

Sault Ste. Marie's Smart Energy Strategy

Prepared for the Sault Ste. Marie Innovation Centre

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Executive Summary

In recent years, Sault Ste. Marie (SSM, or the Sault) has enjoyed significant growth in renewable energy projects including wind and solar farms, as well as the development of cogeneration and a proposed waste to energy plant. With current and future alternative energy projects, the Sault and surrounding area is expected to produce about 670 megawatts (MW) of electricity, enough to power from 300,000 to 600,000 homes across the province. Currently, just over 200 MW of this generating capacity is made up of new wind and solar, with another 400 MW contributed by small hydroelectric facilities and waste to energy projects.

In 2008, the City recognized the renewable project developments it has made in this area and set a bold goal to be recognized as the “Alternative Energy Capital of North America”.

In keeping with this momentum, in 2011 the SSM Innovation Centre, as lead for the Destiny Energy Committee, commissioned a *Community Alternative Energy Strategy for SSM*. This strategy was prepared by Parker Venture Management and represents the culmination of four stakeholder consultation sessions convened in the community from June to December 2011 as well as concurrent regional interviews, discussions, additional research, and analysis of clean technology trends as per Cleantech Venture data.

Major findings are highlighted as follows and elaborated within this report. A heat map of community assets is also included herein.

Global Alternative Energy Trends

Global trends are pointing towards growing urbanization, resource consumption, and supporting energy requirements. Emerging markets, as in the BRIC countries (Brazil, Russia, India, and China), and the nascent N11 (Bangladesh, Egypt, Indonesia, Iran, Korea, Mexico, Nigeria, Pakistan, Philippines, Turkey and Vietnam), are expected to drive economic growth and raise the bar for innovation and reduced costs at all levels. Other expected trends will include greater demand for and pressure on water resources, and increased frequency of unpredictable climate-driven events.

Energy is the primary underpinning element to all these trends, meaning that regions worldwide are placing increased focus on solutions that result in energy autonomy, price stability, and reduced disruptions. This trend is supported by global cleantech investment data that illustrates a continuing interest in renewable energy investment and more recently, the potential inherent in energy efficiency, energy storage, and smart grids. Combined, energy efficiency, energy storage, and smart grid deals now make up one-third of the total amount invested in this area globally (30%), followed by renewable technology investments in solar and wind (23%).

One area of great promise is the concept of the regional smart grid, or microgrid, as this can help bridge the confluence between renewable or distributed generation assets, information technology, and electricity distribution, while increasing the reliability and stability of the distribution grid and manage emergency situations. Between now and 2015, it is expected that over 3.1GW of new microgrid capacity will come online worldwide, representing a total market value of \$7.8B.

Community and Regional Context

In July 2010, community stakeholders were canvassed as to thoughts on their ideal vision for Sault Ste. Marie by 2020. In general, participants were supportive of a renewed vision for the community that included elements of economic, environmental, and social prosperity. Stakeholders were also supportive of guiding principles common to Community Energy Strategies, including improving efficiency, optimizing exergy¹, managing heat, reducing waste, using renewable resources, and using grids strategically.

The bulk of the Sault's immediate neighbours (Hearst, Wawa, Blind River, etc.) also appear to be moving forward in further capitalizing their inherent alternative energy resources with varying degrees of success. There is a consistent recognition that local success will depend on regional cooperation and integration. Overall, the idea of further developing regional networks to present a "coherent whole" is enjoying traction, in that there would be regional benefit should the Sault develop critical mass in renewable energy expertise (or similarly, another kind of progressive energy focus).

Lastly, the *Growth Plan for Northern Ontario* also recognizes that in the North there are several communities that function as economic and service hubs, and that "these hubs should help to identify environmental sustainability objectives, as well as develop policies and programs for achievement in water conservation, energy conservation, air quality protection, and integrated waste management". The Sault has been identified as one such hub.

Community Strengths...

