

**Appendix G - Best Practice Research Completed for the Energy & Sustainability Conference**

Presenter	Topic	Summary	Opportunities
Renewi	Rethinking Waste - Fully Integrated Organic Waste Management	The City of Surrey uses biogas as a viable energy source for municipal vehicles. Their 70% diversion rate saves considerable landfill space but also means they have a sizeable amount of biogas to use. Designed to process 115,000 tonnes of organic waste a year, the Surrey Biofuel Facility will be the largest of its kind in North America and will help Metro Vancouver achieve its regional waste diversion objectives under the Integrated Solid Waste and Resource Management Plan. Each year the facility will process organic waste from more than 150,000 Surrey households, local Industrial, Commercial and Institutional operations, and other municipalities in the region. The RNG produced is used to power the City's waste collection trucks, operations vehicle fleet and to feed the City's District Energy System. In addition, the City is able to produce high quality 'closed loop' compost and sell the product to customers including farmers, landscapers and homeowners.	This example suggests that biogas is a viable energy source for municipal vehicles. Organic materials diversion saves considerable landfill space while also producing a viable product in biogas and compost.
Federated Cooperatives Limited	Ensuring Sustainability of Water Resources	Federated Cooperatives Limited Wastewater Improvement Project enables the organization to efficiently and sustainably recover all of the two million gallons of water used at the Regina refinery.	There could be other opportunities for sustainable water recovery by industrial customers. The City could explore incentives and other mechanisms to encourage industrial customers to recycle and/or conserve water as a means to contribute to sustainable resource use.
University of Calgary	Net Zero Building Transformation	The University of Calgary MacKimmie development is one of Canada Green Building Council's pilot projects for a new zero carbon building standard. The MacKimmie project is the beginning of a wider net-zero movement on the U of C campus, and a larger goal to reach carbon neutrality by 2050. The pursuit of the Zero Carbon Building Standard is a tangible demonstration of the University of Calgary's commitment to be a leader in sustainability among Canadian post-secondary institutions. It directly supports the goals of the University's Institutional Sustainability Strategy, and aligns with its Energy Innovations research strategy and forms part of its Climate Action Plan. The project provides important opportunities to use the University of Calgary campus as a learning-laboratory for sustainability research and teaching.	This project can serve as an insight to how building code's can be a mechanism for reducing carbon emissions (lowering GHG emissions), conserving energy usage, and ultimately serving as a tool for achieving renewability by 2050 while following the 1.5C warming pathway.
Municipal Natural Assets Initiative	Low Tech Dumb Cities	A growing body of experience in municipal natural asset management suggest that healthy and well-managed natural assets can provide some of the same services as engineered assets but with lower capital and operating costs, greater resilience to a changing climate and many other benefits.	The City will review the applicability of natural assets as it develops the Renewable Regina Framework.
Federation of Canadian Municipalities	Sustainable Neighborhood Development: Practical Solutions to Common Challenges	The Federation of Canadian Municipalities (FCM) is positioned to support municipalities as they develop sustainable neighbourhoods focused on creating lasting environmental, social and economic value.	FCM has support services, best practices and funding programs that the City will explore during the development and implementation of the Renewable Regina Framework.
GreenWave Innovations	Energy Conservation Through Real-Time Energy Monitoring	Greenwave is a local company that partners with businesses and organizations to implement ROI based energy conservation strategies. They offer real-time energy monitoring of water, electricity, and natural gas consumption. They equip their partners with accurate consumption metrics that allow for informed decision making to reduce utility bills and carbon emissions within buildings.	The City of Regina could explore a pilot project at a City building to determine the ROI and if the solution should be expanded to more facilities. It is best practice to reduce energy consumption prior to switching to renewable energy options. This would be one way of achieving reductions as Regina progresses through its Renewable journey.
Deep Earth Energy	Geothermal Energy for Baseload Electricity	Deep Earth Energy is currently working on a project to develop a 5MW facility near Estevan that would supply energy to SaskPower's grid. Geothermal energy is one of the few renewable options that is also a baseload power supply.	The City could explore geothermal energy projects in conjunction with the current SaskPower partner programs. Currently, the City could only produce 1MW but it could be possible to explore geothermal as an alternative heatsource.
SaskPower	Planning a Sustainable Power Future	SaskPower has a plan and roadmap to move towards a sustainable energy future. SaskPower is on track to meet it's goal of reducing emissions by 40% from 2005 levels by 2030. Beyond 2030, the company expects that even deeper cuts to emissions will be required - as much as 80% or even 100% by 2050. To meet these goals, they're evaluating the full range of cleaner energy options. These options include: carbon capture and storage, importing more hydroelectricity from Manitoba, nuclear power from small modular reactors, biomass, geothermal and wind and solar with battery storage. They are also looking at ways to create a more efficient and modernized grid designed with customer expectations in mind.	Regina's ability to become renewable by 2050 is heavily deperent on SaskPower's energy mix. SaskPower's roadmap will be an input into the Framework's scenario planning and financial modeling. If SaskPower focuses on a quicker transition it allows the City and residents to focus on energy and GHG reductions.

