



To: Board of Commissioners

From: Jenna Smith, Resource Conservation Manager

Date: November 21, 2016

Re: **2011-2016 Resource Management Plan Dashboard Report and Resolution 5548 to approve the implementation of the 2017-2021 Environmental Sustainability Plan**

At the September Board meeting we will be presenting the 2015 results of KCHA's resource conservation activities as they relate to the existing 2011-2016 Resource Management Plan (RMP). We will also be asking the Board to approve Resolution No. 5548 adopting the new 2017-2021 Sustainability Plan. Although the 2015 results would typically be presented in the Briefings section of the Agenda, the Board should find it more useful to hear past activities prior to a presentation of future strategy. As a result, attached to this memo is the update for the original RMP, as well as Resolution 5548 and the related materials describing KCHA's proposed Sustainability Plan. I look forward to discussing both with you on November 21.

Executive Summary of the 2015 Resource Management Plan Results:

The Resource Management Plan (RMP), adopted by the Board in 2011, established KCHA's first environmental sustainability plan designed to reduce utility consumption and utility costs, improve environmental stewardship and enhance KCHA's reputation as a sustainability leader among public housing authorities. The plan included a list of conservation initiatives for staff to implement by year-end 2016, and identified six utility-related sustainability target areas to measure progress towards annual goals:

1. Common area energy-use
2. Portfolio-wide whole-building energy use (common area and resident consumption combined)
3. Water use per resident
4. Avoided utility costs (water and energy)
5. Waste diversion rate (recycling/garbage capacity)
6. Solar energy production capacity

Each year, staff reports to the Board on the progress made toward fulfilling the mission of the RMP. 2015 marks the penultimate year of the plan where persistent conservation efforts are resulting in steady progress towards meeting 2016 final year-end goals. In 2015, only one target area, the goal to increase solar photovoltaic systems at KCHA properties, did not achieve any gains. Most of the other target areas met or exceeded 2015 year-end goals, except for Avoided Utility Costs, which was 80% of its annual goal.

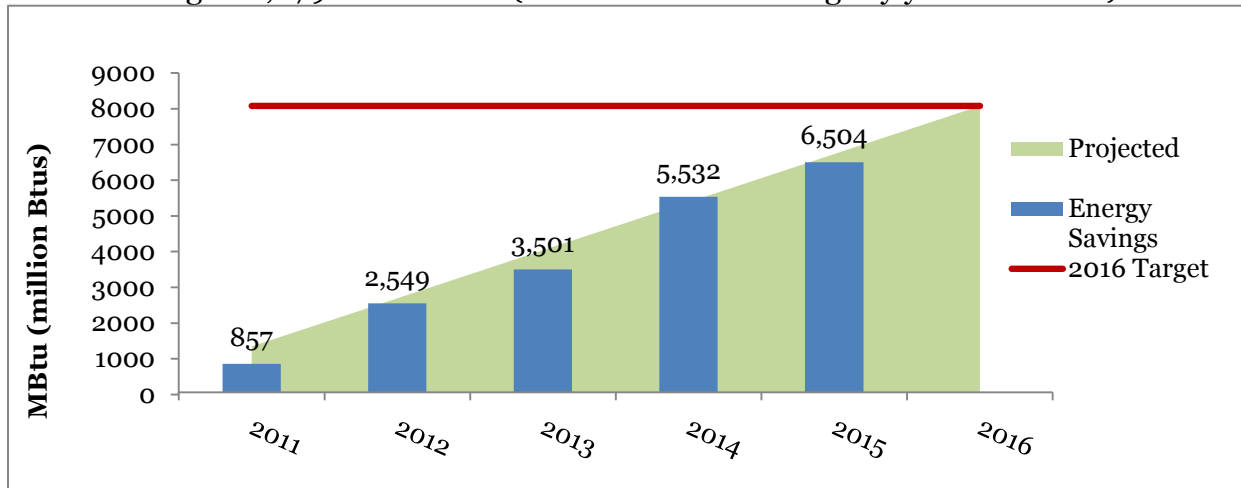
2015 Dashboard:

Sustainability Target Area	2015 Year-End Actual	2016 Year-End Goals	On Track to Meet 2016 Year-End Goals?
Common area energy (Millions of British Thermal Units (MBtu))	6,538 MBtu	8,079 MBtu	Yes
Energy use per square foot (EUI)	34.6 EUI	36.5 EUI	Yes
Gallons of water per person per day (GPD)	48.6 GPD	49.97 GPD	Yes
Avoided utility costs (electricity, gas and water)	\$185,410	\$278,922	No
Waste diversion rate at KCHA-managed sites	43.2% DR	40% DR	Yes
Solar energy production capacity	98.6 kW	195.5 kW	No

Dashboard Tables of the Six Sustainability Target Areas:

The following six tables highlight annual progress towards 2016 year-end goals. The baseline used in the RMP for the six Sustainability Target Areas is 2010 or 2011, except for whole-building energy use, where baseline data was not available until 2012.

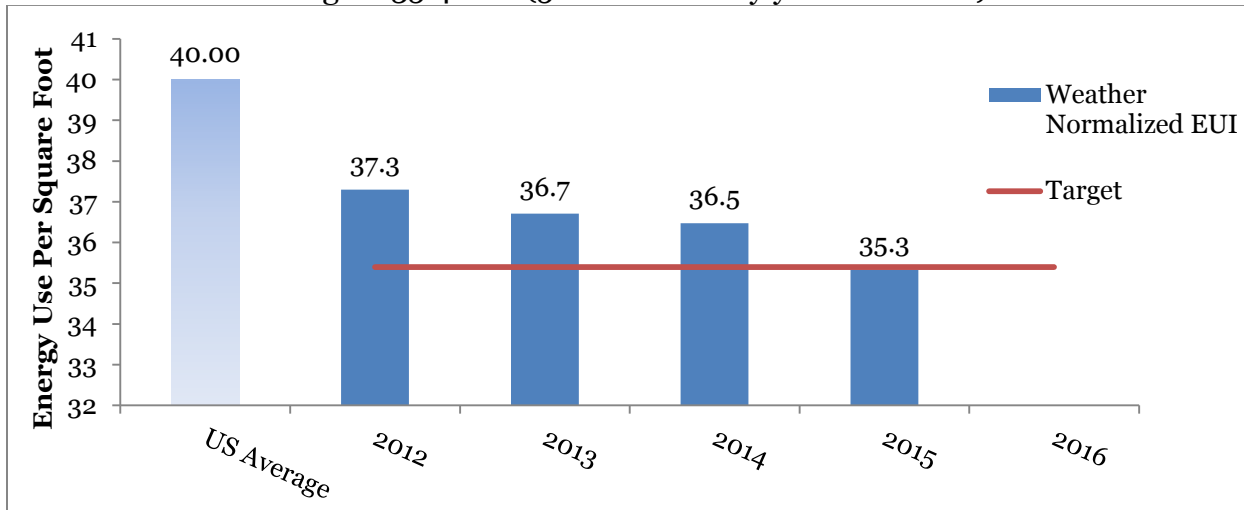
Table 1: Common Area Energy Savings
 Target: 8,079 MBtu saved (10% increase in savings by year-end 2016)



Target 1: Common Area Energy Savings

KCHA-paid common area energy savings were 3% lower than 2015 targets (Table 1). Taking advantage of utility rebate programs, 20 interior and exterior lighting improvement projects were completed with an estimated savings of more than 200 thousand kilowatt hours (kWh) per year. These projects also had the added benefit of increasing illumination in hallways, offices and outdoor areas.