Community Momentum: The Sault is a rejuvenated northern community with increasing employment rates, an excellent recreational lifestyle and a renewed focus on community, environmental, and human health. The community and City have provided fertile ground for new ideas as well as an open and supportive attitude to project development and to development of this strategy. City Council has also set the goal to be recognized as the "Alternative Energy Capital of North America" – marking both the support and drive to further capitalize and leverage these strengths.

Horn of (Energy) Plenty: The region is unusual in that it is one of the few areas in North America that has created a generation system made up primarily of renewable energy assets, and further, one of the very few places in the province where it is feasible to operate off the grid in emergency situations as it has an independent transmission system. The Algoma region exports up to 150 MW of power south and in peak seasons the municipality of SSM consumes less than a quarter of the total power generated in the region.²

North has its Benefits: Companies recently active in SSM renewable energy project development are newcomers to the local landscape, and have taken advantage of funds available through the NOHFC, FedNOR and the Ontario FIT program to move forward. The former two funding pools are exclusive to activity in Northern Ontario. Local companies such as

¹ Avoid using high-quality energy in low-quality applications

² To be clear, the region (including the Sault) generates 670 MW of power, the municipality uses approximately less than a quarter of this power, and the bulk remainder is used by industrial sources and the surrounding area. The excess power (up to 150 MW) is exported south.

Tenaris and Essar also offer investment grants to towards community initiatives that have environmental or social development themes.

Utility Support: The SSM PUC has been progressive in its support for local alternative energy projects ranging from energy efficiency activity as well as renewable energy deployment, and in past work in Broadband over Powerline. This represents a major asset as the community seeks to broaden its development of the smart energy sector.

IT Capacity: The SSMIC has also been active in further developing the IT capacity in the region, with initiatives in health informatics, video gaming, and in particular, the Community Geomatics Centre. This latter initiative provides a sophisticated software solution for mapping and maintaining data for a wide variety of community assets and attributes.

Educational Assets: The community is home to two key post-secondary educational institutions, Sault College and Algoma University. Sault College in particular provides curriculum specific to emerging private sector directions in the community and hosts the Brookfield Power Renewable Energy Training Centre. The College now has one of 20 applied research centres in Ontario and has recently gained access to NSERC funding.

.... And considerations

Manufacturing? For Canada, continued manufacturing presence on a global level is becoming increasingly challenging – this situation has been exacerbated as manufacturing activity has traditionally been a prime source of technological progress and R&D domestically. Significant opportunities in traditional and large-scale renewable energy manufacturing opportunities, compared to giants such as China, Germany, and Israel, is questionable.

(This said, the opportunity to deploy novel energy solutions that that can withstand not only geopolitical disruptions but also mitigate against the frequency of climate driven natural disasters – *and* manage the increased exposure of energy-related risk and costs - is possibly becoming more relevant.)

What about Biomass? The state of the forest industry in the North is the worst it has been in decades, and the operation of the proposed St. Marys Paper Combined Heat and Power (CHP) mill is also unknown as the mill went into receivership in late 2011. This hampers clear direction on using allocated biomass resources and progress in this area. Although the question of what to do with regional biomass resources has been ongoing throughout the project process, and varied in terms of the degree of support for this direction, the major market demand for resources such as pellets are set on macro-levels beyond the influence of any one community (i.e. European pellet policy, BC mountain pine beetle infestation, OPG Nanticoke and Atikokan pellet demand, etc.).

We know, but do others? Despite significant positive changes that have occurred over the last twenty years, the Sault still has a “steel town image” to external stakeholders. This image will take time, effort, and support to change. Although Council has set the bold goal to be recognized as the “Alternative Energy Capital of North America”, simply having a number of renewable energy assets in the region is not enough to catapult the community onto the world stage for recognized innovation in energy solutions – something more is needed that will set the

community apart from the many other areas that have also focused on alternative energy development.

