
VOLT!
VIBRANT OTTAWA BUILT TOGETHER
Ottawa Energy Collective Impact
Theory of Change Report
ECOLOGY OTTAWA
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SustainableEasternOntario.ca
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ECOLOGY OTTAWA ECOLOGIE OTTAWA

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1. Context

Building Ottawa's Energy Evolution is a collective impact effort in Ottawa to work on bringing stakeholders together to massively reduce greenhouse gas emissions from buildings in Ottawa.

Context

This Ottawa Energy Collective Impact project works in synergy with the City of Ottawa's (The City) Energy Evolution renewable energy planning process, which gathered over 100 influential and relevant stakeholders in 2016 and 2017 to create a community held vision of a "Thriving City Run by Renewable Energy".[1] The city commissioned "pathway" reports to delve into the data of Ottawa's energy use and opportunities for various renewable generation strategies. The City of Ottawa has created a three year, 33-action plan which includes advancing the implementation of the smart grid and virtual net metering, and adding new renewable energy generation from small hydro.[2] The City of Ottawa is budgeting $500,000 on the plan and plans to leverage funding from provincial and federal sources as well as the community. [3]

Our collective impact effort was developed alongside Energy Evolution and aims to continue and expand the stakeholder engagement beyond the time frame and scope of the Energy Evolution planning process. We will continue to assist the community by leveraging funding opportunities and convening more dialogue on finance, business models, technology implementation, education and scaling up impact and resources. The value of the collective impact process is to continue to convene influential stakeholders and create a long term plan for the community as a whole to address the complex issues of climate change. The theory of change is a foundational document that expresses how we believe an ambitious long term goal can be achieved. This document explains the process and content of the theory of change for this project.

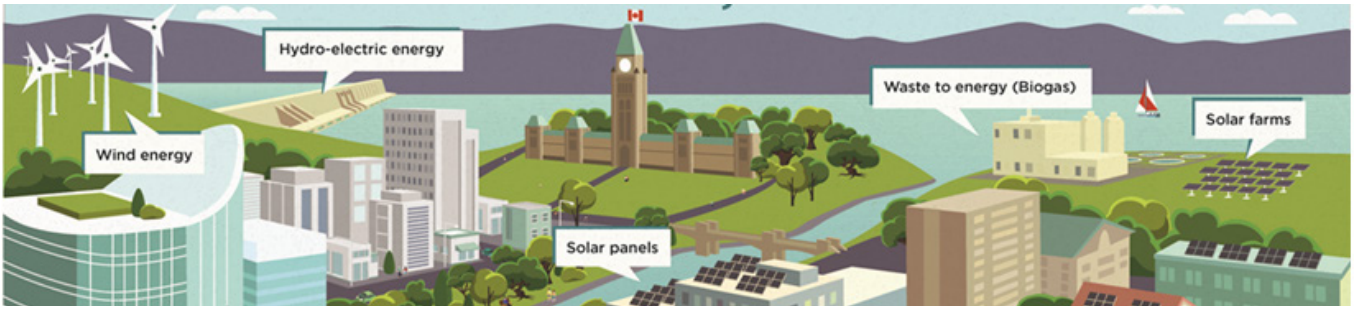


Image 1: Energy Evolution Vision Imagery

1 City of Ottawa (2017). Energy Evolution Stakeholder Report
2 City of Ottawa(2017). Energy Evolution Report. Page x
3 City of Ottawa(2017). Draft Operating and Capital Budget 2018 budget. Page x

2. Purpose and process of the theory of change

A theory of change is a framework for developing a cohesive strategy to achieve a long-term outcome. For a detailed description of the process we used see Appendix A.

There are three steps to the theory of change:

1. Define the PATHWAY of change

2. Define the INDICATORS that will help us measure our impact

3. Consider the INTERVENTIONS to create the desired change

The purpose of a collective impact theory of change is to align multiple stakeholders in congruent actions and develop a shared measurement practice.

The process of exploration and discussion is intended to build trust and understanding of each other's perspectives as well as

The pathway of change starts with a long term outcome that is aspirational, yet attainable and measurable. Preconditions are then identified which are necessary and sufficient (not too many, not too few) to achieve the outcome. The result resembles an organizational chart with the future at the top. The pathway is not a road map of steps you are going to take, but a set of conditions that have to be built up over time to enable the long term outcome to occur.

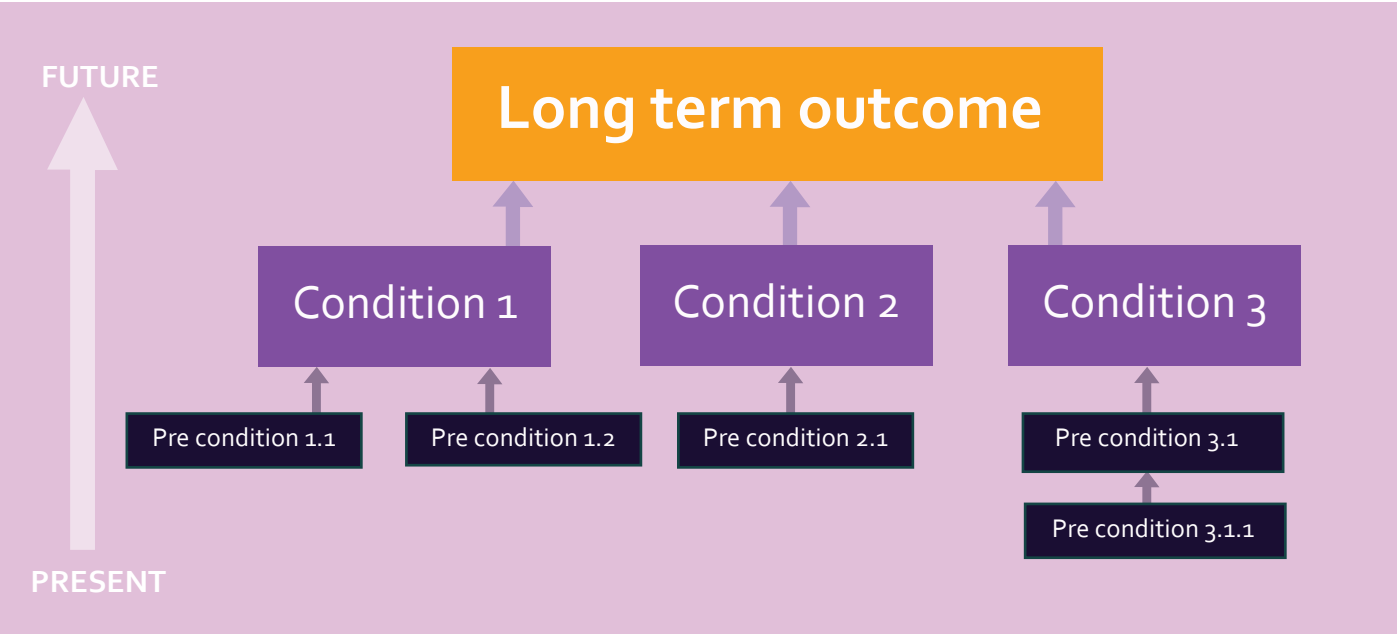


Image 2: Structure of the pathway of change

The indicators

are how progress is measured for each condition and precondition. An indicator has a population of change, a time line and an amount of change required.

Example: if the outcome is greenhouse gas (GHG) emissions are reduced by 80%, the indicator is...

WHAT: the amount of GHG emissions measured in Ottawa by the City of Ottawa

HOW MUCH: 2700 kt/year reduced to 500 kt/year

BY WHEN: by 2050.

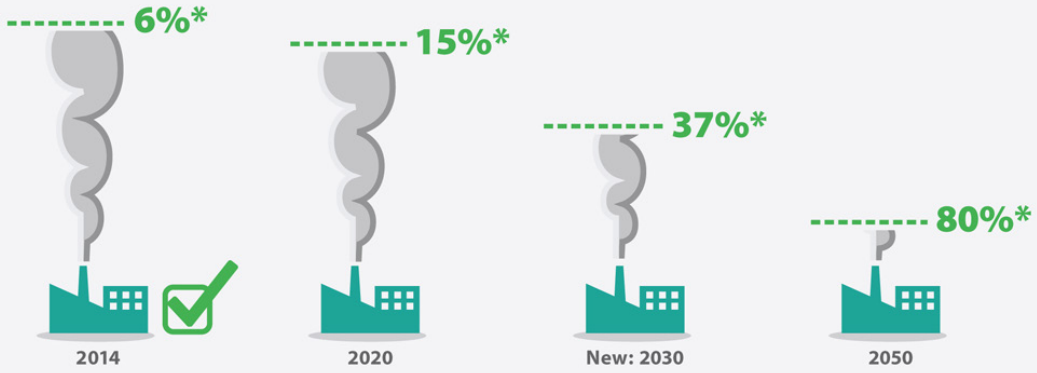


Image 3: Example of Ontario's well defined indicator for greenhouse gas reductions.

Interventions

are the actions that move us from the current reality to the required condition. An intervention can be an program, a project, a campaign etc.

Example: An intervention to achieve the state of "80% greenhouse gas reduction projects implemented in almost all existing buildings" could be a program in partnership with Hydro Ottawa and major investment firms that links all facility managers with technology implementation expertise, feasibility studies, financial modeling and access to invested capital, to complete deep energy retrofits with bulk buying power of solar panels, windows and heat pumps for a massive transition throughout the city. This program crosses many pre-conditions at once to move the goal into the realm of the possible.

Ottawa Energy Collective Impact theory of change process description

Several meetings were held from May to November 2017 to bring stakeholders together, introduce the collective impact process and work on the theory of change.

May 31st Fellowship event

The first fellowship event focused on the problem statement and state of the city with regards to energy and climate change. Roger Marsh (Hydro Ottawa) presented about innovative business models for implementing energy saving LED lights around the city. The steering committee suggested a focus on buildings based on data from Ottawa's Air Quality and Climate Change Prevention plan demonstrating that buildings account for a majority percentage of greenhouse gas (GHG) emissions. The 26 stakeholders present agreed that a buildings focus was appropriate and encouraged us to keep a lens of culture change for the initiative.

September 6th Stakeholder Mapping event

With the guidance of Knowing Fields Designs consultant Diana Claire Douglas, we conducted a constellation system map to test a draft long-term outcome proposed by the steering committee in relation to the relevant actors and stakeholders. This was a process where 15 community members each represented a stakeholder group and we arranged ourselves in a large room to play out the dynamics of the system and gain insights. The stakeholders were citizens, city managers, civil society facility managers, business community, Gaia and the Spirit of Ottawa. The main insights were that the community will be the most energetic supporter at first and we ought to put time and effort into attracting them to the project with a simple,clear rally cry - like Vibrant Ottawa Built Together. The Businesses are key but reluctant to participate in a long talking process. The facility managers need support as most of the hard work falls on them to drastically change their buildings. We must also make power dynamics visible and clear. We saw that the Spirit of Ottawa had a past or reputation of non-possibility that was holding it back and needed to be transformed. The spirit of Ottawa was able to move the players into a strong hub, each with a hand on the others' shoulders with Gaia at the center. Stakeholder engagement and dialogue emerged as a necessary condition for success of the project.

