



OCH Utility Savings; Actual results from multiple sustainability projects

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ONPHA

Ontario
Non-Profit Housing
Association

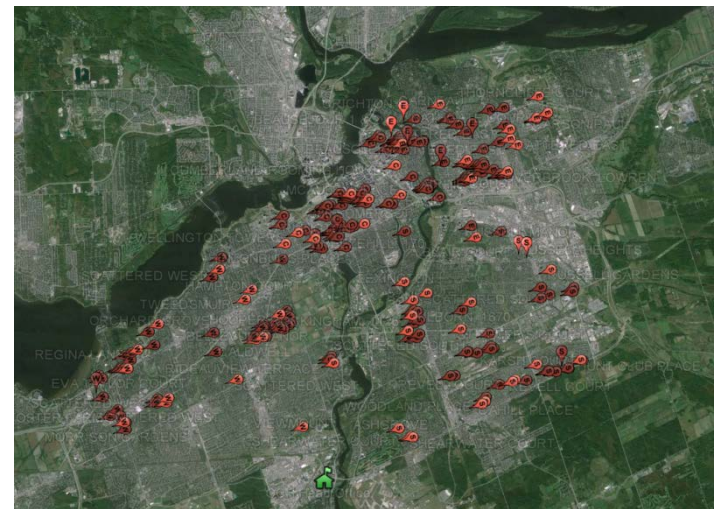
OCH Portfolio

Ottawa Community Housing

- 15,000 unit through out Ottawa
 - 100 high to mid rise buildings
 - 60 town house communities
- 2/3 of our buildings are + 40 years old

In 2011, OCH spent \$23,240,000 on Utilities

- Hydro: \$7.2M
- Natural Gas: \$5.5M
- Water: \$10.5



OCH Sustainability History

- 2010 – Building Envelope Retrofit & Energy Officer
- 2011 – 34 Solar Installations & Green Plan Approval
- 2012 - Weatherization & Water Retrofit
- 2013 – Water Retrofit, Weatherization & Heating Management System
- 2014 – LED Lighting Retrofit
- Partnerships and Incentives
 - SHRRP Funding
 - Renewable Energy Initiative
 - Enbridge Low Income Weatherization Program
 - City of Ottawa High Volume User Program
 - Green Fund
 - Ontario Power Authority

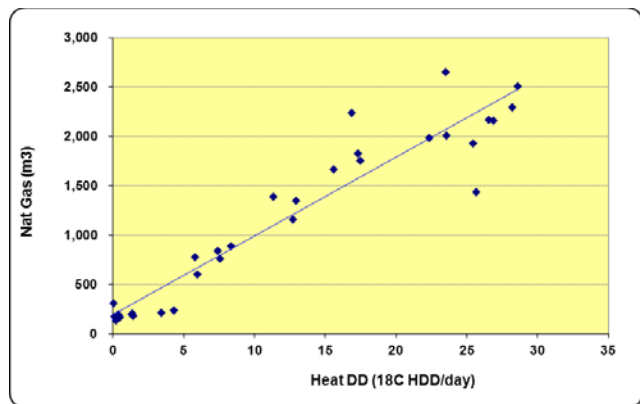


Weather Normalization

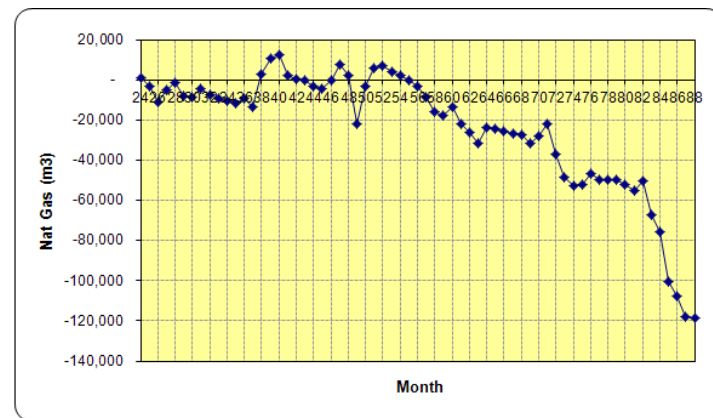


1 HDD (Heating Degree Day) = 1 day w/ 1°C below 18°C





$$Y = 79x + 195 \text{ (Model)}$$



Model vs Actual



Pre-Retrofit Year



Post-Retrofit Year



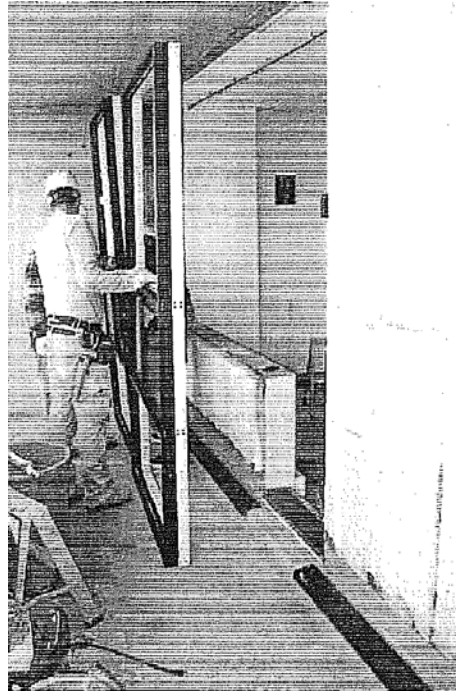
SHRRP Building Envelope Retrofits

- Large funding envelope for life cycle work
- Original Windows , 1970s build (240 units)

Building	Work	Start	End	Cost
415 MacLaren	Windows, Doors, Insulation	Mar-10	Jun-11	\$2.0M
445 Richmond	Windows	Sep-10	Aug-11	\$2.9M
280 Rochester	Windows, Doors	Jul-10	Dec-11	\$4.9M