What about financing and community involvement? The Sault does not have its own investment vehicle that can aggregate local sources of capital and wealth to take positions in emerging regional business opportunities related to smart and alternative energy. Like many other northern communities, SSM offers somewhat limited access to venture, angel, and institutional investment mechanisms to acquire equity, debt financing and operating capital for entrepreneurs – this is critical.

An aging grid... PUC Distribution remains an essential service provider of electricity, and one that is facing multiple challenges given its aging grid infrastructure as well as the need to accommodate increasing distributed generation units. A sizable part of the company's electrical infrastructure is currently beyond its expected life, leading to an estimated annual capital requirement of \$10M (as opposed to \$8.1M in 2010).

.... and constrained transmission. Regional transmission lines have recently approached capacity and the construction of new transmission lines will take significant investment and time to materialize. This impedes the creation of substantive new generation assets (as has been indicated by at least one major renewable energy developer in the region) which brings into question whether the Sault's sole focus should be on more renewable electricity generation development - as opposed to innovation with what is already in place.

Recommended Smart Energy Strategic Priorities for SSM

SSM has been open to renewable energy development and taken advantage of opportunities made available through the original Renewable Energy Standard Offer (RESOP) and later Feed In Tariff (FIT) programs offered by the Ontario government, which has led to some larger projects in the area. This said, siting future projects is blocked by transmission capacity constraints, projects to date have not been designed so as to offer long-term community benefit, nor leveraged to maximize value-added opportunities and augment existing community resources (i.e. education, skilled workforce, community support, existing IT capacity, etc.).

We believe opportunities exist to further link and connect synergies between renewable projects and area attributes that would create a value proposition unique to Sault Ste. Marie; and allow the community to move forward aggressively to capitalize on its momentum without waiting for the long-term planning horizon of expanding provincial transmission capacity. Further, significant opportunities exist to engage the community, tap into local resources and assets, and stimulate local investment.

With this in mind, we propose SSM focus on the following four strategic priority areas and associated activities:

1. Accelerated Activity in Conservation, Energy Efficiency, and Heat Recovery
2. Alternative Energy and Development of an Intelligent Regional Grid (Smart Microgrid)
3. Creation of a Community Investico
4. Community Branding and Outreach

Each of these is further elucidated below – please note that recommendations are *not* listed by order of priority.

Strategic Priority #1:

Accelerated Activity in Conservation, Energy Efficiency, and Heat Recovery

Global cleantech trends indicate that investment into energy efficiency, energy storage, and smart grids are outpacing renewable energy investment. This demonstrates the growing role conservation and efficiency applications are playing worldwide. For the Sault, we suggest that a continued focus on conservation, efficiency and heat recovery will have multiple benefits, including:

- Enabling greater grid stability in peak times and assisting the PUC to meet provincial mandates in energy conservation;
- Increasing capacity, expertise, and employment in local community energy efficiency projects; and,
- In the future, allow for expanded potential for new generation and/or the sale of existing renewable generation (as the community will have taken steps to minimize its total draw on electricity resources). This is important given longer-term plans to develop transmission infrastructure resources in Ontario and the growing power needs of the province and neighbouring markets.

Recommendation #1: Develop An Energy Use, Efficiency and Heat Recovery Strategy

We recommend that consideration be given to forecasting the energy demand in SSM and mapping energy efficiency activities and opportunities so as to examine the feasibility of applying comprehensive strategies similar to Guelphs' *Community Energy Plan* to the Sault.

Secondly, the Sault has untapped potential in the areas of cogeneration, district heating, and in use of thermal energy overall. Excess thermal energy is being generated which is dissipated at the moment, as opposed to the considerable energy savings that can accrue from capturing this 'waste heat'. Essar's 70 MW cogeneration plant is a prime example of this opportunity, having reduced the plant's reliance on "external" electricity by 50%.

