along with community engagement and educational events work to create awareness, understanding, and shift cultural norms (E. Ferrari, personal communication, May 3, 2016; M. Schreiner, personal communication, May 20, 2016; S. Dyck, personal communication, April 26, 2016; Y. Tendick, personal communication, May 1, 2016). Finally, infrastructure speaks for itself, where it is primarily purposed to compete with the personal vehicle as far as attractiveness, thus navigating the chicken and the egg scenario (E. Ferrari, personal communication, May 3, 2016; M. Schreiner, personal communication, May 20, 2016; Y. Tendick, personal communication, May 1, 2016). Together, the various parts of enablement make emissions reductions activities visible, viable, attractive and opportunistic, and hence help steer communities (here, publics and municipalities) as a whole towards them.

Guiding Principles

Moving on, the second pillar is ‘guiding principles’. At this point, I have spoken to each of these principles in some depth in chapter seven; however I re-emphasize my belief in their importance and that they are taken seriously and followed (by local governments and across public actors), where they underscore enablement, and are instrumental to long term and ongoing emissions reductions investments and activities for both municipalities as isolated entities, and the broader public over which they preside. Essentially, these principles are about spending money wisely, and carrying out the implementation process in a way conducive to vitality throughout longevity, where again, each principle nurtures its neighbours. Accordingly, I now bring forth these principles, and then discuss various ways in which they support achieving scale.
• Picking Winners (high economic and environmental ROI projects)
• ‘Smart Implementation Scheduling’ (SIS)
• The ‘Revolving Green Fund’ (RGF)
• ‘Scheduled Performance Evaluation & Reporting (SPER)
• Community Engagement (CE)

Regarding the long term success of a CEP and/or drastic emissions reductions, these principles are foundational. Over the long term, public actors and municipalities will need to consider and preserve their financial integrity, as well as together, ensure all parties are on board, supportive, and willing to allocate significant investment and ‘energy’ towards reducing emissions. Accordingly, these principles generally preserve those mandates in the following ways. Picking winners ensures investments can be recouped promptly, facilitating ongoing investments for municipalities and public actors, where for a local government, this is additionally important to maintaining broad ideological buy in for investments in emissions reductions (D. Gibson, personal communication, April 27, 2016; E. Ferrari, personal communication, May 3, 2016; K. Mwanzia, personal communication, May 18, 2016; M. Schreiner, personal communication, May 20, 2016). SIS and the RGF are models that both drive, and are facilitated by, picking winners. By picking winners initially, public actors and municipalities may establish and feed the RGF, creating their own capital to continue with investments. Additionally, the SIS principle dictates that projects be implemented in an orderly fashion based on their status as ‘winners’. Accordingly, the RGF is then continually enhanced based on that implementation schedule, where, resultant of the summation of project implementation, the purse with which we finance investments in energy continually grows rather than shrinks, seeing scale eventually achieved (E. Ferrari, personal communication, May 3, 2016; M. Schreiner, personal communication, May 20, 2016).

Finally, SPER and CE are fundamental to long term success and scale in a few important ways. First, SPER allows SIS performance based adjustment, where individuals and municipalities keep a watchful eye towards their investments, changing course where necessary to maintain the strength of the RGF (D. Gibson, personal communication, April 27, 2016; K. Mwanzia, personal communication, May 18, 2016). Second, SPER is a necessary component of transparency, where for municipalities themselves, SPER facilitates advancing the type of in-depth transparency necessary to maintaining support within and outside of city hall (D. Gibson, personal communication, April 27, 2016; E. Ferrari, personal communication, May 3, 2016; Y. Tendick, personal communication, May 1, 2016). Finally, CE is instrumental, where it is an integral part of transparency, as well as both a way in which municipalities inform themselves about what ‘winners’ are, and where they (and whoever else might be involved in carrying out CE) play a part in educating the broader public on the subjects of winners, SIS and the RGF, positioning the greater public citizenry to, together, succeed with them over the long term (A. Chapman, personal communication, May 5, 2016). Accordingly, these principles underscore emissions reductions of scale.
Community Engagement