Image 4: May 31st Fellowship Meeting 'Thermometer Reading' of how people feel about the problem statement

September 14th Theory of Change Working Meeting :
A select working group began the process of defining the theory of change to save time and effort with the larger group on Oct 4th. We explored three levels of scope for the Outcome Statement - a broad scope that encompassed a fully thriving, socially, environmentally and financially sustainable Ottawa, a narrow scope of 80% greenhouse gas reductions in buildings, and an in-between scope of an innovative leadership in buildings leading to greenhouse gas reductions. Each Outcome Statements had a different arrangement of top level conditions. The steering committee was able to synthesize the results from each exploration to the in-between scope with all the necessary components for working on with the larger fellowship. For detailed results, see the meeting notes in the appendix section of this report.

Oct 4th Fellowship Event:
This was a large event with close to 40 participants from building, renewable, and local businesses sectors, as well as representatives from the City of Ottawa and a number of NGOs. The purpose of the event is to agree on the main elements of the pathway of change and brainstorm some high level intervention strategies. Speakers presented material on the State of the City, Energy financing models, and Renewable Energy Co-ops. Following a brief explanation of the synthesized version of the Outcome Statement and the pathway of change, several multi-stakeholder groups were tasked to scrutinize a pathway based on their interest and expertise.

November 10th Final Synthesis:
This event involved members from the core group of the Collective Impact in addition to a contingent from the City of Ottawa and the energy manager at the Ottawa Hospital. The focus was on debating the pre-conditions and determining the indicators and interventions.

Image 5: October 4th and Nov 10th participants work in small groups and report back to plenary

3. VOLT! Theory of Change Results

The following is the theory of change based on consultations with 60 stakeholders over seven months. We developed the theory of change, a first draft of indicators and very roughly brainstormed actions. In phase 2 of the Trillium funding we plan to move into action planning based on the theory of change fundamentals.

Pathway of change

The pathway of change is built by agreeing on the scope of the long term outcome and then building the conditions required to create that outcome. We work backwards through time to build the pathway of change, and then start at the bottom and work up with our interventions.

Image 5: Top level of the VOLT pathway of change

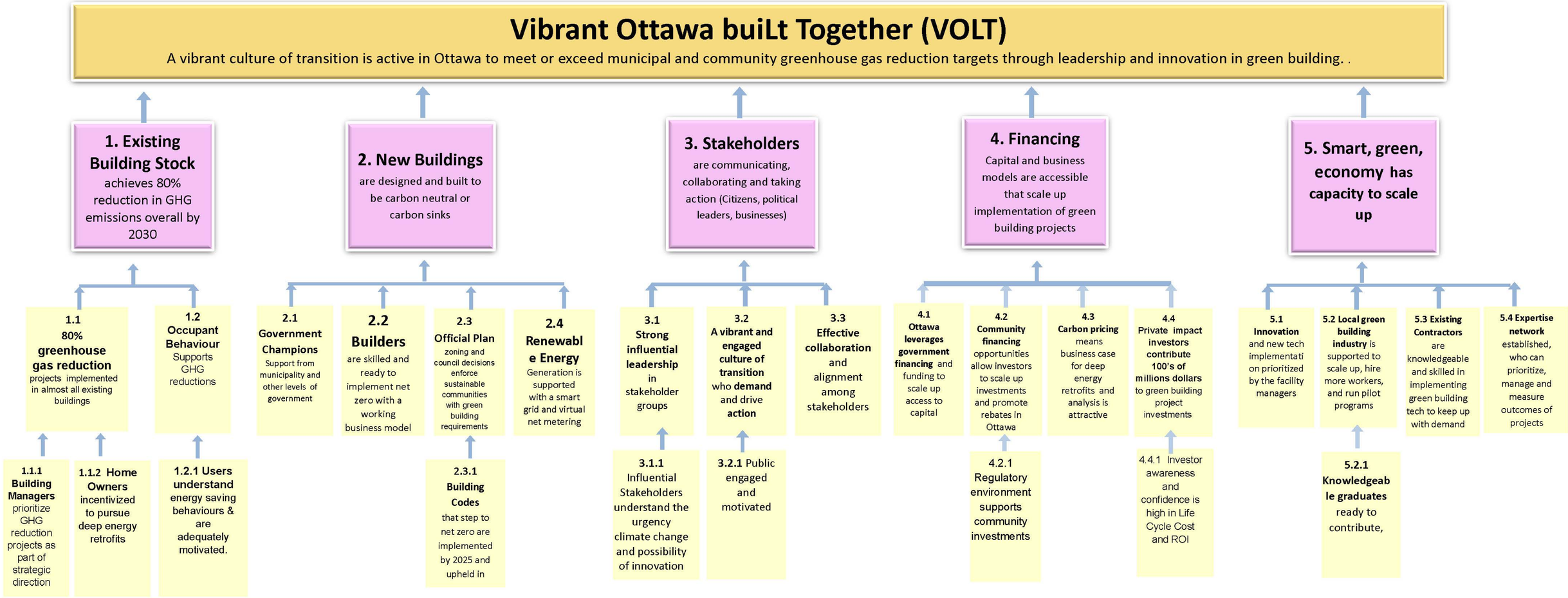


Image 6: Four level pathway of change - a zoom of each section follows

Longterm outcome

The collective impact effort began with a broad greenhouse gas reduction outcome in mind. The steering committee reviewed the greenhouse gas inventory of Ottawa and assessed the actions being planned for Ottawa to identify a gap in action and commitment to reduce greenhouse gas emissions from buildings in Ottawa. From our work on the problem statement, we also recognized that a vision of economic prosperity in building the green economy in Ottawa was the second important theme of the long term outcome. Through stakeholder mapping we realized that the third element is bringing stakeholders together in a vibrant process of culture change.

These elements combine to create our Long Term Outcome

VOLT - Vibrant Ottawa buiLt Together. A vibrant culture of transition is active in Ottawa to meet or exceed municipal and community greenhouse gas reduction targets through leadership and innovation in green buildings.

Top level conditions

1. **Existing Building Stock** achieves 80% reduction in GHG emissions overall by 2030

2. **New Buildings** are designed and built to be carbon neutral or carbon sinks

3. **Stakeholders** are communicating, collaborating and taking action

4. **Capital** and business models are accessible that scale up implementation of green building tech

5. **Smart, green, economy** has capacity to scale up

Preconditions

1 Existing Building Stock achieves 80% reduction in GHG emissions overall by 2030

1.1 80% greenhouse gas reduction projects implemented in almost all existing buildings

1.1.1 Building Managers prioritize GHG reduction projects as part of strategic direction

1.1.1.1 Business Model is attractive and clearly understood

1.1.1.2 Fuels Switching, Heat pumps and Renewable energy tech are financially viable and available

1.1.2 Homeowners incentivized to pursue deep energy retrofits

1.1.2.1 Investment is clearly understood and easy enough to implement for average home owners

1.2 Occupant behaviour supports GHG reductions

1.2.1 Users understand energy saving behaviours & are adequately motivated.

2. New Buildings are designed and built to be carbon neutral or carbon sinks

2.1 Government Champions Support from municipality and other levels of government

2.2 Builders are skilled and ready to implement net zero homes and commercial buildings with a working business model by 2025

2.3 Official Plan, zoning and council decisions enforce sustainable communities with green building requirements

2.3.1 Building Codes that step to net zero (phased) are implemented by 2025 and upheld in practice

2.4 Renewable Energy Generation is supported with a smart grid and virtual net metering

3. Stakeholders are communicating, collaborating and taking action (Residents, political leaders, businesses)

3.1 Strong influential leadership in stakeholder groups

3.1.1 Influential Stakeholders (Prominent Citizens, Business leaders, City Mayor) understand the urgency climate change and possibility of innovation leadership for Ottawa

3.2 A vibrant and engaged culture of transition who demand and drive action

3.2.1 Public engaged and motivated in energy and climate conversation and education

3.3 Effective collaboration and alignment among stakeholders

4. Financing: Capital and business models are accessible that scale up implementation of green building tech

4.1 Ottawa leverages government financing and funding and scales up access to capital

4.2 Community financing opportunities allow investors to scale up investments and promote rebates in Ottawa

4.2.1 Regulatory environment supports community investments

4.3 Carbon pricing means business case for deep energy retrofits and analysis is attractive

4.4 Private impact investors contribute 100's of millions dollars to green building project investments

4.4.1 Investor awareness and confidence is high in Life Cycle Cost and ROI Analysis of green building and retrofit projects

4.4.1.1Tools and standards are clear on measuring ROI and Life Cycle Cost

5. Smart,green economy has capacity to scale up

5.1 Innovation and new tech implementation prioritized by the facility managers in municipal and private sector

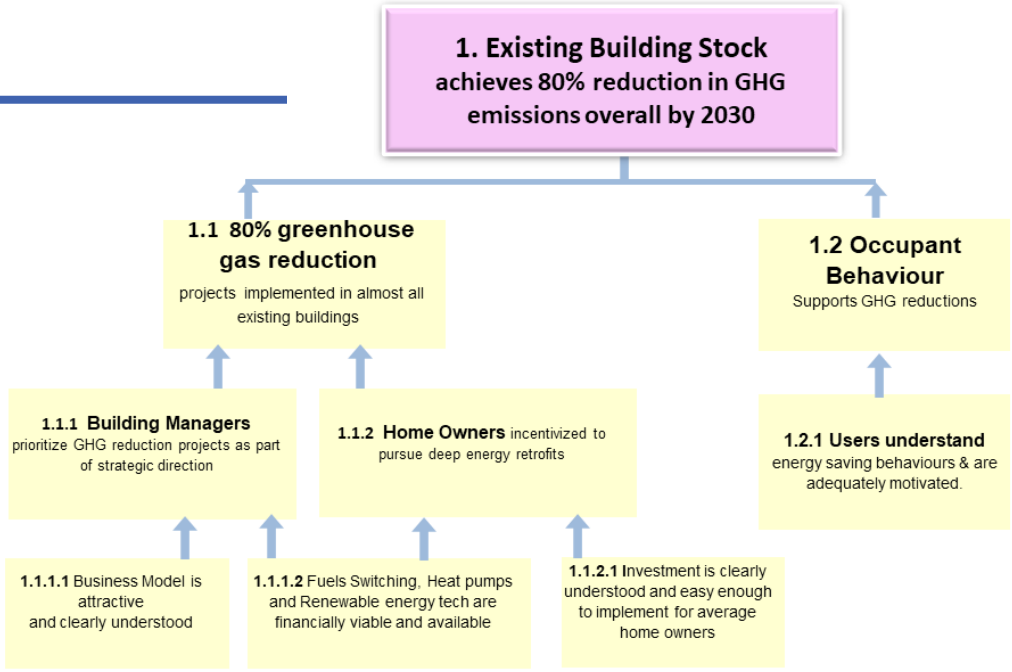
5.2 Local green building industry is supported to scale up, hire more workers, and run pilot programs to test new technologies in Ottawa

5.2.1 Knowledgeable graduates ready to contribute, from post secondary institutions

5.3 Existing Contractors are knowledgeable and skilled in implementing green building tech to keep up with demand

5.4 Expertise network established, who can prioritize, manage and measure outcomes of green building projects

Discussion



1.1 The 2030 goal of this plan is ahead of the city and provincial targets. There are approximately 400,000 buildings in Ottawa[1] that would need to be retrofit to a deep level which seems like a daunting task. However, Public Service and Procurement Canada are dedicated to reducing energy use in federal buildings and are on track for 80% reductions by 2030 [2] so we believe with large scale-effort, the rest of the community can follow suit.