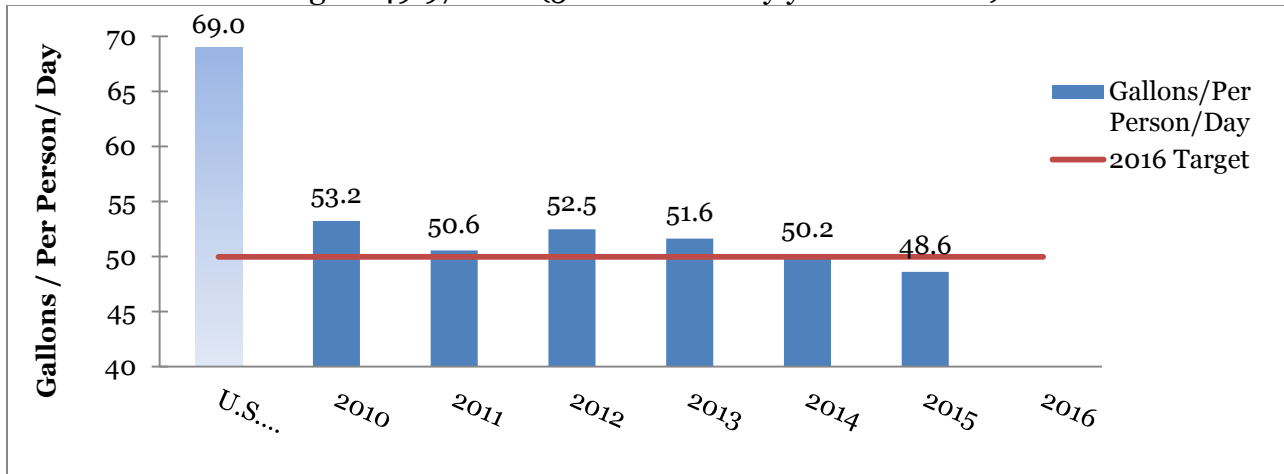
Table 2: Whole Building Multifamily Energy Use Index (EUI)
Target: 35.4 EUI (5% reduction by year-end 2016)



Target 2: Whole Building Energy Savings

Table 2 displays portfolio-wide whole-property (common area and resident consumption combined) energy use per square foot (EUI). Since the end of 2014, 67 properties have participated in utility programs to provide free-of-charge water heater pipe wrapping, light bulbs, and power strips for residents. Along with the 20 properties that completed common area lighting upgrades, KCHA's Weatherization department also completed five projects to insulate walls, provide air-sealing, add efficient heating systems and improve in-unit air quality. Based on the first year (2012) dependable EUI data was available, whole property energy use has declined by 5% and surpassed the 2016 year-end goal of 35.4 EUI.

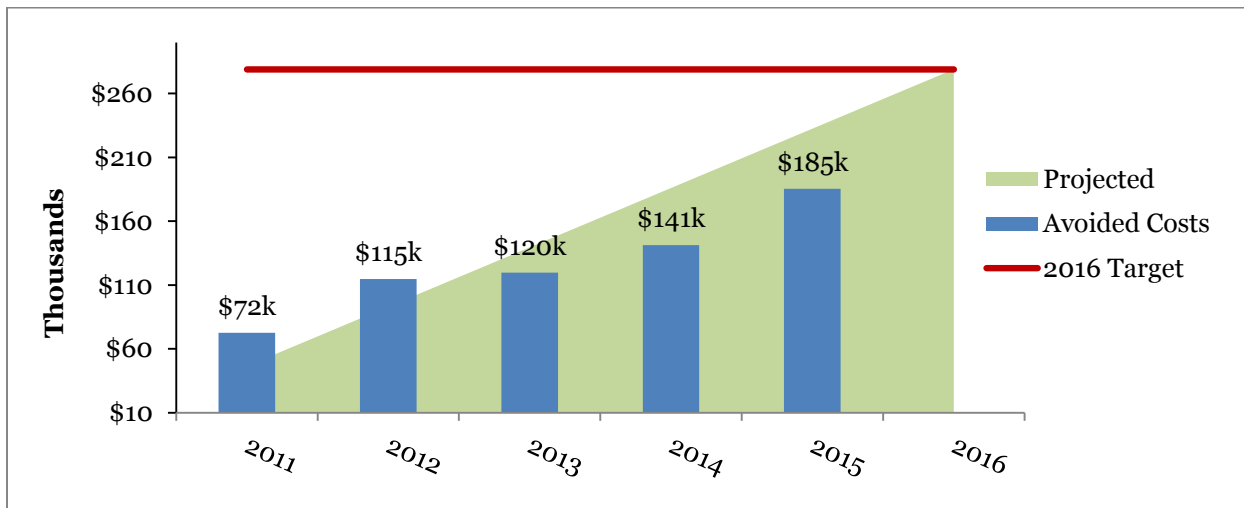
Table 3: KCHA Managed Water Use
 Target: 49.97 GPD (5% reduction by year-end 2016)