Finally, community engagement (CE) assumes itself as the third and final pillar in the framework, where it has been spoken to extensively throughout this research, yet merits its own pillar and further discussion in light of its central importance. Achieving scale, and positioning emissions reductions as an effort that will be ongoing and long lived, requires significant interaction and collaboration between municipalities and the publics they govern for (A. Chapman, personal communication, May 5, 2016; K. Farbridge, personal communication, May 9, 2016; R. Kerr, personal communication, May 12, 2016). Whether it is ideological buy in for municipally led initiatives, spreading understanding and awareness surrounding opportunities, crowd sourcing ideas that strengthen a CEP, or simply overcoming the idea that going green puts us in the red, CE is vital to achieving broad uptake, investment, and behavioural change that are foundational to carbon free energy economies (A. Chapman, personal communication, May 5, 2016; E. Ferrari, personal communication, May 3, 2016; K. Mwanzia, personal communication, May 18, 2016; M. Schreiner, personal communication, May 20, 2016; R. Kerr, personal communication, May 12, 2016; S. Dyck, personal communication, April 26, 2016; Y. Tendick, personal communication, May 1, 2016). In other words, CE is about bridging ideological gaps, and ensuring all parties are on board with, understand, and are acting towards reducing emissions simultaneously. In essence then, CE has an instrumental role to play regarding the nature and purpose of the other pillars in this framework. Accordingly, I now bring forth some forms CE might take (ultimately emphasizing one specific form), and go on to discuss some of the important ways CE promotes achieving scale, where in a general sense, CE (as a term) is used to refer to the interactions between governments and publics.

- Flyers
- Surveys
- Focus groups
- News media (for example, to promote programs, create awareness about public CEP focused forums, or to ask for public input directly, as well as point the public towards the venues through which they might contribute)
- Public forums (collaboration, information exchange)
- Presentations (for example, at schools, churches or sports clubs)
- Web based information exchange resources (for example, ‘opportunities’, or CEP audits)
- Expert or lay public two-way education focused engagement
- Targeted stakeholder engagement (for example, solar installers, home renovations business associations, community cooperatives, or home energy auditors to, for example, help make opportunities visible and educate publics about various retrofits and paybacks)
- Establishing meaningful, collaborative, broadly inclusive (municipal-public) governance and oversight of a CEP (the Public Engagement (PE) approach)

Before discussing the third pillar in-depth, I wish to briefly differentiate between three types of CE, and their potential value and purpose, where, though there is of course overlap, the opportunities outlined above reflect these levels. First, CE can be ‘top down’ and largely about information transfer from governments to the public. This can be effective regarding education surrounding program opportunities, the nature and diversity of energy related investments, implementation theories like SIS and the RGF, as well as advancing transparency in relation to
municipal investments (A. Chapman, personal communication, May 5, 2016; M. Schreiner, personal communication, May 20, 2016; R. Kerr, personal communication, May 12, 2016). Accordingly, there is value in creating awareness of various phenomena. Still, awareness does not necessarily translate to buy-in, as we are bombarded with all sorts of messaging on a daily basis, where apathy and blasé attitudes may thus be ripe (Lenihan 2012; Parag, Hamilton, White & Hogan 2013). Second, CE can be bottom up in the sense that governments engage their publics to help bolster the effectiveness of a CEP. Here, governments might seek out experts regarding various energy related phenomena, or ask the broader public about the design and placement of infrastructure (A. Chapman, personal communication, May 5, 2016; M. Schreiner, personal communication, May 20, 2016; Y. Tendick, personal communication, May 1, 2016). The downside however, concerns apathy again; where public actors may be largely disinterested in spending their personally valuable time with something they have little or no existent investment in. Additionally, governments continue to have to do all the leg work.

