

Setting the Stage: Feedback Loops and Lessons Learned

Garrison Institute 2013 Climate, Buildings and Behavior Symposium September 18, 2013 F.L. Andrew Padian, V.P for Energy Initiatives The Community Preservation Corporation www.communityp.com



The Community Preservation Corporation

- Private non-profit mortgage finance company
- Founded in NYC in 1974
- Provide multifamily construction & perm financing
- Sponsored by 70 banks and insurance companies
- Mission: Stabilize, strengthen and sustain low and moderate income communities
 - Use our financing to preserve existing and develop new affordable housing in the communities we serve
 - Provide a consistent source of capital in low-income areas



Why is a banker telling us about Climate, buildings, and Behavior?

- Well, for starters I'm not a banker, I'm an energy and buildings geek
- I've spent the last 30+ years learning about why buildings go bad
- Started in policy, then energy, H+S, durability, sustainability, resilience
- When I am at a building, I spend about the same amount of time with people as systems
- Owner+super+manager+occupants ÷ 4 = near truth
- Today I want to talk about how some of my most massive failures over the years led me to some real successes



Communicating With Owners, Building Staff, and Practitioners for Over 30 Years







- Owners want to hear objectively how their buildings are doing compared to others
- Owners and managers want windows and cash
- So they need to be gently walked through their buildings and shown things that aren't working



Feedback Loop #1:

How much are we using/paying?

A Top 10 Owner of NYC Properties: Multifamily Heating Fuel Usage



All are expressed in Btu/ft2/HDD

(\$/ft²/Year)



One would think an owner would notice this, no?



CPC SIMPLE, SENSIBLE, SUSTAINABLE

> The Community Preservation Corporation Green Loan Program

CPC Benchmark Plus Report Card For:

24-32 Arden Street, New York, NY 10040

Number of Residential Units Building Square Footage 68 58,030

CPC has analyzed your building's fuel, water, and electricity usage, and here's your CPC Benchmark Plus Report Card:

> Your building's fuel usage (#4 Oil) for heating is 13.2 BTU/SqFt/HDD and according to our scorecard, your building is a C

> Your building's fuel usage (#4 Oil) for hot water is 73.9 BTU/Apt/Day and according to our scorecard, your building is a B

> Your building's common area electric usage is 1.2 KWH/SqFt/Year and according to our scorecard, your building is a **B**

> Your building's water usage is 69.8 Gallons/SqFt/Year and according to our scorecard, your building is a C



CPC Report Card Grades

Electricity Water Heating Hot Water





Feedback Loop #2:

What goes on at the building on a typical day, or.....



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Feedback Loop #3: Spend lots of time looking, talking to staff, owner, tenants, manager, recording data..... **AND GET RESULTS!**

James Geddes Houses, a two block complex of the Syracuse Housing Authority that includes both low rise and towers, was retrofitted with sealed combustion furnaces, hot water makers, and wall insulation in the low rise buildings; lighting, refrigerators, showerheads and aerators in all apartments. Another master metered building for gas heat and tenant electric, and another building where local private crews were kept employed. Buildings showed 26 to 41% reduction in base usage, and up to 23% reduction of heating usage.



This former 1873 engineering school converted to senior housing got attic air sealing and insulation, and heating/DHW replacement without raising historic preservation flags south of Albany NY. Last winter, they saved over 20% in heating costs even adjusted for a significantly warmer winter.

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This 131 unit electric heated, individually metered building had apartment airsealing performed and saw an average CFM 50pa reduction of 24%. New gas hot water makers were installed to replace older models. Common area and apartment lighting, refrigerators, and low flow showerheads and aerators were also installed. In less than one month, the building saw a 46% reduction in gas usage and 21% reduction in water usage. Apartment electric bills reduced by 25%. 80 Parrish Street Apartments Canandaguia, NY



Rehab/Refi Huge Success





Old vs. New System

This typical NYC 1920 walkup building (35 apts, 36,000 ft2) was going through a "checkerboard" Mod rehab, but added a full weatherization package (\$4000/apt). Postretrofit heating and hot water fuel use declined (weather adjusted) 63.7%. In dollars, the building went from \$119,636 to \$43,448 or a savings of \$76,188 (\$2177/apartment) per year.