Target 3: Water Savings

Daily per capita water use from KCHA managed properties was 3% lower than the previous year and exceeded its annual target by 3% (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.

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

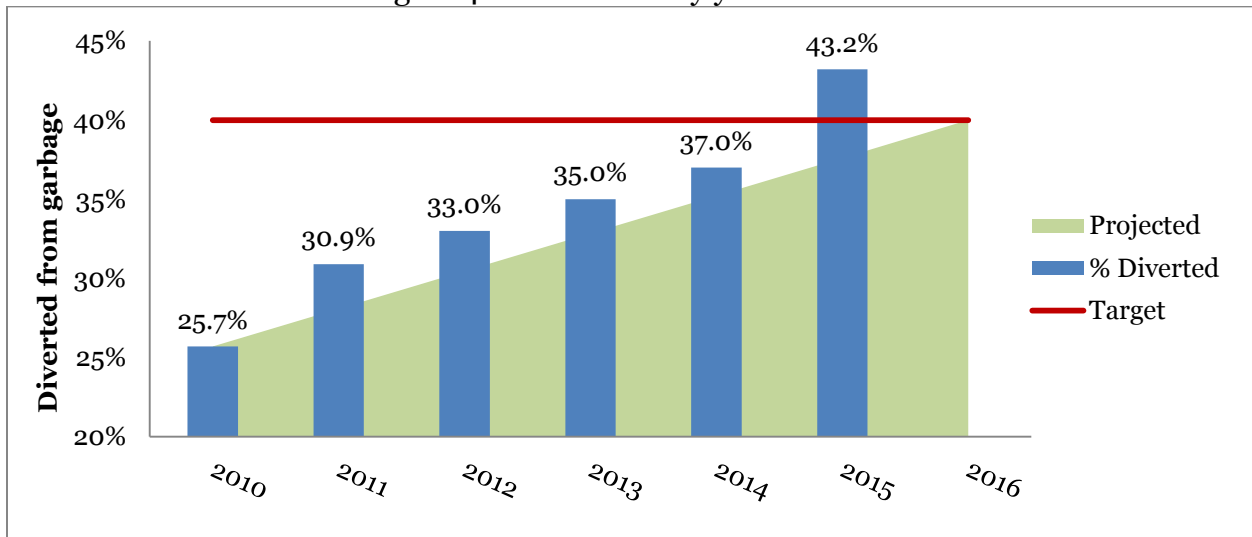


Target 4: Avoided Utility Costs

In 2015, KCHA avoided spending \$32 thousand in water and \$154 thousand in energy costs compared to the 2010 baseline year (Table 4). Between 2014 and 2015, there was a 31% increase in utility savings, mainly due to reductions in gas consumption resulting from operational improvements. Normalized for weather, electrical energy cost savings

remained relatively unchanged; however water utility cost savings, which are not normalized for weather, were 12% higher compared to 2014 and 20% higher compared to 2010.