Accordingly, the third level of CE is two-way and highly collaborative, where the public and government enter into a partnership surrounding governance and oversight of a CEP, effectively realizing the intended results of the first two types of CE, while overcoming their pitfalls, as publics are genuinely empowered and hence motivated to participate (A. Chapman, personal communication, May 5, 2016; Kania & Kramer 2011; K. Farbridge, personal communication, May 9, 2016; Lenihan, 2012). In essence, this method of CE is borne of, and embodied within, the Public Engagement approach to governance, and is (the PE approach) emphasized as the ideal form of both CEP governance and community engagement (as per previous discussions in chapters three and seven). Seeing community engagement materialize through the Public Engagement approach helps effectively deploy expansive social networks (based on seven degrees of separation logic) towards achieving intended results (A. Chapman, personal communication, May 5, 2016; Kania & Kramer 2011; Lenihan 2012; Parag, Hamilton, White & Hogan 2013). This includes (to name a few) information solicitation and delivery surrounding opportunities, CEP structures and infrastructure design/placement, ensuring there is widespread transparency, that a CEP is reflective of broader public wishes (and additionally that a CEP effectively addresses social diversity within communities), as well as engineering ‘green’ culture. Additionally, employing the PE approach to CEP implementation (and by extension, to community engagement), effectively eases strained government resources (personnel, and human, social, financial capital etc) (A. Chapman, personal communication, May 5, 2016; E. Ferrari, personal communication, May 3, 2016; K. Mwanzia, personal communication, May 18, 2016; M. Schreiner, personal communication, May 20, 2016; R. Kerr, personal communication, May 12, 2016; S. Dyck, personal communication, April 26, 2016; Y. Tendick, personal communication, May 1, 2016), where it has been noted that governments alone (as well as any other entity or actor operating alone) fall far short of possessing the resources and authority needed to deal with climate change (Lenihan 2012), which demands action on the part of us all. In other words, if governments alone attempt to take complete responsibility for addressing climate change (avoiding a more collaborative approach), they will not succeed at pushing the needle to where it needs to be. In the PE approach to governance (and again, by extension to ‘community engagement’), extensive voice, hands and resources may be effectively deployed, resultant of public actors on the working team actually seeing themselves in an initiative, becoming empowered, and hence personally invested. Accordingly, apathy and avoidance surrounding top down messaging, and bottom up ‘mining’ may be overcome, as people are
approached, informed, as well as given a venue to share input and participate, by people they know and trust, and where a real sense of ‘teamwork’ is established, ultimately creating the ‘network of networks’ (Lenihan 2012). Moving on, we now turn to a more in-depth discussion of the purpose and intended results of carrying out community engagement.

Despite that I highly encourage municipalities to embrace the PE approach to governance and community engagement (based on previous discussions and evidence presented), whatever form CE assumes, I re-stress the importance that the process be formal, consistent, and maintained, where a combination of some or all of the above might prove most valuable (A. Chapman, personal communication, May 5, 2016; K. Farbridge, personal communication, May 9, 2016; R. Kerr, personal communication, May 12, 2016). Also, note that carrying out community engagement is naturally, not a pain free path to uniting values and actions (though on the flipside, failing to engage and maintain a dialogue is a way to guarantee that opinion will remain splintered). Like in any relationship, or pattern of interaction, there is potential for, and likely will be, conflict along the way. That said, the discussion of community engagement here focuses on the potential positive results of carrying it out. Further, that there will be conflict is a given, where exploring the phenomenon itself is beyond the scope of this research. In this research, the discussion of CE is focused on the value of and need to carry out community engagement (specific forms having been discussed), despite that conflict is inevitable, as participants, and the chapter seven analysis, have clearly emphasized that failing to maintain a dialogue has been to the detriment of emissions reductions in Guelph. Additionally, I have previously commented on the necessity of, and how to maintain the quality of the dialogue. Moving on then, in speaking to value and results, CE promotes and is necessary to achieving scale in a number of ways that generally relate to ideological buy in (for both the validity of addressing climate change and subsequent propensity for individual action, as well as in some cases support for specific actions a municipality might implement), designing highly effective CEP action plans, awareness, and uptake, including but of course not limited to the following (A. Chapman, personal communication, May 5, 2016; E. Ferrari, personal communication, May 3, 2016; K. Mwanzia, personal communication, May 18, 2016; M. Schreiner, personal communication, May 20, 2016; R. Kerr, personal communication, May 12, 2016; S. Dyck, personal communication, April 26, 2016; Y. Tendick, personal communication, May 1, 2016). Broad public support (naturally including city council of course) for a CEP is foundational to long term success, where CE presents itself as an opportunity to garner that ‘buy in’ in a number of ways. First, in some form, CE is of course necessary to maintaining transparency, where quelling the opportunity for festering assumptions in light of public information deficits is of utmost importance. Looping back to Guelph specifically, neglecting to maintain CE as well as a robust SPER framework certainly materialized into public distrust and suspicion, where Guelph is now working to address this with its CEI ‘update’ (D. Gibson, personal communication, April 27, 2016). Relatedly, unified support for a CEP within city hall is foundational to extended CEP lifetimes, where CE is a forum in which local governments get the chance to actually hear public voice surrounding a CEP, working to inform their own priorities. Once again, in Guelph, a failure to maintain CE, along with a lack of SPER, resulted in some political division that then happened to be eased when the floor was opened to the public, where a variety of public delegations worked to inform and unite the political voice.
On a similar note, empowering the public with the role of ‘partner’ regarding CEP governance and oversight (i.e. governing an initiative according to PE approach) itself works to deter political and public opposition, where a CEP advances itself as a direct embodiment of the public voice (A. Chapman, personal communication, May 5, 2016). Further, CE in the form of the Public Engagement (Lenihan 2012) approach to governance and oversight works to ease strained staff resources, and, create a ‘green’ culture across the local populace, where public members of the working team are naturally intimate with various pockets of the lay public to a degree that a municipality cannot ‘engineer’ for itself. Speaking to value proposition resonance then, advancing CE as, and within, the PE approach to CEP governance, is a direct portal into knowing the many public audiences and what speaks to them best, and as such works to deploy and mobilize intricate social networks to garner support, awareness, uptake, and behavioural change that is necessary to achieving scale (A. Chapman, personal communication, May 5, 2016). In this fashion, CE (as being embodied in carrying out the PE approach to implementation) is a way to indirectly steer ‘dinner table talk’ towards energy and sustainability, where those conversations themselves are of course fundamental to realizing any emissions reductions activities.