But I Don't Want to Talk About Those Buildings.....







188 units, 31 buildings, one gas meter, one electric meter, one water meter.



Other problems:

- 20% vacancy
- No subsidy from NYS or HUD
- No Parts for 1950 furnaces
- Maintenance staff repairing 50+ year old furnaces constantly
- Utility bills 1/3 of their total budget
- Extremely low rents



SCOPE OF WORK MELONE VILLAGE, AUBURN NY

Item	Draft scope of work description	Estimated Cost	Estimated Savings	S.I.R.	Payback (years)
1,	HEALTH AND SAFETY: Add gutters to every building to move water away from basements	\$72,000	N/A	N/A	N/A
2.	HEALTH AND SAFETY: Replace nine roofs to protect insulation	\$126,000	N/A	N/A	N/A
3.	Reconnect ductwork, seal joints, seal at all boot connections and replace all grills	\$ 75,000	\$54,359	7.2	1.4
4.	Change all showerheads to Niagara 1.75 gpm, all kitchen sinks to 1.5 gpm, and all bath sinks to .5gpm	\$3,525	\$597	2.5	5.9
5.	Replace inefficient refrigerators with Energy Star models (assumes 188)	\$103,400	\$18,252	2.3	5.7
6.	Replace up to 8 apartment bulbs per apartment with compact fluorescent bulbs	\$84,600	\$13,529	1.8	6.3
7.	Replace furnaces and hot water heaters in all apartments with sealed combustion models	\$ 900,000	\$29,677	1.1	30.3
8.	Replace 20 windows	\$6000	\$522	2.2	11.5
Totals	(payback and SIR excludes H&S)	\$1,370,525	\$116,936	1.3	11.72



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Building Address: 20 Thornton Avenue, Auburn, New York 13021

Auditor: Padian

Audit Date: 08/17/2010

Original Operating Cost:	\$290,823.81 /vr	Savings In Operating Cost:			\$132,683,34/yr	
	Ĥ	ating	Cooling	Water H eater	EAEM(*)	
Original Building (MMBtu/yr)		10,397.19	0.00	6,464.83	2,013.79	
Retrofitted Building(MMBtu/yr)		5,153.50	0.00	3,942,77	1,114.90	
Energy Savings		50.43%	0.00%	39.01%	44.64%	

(*) EAEM (EA-Quip Applicable Electric Meausures): lighting and refrigerators eligible for replacement, range and drivers if electric.

Description	Location	Heating	Cooling	Water Heater	Other Electric
		(%)	(%)	(%)	(%)
INCREASE Boiler Room VENTILATION	Heating system		-		-
Seal ROOF LEAKS	Primary (Roof)	1.98		3	-
Repair & seal DISTRIB system	Control and distribution	43.57		-	+
LO-FLO showers & restrictors	Appliance	<.1%	1.1	0.77	
Install new DHW heater	Appliance	<,1%		33.08	
Install 386 kwh/yr REFRIGERATOR	Appliance	-3.76	1.1.4	*	25,94
REPLACE w/LowE argon-filled Thermal Pane	Old windows (Windows)	0.42		1.1	이 가운 것을 수 있다.
Replace apartment lighting	Lighting	-2.42			18,70
2" INSULATION on HW pipes	Appliance	-1.04		5.17	
NEW Heating System	Heating system (93% - Condensing)	1123			
WTHSTRIP Windows/SEAL frames	Old windows (Windows)	3,1%			-
Weatherstrip Doors	Entrance (Doors)	0.43			



The Beauty Of the Pre-Bid Meeting: 188 vs. 94

CPC

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The Beauty Of Local Contractors: No summer Layoffs



The Auburn Housing Authority worked with CPC to replace every 1950's furnace and hot water maker in every unit, and replaced 19 roofs using HA funds. Lighting and refrigerators were also done in every apartment. Master metered for gas and electric, CPC has documented savings of 26.2% reduction in heating gas usage and 54.8% reduction in hot water and stove usage. All this considering since the retrofit, vacancy has gone from 20% to 3%.