Stakeholders (including the PUC Services, Essar, the City, and others) have also indicated interest in furthering district-heating opportunities that are based on the cogeneration potential in the downtown core, in addition to biomass and other possible inputs. We feel that tangible activity in this area – i.e. exploring current initiatives as well as the development of new projects - should be accelerated. Among other benefits, such projects will lead to increased construction, manufacturing, and project management activity in the short and long term.

Recommendation #2: Evaluation of SSM Cogeneration and District Heating Project

We suggest a principal cornerstone of the proposed *Energy Efficiency and Heat Recovery Strategy* examine in detail the acceleration of cogeneration projects and district-heating potential for the businesses located in the industrial and government office cluster along the St. Marys River, among other similar options and projects.

Although biomass has been a large driver for the Sault's economy for decades, the current reality is that when it comes to energy, SSM has a wide mix of potential options available. The question is what is the best way to employ these options and in what configuration – an ongoing and consistent theme throughout the local consultation process. Although a study of the use of biomass was beyond the scope of the *Community Alternative Energy Strategy* project, opportunities may exist in the near-medium term given innovations under development in the bio-economy sector.³ This sector is in transition and the community would be advised to continue to monitor and position itself to take advantage of new industries/markets in this space.

Opportunities for agriculture and for further developing local farming cooperatives and capacity is also of great interest, as is the optimal use of organic waste resources.

Strategic Priority #2:

Alternative Energy and the Development of an Intelligent Regional Grid (Smart Microgrid)

For renewable generation technology and for the siting of projects, the future looks promising. Although transmission capacity is a current constraint to sizeable new generation projects in the SSM, the fact remains that the region has a significant amount of renewable energy resources on hand and is rich in additional wind, solar, and biomass resources. These assets may well become instantly appealing to energy project developers depending on the prevailing winds of provincial policy, market directions, international trends, and other factors yet to unfold. At this point it seems prudent to initiate work on showcasing these assets in a manner that maximizes regional interests, benefits, and environmental considerations, given that over the longer term transmission will eventually expand.

The benefits of doing so will enable not only international prospecting and project/economic development as transmission lines develop over the Algoma region, but also encourage and expedite local prospecting and project/economic development.

Recommendation #3: Enable Prospect Mapping of Northern Ontario's Renewable Energy Assets

Showcasing regional capability in solar, water, wind, and biomass would enable international prospecting for projects and other opportunities, similar to the types of forestry inventories already available through the Ministry of Natural Resources, and readying the region for action given favourable economic, policy, and market conditions for development. Further, this could also encourage the development of locally-owned energy projects throughout the region. This will ready the community to act quickly and in an informed manner once transmission capacity expands.

³ For example, a recent study by the Forest Product Association of Canada (FPAC – BioPathways Project) and work by organizations like FP Innovations and the Centre for Research and Innovation in the Bio-Economy (CRIBE) are looking towards future novel uses of the forest bio-products.

Globally, investment in energy efficiency, storage technologies, and smart grids is nearly a third of total cleantech investment. Interest will only continue to grow given the pressure that global trends – population growth, urbanization, resource consumption, water stress, and climate stress – will have on energy use and potential exposure to energy risk (financial or otherwise) at all levels, from nation-states to local governments, from multinationals to small to medium-sized enterprises - and even for the average citizen.

As mentioned, one very promising area that offers a comprehensive solution to energy risk exposure is the concept of a smart regional grid, or microgrid, which enables better local control over energy assets and strengthens and stabilizes regional grids. Microgrids also stimulate “hyper-innovation” as they allow for convergence between several rapidly changing sectors: IT, energy distribution networks, telecommunications, and distributed generation assets.

*A **microgrid** is a modern, small-scale version of the centralized electricity system. Basically a microgrid “groups” local electricity generation, energy storage, and loads that would otherwise normally connect to the centralized grid (the macrogrid). What is unusual is that this single point of common coupling with the macrogrid can be technically disconnected, meaning that the microgrid can then function autonomously.*

As the SSM region is technically capable of decoupling from Ontario’s macrogrid (as in emergency situations), the community already has the means to explore sophisticated management of electricity generation assets from integrating distributed generation to embedding virtual power plants and “negawatts” into the utility system.⁴ Done at scale, this would make the Sault one of the first jurisdictions in North America, outside of the US military and a few isolated projects under development, to implement a cutting edge project on a community-wide level that has global resonance.