Window and Door Retrofit

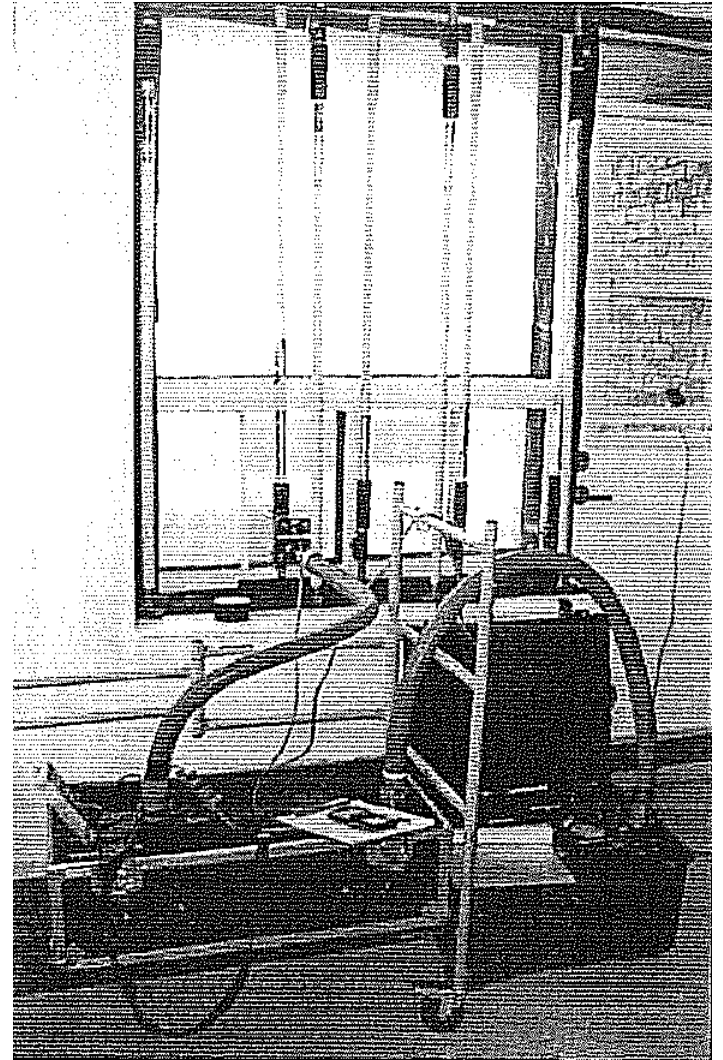


Building Insulation



Window Seal Testing

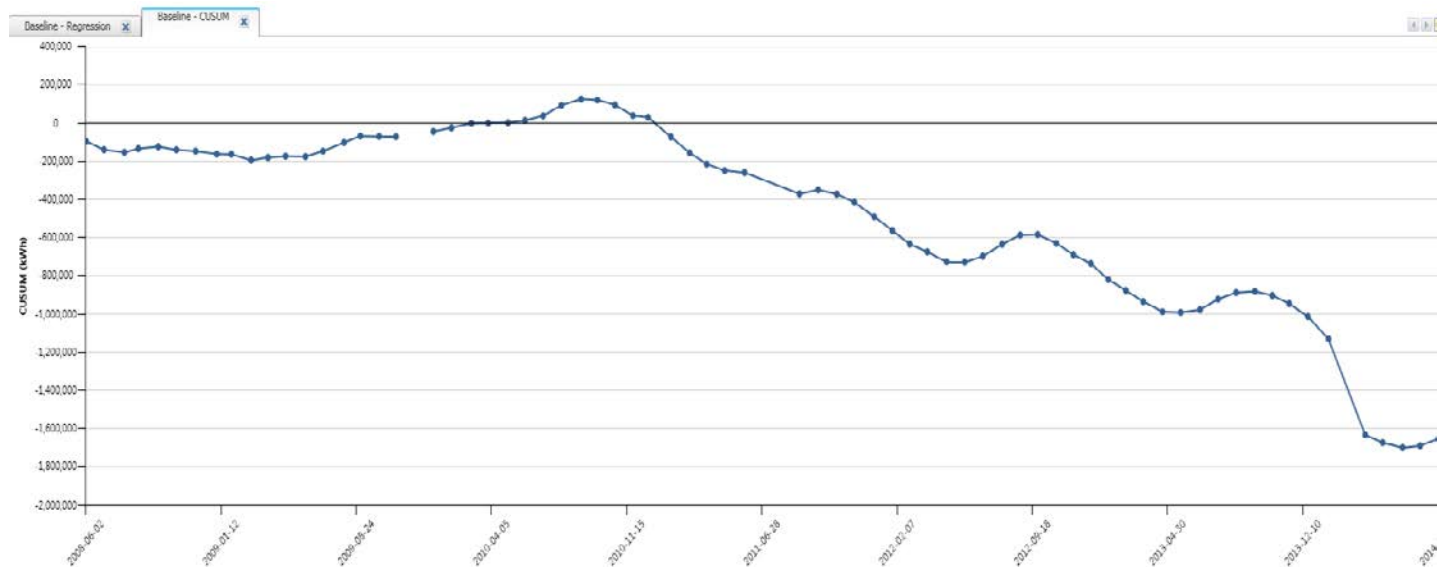
- 3rd party verification of window and installation
- Simulates windy and rainy conditions, identifies infiltration
- Issue identified that would have slipped by