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Natural Resources Canada	SMRs as a way of decarbonizing the energy industry	Natural Resources Canada has a development roadmap for small modular nuclear reactors (SMRs). These reactors can use existing nuclear waste as fuel and unlike traditional reactors, cannot melt down. The reactors can be built in modular form for specific applications, can be stacked together to scale, and also unlike traditional reactors have a reduced cost due to their modular nature. Like traditional nuclear power, they produce a high energy value solution based on the material inputs. There are currently multiple partnerships as well as significant financial investment and technology development exploring the use of SMRs. SaskPower has formed a partnership to review SMR use with provinces of Ontario and New Brunswick.	SMRs are not currently a viable energy source. However, if the technology becomes available, it could provide a viable energy source that SaskPower could use for baseload power production. Although it would not be considered renewable, it would be a significant reduction in greenhouse gas emissions. As a non-renewable energy source it still has potential in helping to decarbonize in order to stay within the 1.5C warming pathway.
Nrstor and Helix GeoConsultants	Compressed Air Energy Storage	Compressed Air Energy Storage (CAES) technology has the capacity to convert a significant portion of Saskatchewan's intermittent, renewable power generating sources like wind and solar to grid-scale power. This would help facilitate the large-scale development of sustainable, low-carbon renewable power resources. Saskatchewan's unique geology means that bedded salts in the deep subsurface supports the development of 'salt caverns' that can be used for storing compressed air.	Saskatchewan has lots of suitable underground salt caverns that already store natural gas. However, at this time it does not seem like SaskPower is pursuing CAES technology. This could be due to low uptake and the existence of only one facility in Canada.
Wascana Solar Co-op	Establishing community solar co-operatives	The Wascana Solar Co-op is experienced at building and supporting a sustainable, community-based solar cooperative. They have an established model for solar use in the community, both at the commercial and consumer levels.	The Wascana Solar Co-op is positioned to provide insights based on their proven history of growing their solar energy footprint. There is likely an opportunity to work together, particularly in promoting solar adoption in the community.
Brett Dolter	Renewable Regina: Residents' Perspectives	Brett Dolter, a University of Regina professor, was working to identify the Regina community's feelings towards becoming a renewable city by 2050. Mr. Dolter was also investigating how much community members were willing to pay and where they wanted investments made.	Brett Dolter's research provides a third-party insight into Regina resident's attitudes towards transitioning to renewable energy. The research looks at how support for transitioning is related to residents' willingness to pay. This will be particularly useful as the Administration works to develop a framework that finds creative ways for the City and residents to finance the renewable transition.
City of Innisfil	Rural Re-Imagined	Innisfil, Ontario, is a town of 30,000 with a plan to enable growth to 150,000. They aim to leverage rapid transit to connect residents to Toronto. The town envisions a community that maintains a small town rural lifestyle while still providing easy access to and urban environment. They are working to develop a complete community through their development plan, The Orbit: Innisfil. By containing and shaping development, they hope to prevent urban sprawl while also supporting sustainability and protecting the environment. Innisfil plan influences development to consider the natural environment and not rip and replace with pavement and concrete	The town has prioritized sustainability alongside growth. Innisfil's pursuits provide an opportunity to rethink what a subdivision looks like and to review how transportation options can impact development.
Town of Raymond	Becoming a Net Zero Community	The Town of Raymond is pursuing a journey to become Canada's first 'Net Zero' community. This means that they produce as much energy as they consume. They are relying heavily on solar energy to accomplish this goal and continue to add solar capacity as they expand energy generation to meet residents' needs.	The Town of Raymond is pursuing net-zero through a phased approach. They have focused on municipal operations first and are now working at becoming net-zero throughout the entire community. This could be a useful perspective as the City continues to plan the RRI development.
Cowesses First Nation	The Journey of Cowesses First Nation Renewable Energy	Cowesses First Nation has been developing a 1MW renewable energy generation facility utilizing wind turbines, solar panels and battery storage. They have a unique experience as a governing body that has navigated the rules around power generation in Saskatchewan.	Cowesses could provide insight as to how a similar system could be used for new community developments.
City of Calgary and City of Edmonton	Pursuing Zero Emissions Transit	The City of Edmonton and City of Calgary are currently pursuing contrasting paths towards a more sustainable transit system. The City of Calgary's transit fleet operates on Compressed Natural Gas (CNG) while the City of Edmonton is piloting electric busses.	Both Cities can provide useful information and experiences regarding sustainable/renewable transit. The City of Regina will continue to monitor Edmonton's electric bus pilot program.
City of Calgary	Building Sustainability into Transportation	The City of Calgary has developed a strong program and practices for integrating environmental sustainability considerations into their investment and operational decision-making for Transportation. Third party auditors validate the environmental management system to ensure it delivers measurable results and positive impact in planning, design, construction, operation, maintenance and public use of Calgary's multi-modal transportation system.	Calgary's experience can add insight when thinking about what City operations go together or how development and transportation planning are linked. This can help find opportunities for pooled resource use. Calgary chose a decentralized approach to environmental issues with folks sprinkled in amongst the business areas to avoid silos. Thinking about where the roles of sustainability should reside organizationally will be an important aspect of implementing the Renewable Regina Framework.
Durham York Energy Center	Creating Energy from Waste	The Durham York Energy Centre waste management facility is a regional waste management solution. It supports 7 local governments that chose to consolidate their waste management services into a single facility.	Regina could pursue more regional solutions for service delivery.