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Date: September 21, 2015

To: Board of Commissioners

From: Jenna Smith, Resource Conservation Manager

RE: 2011-2016 Resource Management Plan Dashboard Report

Executive Summary of Results for the 2014 Resource Management Plan Year:

2014 marks the fourth year of KCHA's Resource Management Plan (RMP), a six-year strategy to reduce the Authority's impact on the natural environment and reduce utility costs. KCHA has met or exceeded its 2014 benchmark goal in three out of six resource conservation areas. With the exception of portfolio-wide whole-building energy use, the Authority continues to make progress towards 2016 year end goals.

Discussion:

The RMP was adopted by the Board of Commissioners in August 2011. It established an energy, water and solid waste baseline from 2010 utility data to measure annual progress in the following six resource conservation areas (*Dashboard progress tables can be found at the end of this report*):

- Common area energy-use at KCHA-managed sites (KCHA paid)
- Portfolio-wide whole-building energy use (KCHA and resident consumption combined)
- Water use per resident at KCHA-managed sites
- Avoided utility costs at KCHA-managed sites (water and energy)
- Waste diversion at KCHA-managed sites (recycling/garbage capacity)
- Solar energy production capacity

Common Area Energy – KCHA-paid common area energy reductions exceeded target by 3% in 2014 (Table 1). Since annual energy data is normalized with 2010 baseline year weather data, the increase in savings is due to improvements in the efficiency of building lighting and heating systems. Through regular life cycle replacements and utility company funded incentive and weatherization programs there is an on-going opportunity to continue to reduce consumption.

Whole Building Energy - While KCHA-managed areas continue to realize savings, Table 2 shows that portfolio-wide whole-building (common area and resident consumption) energy use per square foot (EUI) has remained stable from 2012 to 2014. Though KCHA's long-term goal is to reduce average EUI for the portfolio, national residential sector energy use has been trending upward partly due to increased plug loads. It has been theorized that low-income households in general have higher EUIs due both to more daytime usage and higher occupancy levels. As KCHA's 36.5 EUI is benchmarked against all types of multifamily buildings, attainment of this goal may be very difficult to achieve, although the new Energy Performance Contract (see page 3) should help to reduce the average EUI.

Water - Daily per capita water use from KCHA managed properties was 3% lower than the previous year and virtually equal to the 50 gallons per person per day target (Table 3). Field staff continues to manage utilities efficiently, identifying and fixing leaks quickly and upgrading plumbing fixtures with more efficient technologies, often with the assistance of utility rebate programs.

Avoided Costs - Compared to the 2010 baseline year, in 2014 KCHA saved \$33k in water and \$112k in energy costs (Table 4). These savings were 43% higher than the previous year due to decreases in water and gas consumption. Since energy is normalized to 2010 baseline weather data, and water is not, weather plays a larger role in water cost savings. In 2014, water savings were higher than 2012 and 2013, though less than the savings in 2011. Due to the exceptionally dry summer in 2015, next year's report may show higher water usage and less cost savings. Electricity savings has stayed relatively steady since 2012, however gas savings increased in 2014.

Waste Diversion - In 2014, the volume of recyclable material diverted from garbage exceeded projected targets by 5% (Table 5), similar to years 2011 through 2013. Resident education efforts coupled with free recycling and new food waste services continues to improve the diversion rate while reducing overall solid waste costs. Since 2010, KCHA has saved \$105 thousand by adding recycling services and reducing contamination issues, all aimed at improving the diversion rate.

Solar - With the installation of two solar photovoltaic systems in 2014, Table 6 illustrates how KCHA's solar capacity rose by 46% compared to the previous year. Though this amount is 24% below the 2014 year end target, KCHA continues to explore opportunities to install new systems. In 2014, all the solar systems combined produced over 63,000 kWh, for an estimated savings of \$6.3 thousand. The solar systems also receive a \$10 thousand annual rebate from the energy utilities.

Current Initiatives

EnviroStars - KCHA has 40 properties certified by the King County EnviroStars program, which recognizes organizations for outstanding management of hazardous waste. In 2014, KCHA's commitment to environmental stewardship was honored at a special event sponsored by EnviroStars. Currently, staff is continuing efforts to recertify existing sites and enroll new properties in the program.

Solid Waste - In an effort to assess garbage costs and clarify diversion rates (the amount of material recycled vs landfilled), KCHA conservation staff have developed a new performance measurement tool

to help identify properties that may be paying for unnecessary garbage capacity. “Right-sizing” garbage and recycling capacity to the actual needs of the property is the first step in identifying the property’s true diversion rate. Next steps include educational outreach and the introduction or expansion of yard/food waste services to further increase the diversion rate. Currently, 32 KCHA properties subscribe to organics collection and seven of these encourage residents to compost food scraps as part of the service. By the end of summer 2015, an additional seven properties will begin composting food.