Results- 415 Maclaren

- Average savings: 422,174 kWh/year ; \$50,000/year

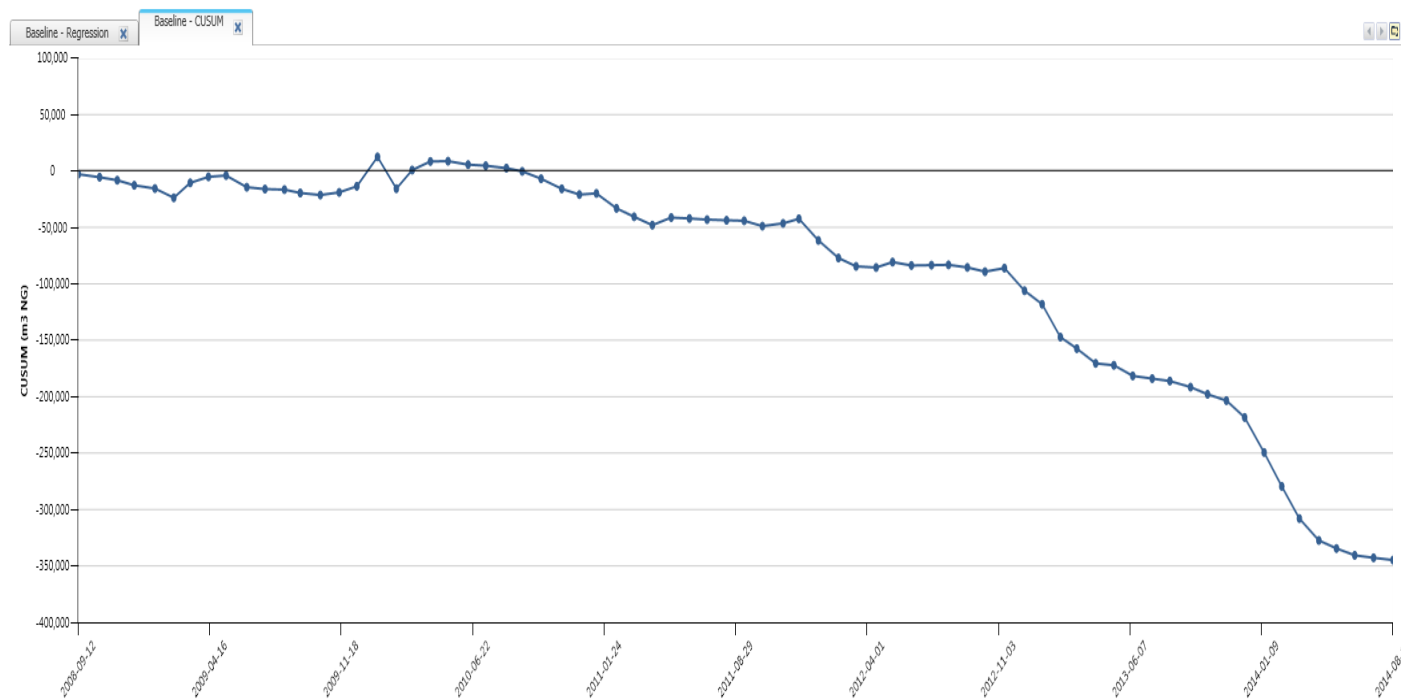
	2010-2011	2011-2012	2012-2013	2013-2014	Average	Reduction
kWh Saved	488985	245633	278266	675814	422174.5	19%



Results - 445 Richmond

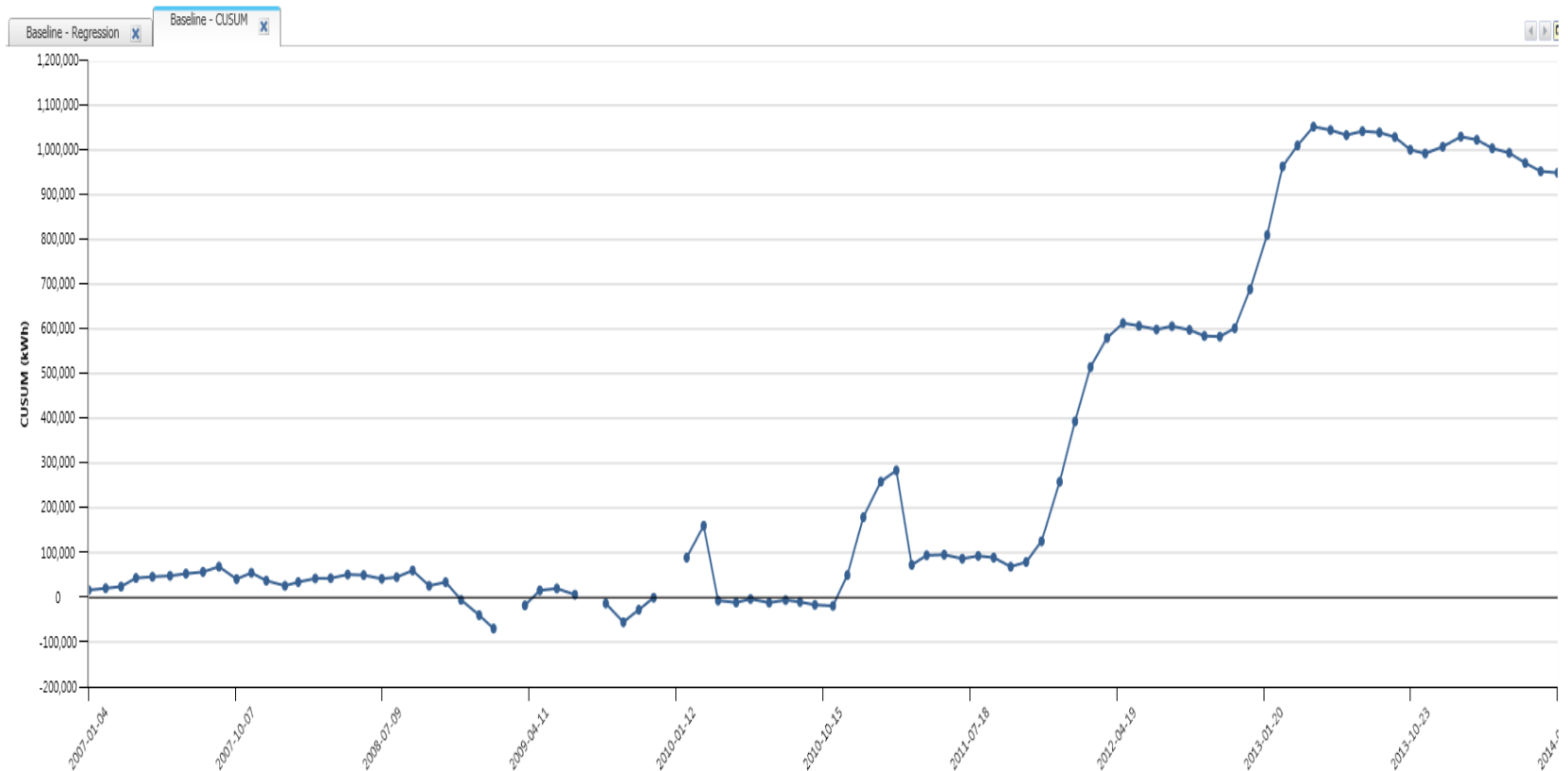
- Average savings; 86,128 m³ NG / year; \$25,838 / year