Benefits include but are not limited to the opportunity to capitalize on global trends in IT and smart grid applications, create immediate and long-term project management, electrical and mechanical engineering, construction, manufacturing, and maintenance jobs, and create a unique value proposition for regional renewable, IT, and utility assets that will attract global attention. A smart grid will also improve reliability and reduce outages for the local distribution system.

Recommendation #4: A Smart Microgrid for the Sault

The SSM region is already a leader in clean, intermittent power. It also has a world-class GIS information system. It can build off Ontario’s smart meter and smart grid initiatives and has its own transmission and distribution capacity. These strengths position the Sault to develop one or more microgrids, enabling the region to be both self-sufficient and resilient while enhancing community wealth (i.e. as in IP, patent developments, technology innovation, etc.).

⁴ A **virtual power plant** is a cluster of distributed generation installations which are collectively run by a central control entity. **Negawatt power** is a theoretical unit of power representing an amount of energy saved. The energy saved is a direct result of energy conservation or increased efficiency. The concept of negawatt power is being implemented in several states in the United States and is emerging as an international strategy to reduce energy consumption. (Wikipedia).

In order to create and sustain momentum and yet move these critical areas forward, we suggest that SSM consider creating a **microgrid pilot project** by beginning with an initial energy storage and smart grid demonstration pilot with research and industrial partners. This will be an important starting point to gain traction with the community and necessary stakeholders while concomitantly exploring the development of a larger regional project and the required partnerships, support, and technological capacity required.

Strategic Priority #3: Creation of a Community Investico

At present, there is little community or local ownership of alternative energy generating and transmission assets in SSM. What really matters is ensuring as much of the operating costs of each asset are spent in the Sault and ensuring the free cash flows generated remain in the region for future investment. Our consultations suggest there is enough local capital in the Algoma region to create a majority, locally-owned investment company.

The benefit of doing so would: (1) create a vehicle for local influence on and engagement with energy and renewable projects; (2) ensure cash flows and investments remain in the region and benefit the community; and (3) augment the financing and capital pool available to entrepreneurs.

Recommendation #5: Creation of a Community Investment Company

We believe an investment company with up to \$50M in capital would make a significant contribution to the Sault's smart energy goals and create a substantial vehicle for community involvement. The investment company could be an "evergreen" vehicle with proceeds from successful exits being redeployed into new projects. Investors would also benefit from periodic dividend payments.

Capital could be sourced from retail investors and local entrepreneurs, former residents with a connection to SSM, as well as financial institutions, be they public or private, as long as voting control is in regional hands.

A number of projects were discussed and identified in the course of writing this study that would have potential for a local investment company (including Community Power Projects).

Strategic Priority #4: Community Branding and Outreach

Recreating the identity of SSM, for example through creating a reputation of prowess in clean energy deployment, or as an exemplary model of an economically and environmentally resilient northern community, will require internal as well as external communication and buy-in. There is consistent recognition that local success will also depend on regional cooperation and integration, and that differentiation and outreach is critical for external success.

In terms of internal engagement, the interest demonstrated by long-standing and relative newcomers to the Sault in the health, viability, and future of the region is unusual, as also evidenced by the degree of stakeholder interest and local involvement throughout the project process. This degree of energy, enthusiasm, and emotional investment in community outcomes provides an unprecedented starting point for a community energy strategy and much more can be accomplished if this momentum is maintained and augmented.

Done well, a marketing strategy focused on community engagement and buy-in would have several benefits, including capitalizing on the enthusiasm and capacity illustrated to date, potentially building new skill sets in social media and IT, and allowing for increased engagement with companies seeking “green and clean power” for their operations.

