



**To:** Board of Commissioners

**From:** Jenna Smith, Resource Conservation Manager

**Date:** September 11, 2017

**Re:** **2011-2016 Resource Management Plan Final Year Report and 2017 Environmental Sustainability Plan Initiatives Update**

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2016 marked the final year of KCHA’s six year Resource Management Plan (RMP). Its replacement, the 2017-2021 Environmental Sustainability Plan (ESP), was adopted by the Board in November 2016. At the September 18<sup>th</sup> Board meeting, I will be presenting the final year results of the RMP, as well as an update on first year ESP initiatives.

**Executive Summary of the 2016 Resource Management Plan Results:**

The RMP included a list of conservation initiatives, plus six sustainability target areas with annual goals. Since 2011, KCHA has made excellent progress in all six of the target areas. By the end of 2016, Target 1, common area energy savings, and Target 5, waste diversion surpassed their final-year goals. Target 2, multifamily whole-property energy use per square foot (EUI), and Target 3, water use per resident per day (GPD), came very close to meeting goals, while Target 4, avoided utility costs, almost met its goal. Only Target 6, the goal to increase solar energy generating capacity, didn’t make any progress in 2016.

**Dashboard of the Six Sustainability Target Areas:**

<b>Sustainability Target Areas</b>	<b>2016 Actual</b>	<b>2016 Goal</b>	<b>% of Goal</b>
1) Common area energy savings in British Thermal Units (MMBtu)	8,359 MMBtu	8,079 MMBtu	103%
2) Multifamily Energy use per square foot (EUI)	35.9 EUI	35.8 EUI	100%
3) Multifamily Gallons of water per person per day (GPD)	50.3 GPD	50 GPD	99%
4) Avoided utility costs (electricity, gas and water)	\$254,118	\$278,922	91%
5) Waste diversion rate (DR)	44.4% DR	40% DR	111%

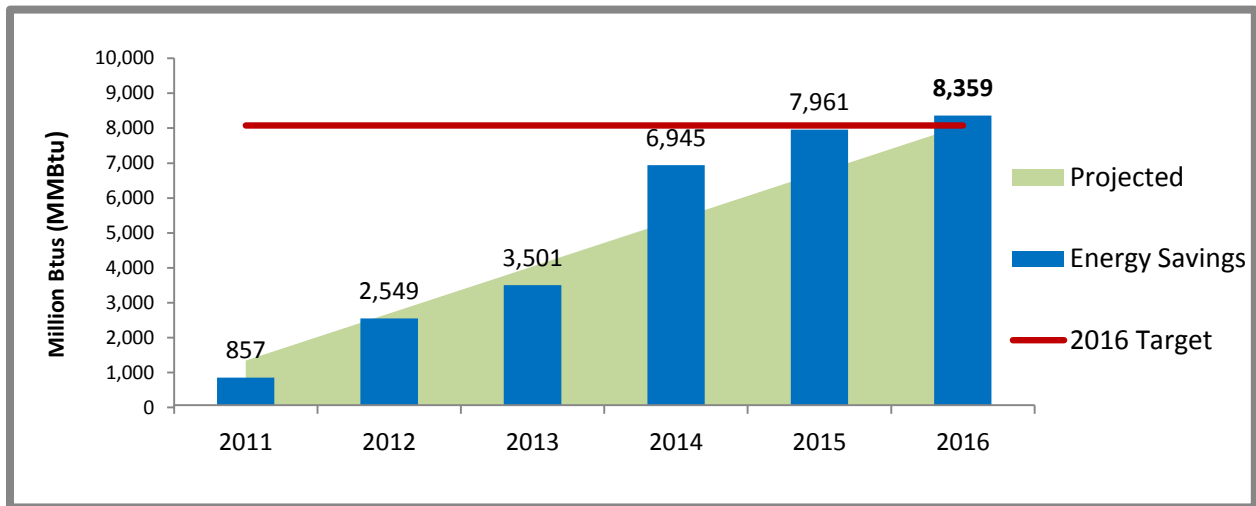
Sustainability Target Areas	2016 Actual	2016 Goal	% of Goal
6) Solar energy capacity	99.7 kW	195.5 kW	51%