On the topic of awareness, CE (in various forms) is quite instrumental, where consistent CE is as much about attempting to grow ideological support and create a space and place to bring together and work through diverse viewpoints (so as to further grow support and create action), as it is about opportunity visibility and uptake (A. Chapman, personal communication, May 5, 2016; K. Mwanza, personal communication, May 18, 2016; R. Kerr, personal communication, May 12, 2016; S. Dyck, personal communication, April 26, 2016). As discussed, many people are interested in reducing emissions, but really do not know how, where accordingly, web based information services, flyers, and information mobilization resultant of the diverse social networks that are tethered to public members of the working team in advancing the PE approach to implementation, are tools with which municipalities (while working collaboratively with the public) might enable investment. Further, CE in the form of targeted stakeholder engagement and collaboration can be quite effective, where these stakeholders may have a personal interest in delivering a program like GEERS to the public, and garnering uptake (K. Mwanza, personal communication, May 18, 2016). In this way (as with the PE approach itself), CE is about creating public ambassadors, again, putting many hands to work, and taking advantage of the vast expanse of existent social networks.

Additionally, the news media might be partnered with and used strategically to help advance emissions reductions efforts. As discussed in chapter six, the media can assume themselves as pests regarding emissions reductions when they create undue controversy and bolster ideological resistance. However, there is also ample room for them to be an ally of municipalities (as well as other social actors), especially when it comes to creating pro-environmental ideologies, soliciting valuable input, and garnering opportunity visibility, understanding, and uptake (some of which was previously discussed, while some of which is discussed following this discussion of media itself).

The mainstream news media enjoy a significant audience, and therefore might naturally play a role in community engagement. Through their video and print publishing, they might for example be purposeful in tailoring their content towards being supportive of emissions
reductions as a pursuit, by framing various related initiatives in a way that helps people see their value, as opposed to unduly problematizing things as Saxon (2016) elected to do here in Guelph. Additionally, they can be an asset where they spend time making visible government solicitations for input that will help bolster the impact of various initiatives (where citizens help inform governments on how to best use their resources to enable the public to maximally participate in emissions reductions – for example, regarding public transit design and placement, or project subsidization). At the provincial level for example, the Alberta government recently solicited input on how to spend $645,000,000 on emissions reductions, and used CBC News to help with opportunity visibility (see Anderson (2016)), which in turn, resulted in me sending the government a lengthy email detailing LIC programs. Further, the news media can use their resources to promote the visibility and understanding of opportunities that are naturally important regarding uptake. In Guelph for example, multiple news stories have been published over the past year detailing the opportunity that is GEERS, which will certainly help with uptake once the program is rolled out (for an example, see Shuttleworth (2015)). Finally, a large scale, ongoing conversation about energy is important to seeing broad action materialize (Lenihan 2012), and as such, the news media continue to be a potential asset in that sense, where they might for example be purposeful in regularly featuring pro-environmental content. In that sense, we might look to Jamaica as an example, where as a result of a deliberate effort on the part of certain journalists themselves, climate change coverage has increased significantly across a number of news outlets, and the Jamaica Observer now features a permanent column on the environment (Cummings 2013).