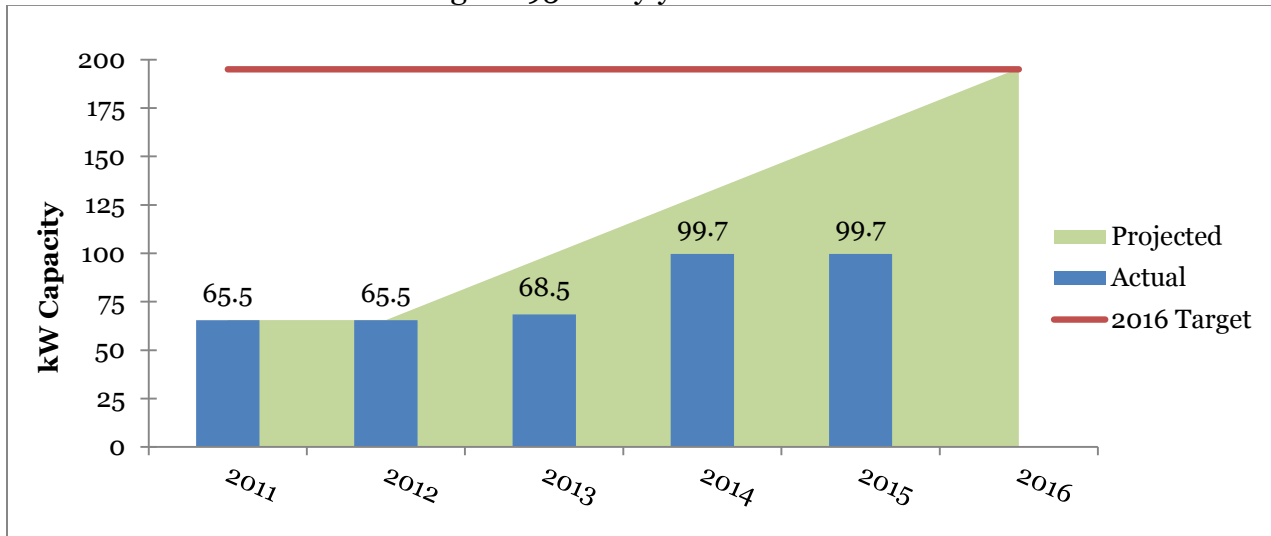
Table 5: Waste Diversion (PH only)
 Target: 40% diversion by year-end 2016



Target 5: Waste Diversion

At the end of 2015, KCHA was diverting 43.2% of its waste away from the landfill and into regional recycling and composting programs. This figure surpasses the 2016 goal, which was originally set at 40% and also greatly exceeds the King County average for multifamily diversion, which is around 13%. 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 6: Solar Energy Capacity
 Target: 195kW by year-end 2016



Target 6: Solar Energy Capacity

In 2015, no solar photovoltaic systems were installed mainly due to lack of state and utility financial incentives to help offset the cost of installation. However, the electricity produced during the utility solar program year, from November 2014 to October 2015, saved roughly \$10 thousand, and provided an additional annual rebate from the energy utilities of \$10 thousand.

Current Initiatives:

EnviroStars - KCHA has 42 properties certified by the King County EnviroStars program, which recognizes organizations for outstanding management of hazardous waste. Currently, another 18 properties have submitted applications and are awaiting certification. By year-end 2016, a total of 60 properties will be certified with at least 3 stars under the EnviroStars banner.

Solid Waste - In the ongoing effort to reduce garbage costs and improve diversion rates (the amount of material recycled vs landfilled), KCHA conservation staff typically start by “right-sizing” 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. And, as residents’ recycling knowledge grows, staff will continue to right-size solid waste services to increase the diversion rate and reduce billing costs. From the beginning of 2015 until mid-year 2016, KCHA has saved about \$76 thousand in solid waste utility costs.

Utility Rebate Programs - KCHA continues to assess properties for utility rebates and free-of-charge conservation program opportunities. Currently, staff participates in the Resource Conservation Manager (RCM) program offered by Puget Sound Energy

(PSE), which provides annual rebates for energy savings. In 2015, KCHA earned a rebate of \$13 thousand. Since the beginning of 2015, 66 properties have partnered with Seattle City Light (SCL) and PSE to provide free indoor LED lighting, power strips, and water heater pipe insulation for residents, 65 properties have been audited to assess opportunities for financial incentives from SCL and PSE, and 28 have participated in common area energy upgrades and received over \$300 thousand dollars in rebates.

The Saving Water Partnership and Cascade Water Alliance continue to provide financial incentives to install water efficient toilets, showerheads and aerators. Currently, three properties are replacing toilets that will reduce toilet water use by half.