	2010-2011	2011-2012	2012-2013	2013-2014	Average	Reduction
m3 NG Saved	43797	41337	106110	153268	86128	22%



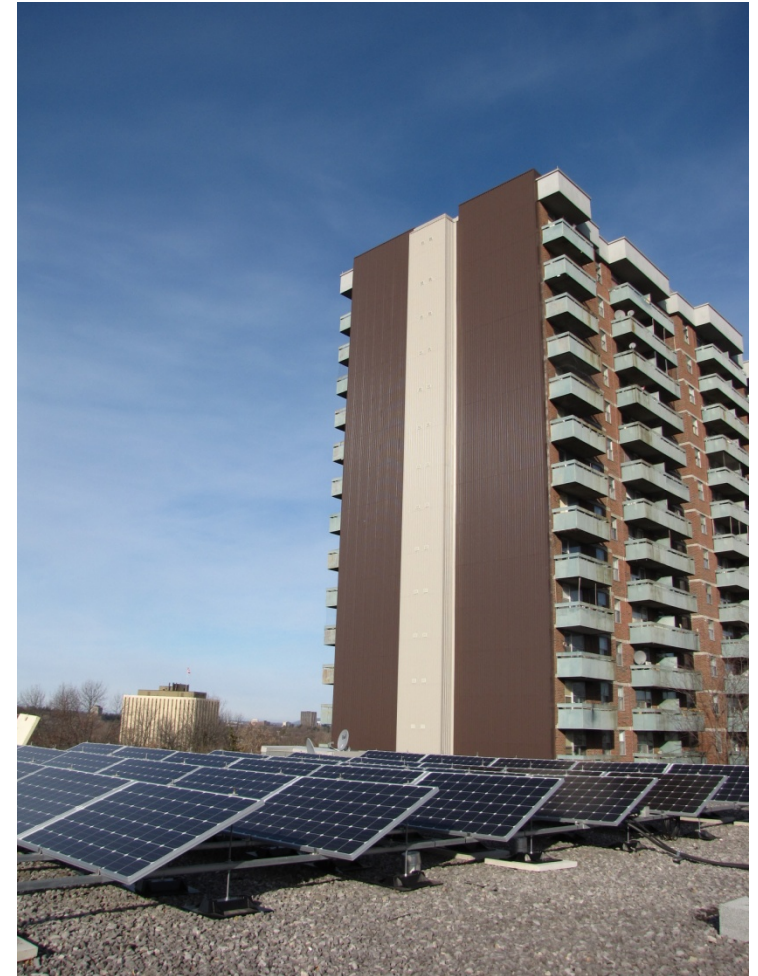
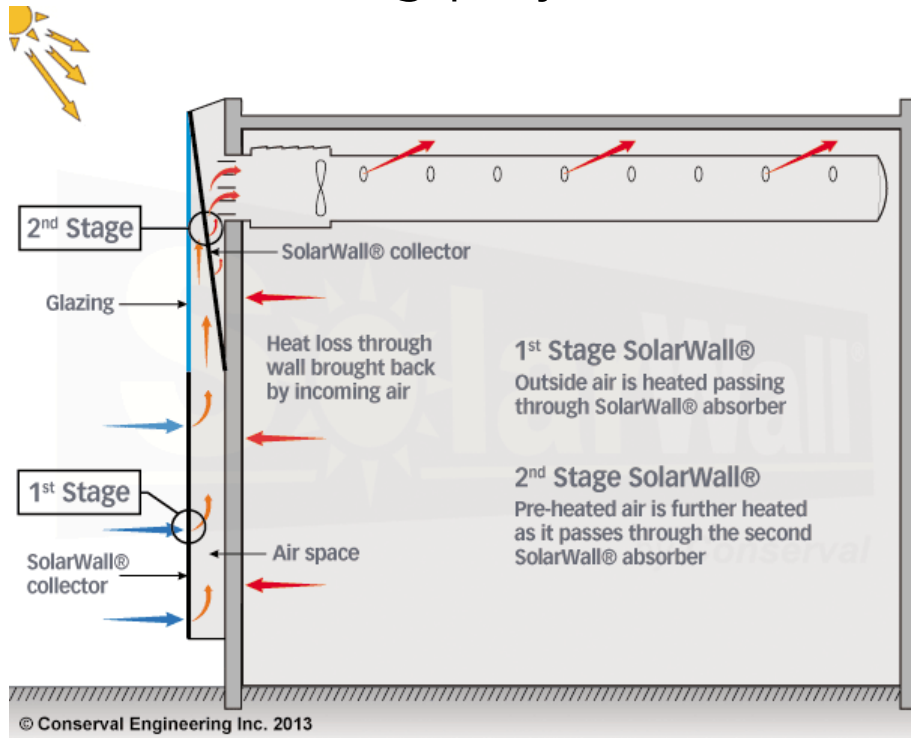
Results – 280 Rochester

	2010-2011	2011-2012	2012-2013	2013-2014	Average	Reduction
kWh Saved		509261	431085		470173	-18%



