OPRC Green & Energy Efficiency Related Activities

The Oak Park Residence Corporation (OPRC) actively practices a "Green" and sustainable operating strategy at all of its multi-family buildings. The Corporation currently owns 22 multi-family buildings in Oak Park containing over 500 units of rental housing.

Electrical

CFL Retro-Fit - In early 2008, all common area lighting (building exterior/security, entrances, lobbies, rear porches and interior stairways and halls were 100% converted from incandescent bulbs to compact fluorescent bulbs (cfl). Additionally, basement and boiler room lighting was converted from incandescent bulbs to florescent tubes. The result was that watt consumption was reduced 20%-45% while we increased our lighting "output" (equivalent watts) by 50%-100% - more lighting was provided at a reduced cost!

Light Timers - Nearly all of the buildings have their common area lighting controlled by "on-off" light timers. These timers are now manually adjusted every two-weeks (paydays) to take advantage of the >6 hours of additional daylight present in summer over winter. It is our intention to eventually convert these timers to light sensors. We are also investigating installing motion-activated, "low-high" interior stairway lighting fixtures.

Vacant Unit Power Usage - OPRC keeps the power turned on in vacant units to protect the refrigerators and to facilitate marketing and servicing the units. However, we set the refrigerators to the "warmest" cold setting to reduce watt consumption.

Office Energy Savings - OPRC is also exploring installing motion-detector controlled, zone lighting throughout its office building.

Water

We have taken a number of steps to ensure water conservation and efficient water use. Within the unit, there are three items effecting water use: faucets, showerheads and toilets. The greatest and most frequent cause of water loss is toilet related.

It is OPRC standard procedure to dye-test the toilet tank for leaking during every (unit) service call, regardless of the actual intent of the service call. Also, maintenance staff "tunes" the fill valve (flush mechanism) to ensure that the amount of water used is only sufficient to purge the bowl, and not to empty the entire tank. However, tuning is done mainly during unit market-prep or when there is a toilet-related service call. Maintenance staff is also expected to note, and cure, any dripping faucets or plumbing leaks.

OPRC contracted[1] a test installation of reduced-flow toilet fill-valve and flapper retrofits, showerheads and faucet aerators in the 70 units in the SouthCourt and Iowa buildings. Preliminary data indicates that water consumption in occupied units was reduced in 30%-40% range.

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[1] This equipment was installed at the end of March 2010 by *Minol, US Water Works Division*, Milford, NH, 03055.

At all other OPRC buildings we are participating in a joint ComEd[2] - NICOR[3] program wherein they are installing reduced-flow aerators on all faucets and showerheads and providing six cfl bulbs for tenant use. NICOR is participating because reduced water consumption reduces the amount of gas required to heat domestic hot water. They project a $52.50 per unit annual fuel cost savings. Installations have been completed in five buildings (176 units); all of the remaining buildings will be completed within the next 45 days.

We have also allocated funds and are evaluating the cost to complete the toilet retro-fit of fill-valves and flappers in all the remaining buildings. It is most likely that instead of the product used at SouthCourt and Iowa, we will be installing a retro-fit, dual-flush button system developed by our preferred, fill-valve manufacturer (*MJSI Inc.*). We are doing test installations of their product which is the recipient of Chicago Innovation Award[4] and the 2010 Home Depot Merchandizing Innovation Award 1st Runner-Up. We also installed dual-flush toilets on a test bases in rehabbed units at SouthCourt and Pleasant Circle South; however, it is more likely that we will use the more financially feasible *MJSI* retro-fit dual-flush system.

Toilet Component Installation and Servicing Training - Equally important to having effective equipment, is having it correctly installed and serviced. All staff attended a product installation and service training presentation by *MJSI, Inc.* - our preferred product manufacturer.

Non-Domestic Water Conservation - As part of our on-going cooperation with the Center For Neighborhood Technology (CNT) we installed a "Superbarrel" in the garden courtyard of the Harrison & Highland building; rain barrels at 14 N. Austin (2) and Pleasant Circle North; "rain gardens" at Showalter House and the Ryan Farrelly building; a "Green Wall" at Pleasant Circle North; and a "Bioswale" at Pleasant & Kenilworth

The Superbarrel collects approximately 350 gallons of roof run-off water. Rather than flowing into the sewer system, this water is slowed and diverted to irrigate the garden's landscaping and foliage. The 75 gallon "rainbarrels" are similarly used.

Although not exactly a water device, our "Green Wall" is a wood and metal lattice-work "wall" approximately 20' high and attached along the façade of the building, but not flush to it. Its function is to act as a framework for climbing plants to attach themselves to. The plant's vines and leaves shield the building from the sun to shade and cool the building during the summer.