**Summary of the Six Sustainability Target Areas:**

**Target 1: Common Area Energy Savings**

In 2016, common area energy savings was 3% higher than target and 5% higher than the previous year (Table 1). Taking advantage of utility rebate programs, 10 exterior lighting projects were completed with an estimated savings of more than 340 thousand kilowatt hours (kWh) per year. These projects also had the added benefit of increasing illumination in hallways, offices and outdoor areas.

**Table 1: Common Area Energy Savings**  
 Target: 8,079 MMBtu saved (10% increase in savings by year-end 2016)



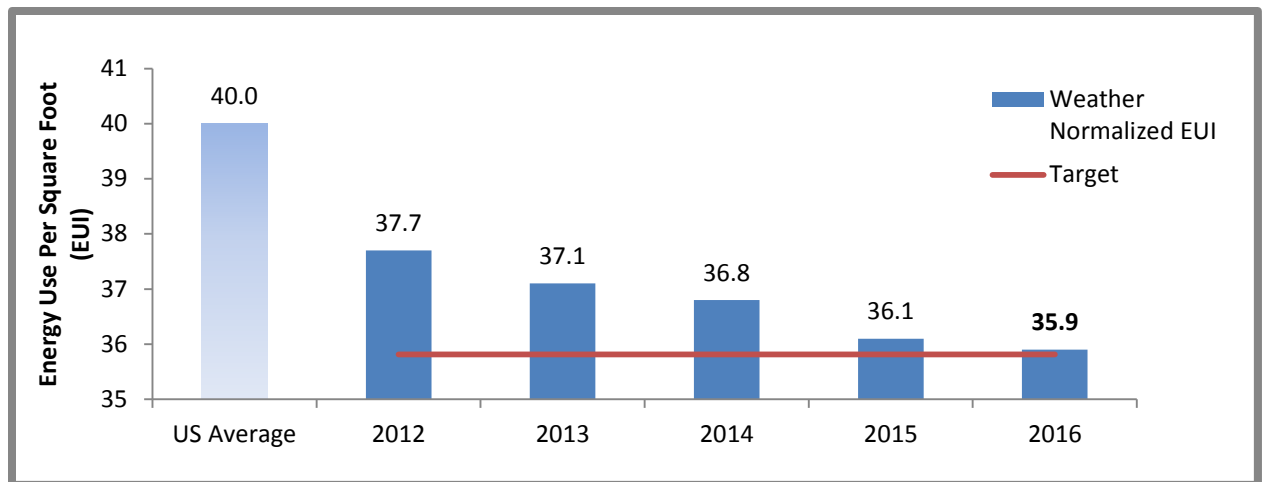
**Target 2: Multifamily Energy Use**

To calculate KCHA’s multifamily Energy Use Index (EUI), common area and resident energy use is combined and normalized for weather variations, and then divided by the total square footage of the buildings. Normalizing energy data requires a complete year of weather data. Energy conservation projects that occurred in the later part of 2016 did not significantly impact 2016’s yearend EUI.

Since 2012, which was the first year the data became available, EUI has been steadily declining. Weatherization projects, energy utility rebates and resident engagement programs, plus maintenance and management practices, continue to reduce energy use (Table 2).

In 2016, KCHA completed eight weatherization projects, ten exterior lighting projects, and 22 free LED light bulb and advanced power strip giveaway events for residents. KCHA also began the Energy Performance Contract (EPC) with Johnson Controls, Inc., to upgrade 34 properties with energy efficiency improvements through 2017.