Ductless Heat Pump (DHP) Review - In November 2014, conservation staff were tasked with assessing the costs and benefits of DHPs because of anecdotal concerns that the technology was difficult for residents to use and consumed an excessive amount of maintenance staff time. The assessment provided an objective review of how DHPs are performing, as well as a cost analysis comparing projected to actual energy savings. In addition, the assessment evaluated staff and residents’ experiences, as well as other multifamily property owners and housing authorities’ DHP experiences, and recommended steps KCHA should consider when implementing DHPs in the future. The findings showed that DHPs are highly reliable systems for KCHA, supported by most residents and staff, and that some additional training and simplified user guides would help both maintain and manage the technology to realize optimal energy savings.

Weatherization - The work of KCHA’s Weatherization Department directly impacts the energy use outcomes tracked by conservation staff. In 2014, Weatherization completed or substantially completed weatherization projects at 7 KCHA properties (80 buildings with 325 residential units) where wall insulation, floor insulation, attic insulation, air-sealing, ductless heat pumps and/or energy recovery ventilators (ERVs) were installed.

Utility Rebate Programs – KCHA conservation staff are taking advantage of utility related conservation programs to retrofit properties with energy and water saving technologies. For example, staff have partnered with Seattle City Light and Puget Sound Energy to provide free indoor LED lighting, power strips, and water heater pipe insulation for residents, and to secure financial incentives for energy efficient outdoor lighting installations. Year to date, KCHA has received free installation assistance for 40 indoor energy projects and over \$57 thousand in rebates for 8 exterior lighting projects. Combined estimated energy savings for both KCHA and residents is 875 thousand kWh. Additional partnerships with the Saving Water Partnership and Cascade Water Alliance have provided free water audits to identify leaks and almost \$40 thousand in funding to retrofit toilets, showerheads and aerators at 7 properties from second quarter 2014 to the present.

Energy Performance Contract- The Board has already had an initial briefing on this initiative. KCHA is exploring the use of HUD financial incentives to finance energy conservation measures such as DHPs, LED lighting, ERVs, energy efficient appliances and water conservation measures in our Public Housing inventory and to use the utility cost savings to amortize project costs and deliver supplemental cash flow to the Authority over a 20 year period. The shape of this project is now coming into focus. KCHA is focusing on a scenario that would deliver \$27.7 million in efficiency improvements, leading to a projected \$53.2 million in utility savings over 20 years, and result in \$15.2 million in cash flow to KCHA

over that same period to support operations. The Board will have another briefing on this project in either October or November 2015 as the numbers are finalized.

Looking Ahead

2016 is the final year of the 2011-2016 Resource Management Plan, and development of a new plan is underway. The new plan will establish further five year goals for measuring the impact of water, energy and solid waste conservation efforts, identify other areas where KCHA can reduce its impact on the environment and highlight the main initiatives KCHA will undertake to increase sustainability outcomes. The Plan will be brought to the Board for review and adoption.

2014 Dashboard Summary and Tables

KCHA RMP Dashboard Summary			
RMP Target Area	2014 Actual	2016 Target	On Target to Meet 2016 Goals?
KCHA managed common area energy in Millions of British Thermal Units (MBtu)	5,532 MBtu	8,079 MBtu	Yes
Portfolio whole building energy use per square foot (EUI)	38.7 EUI	36.5 EUI	No
KCHA managed gallons per person per day (GPD)	50.2 GPD	49.97 GPD	Yes
KCHA managed avoided cost	\$146,161	\$278,922	No
KCHA managed waste diversion rate (DR)	37% diverted	40% DR	Yes
Portfolio solar energy kW capacity	98.6 kW	195.5 kW	No

Table 1: Common Area Energy Savings

Target: 8,079 MBtu reduction (10% by end 2016)