A "bioswale" is a water retaining area used to reduce flooding. Ours is located in a low-spot along the side property line and is landscaped with hardy, native foliage. The "rain gardens" are similar to the bioswale, except they are connected via underground conduit attached to the building's downspouts.

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[2] ComEd's *Smart Ideas for Your Home℠*
[3] *Nicor Gas Residential Multi-Family Direct Install Program*
[4] *Chicago Innovation Award* is sponsored by the Kellogg School of Management, Northwestern University. www.ChicagoInnovationAwards.com.

Fuel Efficiency and Consumption

We have implemented numerous fuel savings measures regarding HVAC equipment and systems. An helpful resource for our energy savings measures were the energy audits conducted by the Center for Neighborhood Technology. CNT inspected 14 OPRC buildings and provided a number of recommendations, many of which were implemented or are in the process of or scheduled for implementation.

Boilers - We installed new steam boilers at 1022-24 N. Austin and Harrison West. CNT had recommended replacement of the former's boiler and modification of the latter's. The existing 1022-24 boiler was designed for a circulating hot water heating system rather than the steam heat it was providing; it was replaced with the proper sized, steam boiler of low-80% efficiency. The Harrison West boiler was replaced with a low-80% efficiency boiler; however, we also installed a condensate return holding tank. This allows the boiler to more quickly return to steam temperature - and thereby use less fuel. The Harrison West HVAC system that we installed was based, in part, on the recommendations of the Weil-McLain's commercial specialist who visited most of our sites. He also wrote the equipment specifications. I had extensive conversations with him on the relationship between higher efficiency, cost and ROI; and, we agreed that greater efficiency was only obtainable at unacceptably long cost recovery. A preliminary analysis of Therm consumption at both boiler sites indicates that they now use significantly less Therms per HDD degree.

Boiler Control - Our preferred boiler control is the *R&D* brand which is about the best available for our systems and with which our staff is most familiar. The *R&D* provides several efficiency opportunities including allowing various temperatures at different times of the day; temperature sensors in up to six units (which ensures that the heat throughout the building is both at Code but not excessive); an adjustable, boiler shut-down out-door sensor; and the potential to monitor and control the boiler by computer from a remote location. Several recent installations include16-24 N. Austin; 1000 N. Austin; 1022 N. Austin and wherever we installed new boilers. Several buildings are scheduled to have *R&D*s installed this heating season.

Mechanical Air-Sealing Vents - Boilers require "make-up" air for combustion. The source of this air is typically a fixed-louvered vent occupying an approximately 4' x 4' hole in the boiler-room wall. This "hole" cools the boiler, boiler room and the basement and nearby units 24-hours a day. We are replacing all fixed-louvers with mechanically operated, insulated louvers that open when the boiler is running and tightly seal when it is off. This work has already been done where boilers had major service or were replaced.

Shut Off of Non-Critical Radiators in Vacant Units - We also reduced Therm consumption by turning-off non-critical radiators in every vacant unit - only the kitchen and bathroom plumbing-radiators are left on. This reduces the area that requires heat. Using this method, a 31-unit building with, say, a 50% vacancy only requires the Therms of a less-than 20-unit building! This procedure has dramatically reduced Therm consumption even as outdoor temperatures increase.

Non-Revert of NICOR Billing - Although not an efficiency or consumption item, we have also significantly reduced gas billing by terminating the gas accounts in vacant units. Tenants typically pay for cooking gas and when they move out the billing automatically reverts to the landlord. By entering into "non-revert" agreements with NICOR, we avoid paying the monthly $20-$30 meter, service and taxing costs - even when no gas is used.

Water Heaters - We installed several types and degrees of energy efficient water heaters. High efficiency water heaters (96% efficient) were installed at 514 S. Austin and at Lombard & Madison (and The Oaks). Moderate efficiency (82%) heaters were installed at 1118-26 S. Austin (3) and Thomasville. We are still doing evaluations of Therm savings and the financial feasibility of installing higher efficiency, but significantly more costly, heaters.

In many cases, the less-efficient still produce significant savings as they are replacing equipment that have long lost whatever desirable efficiency they originally provided. Currently, the more-efficient heaters cost (excluding installation) approximately 50% to 100% more than less efficient ones; however, prices are slowing decreasing and become feasible for OPRC in the near future.

Air Sealing - We are air-sealing basements and have provided demonstrations to our rehab and painting crews on where and how to air-seal units. Air sealing is now standard procedure for all rehab, painting and floor replacements.

Waste Hauling and Recycling

In addition to the standard dumpster, each building is equipped with a "Paper-Only" cart and a "Commingled" cart. Information on what may or may-not be placed in the carts is included in the lease package and prospective tenants are advised of the recycling opportunity during unit marketing.

OPRC also recycles building equipment components - such as boiler controls - by either donating them to other, non-profit users or keeping them for spare or emergency replacement parts.

6/7/11