Weatherization - The work of KCHA's Weatherization Department directly impacts the energy use outcomes tracked by conservation staff. In 2015, Weatherization substantially completed projects at six KCHA properties with a total of 173 residential units. Weatherization work may include wall, floor and attic insulation, as well as air-sealing, the installation of ductless heat pumps and energy recovery ventilation systems. These improvements increase the energy efficiency of our residents' homes while also improving their indoor air quality. In 2016, Weatherization is engaged at nine KCHA properties with five projects slated to be substantially completed by year-end.

Energy Performance Initiative Contract (EPIC) - In January 2016, KCHA entered into an Energy Performance Contract (EPC) with Johnson Controls, Inc. When completed, KCHA expects to have installed approximately \$23 million in energy conservation measures, including water and lighting packages at nearly all public housing properties, and ductless heat pumps at 13 public housing properties. This project is estimated to produce \$50 million in energy savings over the next 20 years. HUD regulations allow the Authority to keep 25% of these savings to support its operating and capital needs, while spending the remaining 75% on the project itself, including debt service, replacement reserves and third party monitoring. The project began at Forest Glen in concert with the Capital Construction department's waste line replacement activity. Shelcor is currently underway with Briarwood, Eastside Terrace and Cascade homes slated next on the schedule. Once complete, the EPC should further reduce the Authority's EUI (Target 2) and GPD (Target 3). Future reports will also report annual updates on savings resulting from this project.

Executive Summary of the 2017-2021 Environmental Sustainability Plan:

Investment in energy and water conservation, as well as solid waste management, continues to be a cost effective strategy for KCHA. In the new five-year Environmental Sustainability Plan (ESP), KCHA will carry forward current initiatives outlined in the original RMP, and will pursue new opportunities to reduce the Authority's environmental footprint and utility costs. The proposed plan and appendices A - C are attached to this memo.

The ESP builds on the original plan, incorporates existing initiatives and expands KCHA's sustainability strategy to include new initiatives and areas of focus. The plan also identifies three special initiatives, Landscape Management, Waste Management and Resident Engagement, that will be explored more thoroughly by the Resource Conservation department during the five years of the Sustainability Plan. Though these special initiatives have been part of ongoing efforts at KCHA, Resource Conservation plans to investigate the behavioral and/or systemic barriers that need to be addressed in order to improve outcomes.

KCHA considered a broad range of environmental initiatives for the new plan, selecting only those that will have a direct or indirect benefit to utility costs, the natural environment, and residents and staff. These initiatives are organized into three categories:

- Sustainable Operations – General administration of KCHA, and the property maintenance and management functions.
- Sustainable Development & Renovation – Construction and development activities.
- Sustainable Communities – Resident engagement activities.

Both new and existing initiatives are listed in the ESP. Existing initiatives will be evaluated for effectiveness, and updated if needed. For example, policies and procedure that were established during the RMP may need to be updated to reflect the current state of sustainability. Some new initiatives may require upfront research, as well as input from stakeholders before implementation.

To measure the environmental impact of the initiatives, seven Sustainability Plan Goals were selected as key overall indicators of performance. Many additional performance metrics have also been identified (Appendix B – Measurements) in the plan. These metrics are indicators of progress, and support main sustainability goals.

Based on 2016 year-end estimates, by the end of 2021 KCHA expects to achieve:

1. 10% reduction in gallons per day per resident (GDP) for multifamily properties managed by KCHA (without irrigation)
2. 10% reduction in energy use per square foot (EUI) for all multifamily KCHA properties
3. 5% reduction in greenhouse gas emissions (GHG) from building electricity and gas consumption
4. 195 kW of renewable energy installed
5. 55% recycling and organic waste composting diversion rate
6. 100% of qualified properties certified with at least 3 stars in the King County EnviroStars program
7. 31% of KCHA fleet use alternative fuels

The new five-year ESP will be implemented by KCHA department directors and staff, the Resource Conservation department, and contracted property management companies. Resource Conservation staff will be responsible for providing oversight of the plan and monitoring progress.