Community Energy Planning Workshop in Saint John NB

November 24, 2015

QUEST NB

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CITY OF
SAINT JOHN

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- Overview of MEEP
- Green Thermal Utility or Community Energy System (CES)

Mission Statement

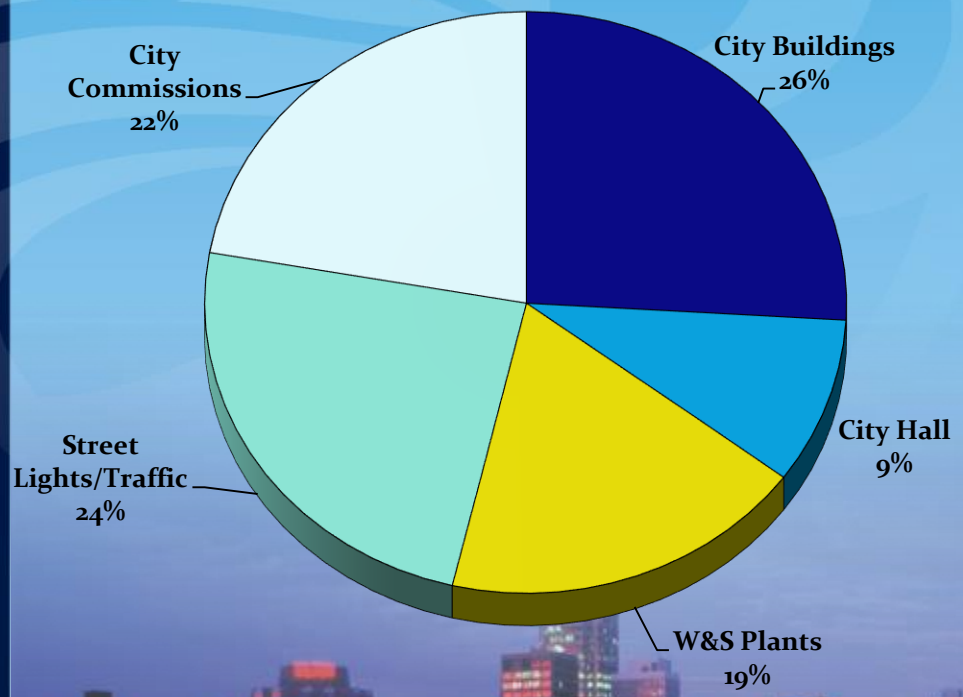
(MEEP)

We are the Centre of Excellence of the Corporate Sustainable Energy Management. We promote, advise, develop and implement energy efficiency programs and initiatives on existing and new infrastructures, to lessen the effects of energy use on the environment and operating budget, and to showcase the City as a leader in Sustainable Energy Management.

Objectives & Goals of the MEEP

- Reduce total energy use and GHG emissions
- Help other municipalities, community and business sectors with the lesson learned
- Advise council and Senior staff on Energy Policies, Standards, Guidelines and procurement of environmentally sound equipment
- Raise energy efficiency awareness among staff

Background & Data



Program Started in 1999

- Over 152 buildings
- 1.5 Million Area ft2
- Commissions 5 Buildings
- $7.3 million (2001)

Accomplishments as of 2014

27%
Energy Reduction

8M KWH and 35,000 GJ
Energy Savings

$2.0M
Energy Savings

8,600 Tons
GHG Reduction or 24%

$21M Grants & Loans

90+
Energy Audits/Retrofits

Accomplishments (contd.)

- **Premier's Award For Energy Efficiency** 2011- Commercial Energy Efficiency Champion
- Top 13 in North America for **Best Energy Management Practices**
- **Milton F. Gregg Conservation Award**
- FCM-CH2 M Hill **Sustainable Community Award** 2008: Energy
- Canadian Association of Municipal Administrators (CAMA) 2004: **Environmental Award**
- **LEED** Buildings
- **GNB Community Recognition Award**