With all that said, the news media ultimately decide on their own agenda, and accordingly, municipalities and other interested social actors have a role to play in shaping their dispositions. Once again, direct engagement of the media can be important in this regard (E. Ferrari, personal communication, May 3, 2016), where not only can this help thwart anti-environmental coverage by playing on cognitive dissonance, but also, where this plays a part in steering media towards publishing and framing pieces that help positively frame and advance emissions reductions efforts. In that sense, we might look to the Citizens Climate Lobby (2016) as an example of this in action, where the organization is active in personally meeting and dialoging with various editorial boards, and subsequently gaining their editorial endorsement (meaning these news outlets commit to their cause in political terms, and thus ensure their publications are both non-destructive of that cause, as well as in many instances purposefully seek to bolster it). Concerning the news media then, though I had previously outlined some ways in which they can be pests to emissions reductions efforts, there is ample opportunity for governments and other social actors to make an ally of them, where dialogue appears central to achieving that result.

Moving forward, in continuing with the topic of uptake, investment, and ‘knowing how’, municipalities need deploy CE (in some form) not only towards program uptake, but also regarding education and awareness of more technical content. Accordingly, personal investment (both initial and ongoing) is enabled and encouraged where diverse public actors are aware of various projects and their ROI and payback periods, as well as SIS and RGF theory (A. Chapman, personal communication, May 5, 2016; K. Mwanzia, personal communication, May 18, 2016; M. Schreiner, personal communication, May 20, 2016). Accordingly, CE is about giving the public the tools they need to make smart investments (ensuring their own ongoing
financial viability), and, spurring investment in emissions reductions with both the environmental sympathizer and the climate change denier, where the perception that green is red may be overcome, effectively steering both towards energy investments resultant of understanding the economic case. Regarding the sympathizer then, they may go about making investments while be comfortable that they will not be sunk costs, and for the denier, the profit motive will work its magic. In this regard, partnering with home energy auditors (ideally a part of the ‘working team’ in the PE approach to implementation) might help spur action, where they may educate the broader public about a plethora of potential investments and their payback periods, thus both showing that GiG, empowering publics to take advantage, and hence spurring investment based on the profit motive and a specific understanding of various projects and their returns (A. Chapman, personal communication, May 5, 2016). After all, home energy auditors are the experts when it comes to retrofit options, payback periods, and setting oneself up for ongoing financial viability. Additionally, in showing potential connection, municipalities might, in having partnering with home energy auditors, create programs to subsidize and/or mandate the actual audits, where CE once again becomes important regarding awareness that such visits are eligible for external financing. Here in Guelph, eMERGE home visits are in effect free, where they are collectively subsidized through public taxes (E. Ferrari, personal communication, May 3, 2016), and thus making them mandatory on a term basis (to keep energy and financial savings on public actors’ minds, as well as promote visibility surrounding evolving technologies and opportunities) seems like a no-brainer.

Finally, CE can work to strengthen a CEP in practice, as well as again, regarding ideological support. This is especially resultant of publically grounded CEP governance and oversight (i.e. following the PE approach), where entire publics thus become empowered and see themselves in an initiative, hence spurring support and free labour surrounding research (where governments are not automatic experts), and the diffusion of opportunity awareness, green culture, and uptake throughout the greater populace (A. Chapman, personal communication, May 5, 2016; K. Mwanzia, personal communication, May 18, 2016; Lenihan 2012). Regarding uptake, behavioural change, and a CEPs strength in practice, communal and non-motorized transportation planning illustrate this well, where the degree to which public voice informs design and implementation will correspond to the degree to which the infrastructure is effective and garners active uptake (Y. Tendick, personal communication, May 1, 2016). All told then, community engagement (CE), as per its name, is integral to significantly reducing emissions throughout entire community populations. Accordingly, I encourage municipalities to take the role of CE seriously, and pursue it in a multitude of ways, where the Public Engagement approach to CEP governance, and by extension, to community engagement, is advised in order to increase scale of impact.