1.1.1 To get faster, deeper retrofits widely adopted, an attractive and innovative business model would need to be presented and understood by the facility managers and building owners. Part of this model would mean having an affordable way to switch off of natural gas, since that is Ottawa's largest source of heating and cooling GHGs. It is also noted that we must generate more renewable energy at the same time as switching to heat pumps to account for the extra electricity required to run them.

1.1.2 Similarly, homeowners and renters need a tailored solution for a simple program or investment that has little to no upfront costs and does not negatively affect the value and saleability of the house. A coordinated, scaled up implementation of deep energy retrofits may have the effect of significantly lowering the cost per retrofit as demonstrated by the Energiesprong project in the Netherlands, France and the UK. We can assume a net zero home will be highly valued in the future as carbon pricing makes energy efficiency more attractive.

1.2 Finally, high efficiency buildings can only perform well if the residents adapt behaviours to uphold the energy saving features. This might mean having windows and doors closed more often, turning off lights, using less water than the average Canadian and conserving energy at certain times. Ottawa Community Housing is running a pilot program to address this issue in their social housing units where green retrofits have been installed.

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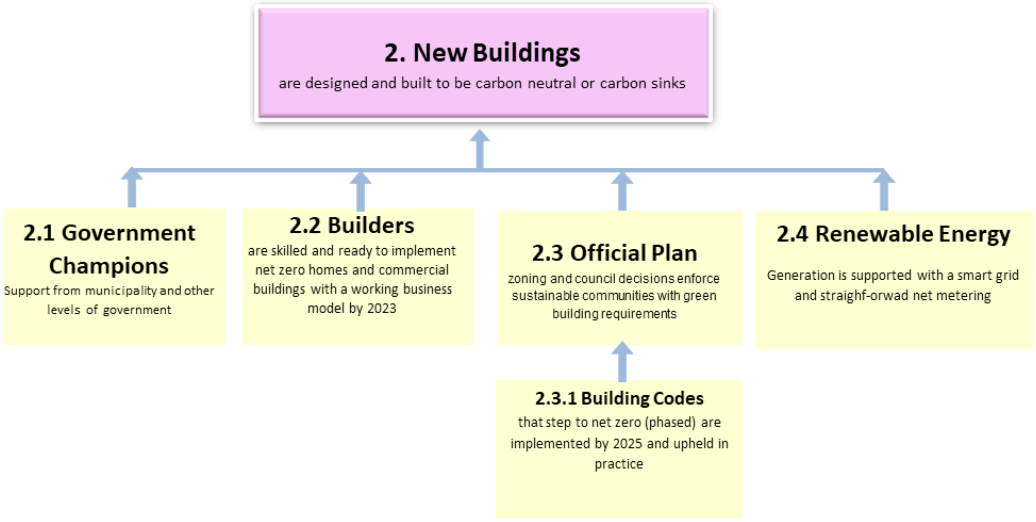
1 Hydro Ottawa. Governance statistics https://hydroottawa.com/about/governance/overview. Accessed Dec 2017
2 Presentation by Public Services and Procurement Canada at Better Buildings Breakfast, Sept 28th, 2017. supporting documentation. https://www.tpsgc-pwgsc.gc.ca/biens-property/gestion-management/ecologisation-greener/esap-pase-eng.html#a3.1 Accessed



2. To significantly reduce the GHG emissions of the city it is important to avoid adding new net annual emissions as the city grows. Government support is a strong lever to ensure the net zero building codes come into effect and are monitored and enforced.

2.2 For local builders, net zero buildings are possible now but not yet at a large scale. A pilot project by Minto developers in Kanata called Arcadia, demonstrated that mass produced, beautiful, large, net zero homes are possible and desirable in Ottawa. Through a federally funded pilot project they were able to reduce costs of implementation of future net-zero homes.[1] Ontario Building Code changes are planned to make all new buildings net zero starting 2030. Builders would need to be organized and ready a few years in advance of the legislation. In Ottawa there is a small network of green builders, but work would need to be done to bring the main builders into the fold and train many installers.

2.3 At the municipal level, official plans and zoning are fundamental building blocks that must support sustainable neighbourhoods, green-buildings, dense living and good public transport. The City of Vancouver is implementing net-zero building requirements by 2030 and changing their official plan, zoning,by-laws and processes to facilitate the change. [2] The City of Ottawa can learn a lot from and follow their example.

2.4 Supporting renewable energy generation is foundational for new and existing buildings to become greenhouse gas neutral. The City of Ottawa's energy pathways analysis by Leidos Canada[3] calculated that 43% of the current energy needs of Ottawa could be met by renewable energy by 2050, mainly by solar, switching from natural gas heating and cooling to heat pumps and some biomass gas from waste and sewage. An important part of creating a market for locally generated renewable energy will be a virtual net metering program with Hydro Ottawa, so generators of renewable energy can sell credits to organizations who would like to buy renewable energy and it will pay for their energy bill with Hydro Ottawa. This is a leverage point since the Ontario Ministry of Energy and the Independant Energy System Operator (IESO) is closing the premium price Feed in Tariff program and the new framework is net metering per building at market rates.

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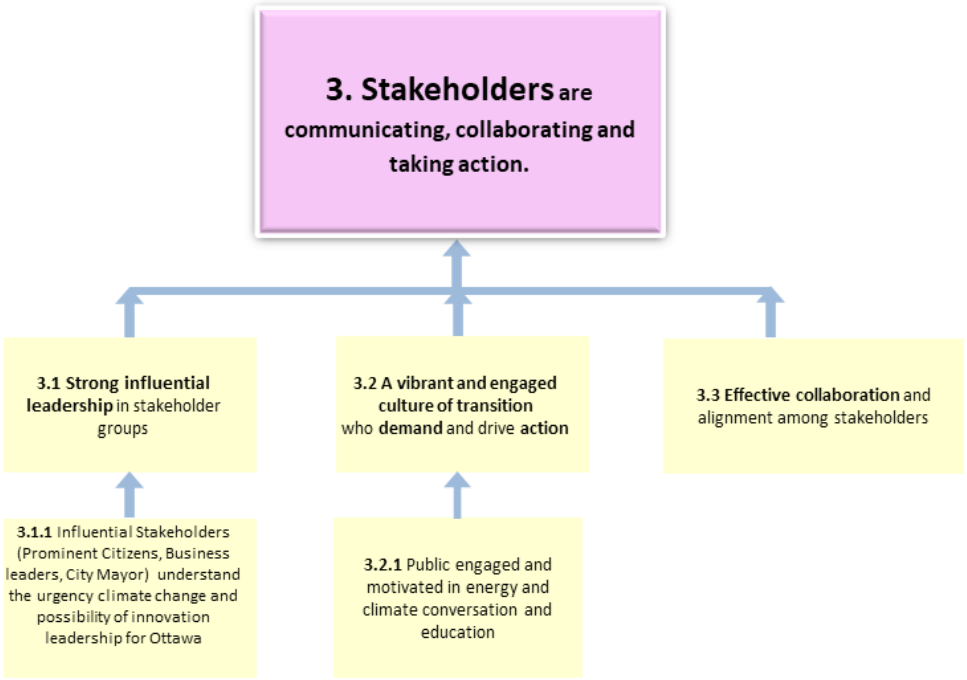
1 Owens Corning Canada LP. *Integrating Renewables and Conservation Measures in a Net Zero Low-Rise Residential Subdivision.* http://www.nrcan.gc.ca/energy/funding/current-funding-programs/eii/16140. accessed Nov 6th, 2017.
2 City of Vancouver. *Greenest City 2020 Action Plan*. http://vancouver.ca/files/cov/Greenest-city-action-plan.pdf Accesses Dec 2,2017
3 City of Ottawa. Nov 2017. Energy Evolution- Ottawa's Community Energy Transition Strategy Phase 1



3. When stakeholders meet and discuss the real issues and share information we have a chance at tackling such a complex challenge as climate change. It helps the whole process move ahead if influential leaders in the business, government and community all champion the new direction and are prepared to take decisive and bold action.

3.1 Currently many people understand the threats of climate change but it is still a big leap to change our business models and living patterns for it. We need strong, influential leaders to make it real. If we take an innovation and economic prosperity lens to the issue we can engage more players, focus more funding and development to the issues and make a larger impact.

Many cities around the world are showing bold leadership for GHG reductions and committing to 100% renewable energy by at least 2050, such as Victoria and Vancouver B.C., Woodstock Ontario[1], New York City, California USA, with a total of 118 U.S. Mayors signing a formal pledge support 100% renewable energy. In Germany, a leader in renewables, Großbardorf pledges to produce 400% renewable energy. Unsurprisingly, Fukushima City,Japan has joined the pledge for 100% renewable energy by 2050 as well.[2] Some cities that have made these goals as top-down from the political leaders and others have had a groundswell of demand from citizens, but always a conversation about economic advantages is an important factor.

The city of Ottawa has made a significant pledge to reduce community-wide GHG emissions by 80% by 2050[3] to align with Federal and Provincial goals and access funding from those sources. Ottawa is lacking senior staff that are mandated to prioritize environmental sustainability. The Energy Evolution Community Renewable Energy Action Plan is currently a small budget item on busy agendas within several departments.

1 Renewable Cities. May 18 2017. Canadian Municipalities Committed to 100% Renewable Energy
http://www.renewablecities.ca/dialogues-projects/global-learning-forum-2017/session%20/canadian-municipalities-committed-100-renewable-energy. Accessed Nov 16th, 2017
2 Go 100% Renewable Energy. Project Map. http://www.go100percent.org/cms/index.php?id=19Accessed Dec 5th, 2017
3 City of Ottawa 2017. Energy Evolution: Ottawa's Community Renewable Energy ActionPlan Pg 4.

The Chair of the Environment and Climate Protection Committee, David Chernushenko (Councillor for Old Ottawa South) is a champion for our Collective Impact process and is a passionate advocate for the urgency of climate change, 100% renewable energy and supporting the community actors in sustainability. In a speech following the committee approval of the first phase of the Energy Evolution Community Renewable Energy Strategy, he reflected that the municipality takes a measured and careful approach. In some ways Ottawa is making better progress than some cities who were quick to make a bold pledge and slow to follow up with their analysis and plans.[4] In the fellowship meetings concerns were raised by several stakeholders that the current Mayor is concerned, but not urgently motivated around the issues of climate change and prioritizes prudent financial management for the City of Ottawa. Engaging citizens and their counselors in constructive dialogue will be an important part of the leadership picture.