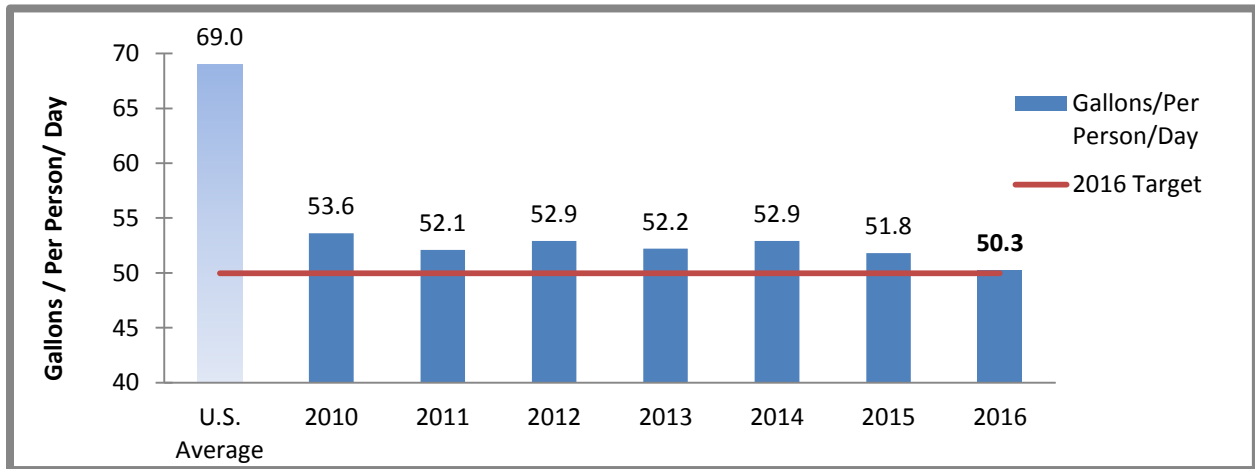
**Table 2: Multifamily Energy Use**  
Target: 35.8 EUI (5% reduction by year-end 2016)



### Target 3: Water Savings

Average daily per capita water use for KCHA-managed properties was about 3% lower than the previous year, almost meeting the annual target (Table 3). Staff continues to monitor utility bills, identify and fix leaks, and upgrade plumbing fixtures with more water efficient technologies, often with the assistance of utility rebate programs. Though the EPC began towards the end of 2016, the impact to total water use mainly impacted utility bills in 2017.

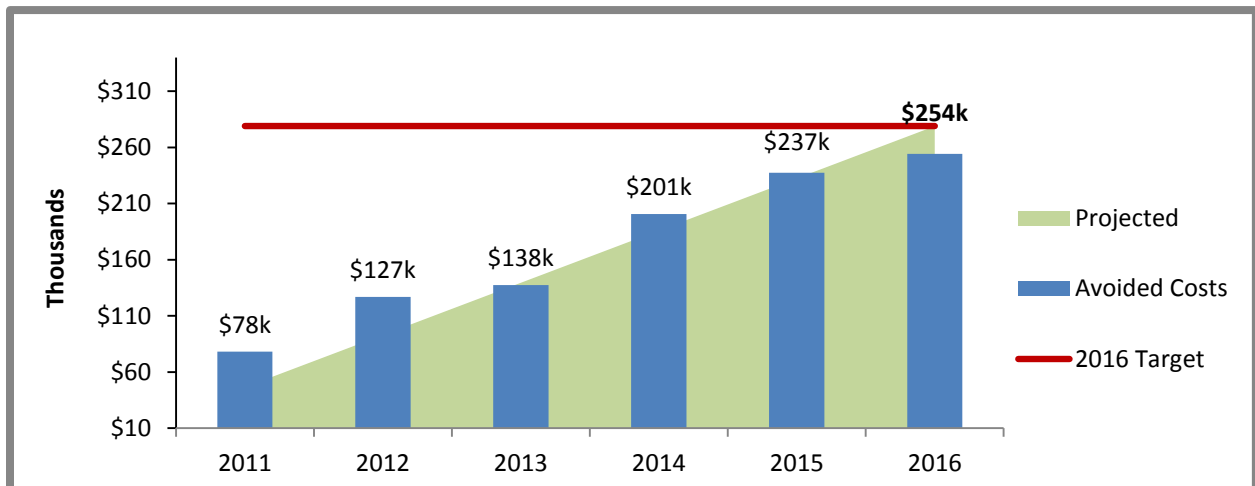
**Table 3: Water Savings**  
 Target: 50 GPD (5% reduction by year-end 2016)