I hope and intend that this discussion has convinced you, the readers, that these three pillars (and the framework in its entirety) are a valuable starting point resource for local governments to partner with civil society and their respective citizenry to help facilitate the pursuit of large scale emissions reductions, and ultimately, realize carbon-free communities. In their own way, I hope and believe that each of these pillars embodies an ‘enabling’ force towards local governments and diverse public actors surrounding ‘long haul’ CEP success, and actually breaking the dial upon which we move the emissions needs. Whether it be maintaining unified CEP support, engineering behavioural change in the transportation sector, maintaining municipal
financial integrity, or seeing broad individual investments in energy, together, I hope and intend that this framework can play a significant role. Accordingly, I encourage municipal and public actors to understand, pursue, and implement this framework as they see fit for their communities. On that note, I also highly encourage municipalities to embrace a meaningful collaborative form of CEP governance and implementation, and as such carry out efforts according the Public Engagement approach. In that sense, though I have argued this framework may have transferable applicability, local actors in communities outside of Guelph can best position themselves, together, to address (as well as exploit) their own social diversities and unique community realities and needs, in pursuit of the SEC. Regarding this framework itself however, the following diagram (Figure 2) serves as a topical guide and reminder of the mutually reinforcing relationship embodied in this tool, stressing its ‘togetherness’ and that it need be advanced as such. Intricacy and symbiotic relations have significantly underscored the entirety of this analysis. That this broadly applicable answer to creating sustainable energy communities also manifests such elements is then, not surprising.
Reducing GHG Emissions in Communities: A Framework for Going the Distance

- Enablement
  - Policy
  - Programs
  - Infrastructure

- Guiding Principles
  - SIS
  - RGF
  - SPER

- Community Engagement
  - Governance
  - Oversight
  - Collaboration
Returning to the Roots: Summarizing Findings & Conclusions

Before officially closing chapter eight, I now briefly return to the higher order research questions that have guided this endeavour, and explore some of the conclusions drawn. In this research I sought to answer the following questions, by delving into greenhouse gas emissions reductions efforts in Guelph:

1. **When attempting to systemically reduce greenhouse gas emissions at the community level via community energy plans, and/or systems and practice reforms, what is the nature of prominent and potential challenges or barriers that might hinder the implementation process and the realization of the reductions targets?**

2. **With said barriers identified, what are some effective ways to prepare for, avoid, and/or move past these issues as they come about?**

3. **[and] To what extent has Guelph been successful with CEI implementation, reducing greenhouse gas emissions, and realizing itself as a ‘Sustainable Energy Community’ (SEC)?**

The results of this research indicate that reducing emissions in our communities is much less technically challenging than it is a matter of socioeconomic phenomena. First, reducing emissions in the transportation sector is difficult, as an enduring cultural attachment to the personal vehicle is a major stumbling block. As such, infrastructure geared towards alternative modes of travel continues to be neglected in favour of serving the automobile, giving people little incentive to abandon their cars regarding convenience and attractiveness. As a chicken and the egg scenario exists, municipalities are encouraged to revise the transportation budget and increase infrastructure that facilitates other modes of travel, making alternatives increasingly attractive and competitive with personal vehicles, and thus gradually shifting culture and practice.

Finances also present themselves as an issue for municipalities and individuals, where up-front costs and home stay can deter investment in emissions reductions projects. Accordingly, municipalities and their public citizenries can enable initial and ongoing investments in a number of ways. First, individuals and municipalities are encouraged to implement projects in a calculated fashion, by adhering to the concepts of Smart Implementation Scheduling (SIS) and the Revolving Green Fund (RGF). Projects with the fastest payback period should go first, where investments can be recouped promptly, and where payback period itself determines each project’s place in the implementation schedule. Accordingly, as projects are implemented and pay themselves off, ongoing additional savings from each may then be used to fund subsequent investments that may be less financially attractive in the short term, but necessary to reduce emissions, as well as eventually profitable. This helps us move from LED lighting to solar panels, without going out of pocket to any significant degree. Second, I stress that municipalities implement programs based on the ‘local improvement charge’ (LIC) mechanism, such as GEERS in Guelph, and Solar City in Halifax. Accordingly, the issues of up-front cost and home stay for home owners may be nullified, and hence widespread investment enabled. Finally, individuals and governments need to be made aware of the nature of various
projects and their payback periods in order to consider implementing, as well as to best follow the implementation schedule described above, and maintain financial integrity. Additionally, the broader public needs to understand and be aware of programs like GEERS if there is to be significant uptake. As such, municipalities are encouraged to advance community engagement (CE) in some form, where they engage experts themselves, as well as help facilitate educating the broader public about projects, theories of implementation scheduling, and other opportunities. As per Guelph’s experience, collaborative governance of community energy plans (CEPs) (public-municipal, according to the Public Engagement approach to social change) is recommended, where intricate social networks may be deployed to achieve such education, investment, and uptake. Additionally, collaborative governance lends itself to deploying and enhancing other resources necessary to significant emissions reductions, where it is stressed that no single actor or entity (municipal or public) has the capacity to fully address the issue alone.