3.2 A vibrant culture of transition means people are excited and motivated to work together on these tough issues and are willing to spend time working on a the collective impact process and actions. It is the opposite of creating a divisive debate around the issues and blaming the 'bad-guys'. In cities like New York, three-quarters of residents say they are worried about climate change, with more than 80% wanting carbon dioxide to be regulated.[5] That enables the Mayor of New York to confidently make pledges and prioritize funds to GHG reductions. We do not currently have any specific information on Ottawa's sentiment. However, national Canadian survey in 2015 shows three quarters of Canadians believe climate change is real and caused by human activities. A general, anecdotal assumption is that rural area and small town residents of Ottawa are less concerned and knowledgeable about climate change and urban residents are more aware and concerned, but studies by Environics and the David Suzuki Foundation show that rural Canadians across the country are more aware and concerned than in previous years, Canadians in general accept that climate change is real, and support exists for cap and trade programs.[6] Discovering the Ottawa specific engagement numbers and fanning a movement of concern and action would be likely steps forward. This can be in social and traditional media, pod casts and events all targeted at demonstrating a strong demand with the public on green buildings and renewable energy.

3.3 Stakeholder engagement has been very good on the Energy Evolution planning process and the collective impact process, and it shows in the completion of a plan that was widely praised by the environmental community and partners, and which actors are excited to help enact. Hydro Ottawa is an excellent partner, who's strategic vision is to lead in the development of smart technologies for energy services and renewable generation. Hydro Ottawa is a subsidiary of the City of Ottawa, and pay a dividend which will add to the new Community Energy Innovation Fund.

The Environment Committee received 500 thousand dollars in the 2018 City of Ottawa budget for environmental programs. This is a large amount of money but is very small compared to the total budget of 3.7 billion whereas 202 million is spent on solid waste services and 100 million is spent on road services. [7] If there is more community demand for green action we suspect environmental initiatives could receive significantly more municipal funding. Community citizens groups were vocal in their support of a full time dedicated team at the City of Ottawa to handle this important file.

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4 Speech by David Chernushenko, Chair of Environment Committee re: Energy Evolution Strategy, November 21, 2017

5 The Guardian. June 12, 2017. https://www.theguardian.com/cities/2017/jun/12/climate-change-trump-new-york-city-san-francisco-houston-miami accessed Dec 8th, 2017

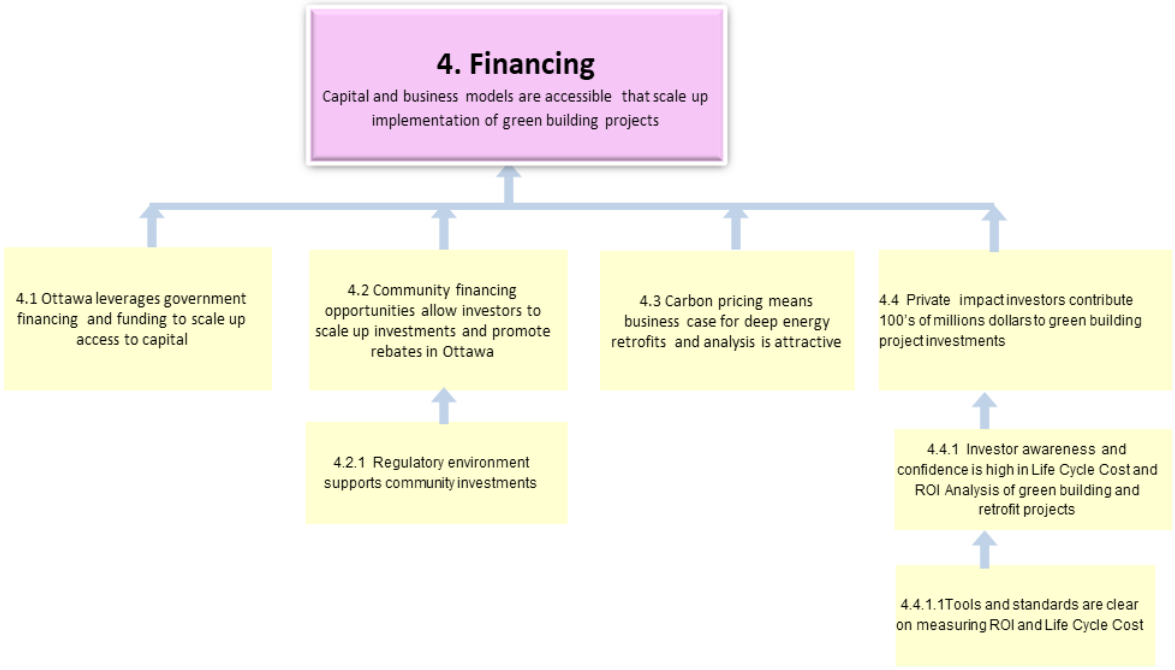
6 The Globe and Mail. Nov 2015. https://www.theglobeandmail.com/opinion/are-canadians-on-side-with-trudeau-in-fighting-climate-change/article27506540/ accessed Dec 8th, 2017

7 City of Ottawa. Draft 2018 capital and operating budget.http://app05.ottawa.ca/sirepub/cache/2/cad5imrpc15ynlrbomztcaof/48933912052017105152208.PDF Accessed Dec 5th 2017

Prominent business leaders also show fairly good understanding of the urgency of climate change are generally willing to help out if there is an organized opportunity or campaign. Jim Basilie, former CEO of Blackberry is the chair of Sustainable Development Technology Canada, Don Anderson former chair of the Chamber of Commerce Ottawa expressed his willingness to be a champion for the collective impact project and to connect to the business community. Invest Ottawa works closely with Hydro Ottawa and the Planning, Infrastructure and Economic Development section of the City of Ottawa on the Smart Cities 2.0 strategic plan. There are opportunities to focus more on green buildings as part of the smart cities projects.

The municipal plans for Energy Evolution are to be more targeted and specific in their stakeholder engagement going forward, so the collective impact process will be primed to engage the broader community to ensure a vibrant culture of transition is growing in Ottawa and focus on large scale building retrofit programs in Ottawa. The collective impact processes can help align these stakeholders for bolder action than a municipality can comfortably commit to alone.

Image 7 Image by Heather Craig for 350.org

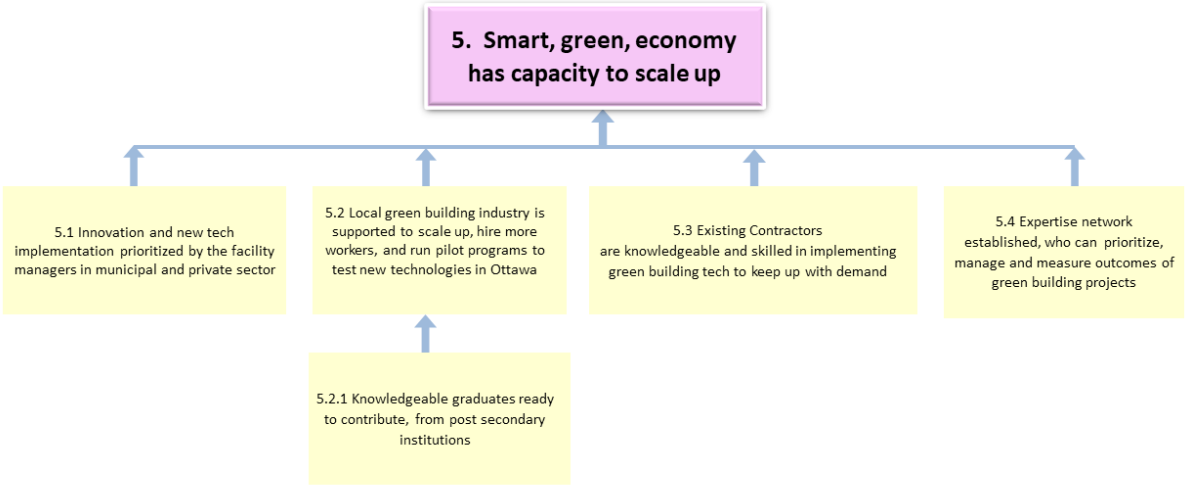


4.1 The federal, provincial and municipal governments are all aligned at this time, on climate change mitigation and funding major projects for GHG reductions. It is important to leverage this funding for Ottawa and also use these investments to create structures that will continue to fund GHG reductions in a big way if these favorable conditions change.

4.2 That is why we want to help scale up Ottawa community funded investing co-ops as well as create financial instruments that move larger private investments into Ottawa GHG reduction projects through impact investing. In order to create these, we need the rules and guidelines in place that make the investments accessible and trust-worthy. One of our stakeholders, Ottawa Renewable Energy Co-operative, OREC is working with funding from the City of Ottawa to build and grow a community funded energy retrofit program similar to their successful solar panel installation investment co-op.

4.3 Carbon pricing should make net zero buildings more financially favorable over time. Investors often look at payback period and life cycle cost analysis as a way to justify an investment in GHG reducing technologies. A predictably increasing price on carbon will speed up the payback period and encourage investors.

4.4 To retrofit nearly all buildings in Ottawa, 100's of millions of dollars of investment will be needed. New financial products will need to be created to aggregate risks and provide a stable rate of return and be RRSP eligible. Left to a building by building approach, low hanging fruits will be done first such as changing light-bulbs and more efficient fans and furnaces, but to meet these ambitious targets, we really need large scale investments like a smart grid, district energy, ground source heat pumps, building envelop and window upgrades, large scale renewables and sophisticated control systems. The Toronto Atmospheric Fund finances large projects in Toronto and is trying to expand this program to other cities in Canada such as Ottawa with Sustainable Innovation Centers. Future actions may include a summit about financing green projects in Ottawa, creating an ongoing working group who could develop a framework for massive financing in Ottawa.



5.1 Innovation for green building performance must be a top priority for building managers, coming from top executives. Innovation is risky and there is a legitimate fear of spending a lot of money and not getting the results that pay back for the company. Green technology businesses report that it is difficult to convince Canadian businesses to take a risk on a pilot project or an innovative technology.[1]

Innovation and scaled uptake of renewable technologies pushes the envelope on what's possible and reduces the cost of implementation. Energiesprong is an innovative program that uses high tech processes such as drones to measure a block of houses, fabricates a new building envelop at a factory and then installs a new energy system, cladding and solar panels all in a matter of days.[2] Residents pay the same amount they used to for utilities to pay off the upgrades. It is used in the Netherlands, the U.K. and France. It is also being piloted in a few cities in the USA including New York City, coordinated by the Rocky Mountain Institute and is being studied by Ottawa by Sustainable Buildings Canada for possible adoption in Toronto and Ottawa.

5.2 If we take on massive scale projects, we will need many skilled tradespeople to install many solar panels, windows, envelopes and heat pumps. There is an active network of solar installers and green builders now in Ottawa, but additional workers need to be trained and certified if our goals are to be met. An 'all at once' project could also help us book certified installers from further afield for a few months for a special project.

5.3 For the long-term, we would want to see a steady stream of green skills trades ready to work. The federal government is investing 24 million of cap and trade income to fund green jobs training in Canada.[3] Internships, work placements and apprenticeships are an important way to transition the workforce. Untrained construction workers sometimes install new technology improperly, losing the potential energy gains. There is currently not much training available or invested in for the employed workforce.

5.4 Building mangers/owners who want to complete deep retrofits need to do a building analysis, feasibility study, financial investment ROI analysis, and project plan. It is important to be able to access the experts who can provide credible and informed analysis. Energy Ottawa is developing expertise in this area and other consultants could become a part of a network that work with common definitions and standards to help prioritize which buildings and area should be retrofit first with which technologies.