**Target 4: Avoided Utility Costs**

In 2016, KCHA avoided \$51 thousand in water and \$203 thousand in energy costs compared to the 2010 baseline year (Table 4). Between 2015 and 2016, there was a 7% increase in overall utility savings. The water cost savings nearly doubled compared to the previous year due to water efficiency measures installed at 4 EPIC and 8 Weatherization properties. In 2016, energy savings were down by 4% compared to 2015. Though electricity savings increased, overall gas savings were much lower in 2016, due to an abnormally cold and long winter.

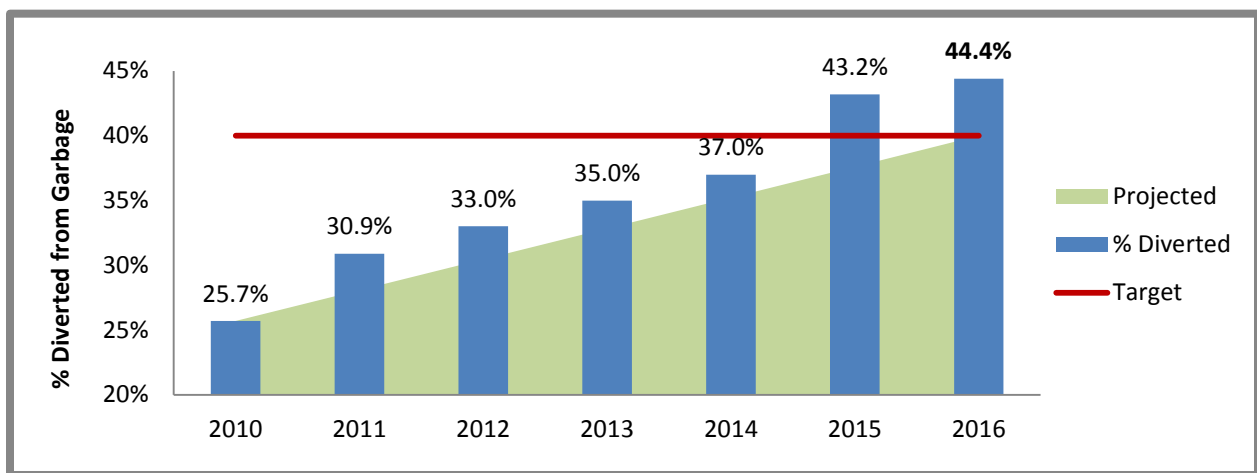
**Table 4: Avoided Utility Cost**  
 Target: \$279k (5% Energy & 10% Water Savings by year-end 2016)



### Target 5: Waste Diversion

At the end of 2016, 44.4% of waste was being diverted from the landfill to regional recycling and composting facilities. This figure surpasses the five year goal, which was originally set at 40%, and also greatly exceeds the King County average for multifamily diversion, which is around 15%. Currently, 100% of KCHA properties subscribe to recycling service, 35 properties subscribe to organics collection and of those 16 encourage residents to compost food scraps.