Speaking further to community engagement (CE), maintaining broad ideological support for a CEP is necessary to longevity. Accordingly, consistent CE in some form is vital regarding transparency, where employing a Public Engagement approach to initiative governance is emphasized, but other forms of engagement such as public forums or web based resources can be valuable. In some form or another, the broader public needs to understand and be aware of what municipalities have been doing with tax money, and what the economic and other returns have been, in order to avoid festering assumptions and dwindling CEP support. Relatedly, consistent CE, especially through a Public Engagement approach, is a good opportunity to show the broader public that investing in reducing carbon emissions is profitable, where public members of the governing team spread information throughout their networks, and where this is more likely to resonate as per it being personally transmitted. Accordingly, CEP support can be further established, and personal investments indirectly encouraged. The belief that strong economic practice and emissions reductions do not couple well is widespread, and is cited as a big deterrent to personal investment in, as well as support for municipal emissions reductions activities. Further, in Guelph, finances have been demonstrated as the biggest motivator or inhibitor surrounding energy related investments. As such, municipalities have a role in leading by example, engaging the public, and hence helping to shape a different understanding.

Overall, many barriers to reducing emissions have been identified, where they ultimately amount to issues with achieving scale (a challenge highly emphasized by participants in this research). Though municipalities can construct CEPs, and invest heavily in themselves as corporations, achieving ambitious emissions reductions is fundamentally dependent on broader publics voluntarily following a municipality’s lead, and reducing the bulk of emissions themselves. As such, a three pillar framework for going the distance has been advanced, where each pillar is geared towards ‘enabling’ widespread emissions reductions activities, and where each fundamentally nurtures its neighbours.

The first pillar is ‘enablement’, and comprises implementing targeted policy, programs, and infrastructure that facilitate mobilizing emissions reductions activities and investments, by nurturing market, regulatory, and physical landscapes to make such activities viable, convenient, opportunistic, and attractive. Accordingly, policy changes like the integration of CEP principles into all municipal planning documents, programs like LICs and bicycle shares, and infrastructure like extensive public transportation and bicycle lanes are encouraged. The second pillar is
‘guiding principles’, and as it sounds, is premised on structuring the process for municipalities and individuals to effectively maintain long term vitality and capacity. Here, ‘smart implementation scheduling’ (SIS) and nurturing a ‘revolving green fund’ (RGF), helps social actors maintain financial integrity and self-finance a variety of emissions reductions investments without bankrupting themselves, and in effect actually building surplus capital. Further, ‘Scheduled Performance Evaluation and Reporting’ (SPER) is purposed towards tracking return on investment, allowing adjustments in SIS to be made as necessary should various project paybacks fail to materialize as forecast. Further, SPER allows municipalities to advance the in-depth transparency that is necessary to maintaining broad public support, and hence long term CEP success. The final pillar is community engagement (CE), and largely acts as a bridge between the former two. Community engagement can take many forms, however according to the evidence demonstrated in this research, employing a meaningfully collaborative, broadly inclusive (public-municipal partnership), and ongoing form of CEP governance and oversight is emphasized as per Guelph’s experience. Whatever the form however, CE should be consistent and maintained. Through CE, CEP support can be nurtured via transparency, a broad understanding of guiding principles established, an associated transcendence of the idea that sustainability and economic security are incompatible, and awareness of the existence and nature of various programs or potential projects achieved. Further, CE is important for designing and implementing projects and infrastructure so as to achieve the broadest uptake and impact, for example, regarding public transportation systems and cycling track. Accordingly, CE appears instrumental to facilitating the widespread action regarding de-carbonization that is necessary to a sustainable future. Together, I hope that this three pillar framework assumes itself as a useful starting point upon which success might be built regarding achieving scale in emissions reductions, and that it can play a significant role in ultimately realizing carbon free communities. As such, I encourage municipalities and other interested social actors to understand, pursue and implement this framework as is fit in their unique communities and circumstances.