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1 Sustainable Development Canada. CleanTech summit dialogue. April 7th, 2017
2 Canadian Sustainable Buildings. Energy Sprong Report. http://sbcanada.org/wp-content/uploads/2017/09/Energiesprong-Summary-Report.pdf?x41824 accessed Dec 8th, 2017
3 24M in Capa and Trade cash to fund provincial green skills training. CBC News. http://www.cbc.ca/news/canada/london/24m-in-cap-and-trade-cash-to-fund-provincial-green-skills-training-1.4241857 Accessed Dec 4, 2017

Indicators

The top level indicators form the basis for shared measurement in collective impact. Indicators should demonstrate movement towards the desired conditions and be able to be measured without too much extra effort from participants. Indicators should have a date, an amount of required change and the type of change by who.

The measurable indicators for the top level conditions are as follows:

1. Existing Building Stock achieves 80% reduction in GHG emissions overall by 2030
Indicator: Kilo-tonnes of CO_2 equivalent emissions for Ottawa buildings per year. Reduced from 2700 KT to 500 kt by 2030

2. New Buildings are designed and built to be carbon neutral or carbon sinks
Indicator: Percentage of new builds in Ottawa that are net zero or better
10% by 2020
50% by 2030
100% by 2050

3. Stakeholders are communicating, collaborating and taking action Indicator: Level of engagement from influential leaders from each sector increased to 4 or 5 in seven stakeholder categories
(5 point subjective engagement scale based on targets and actions - Federal, Provincial, Municipal, Developers, Facility Operators, Community, Academic)

4. Capital and business models are accessible that scale up implementation of green building tech
Indicator: Canadian Dollars of capital invested each year in GHG saving measures for buildings.
150 Million/year by 2020 until 2030 for a total approx. 2 Billion by 2030

5. Smart, green economy has capacity to scale up
Indicator: Number of people employed in Ottawa doing GHG reducing work.


Vibrant Ottawa buiLt Together (VOLT)
A vibrant culture of transition is active in Ottawa to meet or exceed municipal and community greenhouse gas reduction targets through leadership and innovation in green building..
1. Existing Building Stock
achieves 80% reduction in GHG emissions overall
2. New Buildings
are designed and built to be carbon neutral or carbon sinks
3. Stakeholders
are aligned for action.
(Citizens political leaders, businesses)
4. Financing
Capital and business models are accessible that scale up implementation of green building tech
5. Smart, green, economy has capacity to scale
Indicator:
kt of CO2 equivalent emissions for Ottawa buildings per year.
Reduced from 2700 KT to 500 kt by 2030
Indicator:
Percentage of new builds in Ottawa that are net zero or better
10% by 2020
50% by 2030
100% by 2050
Indicator:
Level of engagement from influential leaders from each sector,(5 point scale - engagement scale - Federal, Provincial, Municipal, Developers, Civic Managers, Community, Academic)
Indicator:
$ of Capital invested each year in GHG saving measures for buildings
Goal 150 Million/year by 2020 until 2030 for a total approx. 2 Billion by 2030
Indicator:
Number of people employed in Ottawa doing GHG reducing work.

Interventions

A top level view of strategic direction was outlined in a fellowship meeting. Further analysis of baseline states and aligned action planning will be part of Phase 2 of the collective impact efforts.

- Set the baseline analysis for buildings in Ottawa to prioritize retrofits and potential for district solutions. Improve financial analysis and bench mark Ottawa's building stock
- Work on a citizen up-swelling of support for green building deep retrofits in Ottawa including advocating for energy labeling on houses and a accompanying marketing campaign. Unified message from many voices.
- Convene a circle of champions to support bold action on sustainable housing development and retrofits which harnesses the pioneering spirit of the Ottawa tech community.
- Work closely with developers and financiers to pilot massive energy retrofit program
- Scale-up education and training for green construction operators and city councilors
- Create a financing framework to massively up-scale deep retrofits across the city
- Implement massive upgrades across Ottawa using a model similar to EnergieSprong, but tailored for our conditions.

If we can prototype a few standard solutions for the majority of retrofits, we may be able to significantly reduce the cost per installation, as in the scanning and 3D printing example described previously. There may be a way for green bonds or even alternative Earth-based currencies to be developed to enable the projects. Next steps are to have a special engagement for investing experts, connecting with the Building The Base collective impact effort in Ottawa for social housing to reactivate those efforts from an environmental lens.

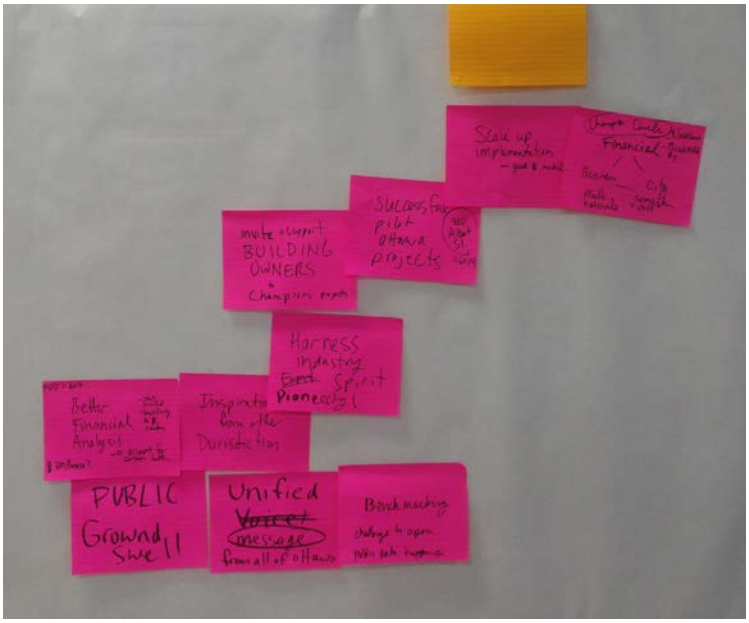

Image 6: Broad level strategy developing through theory of change discussions

4. Conclusion

We are in important, exciting times for the environmental movement and technological innovation landscape in Ottawa, and must make the most of the opportunities surrounding us. Intelligent action builds a foundation for future success and the ability to reduce the most greenhouse gases in the shortest time frame while building a thriving Ottawa powered by renewable energy. The theory of change process is helping us make sense and choose together, a holistic and effective strategy that will be measurable and be perceived as more and more possible as we make process on it. The world is changing faster than we realize and Ottawa is well positioned to be a leader in the new economy of green innovation.

We can already see the benefits of bringing everyone together. The Ottawa environmental movement is more co-ordinated and connected with the citizens affected by climate change and city policies, moving from networking and partnering to co-creating. The City of Ottawa has co-created a solid plan that the community can get behind. Hydro Ottawa is planning to support more renewable energy generation, and the collective impact participants are building support to do the broader scope actions that the City of Ottawa is not in charge of, such as citizen engagement, education and business model development and community financing. The whole field has infinitely more trust among the relevant actors compared to a few years ago.

We are extremely grateful to the Ontario Trillium Foundation for supporting this important systemic work. If we all pull together, the near impossible can be grasped.

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Maison Tucker House

Appendix

A. Problem statement
B. Aspen Institute Theory of Change Framework
C. Fellowship meeting reports

Problem Statement

At this time, the Ottawa community - including the residents, businesses and government of the City of Ottawa - stands at a crossroads when it comes to taking meaningful action to combat climate change. Like other cities in Canada and around the world, Ottawa is where hundreds of thousands of residents make the day-to-day decisions that use up energy and generate greenhouse gas emissions. Also like other cities, the Ottawa community's action on climate change is a vital part of larger plans and agreements.

The urgency of action in Ottawa is part of a global challenge to reduce greenhouse gas emissions. According to scientific consensus, anthropogenic climate change is an urgent global problem. According to a recent analysis by the Global Carbon Project, the planet has a mean budget of approximately 600 gigatonnes of carbon dioxide left to emit before the planet warms dangerously by more than 1.5 to 2 above pre-industrial levels. To keep within this global carbon budget, the world's countries must realize year-over-year emissions reductions starting by around 2020 and continuing towards full decarbonization by mid-century.[1]

The global nature of the climate challenge requires action at the national and sub-national levels. Similar to its counterparts at the Government of Canada and the Government of Ontario, the City of Ottawa seeks to reduce emissions by 80% below 2012 levels by 2050.[2] This entails addressing the Ottawa community's [3] five emissions sources: buildings, transportation, solid waste, agriculture and wastewater. However, two local emissions sources are particularly important; buildings and the built environment account for 49% of the Ottawa community's emissions, while transportation accounts for 40%. [4]

So far, the most detailed articulation of the City of Ottawa's climate strategy is contained in the 2014 Air Quality and Climate Change Management Plan. This plan has broad coverage in its analysis and in its list of suggested policy actions to reduce greenhouse gas emissions. However, it lacks content on the City of Ottawa's strategy for energy generation, energy conservation and energy efficiency – content related to the building stock that will be covered in a yet-to-be-articulated Renewable Energy Strategy.

With its commitment to light rail, the City has started to make investments that will lead to meaningful action on reducing emissions from transportation. Once completed in 2023, Stage 2 of the City of Ottawa's light rail project will bring 70% of the population within five kilometres of rail,[5] lessening emissions from daily car travel.

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[1] Figueres et al. (2017). Three years to safeguard our climate. Retrieved July 7, 2017 from: https://www.nature.com/news/three-years-to-safeguard-our-climate-1.22201.

[2] City of Ottawa (2016). City of Ottawa joins Carbon 613 to help cut greenhouse gas emissions. Retrieved April 19, 2017 from: http://ottawa.ca/en/news/city-ottawa-joins-carbon-613-help-cut-greenhouse-gas-emissions.

[3] The emissions profile of Ottawa can be thought of in two different ways. On the one hand, there are the "corporate inventory" emissions of the municipal government and its inventory. These corporate emissions make up a subset of the larger "community inventory," produced by the entire Ottawa community - all residents and built infrastructure in the city, including urban and rural areas. Accordingly, this document will differentiate between the City of Ottawa and the Ottawa community throughout.

[4] City of Ottawa (2014). Air Quality and Climate Change Management Plan. Appendix A – GHG Inventory Summary, p. 6. Retrieved April 18, 2017 from: http://ottawa.ca/en/city-hall/planning-and-development/official-plan-and-master-plans/air-quality-and-climate-change

[5] City of Ottawa (2017). About Stage 2 rail. Retrieved July 7, 2017 from: http://www.stage2lrt.ca/.

Problem Statement

Yet when it comes to buildings and the built environment, policy measures are still urgently needed. Currently, there is no integrated strategy in place; new buildings and developments are being constructed according to inefficient design and planning standards, and will generate life-cycle emissions that pose a long-term threat to the City of Ottawa's emissions reduction targets. A systemic approach to building retrofits is also required; according to some estimates, at least half of the buildings that will be in use in developed economies by 2050 have already been built. [6] In this context, the City has an opportunity to work with various stakeholder groups to address challenges associated with new builds, while also implementing measures to retrofit existing homes, offices and other buildings across the city.

Addressing climate change means more than responding to a threat to the future health of our city and our livelihoods - it is also an opportunity to redesign the Ottawa community's energy and building system to promote healthy, green and prosperous city. If we do not step up, and simply continue business as usual, we may find ourselves losing out in the green economy of the future while failing to secure local energy resilience. We will do this while facing increasing climate-related risks damaging infrastructure and livelihoods, in floods, heatwaves and unpredictable weather patterns.