Recommendation #6: Community Smart Energy Marketing Strategy.

Strengthening community enrollment and investment in SSM’s *Clean Energy Strategy* is critical – we recommend that a concurrent and dedicated public relations and media campaign be launched to articulate the objectives, goals, and benefits of the strategy to the community. This campaign should employ social media and innovative messaging to dynamically engage the community and create excitement and momentum around the Sault’s proposed future energy directions.

While the subject of cities and sustainability is currently trending with major conferences being held almost weekly around the world, focus is almost exclusively on mega urban areas. Scant attention is paid by organizations such as the C40 or the Clinton Global Initiative to smaller and more remote cities. Second or third tier cities have their own challenges relating to scale, migration, economic competitiveness, service delivery, tax base and so on that are often different from those of large conurbations.

We believe a significant opportunity exists with in developing an agenda exclusive to smaller cities. As noted throughout this report, SSM has reasons to be proud of the assets it has assembled to date with respect to alternative energy and its aspiration to be a North American leader. This positioning should be wrapped within a broader brand of urban renewal and next generation management.

To be clear, the Sault has a story to tell with the way it has brought in or revitalized industries and developed smart systems, such as the GIS, to manage the region sustainably. In short, SSM should position itself as the leading pioneer of urban sustainability for second tier cities. We recommend that SSM become the world center for research and ideas relating to smaller cities, particularly in northern climates, and their sustainability challenges and opportunities.

This could be energized by the two following initiatives, which would help position and brand SSM as a knowledge-intensive hub for practical solutions to the sustainability challenges faced by smaller cities. This would help attract economic development and investment, directly and indirectly, and reinvigorate notions about where economic vibrancy can be found.

Recommendation #7: Creation of a Biennial Smaller Cities Sustainability Symposium

We feel there is great opportunity for the creation of a Symposium that generates awareness, inspiration, and momentum around solutions and advancements applicable to smaller and remote urban centres. Sault Ste. Marie could lead this initiative and in so doing put itself on the world map as far as “the gatherer” for innovations and solutions in this area.

Recommendation # 8: Development of a Smaller Smart Cities Sustainability Thinktank

An academically-focused Smaller Smart Cities Sustainability Thinktank specifically geared to deploying energy, distributed generation, and microgrid solutions particular to remote locations would sustain interest and generate added R&D momentum in the Sault region, build important research partnerships and augment existing academic capacity, and focus international attention on the exploration of the smart microgrid.

Organizations are already in place that can implement the recommended activities although additional resources (human, financial) will be required to complete the tasks. We estimate the startup costs for the recommendations to range from \$1.1M - \$1.4M – funds range from initial one to two years of activity and over several years in select cases. Note that this does not include capital costs for larger projects in district-heating or microgrid roll-out which could exceed \$40M.

If executed correctly, we conservatively estimate the *Smart Energy Strategy* could create from ~300 to over 600 jobs for the City of Sault Ste. Marie and region.

Note Bene: Outside of this strategy, it will be important for SSM to consider a concerted effort to initiate and maintain a presence with provincial energy policymakers, in terms of informing the Province of innovative activities underway, remaining abreast and involved on transmission line discussions and developments, and allow for increased activity in other areas such as preferential power rates for the Northern region.

Towards A Community Action Plan: The following table identifies important actions suggested to further develop the priorities and activities recommended in this Clean Energy Strategy, including treatment of core infrastructure required, required capacity and capability, and communications activity. Supporting detail and added information on costs and specific outcomes is provided in **Section 8.0** of this report.