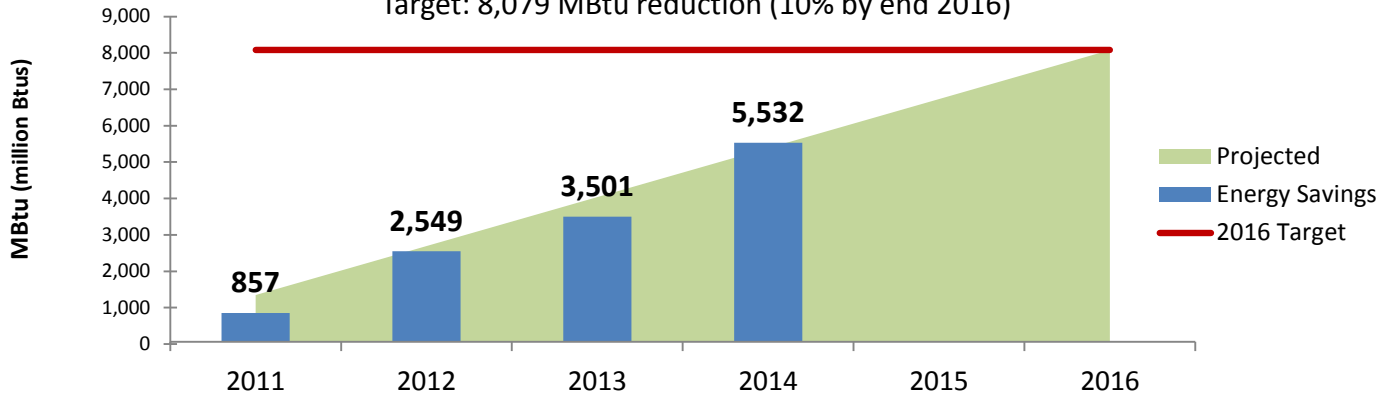


Table 2: Whole Building Multifamily Energy Use Index

Target: 36.5 EUI (5% reduction by end 2016)

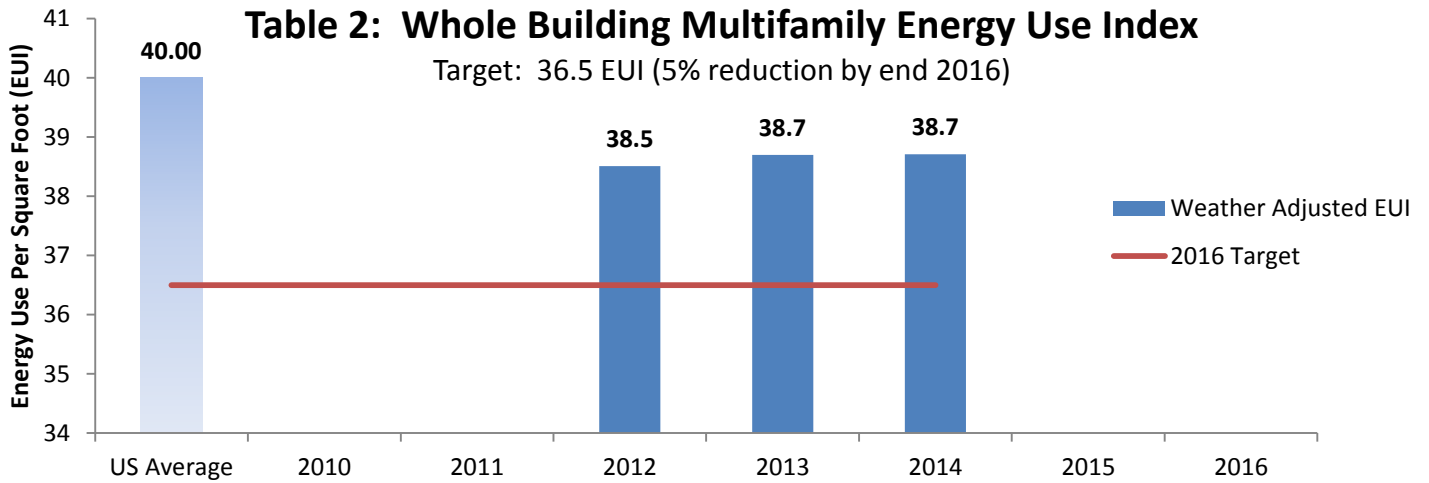


Table 3: KCHA Managed Water Use

Target: 49.97 GPD (5% reduction by end 2016)

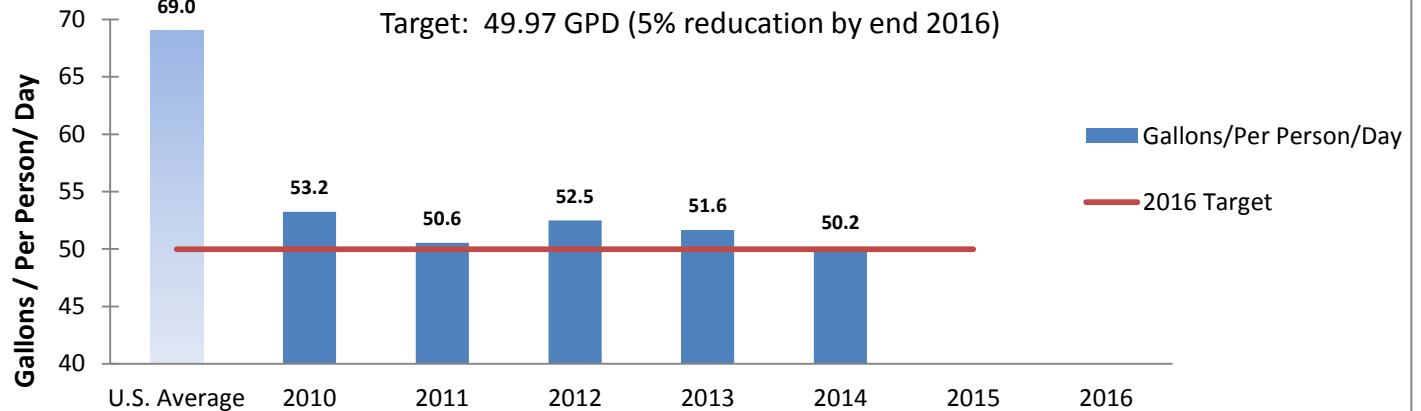


Table 4: Avoided Utility Cost

Target: \$279k by end 2016 (5% Energy & 10% Water Savings)