Climate change is too complex of an issue to be resolved by any one entity. Government bodies at all levels, energy producers, distributors and users, developers, investors, and community leaders must work together, rising above the perspective of each organization to find innovative ways of working, relating, and governing to ensure we reach the superordinate goal of prospering as a whole as we shift to a climate-sustaining economy. We know there is demand for action - for example, 73% of Canadians want their governments to do more to limit further climate change from happening, and the vast majority are in favour of various policies to reduce emissions. [7] Beyond policy changes, addressing climate change requires sustained education and culture change, including an inculcation of the inter-generational nature of climate problems and solutions.

The next three years are a critical time to plan and collaborate for meaningful action. We stand in a rare moment where governments from the international down to the municipal level all agree that deep cuts in carbon are required to save civilization from catastrophic climate change. There are unprecedented investments in green infrastructure and innovation happening federally now and the foundations for carbon trading are just being laid. No one knows exactly how to do it, but if we are wise enough to work together, we can discover and innovate how to create eco-wealth for the entire Ottawa community now and set up a sturdy foundation for the future.

This collective impact fellowship will set out to understand the problem more deeply in our local context, encourage broader support for innovative and bold policy and investment strategies, access funding and share resources for projects and prototypes that will make meaningful, long term impact.

Are you ready to step into the fire of collective impact? If not you, then who? If not now, then when?

[6] Building Efficiency Initiative (2017). Why focus on existing buildings? Retrieved July 7, 2017 from: http://www.building-efficiencyinitiative.org/articles/why-focus-existing-buildings.

[7] EcoAnalytics (2016). New survey finds Canadians nationwide support government action to spur clean energy. Retrieved August 9, 2017 from: https://www.ecoanalyticscanada.org/sites/default/files/images/upload/documents/climate-survey-newsrrelease_051216.pdf.

Problem Statement

Problem/Opportunity statement in a nutshell

The residents, businesses and government of the Ottawa community will risk not achieving our greenhouse reduction targets unless we radically change the way we build, heat and cool the city. This complex challenge requires municipal planners, developers, investors, energy system operators and community members to work together in unprecedented ways to rapidly transform the energy and building systems across the Ottawa community, in concert with provincial, federal and international efforts. We have the opportunity to build a beautiful, healthy, livable city with future-forward economic development, a city the next generation will thank us for.

Aspen Institute theory of change framework

1. Introduction

A theory of change can be a helpful tool for developing solutions to complex social problems. At its most basic, a theory of change explains how a group of early and intermediate accomplishments sets the stage for producing long-range results. A more complete theory of change articulates the assumptions about the process through which change will occur, and specifies the ways in which all of the required early and intermediate outcomes related to achieving the desired long-term change will be brought about and documented as they occur.

To best realize the value of creating a theory of change as part of planning and evaluating social interventions, the Aspen Institute Roundtable on Community Change (Roundtable) developed an approach to help community builders create the most robust theories of change possible.[1]

The Community Builder's Approach to Theory of Change: A Practical Guide to Theory Development is for planners and evaluators who are going to facilitate a process for creating a theory of change with community-based programs and community change initiatives. It was designed as a "refresher course" for planners, evaluators, and others who have attended one of the Roundtable's Theory of Change Workshops,[2] but we fully expect experienced facilitators will be able to quickly learn and apply the method as described in this guide. Please visit our web site, www.theoryofchange.org, for updated information and additional examples.

OVERVIEW OF THIS GUIDE

We've organized this guide into two sections. Section One answers the question "What is a theory of change?" It provides all the information needed to facilitate a theory of change process with a community group. This section

- **reviews the major concepts that define theories of change;**
- **provides important background information for facilitators before they enter a planning session; and**
- **offers practical guidance for facilitating planning sessions.**

Section Two is a resource toolbox for the theory of change facilitator. It includes

- **a case study to show a portion of a finished theory of change;**
- **a list of materials to bring to a planning session;**
- **a participants list that suggests the ideal composition of a theory of change building team for a community-based program or initiative;**
- **a glossary that could be distributed at the training sessions; and**
- **a description of PowerPoint presentations that you can download from our web site, www.theoryofchange.org.**

1. This work greatly benefited from the ongoing collaboration with Heléne Clark and her colleagues at ActKnowledge. For more information about ActKnowledge, visit www.actknowledge.org.
2. For information on scheduling a workshop, please contact Andrea Anderson at andreaa@aspenroundtable.org or Heléne Clark at hclark@actknowledge.org.

Aspen Institute theory of change framework

2. What Is the Community Builder's Approach to Theory of Change?

The Community Builder's Approach to Theory of Change is a method that a community group can use to think critically about what is required to bring about a desired social change. It is a process designed to depict how a complex change initiative will unfold over time. It creates an illustration of all the various moving parts that must operate in concert to bring about a desired outcome.

Our approach to theory of change requires stakeholders to be precise about the type of changes they want to achieve. This often requires participants to adhere to a level of conceptual clarity that they are not accustomed to, which is why we think it is necessary to have a skilled facilitator at the helm, managing the process.

We ask theory of change participants to predict *exactly* who or what is going to change, over what period of time, and by how much, at every single step in an often complex process. We ask them to specify how and why they expect change to happen in a particular way. We also ask how they are going to bring their resources to bear on creating early and intermediate changes that add up to their ultimate goal. Simple questions, in theory (pardon the pun!), but difficult to answer in practice.

A theory of change is essentially an explanation of how a group of stakeholders expects to reach a commonly understood long-term goal. In creating a process for doing this work, we have coined a few terms that may be unfamiliar, and we use familiar terms in new ways. Terms like *pathway of change, precondition, indicator, outcome, intervention,* and *assumptions* are commonly used in our field, but to us they have specific meanings:

PATHWAY OF CHANGE

For us, a pathway of change is a map that illustrates the relationship between actions and outcomes and also shows how outcomes are related to each other over the lifespan of the initiative. **(See Figure 1.)** It is the most easily recognized component in a theory of change because there are many planning approaches that employ boxes and arrows to depict program elements. Throughout this guide, we use the terms *pathway of change* and *map* interchangeably.

WHAT ABOUT PROJECTS WITH MULTIPLE GOALS?

Throughout this guide, we refer to the long-term goal or outcome, but in reality most community initiatives are working toward an interrelated set of long-term goals, each of which would need to be mapped in the way we describe.

Aspen Institute theory of change framework

We draw a pathway of change in a way that may seem peculiar at first because it looks like an organizational chart. (Believe it or not, this is an artifact of our early attempts to draw these in Microsoft Word.) The long-term goal of the initiative appears at the top of the map, and the outcomes that must be produced in order to get there are arranged in order on the subsequent layers of the map. We then read this map from the bottom to the top, suggesting that the earliest outcomes (at the bottom) are needed to get to the next level, and outcomes at the middle

FINAL PRODUCT OF PATHWAY MAPPING

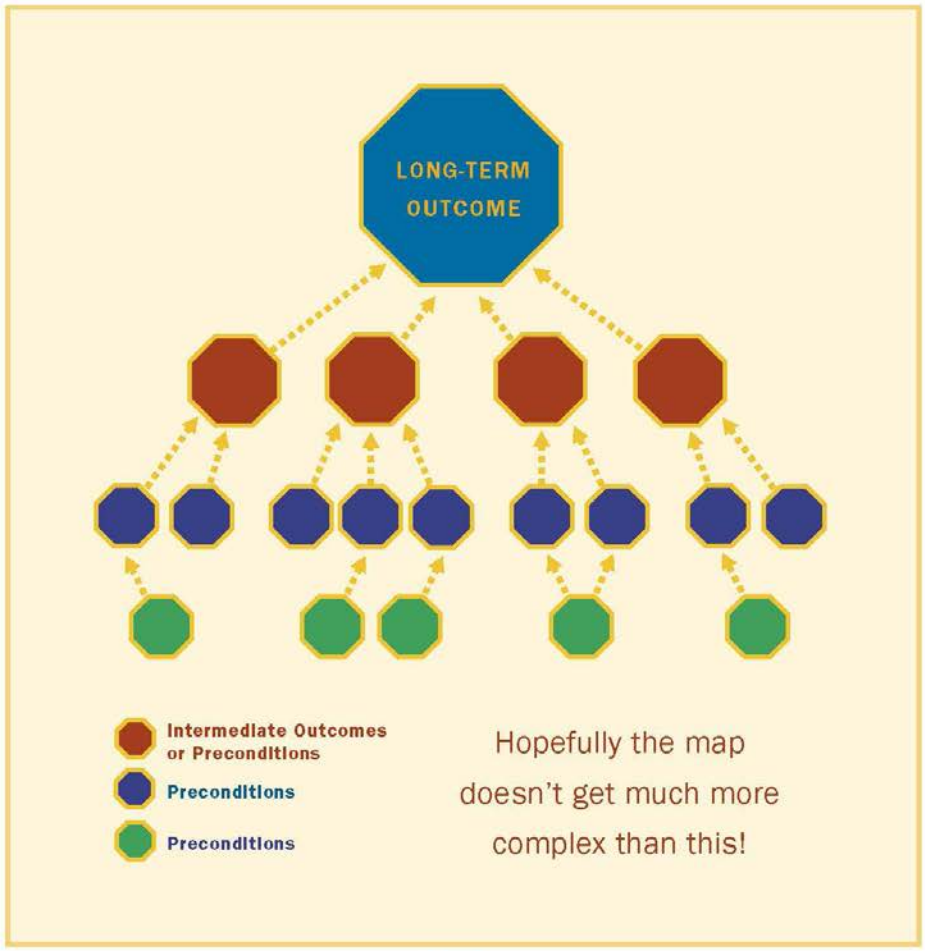


Figure 1

Aspen Institute theory of change framework

level are needed to get to the top. (It might help to think of it in terms of an organizational chart: it's like starting off in a company mailroom, moving up to sales, then management, and then to the CEO's office.)

OUTCOME AND PRECONDITION

We use specific language to describe the outcomes on the map. For us, everything in the pathway of change is a precondition to the long-term goal. That is, the outcomes on the path are all required to reach the goal—without each of them in place, we assume the goal cannot be attained. This logic helps us weed out extra outcomes that may be nice but unnecessary to achieve the goal we have in mind. An effective pathway of change reflects only the outcomes, or preconditions, that are at once necessary and, when taken together as a set, sufficient to reach the long-term goal.

Arranging outcomes on the map as the first step in the theory building process has a few advantages over other brainstorming or planning approaches, which often focus on "actions" or programs at the outset. First, we see the big picture quickly. Without having to read through a thick description of a complex plan, we can see how a group expects their early achievements to start a process that eventually leads to the desired long-term results. Second, it allows the group to think about what must change or be produced before thinking about how to actually *do* it. This is a new way of thinking for most people. When we facilitate theory of change groups, we like to tell people to imagine that they have unlimited power and resources when they draw the pathway of change so that they focus on getting all of the necessary and sufficient preconditions on the map *before* turning to the task of figuring out exactly how to make these preconditions a reality.