Recommendation	Timeline & Length	Lead and Partners	Proposed Activities	Outcomes and Long Term Benefits
<p>#1. Energy Use, Efficiency and Heat Recovery Scoping Study</p>	<p>Immediate. Approx. 1 year study</p>	<p>City of SSM, with PUC Distribution, PUC Services, CGC</p>	<ul style="list-style-type: none"> ❖ Gain funding for project (OPA’s Conservation Fund or FCM’s Green Municipal Funds) ❖ Map energy use and projected energy demand in region ❖ Apply Guelph CEP principles to identify and assess efficiency opportunities ❖ Engage Sault College capacity in the study 	<ul style="list-style-type: none"> ❖ Comprehensive community energy use assessment and long-term energy planning capacity ❖ Assist PUC Distribution meet provincial mandates in energy conservation ❖ Increased energy efficiency activity and projects ❖ Increased opportunity for Sault graduates and workforce in energy efficient retrofitting and new construction
<p>#2. SSM Cogeneration and District Heating Project Potential</p> <p>Subset to #1 above, in that funding for the study portion will be rolled into the submission above</p>	<p>Immediate. Approx. 1 year study</p>	<p>PUC Services, with Essar Steel Algoma, Sault College, Tenaris, the City of Sault Ste. Marie, Lake Superior Power, CGC</p>	<ul style="list-style-type: none"> ❖ Survey the community and buildings to assess heating space and required heating pipe network (scope and fuel type) ❖ Research and identify management structure (i.e. utility, coop) ❖ Research leading edge district heating systems, involve experts ❖ Solicit <u>project</u> funding support, i.e. FCM’s Green Municipal Funds, NOHFC, CMHC’s Municipal Infrastructure Lending Program, Infrastructure Ontario’s Loan Program, public/private partnerships (P3s). 	<ul style="list-style-type: none"> ❖ District Heating Project(s) for downtown core ❖ Increased construction, manufacturing, and project management activity in the short and longer term ❖ Optimal use of waste heat and reduced energy costs in the long term ❖ Application of local product (i.e. Tenaris) ❖ Energy resilience for community – ability to switch between least cost and most available fuel sources ❖ Ability to utilize biomass resources and leverage cogeneration opportunities

Recommendation	Timeline & Length	Lead and Partners	Proposed Activities	Outcomes and Long Term Benefits
#3. Prospect Mapping of Northern Ontario’s Renewable Energy Assets	2 to 3 years	SSM co-lead with regional partners, CGC, City of SSM, SSMIC, SSMEDC, Tier 1 and 2 GIS communities.	<ul style="list-style-type: none"> ❖ Secure large scale funding through FedNor and assemble project team ❖ Build upon model of Tier 1 and 2 GIS communities previously conceived <i>via</i> the RIUN network model ❖ Leverage and replicate data management sophistication of CGC ❖ Involve First Nations and remote communities – ensure first priority access to opportunities 	<ul style="list-style-type: none"> ❖ Showcase regional resources in solar, water, wind, biomass ❖ Enable and expedite local prospecting and project/economic development over the Algoma region ❖ Enable international prospecting and project/economic development as transmission lines develop over the Algoma region
#4. An Energy Storage and Smart Grid Demonstration Pilot	2 - 3 years	PUC, Sault College, with SSMIC, SSMEDC and private sector partners	<ul style="list-style-type: none"> ❖ Secure pilot/demonstration funding through SDTC, OCE, and/or NOHFC, others ❖ Identify and gather companies in Ontario that would have interest in adapting and deploying their solutions in this area ❖ Develop key partnerships and explore synergies with the GE Innovation Centre, others ❖ Research and develop project plan and roll-out ❖ Initiate larger-scale planning for an SSM microgrid and build on capacity and partnerships acquired in the pilot to date 	<ul style="list-style-type: none"> ❖ Leverage to develop a Smart Regional Grid, or Microgrid for the Sault ❖ Capitalize on global trends in IT and smart grid applications ❖ Gain international recognition and interest in SSM’s smart energy activities ❖ Create <u>unique</u> value proposition for regional renewable, IT, and utility assets ❖ Create immediate and long-term project management, engineering, construction, manufacturing, and maintenance jobs ❖ Create exciting and cutting edge opportunities in IT and energy management