**Table 5: Waste Diversion**  
Target: 40% diversion by year-end 2016

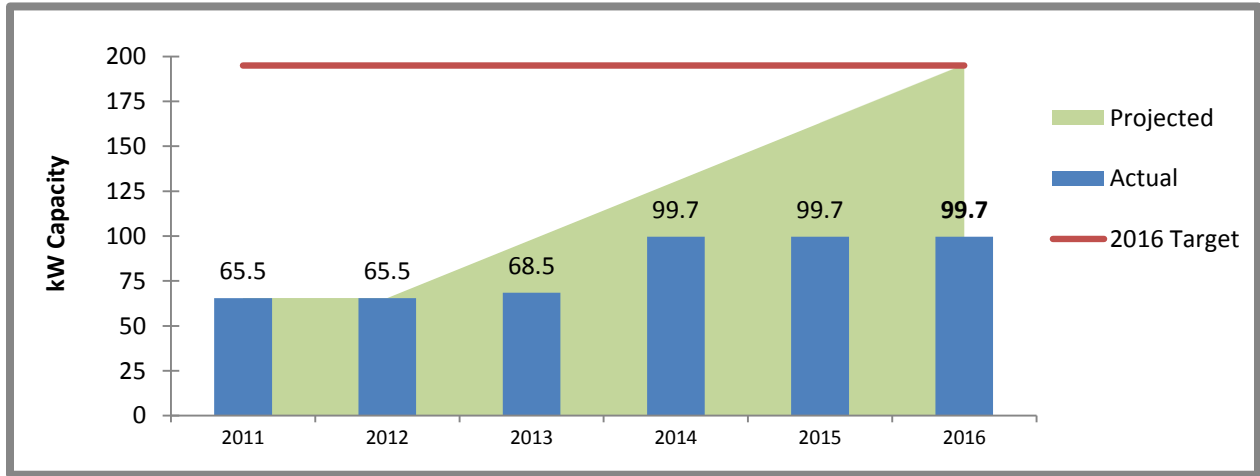


### Target 6: Solar Energy Capacity

In 2016, KCHA explored using Washington State Department of Commerce funding to install a solar array system on one of the Central Office's buildings, however the cost-benefit analysis was not favorable and the project was not implemented. Additional solar installations will in most cases require a change in the financing/tax environment or additional reductions in installation costs.

From November 2015 to October 2016 (the utility solar program year), KCHA's six solar systems generated about \$11 thousand in electricity savings, and provided a \$12 thousand annual rebate from the energy utilities.

**Table 6: Solar Energy Capacity**  
Target: 195kW by year-end 2016



## **2017 Environmental Sustainability Plan Initiatives Update:**

### **Utility Data Improvements**

- Since the beginning of 2017, a comprehensive effort has been underway to verify and update all water, sewer, electricity and gas utility data. This year, a new staff person was hired and has updated about 75% of the utility data tracked in the two main utility management software systems. Updated utility data will likely impact the goals and targets that were originally calculated for the new Environmental Sustainability Plan.

### **Partnerships**

- **City of Bellevue/Bellevue Boys and Girls Club:** In a partnership between KCHA, the City of Bellevue, and the Bellevue Boys and Girls Clubs, an environmental educational program was developed for the Spiritwood, Hidden Village, and Eastside Terrace clubs. The program taught children about energy conservation, storm water protection, recycling and composting, and saving water in the home, and encouraged the children to take the messages home to family members.
- **Kent Youth and Family Services:** KCHA Resident Services staff partnered with Kent Youth and Family Services staff to tackle a litter problem at Valli Kee. Kids made posters to encourage other kids and adults to make sure trash ends up in the bin and not on the ground around the bins. The posters were then laminated and placed on the outsides of the waste/recycling enclosures with the

hope that it would encourage residents to more carefully place trash and recycling in the property dumpster.

- **The Cascade Water Alliance:** KCHA has collaborated with the Cascade Water Alliance on multiple initiatives over the past few years. In the spring of 2016 and 2017, Cascade hosted sustainable landscape management trainings for KCHA property maintenance staff, including contracted properties, to teach them natural landscape management techniques that improve the appearance of plants, while reducing staff time, water use, and impacts to the environment. Cascade also performed water conservation workshops for staff and outreach to residents during Fix-A-Leak Week events in March.
- **EnviroStars:** King County's EnviroStars program recognizes organizations for outstanding management of hazardous waste. Currently, KCHA has about half of all properties certified. This year, King County announced major changes to the EnviroStars program, which may impact how KCHA participates in the program in the future.