INDICATOR

Indicators tell the story of how success will be recognized at each step in the pathway of change. While this term is so often used in planning and evaluation efforts that most people assume that we're all talking about the same thing, we use the term in a very specific manner when we talk about indicators as part of a theory of change. First, we define an indicator for *each* outcome (or precondition) on the pathway of change **(see Figure 1)**, not just for the long-term goal. Second, the indicator must be defined in a way that includes a lot of detail. We call this operationalizing the indicator because we take an abstract concept and make it "operational" so that a research plan for gathering useful data can be designed around it. For us, the best way to operationalize each indicator is to ask a few questions:

- **Who or what is the target population of change?**
- **How much change has to occur on this indicator for us to claim to have successfully reached the outcome?**
- **How long will it take to bring about the necessary change in this indicator in the target population?**

Answering each of these questions for each of the indicators that will track progress on outcomes is quite a task, but one that is absolutely essential for making sure that the theory of change truly makes sense in the end.

INTERVENTION

While the pathway of change is the centerpiece of a theory of change, and often the most

Aspen Institute theory of change framework

recognized component, a complete theory of change must also describe the types of interventions that would be required to bring about each of the preconditions on the pathway of change. An intervention might be as simple as a single activity or as complex as an entire program. Instead of planning an omnibus strategy, participants in the theory of change process must match each outcome in the pathway of change to a specific intervention, revealing the often complex web of activity that is required to bring about the desired long-term community change. **(See Figure 2.)**

ELEMENTS IN A PATHWAY OF CHANGE

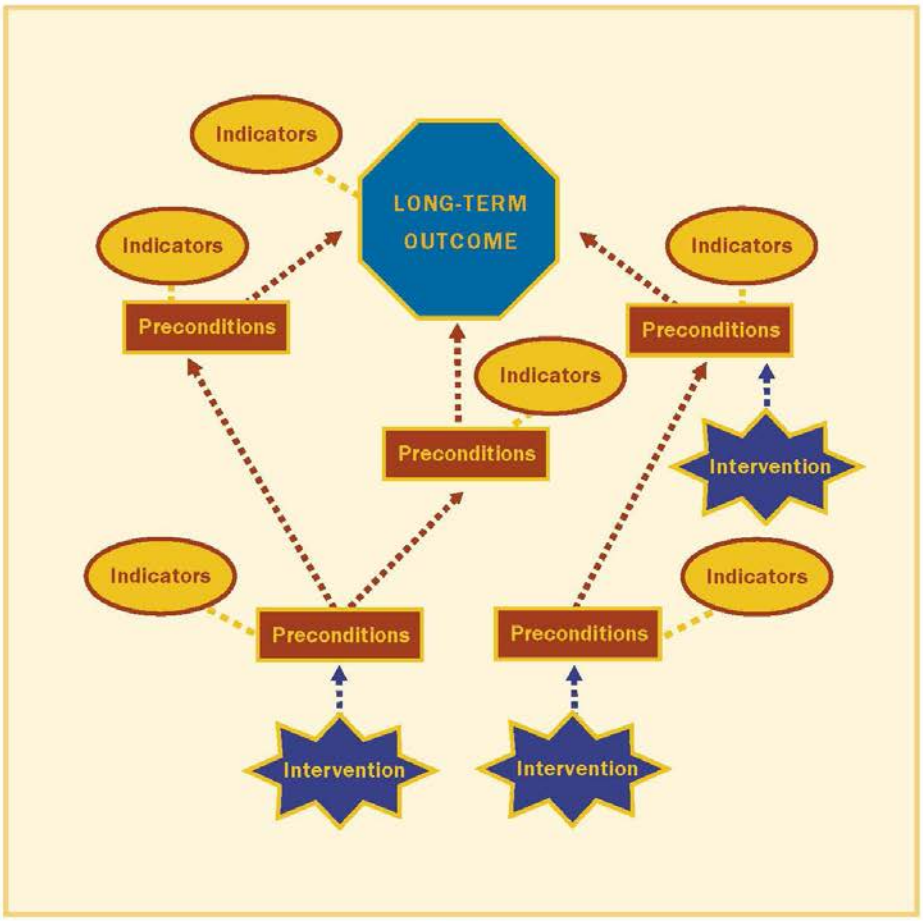


Figure 2

Aspen Institute theory of change framework

ASSUMPTIONS

Finally, a theory of change would not be complete without an articulation of the assumptions that stakeholders use to explain the change process they have envisioned. Assumptions explain both the connections between the preconditions for long-term change that occur in the early and intermediate stages of the change process, and the expectations about how and why proposed interventions will bring them about.

While assumptions are often the set of beliefs that guide a group (and often remain unstated until the theory of change process comes to town!), they may also be supported by research, or "best practices," which can strengthen the case to be made about the plausibility of theory and the likelihood that stated goals will be accomplished.

Assumptions answer some of the probing questions that come up when a theory of change is being critiqued. For example, one group we worked with developed a theory largely based on the principles of resident control and empowerment. As they reviewed their theory, we pushed them to answer two simple—yet extremely important—questions they hadn't thought about clearly. We asked, "Why is it important to build resident control of the housing investment decisions made by the local community development corporation?" and "How are we going to build resident control of the housing decisions that are made by the local community development corporation?"

Probing these questions in a group setting revealed that members held a variety of different assumptions about these important how and why issues. It was an important turning point for their work when they began to develop a consensus on the assumptions that they agreed reflected the "group think" about resident control and empowerment.

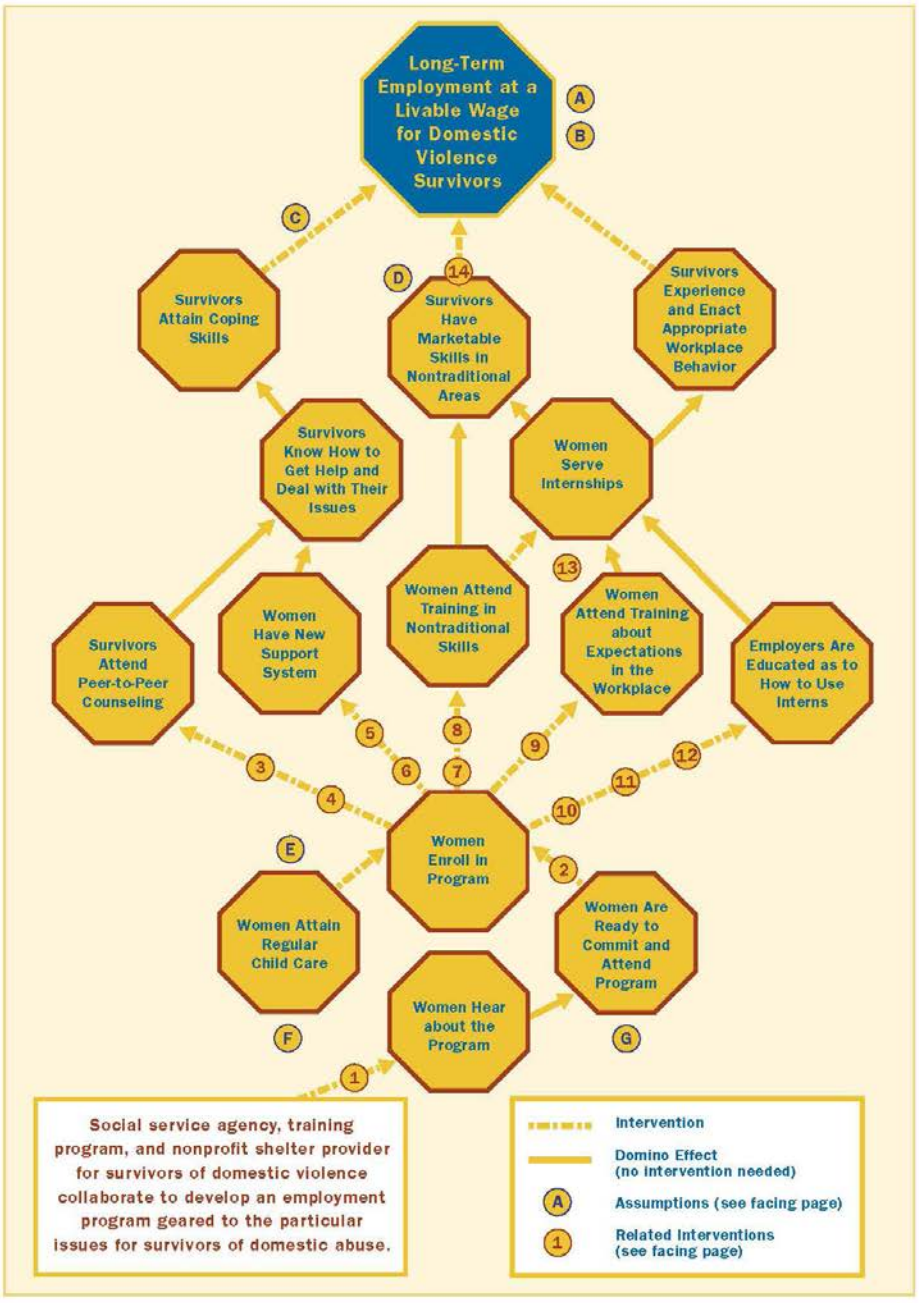
A REVIEW: THE CORE ELEMENTS OF A THEORY OF CHANGE

1. **A pathway of change that illustrates the relationship between a variety of outcomes that are each thought of as preconditions of the long-term goal.**
2. **Indicators that are defined to be specific enough to measure success.**
3. **Interventions that are used to bring about each of the preconditions on the pathway, and at each step of the pathway.**
4. **Assumptions that explain why the whole theory makes sense!**

B

Aspen Institute theory of change framework

PROJECT SUPERWOMAN: A THEORY OF CHANGE



Aspen Institute theory of change framework

Assumptions

- **A** There are jobs available in nontraditional fields for women.
- **B** Jobs in nontraditional areas of work for women, such as electrical, plumbing, carpentry, and building management, are more likely to pay livable wages and are more likely to be unionized and provide job security. Some for these jobs also provide a ladder for upward mobility, from apprenticeship to master, giving entry-level employees a career future.
- **C** Women who have been in abusive relationships need more than just skills; they need to be emotionally ready for work as well.
- **D** Women can learn nontraditional skills and compete in the marketplace.
- **E** The program cannot help all women, and so entry into the program must include screening so that women who have sufficient literacy and math skills to take the training and have lives stable enough to attend classes are admitted. The program does not have the resources to handle providing basic skills or major social services.
- **F** Women who have left abusive situations are often single mothers and therefore cannot work unless they have child care.
- **G** Women must be out of the abusive situation. The program assumes that women still in abusive situations will not be able to attend regularly, may pose a danger to others, and will not be emotionally ready to commit.

Interventions

1. Implement outreach campaign
2. Screen participants
3. Set up counseling sessions
4. Lead group sessions
5. Provide help for short-term crises, such as housing evictions or court appearances
6. Provide one-on-one counseling
7. Develop curricula in electrical, plumbing, carpentry, and building maintenance
8. Conduct classes
9. Develop curricula and experiential learning situations
10. Conduct classes
11. Identify potential employers
12. Create employer database
13. Match women to internships
14. Help women secure permanent jobs

Sample Indicator

OUTCOME:
Long-term employment at a livable wage for domestic violence survivors

INDICATOR:
Employment rate

TARGET POPULATION:
Program graduates

BASELINE:
47% of program attendees are unemployed
53% are earning minimum wage

THRESHOLD:
90% of the graduates remain in job at least six months and earn at least $12 per hour

Collective Impact Fellowship Events

a. First Event - May 31, 2017

Stakeholders from many sectors, representing over fifty organizations, joined the project steering committee on the afternoon of May 31st, 2017, at the RA Centre in Ottawa. Helping Ottawa thrive while meeting it's greenhouse gas reduction targets through improvements to the community's building stock was introduced as a theme.