Recommendation	Timeline & Length	Lead and Partners	Proposed Activities	Outcomes and Long Term Benefits
#5. Create a Community Investment Company	Immediate. 1 – 2 years	SSMIC, Investico Board of Directors, SSMEDC	<ul style="list-style-type: none"> ❖ Investigate gaining project development funds from NOHFC, ICCI ❖ Establish share capital investment company majority owned by Sault representatives ❖ Recruit board of directors ❖ Assess investment prospect pipeline ❖ Develop programs specific to small retail investors ❖ Source capital from retail investors, local entrepreneurs, financial institutions 	<ul style="list-style-type: none"> ❖ Aggregate and leverage local capital ❖ Creating a vehicle for local influence on and engagement with energy and renewable projects ❖ Ensure cash flows and investments remain in the region and benefit the community ❖ Augment the financing and capital pool available to entrepreneurs
#6. Community Smart Energy Marketing Strategy	Immediate. 1 year	SSMIC, Algoma Games for Health, Algoma University, Sault College, SSMEDC	<ul style="list-style-type: none"> ❖ Develop dedicated public relations and social media campaign to articulate the objectives, goals, and benefits of the clean energy strategy to the community ❖ Consider development of Apps, games, or interactive user tools to communicate messaging ❖ Tap students into the SIFE competition (i.e. media/ marketing submissions relating to the Clean Energy Strategy) ❖ Consider providing a cash award for the best app or social media strategy developed. Funding may be available through the Essar and/or Tenaris Community Grants Funds. ❖ Further connect synergies between renewable projects and area attributes to create unique value proposition - and market this aspect to industries seeking 'green' power in their operations 	<ul style="list-style-type: none"> ❖ Capitalize on and augment community enthusiasm for the Sault's clean energy directions ❖ Employ social media and innovative messaging to dynamically engage the community in new ways ❖ Build skill sets of youth active in areas of IT and gaming to have real-world applications and influence ❖ Showcase and celebrate innovative applications and approaches through national and international competition and through Recommendation #7 (below) ❖ Increased engagement with companies seeking "green power" for operations

Recommendation	Timeline & Length	Lead and Partners	Proposed Activities	Outcomes and Long Term Benefits
#7. Host Biennial Smaller Cities Sustainability Symposium	Immediate, ongoing.	SSMEDC with SSMIC and City of SSM.	<ul style="list-style-type: none"> ❖ Bringing together international leading thinkers, urban practitioners, investors, technology providers and government officials in invitation-only event ❖ Build dynamic agenda that catalyzes discussion and ideas relating to smaller city resilience ❖ Explore Tedx model; partnerships with C40 ❖ Include other neighbouring communities ❖ Secure sponsorship from FedNor, NOHFC, possible Essar and Tenaris funds. 	<ul style="list-style-type: none"> ❖ Help position SSM as the world center for research and ideas relating to smaller cities ❖ Help stimulate economic development and investment, directly and indirectly ❖ Acquire maximum exposure and support for the community energy strategy
#8. Smaller Smart Cities Sustainability Thinktank	Immediate, ongoing.	SSMIC, SSMEDC	<ul style="list-style-type: none"> ❖ Create academically-focused Thinktank specifically geared to deploying energy, distributed generation, and microgrid solutions ❖ Partner with MaRS institute, the Ontario Centres for Excellence, the Perimeter Institute, and others ❖ Explore sistering with new Centre for Green Cities at the Evergreen BrickWorks in Toronto as a satellite campus ❖ Gain funding via federal and provincial resources, and possibly Cisco and IBM who have a major interest in urban sustainability systems 	<ul style="list-style-type: none"> ❖ Sustain interest and generate added R&D momentum in the Sault region ❖ Build important research partnerships that will help grow the R&D attraction and capacity of the region, increasing enrollment as well as capacity for the Sault’s academic institutions ❖ Focus international attention on the collective exploration of the Sault’s smart microgrid

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