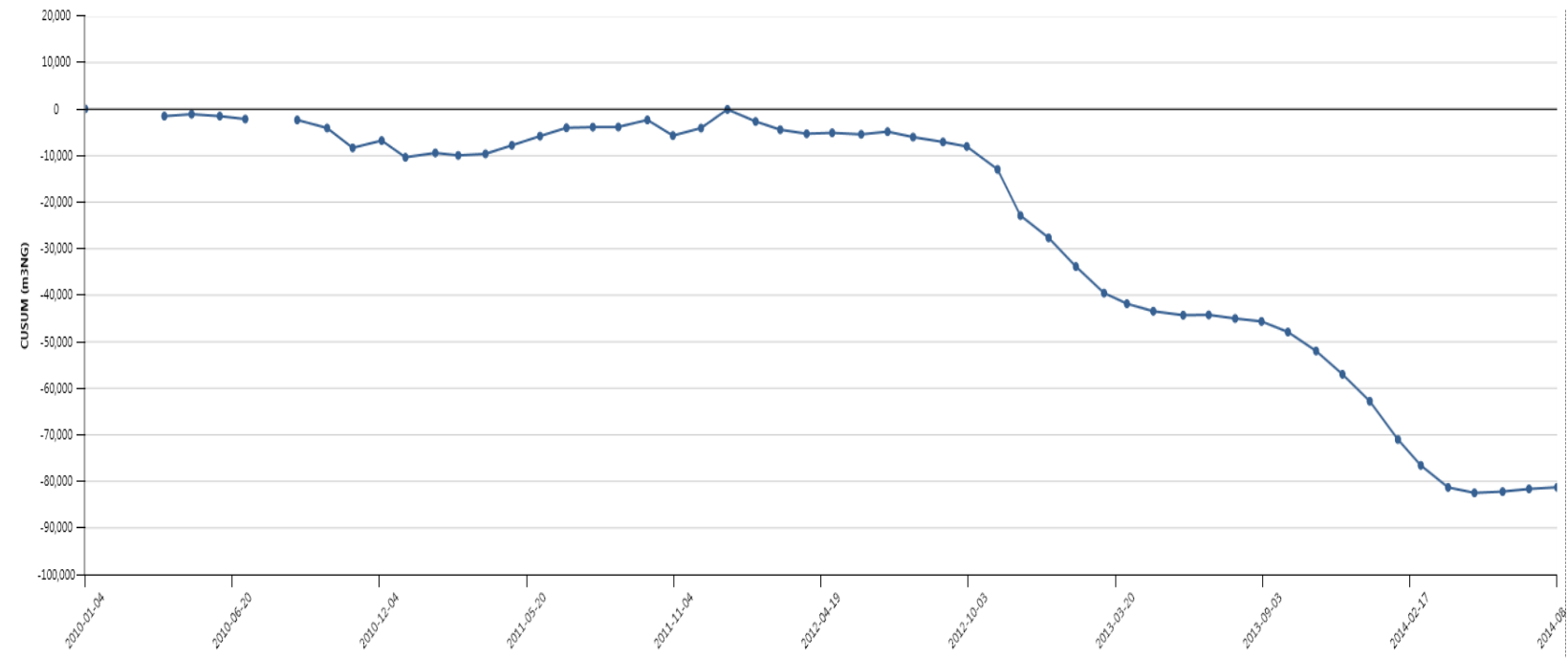
1455 Clementine Solar Wall

- +8,000 sqft solar collector
- Simple addition to a re-cladding project



1455 Clementine Solar Wall

- July 2012-2013: 39,380 m³
- July 2013-2014: 37,400 m³
- 30 % reduction in gas consumption (electrically heated)



Weatherization & Furnace Replacement

- Over 5,000 singles / townhouses (50s, 60s, 70s, 80s, 90s)
- Unfinished basements, headers above grade
- Enbridge Low Income Weatherization Program
 - Pre and Post Audits (Blower Door and Insulation)
 - Insulating exterior basement walls and Attics
 - Air sealing stacks, joist, shared walls