Participants were informed about the nature of a Collective Impact process and the work done to date by the steering committee and core organizations. A State of the City report was prepared and presented by Ecology Ottawa, outlining the current local situation, the need for action, and some opportunities to move forward.

Participants discussing the Problem Statement at the May 31st event.

Several speakers expanded on these opportunities. Roger Marsh, Chief Energy Services Officer at Hydro Ottawa, outlined some recent conservation successes in partnership with the municipality, and the utility's ongoing interest in and commitment to sustainability initiatives. Marica Clarke, project lead on the City of Ottawa's Energy Evolution program, gave an update regarding that including opportunities for community input. Jennifer Jackson of EnviroCentre, a major local ENGO focussed on many aspects of sustainability including buildings, presented on the successes, challenges and opportunities associated with various home energy retrofit programs they administer. Peter Reinecke, small business owner and member of the local Canada Green Buildings Council chapter, highlighted some of the emerging trends and technologies in green buildings locally.

Facilitator Kara Stonehouse (Maison Tucker House) receiving initial feedback from a stakeholder at the end of the session.

A Problem Statement prepared by the steering committee was presented to participants, who engaged in various discussions and interactive elements to assess and provide feedback on it. This provided valuable insight into the perspectives of the broader community and was intended to help the steering committee refine and move forward with the statement. These exercises also helped to gauge the interest level, concerns and goals of the community, map stakeholders across sectors and identify gaps in representation, and connect with additional collaborators.

This event went very well and also provided the steering committee with useful feedback not just on the Problem Statement and the concept, but also on the process and how best to engage with a diverse cross section of stakeholders.

Collective Impact Fellowship Events

Summary of Feedback, May 31st

Problem Statement Resonance

Thermometer exercise

Resonates well
In general, buildings focus resonates with the group convened
Collaborative approach
Unprecedented ways, radically change
Major culture shift
Complexity needs all levels of government involved
A BIG PLAN is needed, not incremental change

Suggestions

The word 'city' to mean all of Ottawa, does not work well for rural people - try using Ottawa Community.
Add in scientific view and measurements
Acknowledge global problem
Focus more on the opportunity of reducing greenhouse gases, don't have it be threatening
Suggested also focus on Education and Culture change, children now will be dealing with consequences and taking actions with climate change.
Focus on small actors too - home/building-owners don't all agree climate change is a an urgent threat to the home's value, this is part of the problem.
Oversimplifies, scale and difficulty of change required not acknowledged
What about transportation?
Confirm data - 80% of building stock in 2050 is standing now
Confirm data - 30 year payback for existing buildings to be fully retrofit?

As we continue
Scale and scope needs further definition
Idea to focus on the Value of people's homes: low energy use = high value, each house can have an energy score.
Get tangible like Germany's code to make roofs stronger to hold solar panels and green roofs.

General Event Feedback

Interesting and important subject, but some confusion as to what is expected of participants, how engagement will work.
Some skepticism due to collapse/delay of similar initiatives in Ottawa in the past - a sense of waiting to see where this goes before committing more.
A lot of content for one afternoon. Pariticipants who were not familiar with Collective Impact found that portion confusing.
Low response rate to Wheel of Engagement form - participants expressed uncertainty about where their organizations would fit without knowing more details, but suggested additional stakeholders and expressed an onging interest in the project with more definite committments to come.

Collective Impact Fellowship Events

b. Second Event - October 4th, 2017

The second of the Collective Impact Fellowship gatherings, this session benefitted greatly from the feedback of attendees to the first session and the work done by core organizations and focus groups over the summer. Having revised the Problem Statement, created a clearer goal, and begun work mapping out the higher levels of a Theory of Change, the steering committee was able to engage a more focussed group of stakeholders, representing approximately forty organizations and filling in some of the representation gaps from the first event.

New faces included Dan Dicaire (Ottawa Community Housing - far left), Faris Rashid (Ottawa Hospital - yellow shirt), Marny Girard (Green Economy Network, cener), and SEO Intern Talal El Ayoubi (right).

The group, which was a good mix of new and returning faces, again learned the basics of the Collective Impact process and received an update on the programs and documents presented at the May meeting, but were also introduced to examples of novel funding concepts, successful building retrofit program examples from other areas, and the draft Theory of Change that had been developed based on core group consultations in the intervening months.

After some discussion with the general group, participants self-selected based on interest and expertise into smaller groups focussed on specific pre-conditions that had been presented. These groups worked to evaluate, refine and in some cases revise the preconditions, and also brainstormed possible indicators and requirements for those preconditions. At the end of the exercise, members of each group presented to the larger group what they had produced and the lines of thinking they were moving along, and the results were roughly synthesized. Additional comments and feedback were collected via written forms.

After reviewing the documents produced in the session and the written feedback, steering committee members worked further to expand the Theory of Change document in time for another core group session with some of the most interested community members.

At the end of the session on Oct 4th, members of each smaller discussion group presented their insights to the group at large under the facilitation of Kara Stonehose, Director of Maison Tucker House. The resulting posters were used as the basis for the next draft of a Theory of Change document, further revised with a core group and by the steering committee.

Collective Impact Fellowship Events

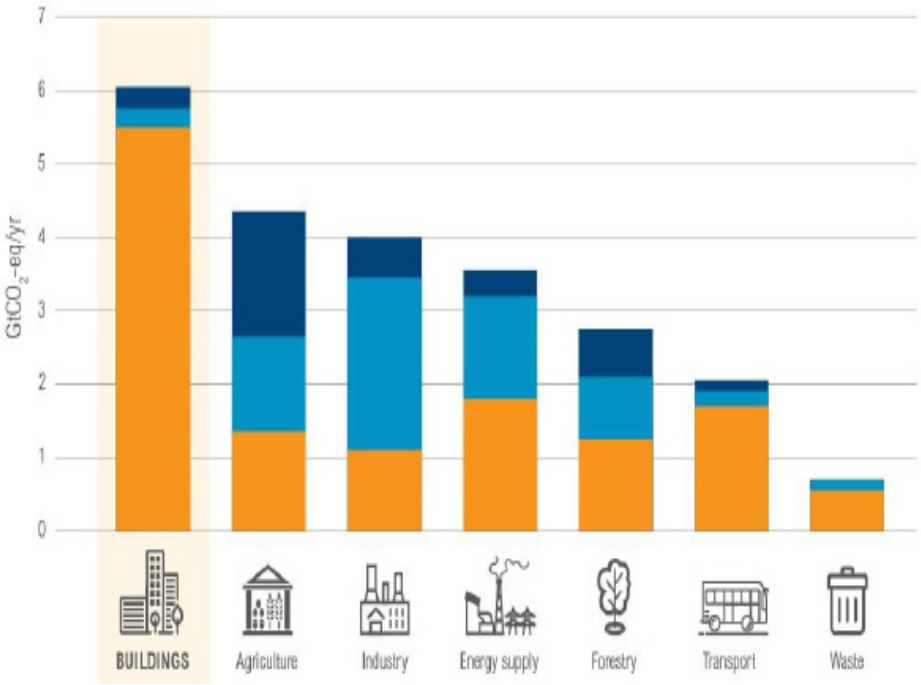
In addition to the two large Fellowship events and regular Steering Committee meetings, the project benefitted from a few smaller sessions to either bring new perspectives, focus on particular areas, or accelerate progress towards a Theory of Change.

Community Visioning Exercise - Sept 6

The Community Visioning Exercise was a facilitated 4D visualization exercise conducted with Knowing Fields Designs consultant Diana Claire Douglas and several community members not otherwise involved in the process. Bringing in community members who were unaware of the progress to date on the project to explore the spirit of Ottawa and of Gaia, the mood of the community, and some of the roadblocks and opportunities associated with creating a more sustainable Ottawa, was intend to help with the goal of obtaining more conceptual insight into the broader issue and best course of action. Stakeholder engagement and dialogue emerged as a necessary condition for success of the project.

Core Group Working Session - Sept 14

On Sept 14, 2017, Sustainable Eastern Ontario hosted a Core Group meeting at its Hintonburg office.



This graph from the World Resources Institute was referenced by the Ottawa CaGBC representatives frequently in discussion. It illustrates the relatively low cost for energy saving through building retrofits. (Organge represents low cost interventions - www.wri.org/buildingefficiency)

Building on the initial work done by the steering committee, and the insights from the September 6th visualization exercise, a refined goal was presented that was backed up by local data, and contextualized within the setting of the city and the UN "Sustainable Cities" Sustainable Development Goal (SDG #11).

There was strong support for a focus on improving existing buildings from key partners, particularly the local Canada Green Building Council Chapter, who argued eloquently that **"If we can't do it with buildings, we can't do it."** in reference to meeting GHG emission reduction targets.

Collective Impact Fellowship Events

Refining Session - November 10

Following the second fellowship meeting, the steering committee and a small group of interested collaborators met to refine the Theory of Change pre-conditions, and brainstorm possible interventions for each that would move the community closer to reaching them, as well as quantifiable indicators that could be used to measure and assess progress during the implementation phase.

This was preliminary - but extremely useful- work, further refined by steering committee members, and subject to additional refinement based on expert consultation as we move forward in specific areas.

The steering committee was joined on Nov 10 by a group of engaged stakeholders to refine the higher level Theory of Change work and brainstorm ideas for the lower levels. Pictured here (left to right): Tyler Blanchett (Ottawa Renewable Energy Coop), Kim Smet, (SEO), Angela Keller-Herzzog (Glebe Comm. Assoc., local business owner) and J.P. Rozon (City of Ottawa).

Steering Committee Meetings

A steering committee was established composed of representatives from the three joint applications to the original Collective Impact grant, as well as additional staff from these organizations, and additional partner organizations. Strong organizational communication ensured a contutinuity of participation from steering committee member groups despite staff turnover within groups.

In total, the steering committee consisted of representatives from Ecology Ottawa, Sustainable Eastern Ontario, Maison Tucker House, EnviroCentre, Nobel Women's Initiative, Canada Green Building Council (Ottawa Chapter), and the Sustainable Enterprise Alliance.
Additional assistance with specific tasks or subjects was received from Faith & the Common Good, Diana Clare Douglas, Ottawa Renewable Energy Coop, City of Ottawa municipal staff, and the Pembina Institute, and was sincerely appreciated

A total of 14 steering committee meetings were held during the duration of Phase 1. The dates of these sessions are listed below. Of course, there were numerous smaller meetings and email check-ins between these.

October 21, 2016
November 24, 2016
December 15, 2016

January 26, 2017
February 16, 2017
March 16, 2017
April 20, 2017

June 15, 2017
July 27, 2017
September 26, 2017
October 2, 2017
October 26, 2017
Novmber 10, 2017
November 23, 2017