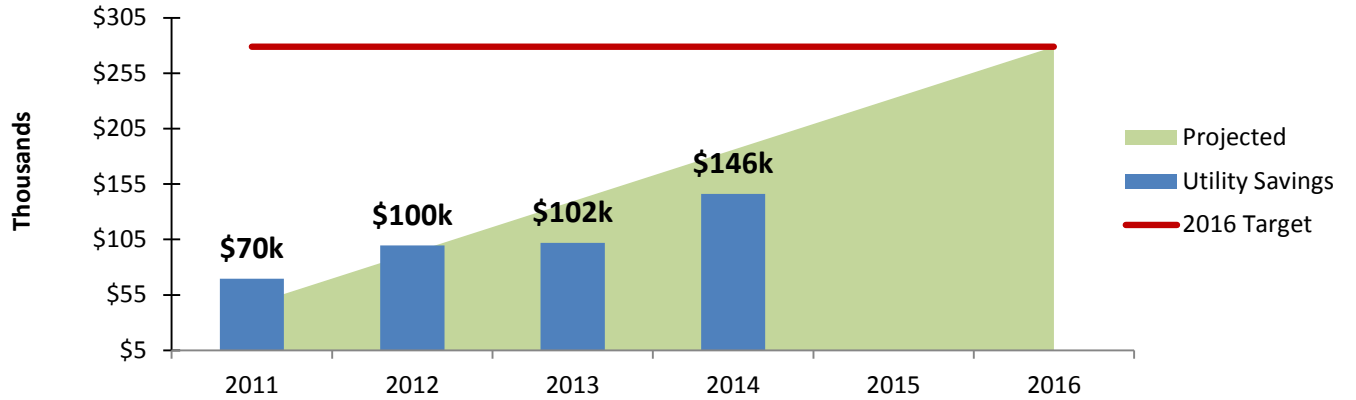


Table 5: Waste Diversion (KCHA managed only)

Target: 40% diversion by end 2016

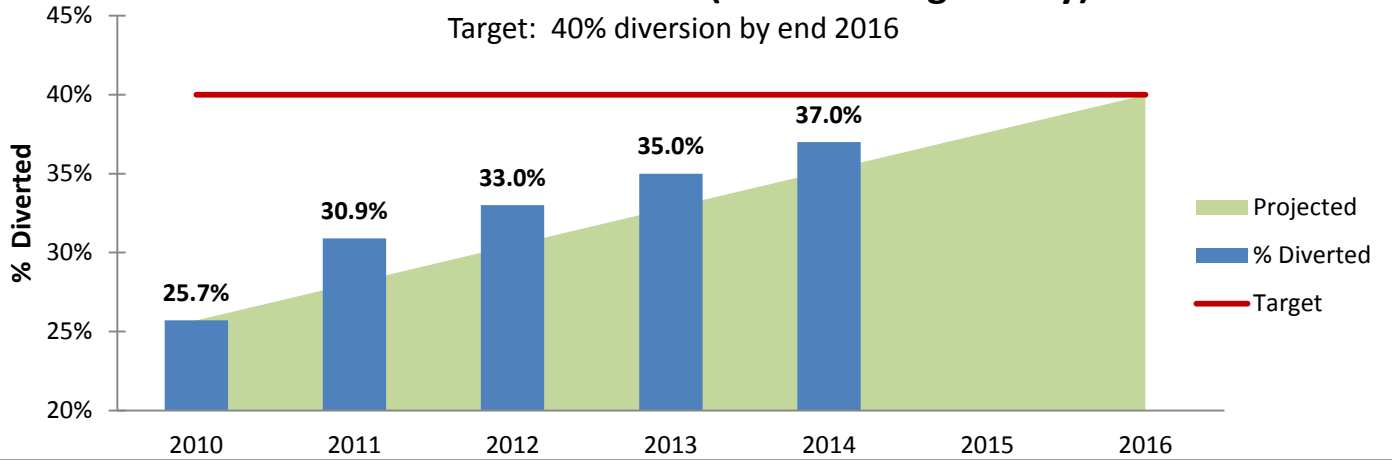


Table 6: Solar Energy Capacity

Target: 195kW by end 2016