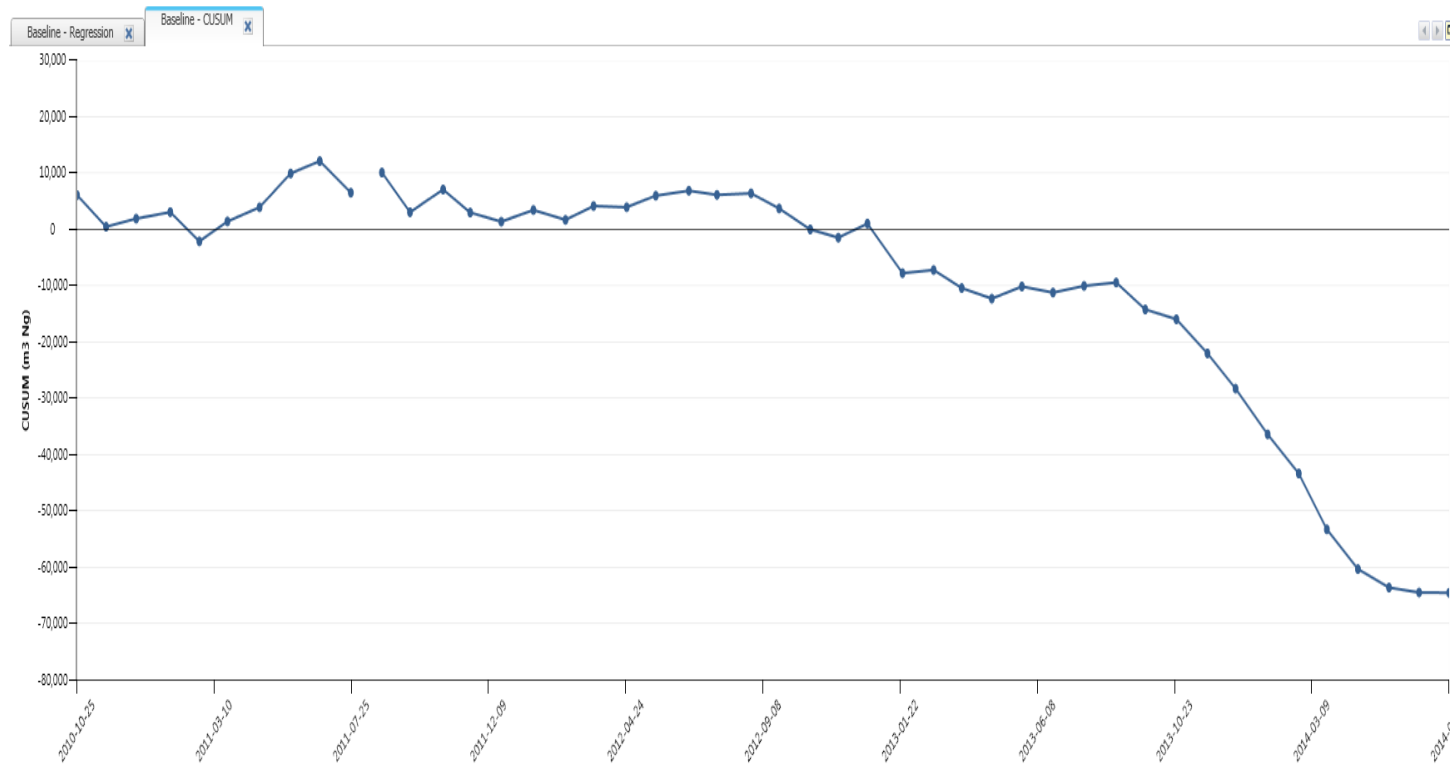
Weatherization & Furnace Replacement

- Community targeted furnace program 2013-14
 - OHC paid gas units
 - Large number of end of life and mid-late life furnace
- Replacement of furnaces
 - Atmospheric to high efficiency

Community	# of Units	Weatherization		Furnace Replacement	
Morrisson Gardens	128	Apr-12	70%	None	None
Debra Dynes	180	Apr-12	77%	Jan-14	50%
Michelle Heights	131	Apr-13	78%	Oct-14	81%



Results



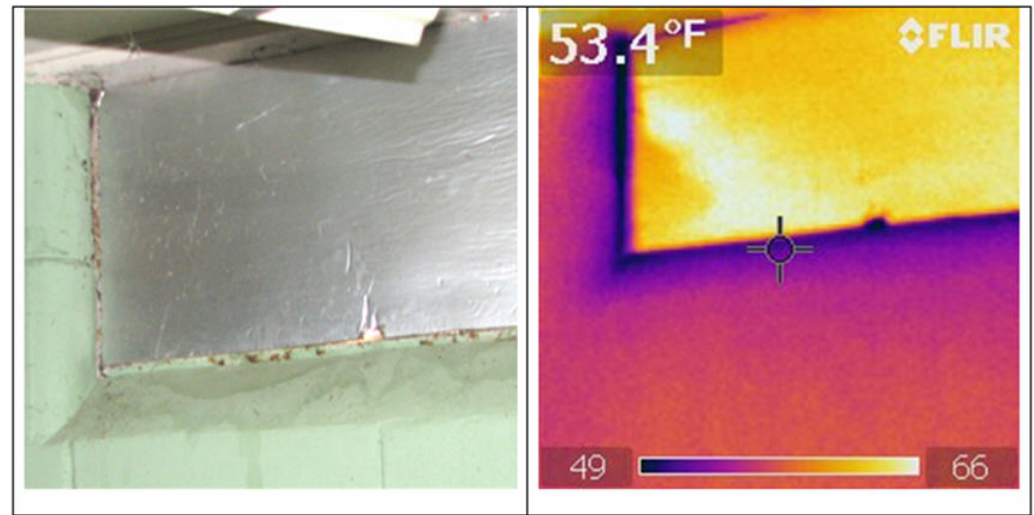
Natural Gas Savings (m3 NG)					
Community	# of Units	Weatherization	Furnace Replacement	2012-2013	2013-2014
Morrisson Gardens	128	Apr-12 70%	None None	16000	50000
Debra Dynes	180	Apr-12 77%	Jan-14 50%	16000	64000
Michelle Heights	131	Apr-13 78%	Oct-14 81%		47000
				Average	47000
				m3 NG/ unit	368.30
				Reduction	10%
					285.71
					459.97
					15%



Draft Proofing vs Insulation vs Furnace

	TOTAL Cost	TOTAL Savings	m3 Saved/\$ spent
Insulation	\$929,202.03	231777.81	0.25
Draft Proofing	\$30,708.87	85218.94	2.78
Furnace (Sample)	\$2,500.00	300.00	0.12