## Recognition

- **Green Globe Award:** In 2017, Dow Constantine, King County Executive, honored KCHA with the County's Green Globe award for their outstanding achievements in environmental stewardship. KCHA received the award based on work with the EnviroStars Program, as well as the on-going work from the new Environmental Sustainability Plan.
- **Better Buildings Challenge:** In 2017, KCHA received recognition from HUD and the Department of Energy for tracking and sharing all whole property multifamily energy data. In 2016, HUD developed a proposal that would require all public housing properties to benchmark energy use every three years. KCHA can comply with this proposal if it becomes a requirement.

## Property Initiatives

- **Sustainable Landscape Management:** Landscape management is one of the main initiatives in the Environmental Sustainability Plan (ESP). Starting in 2016, staff began looking at the water efficiency of automatic irrigation systems. This year, staff began inventorying irrigation systems, adjusting irrigation runtimes and tracking the impact to water use and utility bills.
- **Solid Waste:** In the ongoing effort to reduce garbage costs and improve diversion rates (the amount of material recycled vs sent to the landfill), KCHA conservation staff continue to "right-size" garbage and recycling capacity at each property. This simple change typically leads to a reduction in garbage capacity and an increase in recycling capacity, plus a utility cost savings for the property. As residents' recycling knowledge grows, staff will further right-size solid waste services to increase the diversion rate and reduce billing costs. As a result of

increasing recycling service and reducing unneeded garbage capacity, in 2016, KCHA saved over \$28 thousand, and an additional \$21 thousand so far this year.

- **Utility Rebate & Conservation Programs (Excluding EPC):** KCHA continues to assess properties for utility rebates and free-of-charge conservation program opportunities. In 2016, portfolio-wide rebates totaled almost \$450 thousand, and in 2017, \$51 thousand. Energy and water efficiency rebates come from the Saving Water Partnership, Cascade Water Alliance, Seattle City Light and Puget Sound Energy. For both years, projects included air sealing (\$272 thousand), exterior lighting (\$97 thousand) and toilet retrofits (\$116 thousand, plus 129 free toilets), efficient pool heaters (\$2.8 thousand), and rebates for Resource Conservation staff's participation in the PSE's Resource Conservation Manager program (\$13 thousand). Also, since last year, another 22 properties participated in Seattle City Light (SCL) and Puget Sound Energy's (PSE)'s direct install program which provides free indoor LED lightbulbs, power strips, and water heater pipe insulation to residents. Currently, KCHA is also participating in two PSE programs, one that targets energy savings through commissioning services for non-residential buildings and the other which aims to provide comprehensive energy management support to residents and staff.
- **Weatherization:** KCHA's dedicated Weatherization department performs outstanding work that directly impacts both energy and water outcomes tracked by Resource Conservation staff. Their wide scope includes heating systems (ductless heat pumps and furnaces), insulation (walls, attic, and floor), mechanical ventilation (bathroom fans and energy recovery ventilators), and low cost items (LED bulbs, showerheads, and faucet aerators). In 2016, Weatherization leveraged \$2.5 million to substantially complete eight KCHA sites (511 residential units). In 2017 there will be an estimated \$1.2 million leveraged for another five KCHA sites (274 residential units) with three slated to be substantially completed by year end.
- **Energy Performance Initiative Contract (EPIC):** Since EPIC construction began in 2016, 100% of the water measures and about 75% of the energy measures have been installed under the contract with Johnson Controls, Inc. Another three properties have been added to the project scope since beginning the work, and planning is underway to add more to the extent that additional funding becomes available. Most of the additional scope will be self-performed by KCHA in 2018. When complete, KCHA will have installed approximately \$23 million in energy and water conservation measures at nearly all public housing properties. For this project, HUD paid incentives to KCHA are estimated to be \$50.4 million. Of these incentives, \$20 million (\$1 million annually) can be used to support KCHA operations, above and beyond any project costs.