Finally, it appears Guelph is progressively becoming an SEC. Regarding facilitating travel in forms alternative to the personal vehicle, the City of Guelph has more than doubled the length of cycling track since 2009, where it now totals over 100 kilometres. Additionally, the public transportation system is quite effective, where buses run frequently to and from two primary transfer hubs strategically located at the University and downtown core. Further, each bus is mounted with a bicycle rack. Speaking to residential energy use, smart metres had been installed in 40,000 homes as of 2012, lending themselves to smarter energy use and conservation. Further, regarding conservation, efficiency, and renewable generation in the residential sector, Guelph is in the process of advancing its GEERS program that holds great promise. Additionally, 3% of total community energy use is derived of local renewables, where this number has grown 1300% since 2012, and is about 50% higher than similar jurisdictions in Ontario. This is poised to continue, as Guelph continues taking steps towards realizing emissions reductions across the community. Finally, Guelph is currently reinvigorating a collaborative form of CEI governance with their Community Energy Initiative Task Force (mirroring, to a degree, the Public Engagement approach), that had been lost as of 2012, but that appeared to be instrumental to the impressive emissions reductions they had achieved as of that year. As such, though Guelph still has a long way to go, it appears they are in high pursuit of realizing themselves as a Sustainable Energy Community, and it is my sincere hope and intent that this research helps move them, and other communities, ever closer to that goal.
From Fire a Phoenix Rises: ‘End Note’

Whether it be drought, wildfire, food crises, super storms, insufferable heat, or our homes being swallowed by the tides, climate change continues to ravage us one ‘natural’ disaster at a time. Further, blame largely rests with the human collective, and our elected leaders have demonstrated an inability to move beyond attractive rhetoric surrounding a change in course. Still, it is this collective, and not its representatives, that ultimately make the world turn, where we thus embody great potential. Accordingly, there is much work being done, and to be done, on the ground, and in the communities we live in. In that regard, this research set out to enable and bolster our ability to do such work, by delving into the process of reducing greenhouse gas emissions at the community level, its many challenges, and the arsenal with which we might keep them at bay. On that note, learning from one of Canada’s leaders in community energy planning appears (to me) to have been hugely valuable, and on a more certain personal note, was nothing short of inspiring. Much I have learned, and much I have shared, where I have concluded that the nature of community level emissions reductions presents itself as an intricate, complicated, and layered process, having far less to do with our technological capacities, and far more to do with socio-economic realities, themselves highly negotiable.

Accordingly, I hope and believe this research has been quite successful. Based on Guelph’s experience, I have attempted to advance a plethora of challenges, as well as tools for their destruction in a comprehensive way, where it is hoped that such insights lend themselves to helping realize a change in our ways, and preserving this ecological wonder for at least seven generations beyond our own. On that note, despite that each community is naturally unique, I recommend, and hope it is viable, that all communities and individuals working towards such a noble cause take heed of, place credence in, and act according to the insights brought forth, where the ‘framework for going the distance’ may be especially promising regarding moving beyond negligible, and towards the significant carbon reductions for which we need strive. For better or worse, praxis is the foundation upon which we evolve, where this research is wholly about applicability, and of course geared towards ‘the better’.

‘In the desert, the only god is a well’ – Vera Nazarian…

For some time, a fire has been swelling under the ice over which we tread, steadily rotting out its foundation, and swallowing us in parts through its manifest rifts. Still, the harder we fall, the more rugged we rise, and like the phoenix, our rebirth is in the making within the flames of our present. Surrounding de-carbonization, our trials are young, where many lessons have been learned, while many have yet to introduce themselves. Accordingly, I leave readers with a word of hope, direction, and optimism. In fighting the beast that is climate change, may this research inspire and help guide us all. Despite that we may feel small, inept, helpless or clueless when it comes to mitigation, the battle is far from lost, and we have, as well as will continue to procure, many tools for our disposal. As individuals, municipalities and communities then, I urge that, in tandem with other resources, we, where fit, employ the insights brought forth today, thus through praxis, transforming in, and rising from, the pyre of our ignorance. The ‘Sustainable Energy Community’ is the fire in the night, the well in the desert, and ultimately, the key to our vitality as well as that of all our creature companions. Accordingly,
pursuing the SEC is the duty with which we are now tasked, and despite the cynic ballad, as it happens, it *is* within our reach!

‘Every daring attempt to make great change in existing conditions, every lofty vision of new possibilities for the human race, has been labelled Utopian’… – Emma Goldman
Bibliography


Additional Sources