- Insulation /draft Proofing: 10 year payback
- Furnace on Life Cycle



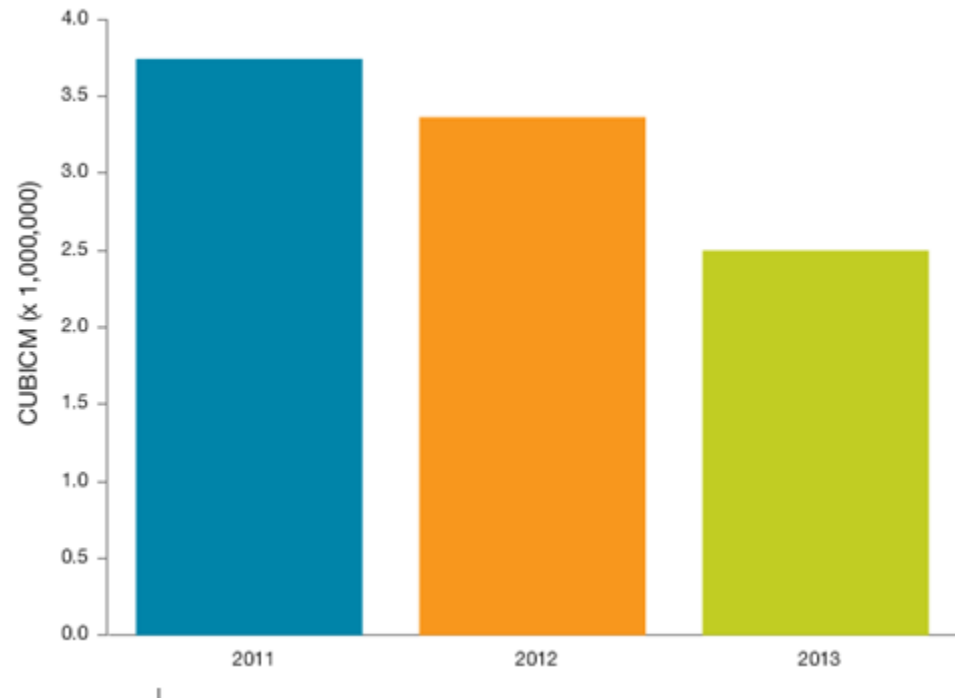
In-suite Water Retrofit

- OCH Pays the water in all 15,000 Units
- Replaced toilets, showerheads and aerators
 - 13L-20L toilets
 - Multiple undiagnosed leaks
- 2011 – Pilots
- 2012 – Phase 1 and 2 (high rises)
- 2013 – Phase 3 and 4 (townhouse)



Results

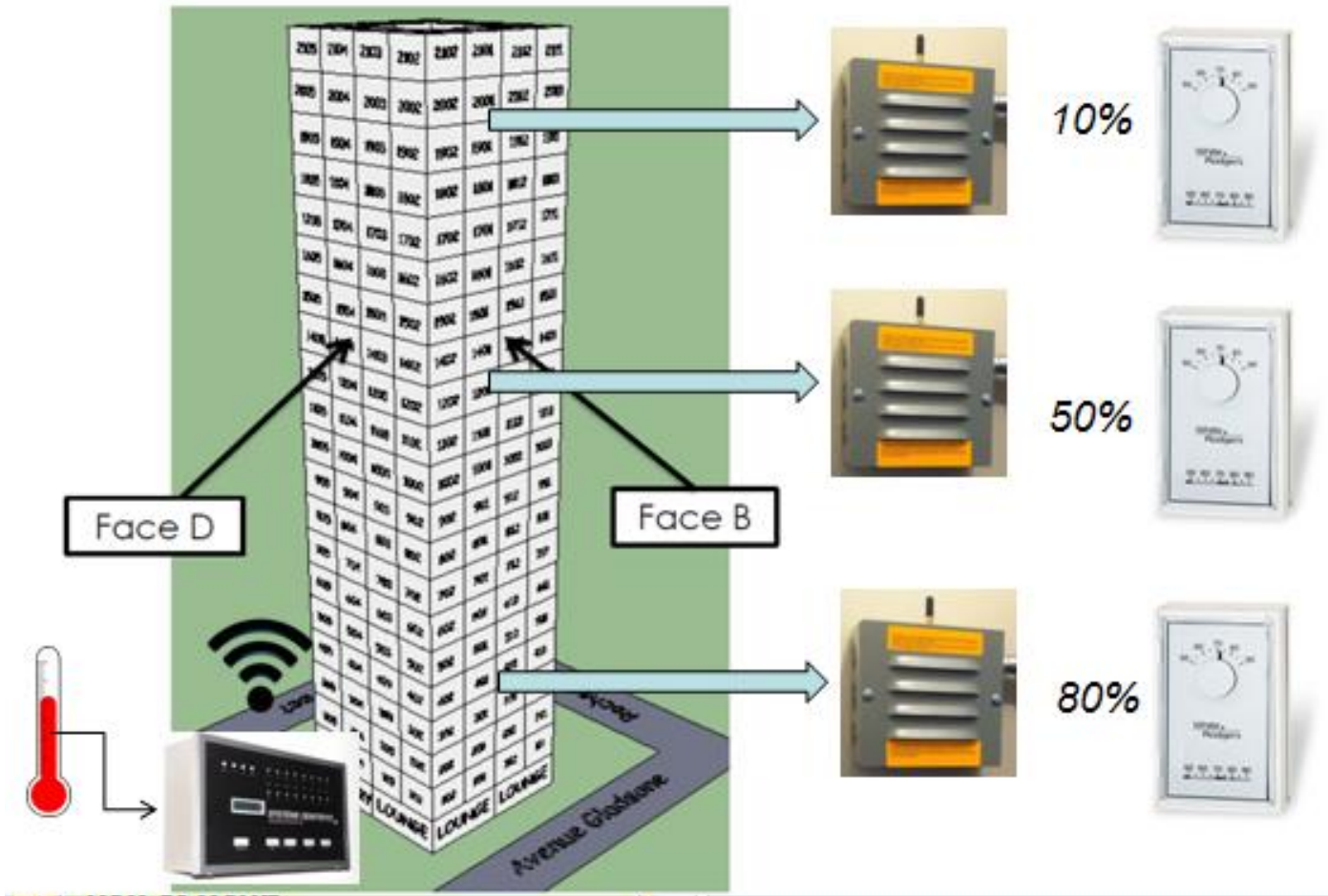
- 1.2M m³ of water annually – over \$4M in savings
- 800,000m³ of Natural Gas annually