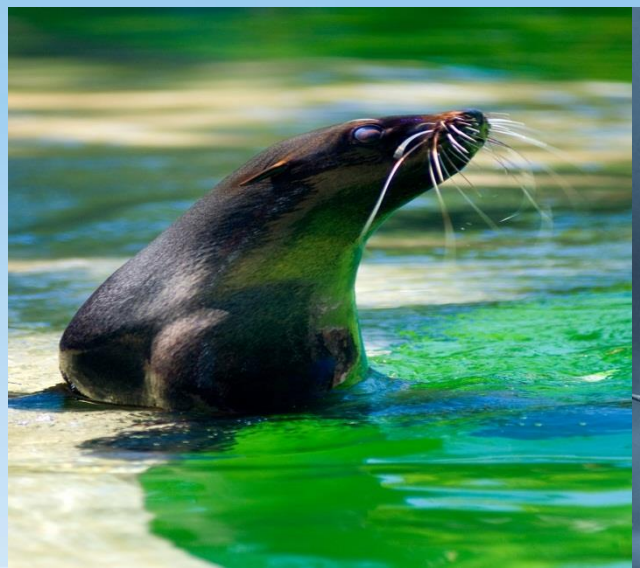
Future Goals and Objectives 2020

- Develop CEP
  - Reduce Energy Consumption and GHG emissions by 38%
  - Reduce Annual Energy Cost by approximately $3 Million
- Develop a Community Energy plan
- Develop and implement an energy management plan for the City fleet including transit
- Continue to work with City staff, Developer, Community and other government levels

Green Thermal Utility (GTU)

Energy Sources Option

- Sea water cooling
- Raw Sewage Energy
- Industrial Waste Energy (Irving Refinery, Irving Pulp & Paper)
- Waste Heat from buildings



Accomplishment

- Visit sites in Toronto, Markham and Halifax
- Pre-feasibility Study Completed in March 31,2009
- Environmental Trust Funding: $ 100,000 (awarded)
- FCM Green Municipal Funds: $ 149,000 (awarded)
- Funds Toward Project Implementation. $9.8 Million in GIF
- Complete Detailed Conceptual Design
- Complete Business and Technical Analysis
- Negotiation with Energy Supply
- Complete Environmental Assessment

Energy Sources and Design Recommendations

- Industrial waste heat
- 30 MW
- $35 Million
- Biomass Plant
- 200 F/95 C Loop Temperature
- Hot Water and Low Steam Heat E
- Backup plant
- Good payback
- DPS Bridge Connection
- DPS Route
- European Standard EN253 – Insulated Steel Pipe

Buildings and Load Profile

- Hydraulic System
- Two KM
- 150,000 MWH
- Multi-phase Development
  - Phase 1&2 - Energy Integration of the Saint John Anchor tenants (3.5 million ft^2) Includes:
    - Market Square including the expansion and Hilton,
    - Canada Games Aquatic Centre,
    - Peel Plaza Law Courts,
    - Peel Plaza Police Station, and
    - Harbor Station Arena
    - New Development at the Coast Guard location
    - City Hall
    - Other Buildings
    - 25 Buildings

Proposed Piping Diagram

#	Building	Year	Heating Load (kW)	Branch Size NPS
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	Confederation Building	2012	300	40
2	Brunswick House	2012	300	80
3	City Hall	2012	1 100	100
14	Harbour View High	2012	500	50
19	New Brunswick Museum	2012	500	40
24	Lord Beaverbrook Arena	2012	300	50
22	Fort Howe High	2012	500	40
23	Hillyard Place	2012	300	50
12	[illegible] (Old Head Quarters)	2013	700	40
16	Prince Edward Square Mall	2013	300	80
17	Prince Edward Square Apt.	2013	700	50
18	St Joseph's Hospital	2014	1 500	100
21	Cathedral	2014	200	40
20	Saint Vincent's School	2014	1 200	100
25	Cotton Building	2015	400	40
7	Saint John High	2015	900	80
10	City Market	2016	500	40
13	Imperial Theatre	2016	200	50
11	Saint Malachy's High	2016	500	40
9	Sydney Arms	2016	700	80
	Total		12 200	

#	Building	Year	Cooling Load (kW)	Branch Size NPS
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	Brunswick House	2012	800	125
3	City Hall	2012	1 500	200
A	Delta	-	6 240	250
B	Ariel Cold	-	1 500	150
C	Moncrieffe	-	1 500	150
	Total		10 540	

Legend

- #6 Building No. Heating & Cooling Loads
- #13 Building No. Heating Load
- #A Building No. Cooling Load
- 65Ø Heating NPS Diameter
- 125Ø Cooling NPS Diameter

REVISIONS

DATE	REMARKS	NO.	INIT.
2010/03/XX	PRELIMINARY	X	

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PROJECT TITLE: SAINT JOHN COMMUNITY ENERGY PROJECT

SHEET TITLE: SYSTEM OVERVIEW PIPE SIZING

DGN: P.BECKETT | SCALE: 1:5000
DWN: B.HOOKS | JOB NO.: XXXXXX
APPR: | DATE: 2010/03/04
DWG NO.: PD-XXXX-01

Integrated Community Energy System Project

Saint John Harbour

Thank You !
SAINT JOHN