AUBURN HOUSING AUTHORITY

20 THORNTON AVENUE, AUBURN, NEW YORK 13021

(315) 253-6249 FAX (315) 252-0399 TDD (315) 255-2752

October 7, 2011

Mr. Andrew D'Agostino Assistant Vice President Community Preservation Corporation 315 North Clinton Street Syracuse, NY 13202

Dear Andrew,

On behalf of our Board of Directors, Residents, and Staff, I would like to thank the Community Preservation Corporation for all of the hard work that went into making the weatherization renovations at Melone Village a success. In addition to extending the useful life of the complex, the capital improvements overseen by CPC, including new furnaces, hot water heaters, refrigerators, lighting, windows, ductwork, gutters, and roofs, have resulted in a more healthy and sustainable living environment, increased employee and resident morale, and a lower vacancy rate.

In 1997, New York State abandoned its commitment to provide operating subsidies to State Public Housing Complexes, including Melone Village. The sudden drop in funding resulted in a backlog of critical upgrades and repairs. When we began working with the Community Preservation Corporation in June of 2010, 20% of the 188 units at Melone Village, constructed between 1952 and 1962, were vacant. 17 roofs were in need of replacement. None of our 31 buildings had gutters, and tenants' basements were taking in water. Our furnaces were between 45 and 55 years old and improperly vented. Hot water heaters and appliances were outdated and inefficient. Over 40 windows, original to the buildings, had never been replaced. We could not afford to make the cosmetic upgrades to our units that would be necessary to attract new tenants (new flooring, kitchen countertops, cabinets, bathroom updates). With our reserve funds dwindling, rising utility costs threatened our ability to fulfill our mission to provide quality, affordable housing to the most vulnerable members of our community.

Throughout the construction process, CPC staff worked with us closely to understand our operations, accommodate our residents, and educate our staff on weatherization techniques. CPC helped us to leverage almost \$300,000 of our own funding to replace roofs in an effort to protect existing weatherization work, to replace thermostats with digital, tamper-proof models, and to properly vent residents' clothes dryers. CPC managed all of the construction, and this allowed us to direct our financial resources toward a campaign to enhance our relationships with community organizations, potential applicants, and neighbors.







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I am proud to say that the efforts of the Weatherization Program, CPC, and the Auburn Housing Authority have produced real, tangible results. The vacancy rate at Melone Village has fallen to 4.7%, and we expect to be up to full occupancy within the next six months. We are already able to see improvement in our utility bills, which comprise a full third of our operating budget. Resources have been freed up for cosmetic and structural upgrades at both Melone Village and Brogan Manor (another 88-unit State complex owned and managed by AHA). We are now producing operating surpluses, which will allow us to build our reserves and make further capital improvements at both complexes. We will also be able to use our remaining reserves to leverage funding from grants and foundations.

We feel that we have been able to restore the trust of both our residents and our community. Though we have always been responsive, it was extremely difficult to address common complaints with limited resources. While this will remain a challenge, we have now demonstrated our willingness and ability to improve our housing.

We have also applied our knowledge of weatherization techniques to our other complexes. For example, we are now replacing incandescent bulbs with CFL's in all complexes, in addition to replacing inefficient toilets, windows, doors, and thermostats. The work has continued at Melone Village, where we hope to landscape and replace basement windows as soon as possible to further improve the appearance of the buildings.

We are fortunate to have had the opportunity to work with the Community Preservation Corporation. Each of your staff members played an important role in restoring our ability to respond to the need for quality, affordable housing in our community. Melone Village is currently home to 400 residents, including 202 youth, 64 disabled individuals, and 136 female-headed households who have turned to the Auburn Housing Authority for a decent place to live. Your organization has helped us to ensure that each and every one of them will continue to have a safe, viable, and prosperous place to live.

Sincerely. Stephan Hutchinson

Stephanie Hutchińson Executive Director Auburn Housing Authority





Feedback Loop #5:

We must fertilize the fields behind us.



Thank you!