FUTURE PROJECTS

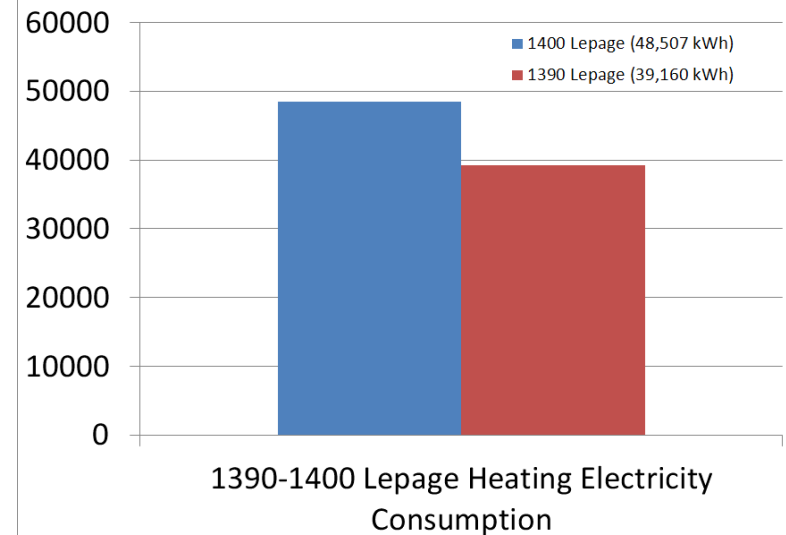
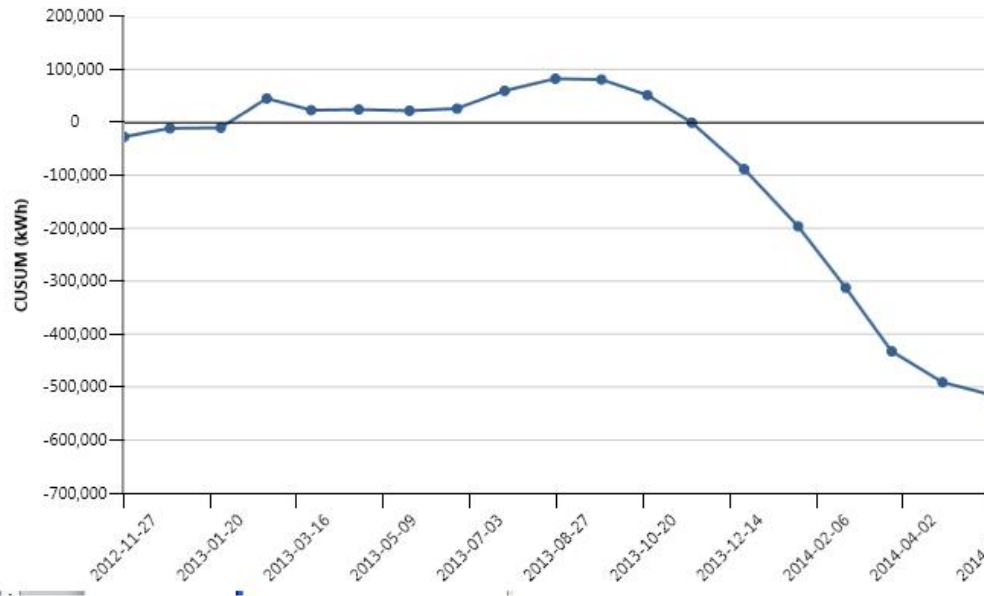


Pilot - Heating Management System



Results

- Only half a heating season of results
- Approximately 20% reduction in heating consumption
- Tenant engagement required to reduce maintenance calls



Future - LED Lighting Retrofit

LED offer many advantages

- 30% lower consumption
- 5 times the lifetime, less maintenance
- No hazardous materials
- Simple retrofit options

Adding sensors just makes sense



Business Case

3 Buildings selected for pilot project

- Payback of 3-5 years

31 buildings selected for Phase 1 Implementation

- Payback of 5 years

Ottawa Community Housing Common Area LED Lighting Retrofit - Without Corridor Sensors					
Address	Project Cost (\$)	Consumption Savings (kWh)	Demand Savings (kW)	Cost Savings (\$)	Simple Payback (Years)
1455 Clementine	\$ 27,174	59,371	7.2	\$ 7,125	3.8
540 Thomson	\$ 22,372	30,722	3.7	\$ 3,687	6.1
800 St. Laurent Boulevard	\$ 23,162	26,030	3.4	\$ 3,124	7.4
251 Donald	\$ 19,915	24,546	3.1	\$ 2,945	6.8
255 Donald	\$ 19,904	38,737	4.8	\$ 4,648	4.3
1365 Bank	\$ 62,965	76,549	11.7	\$ 9,186	6.9
380 Murray	\$ 41,472	59,831	9.5	\$ 7,179	6.5
160 Charlotte	\$ 23,795	36,231	4.8	\$ 4,348	5.5
395 Somerset	\$ 32,776	107,441	12.6	\$ 12,893	4.1
415 MacLaren	\$ 21,750	29,519	3.9	\$ 3,542	6.1
453 Cooper	\$ 15,178	23,670	3.2	\$ 2,840	6.2
215 Wurtemberg	\$ 14,316	18,532	2.4	\$ 2,224	6.4
300 Lacasse	\$ 25,000	55,887	6.7	\$ 6,707	4.6
125 McLeod	\$ 16,294	24,906	2.7	\$ 2,989	5.5
1465 Caldwell	\$ 15,727	23,172	2.7	\$ 2,781	5.7
1485 Caldwell	\$ 29,735	42,797	6.6	\$ 5,136	5.8
1390 Lepage	\$ 14,382	20,113	2.2	\$ 2,414	6.0
1400 Lepage	\$ 18,045	25,816	3.0	\$ 3,098	5.8
1041 Wellington	\$ 19,018	37,414	4.2	\$ 4,490	4.2
280 Rochester	\$ 38,336	69,335	8.0	\$ 8,320	4.6
865 Gladstone	\$ 9,548	30,423	3.5	\$ 3,651	2.6
450 Laurier	\$ 22,501	78,209	9.8	\$ 9,385	3.3
31 McEwen	\$ 24,038	47,806	6.6	\$ 5,737	4.2
2651 Regina	\$ 24,453	30,349	4.0	\$ 3,642	6.7
1065 Ramsey	\$ 55,502	97,494	12.0	\$ 11,699	4.9
1909 Russell	\$ 16,063	27,953	3.4	\$ 3,354	4.8
2080 Russell	\$ 17,069	33,211	4.0	\$ 3,985	4.3
2100 Russell	\$ 32,914	59,638	7.2	\$ 7,157	4.6
1455 Heatherington	\$ 25,099	36,632	4.8	\$ 4,396	5.7
110 Cobourg/123 Augusta	\$ 17,701	22,945	3.7	\$ 2,753	6.4
Building Subtotal	\$ 746,206				
Audit/Engineering/Design	\$ 34,440				
Total	\$ 780,646	1,295,280	165.23	\$ 155,431	5.0



Questions?

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