

**2011-
2016**



Resource Management Plan

Angela Wallis and Theresa McCartney
KCHA Resource Conservation Program
August 2011

Table of Contents

Introduction	2
Executive Summary.....	3
Implementation	8
TARGET 1: ENERGY.....	9
TARGET 2: WATER.....	233
TARGET 3: SOLID WASTE.....	277
TARGET 4: HAZARDOUS WASTE.....	377
TARGET 5: COMMUNICATION & AWARENESS	399
Conclusion.....	42
Appendix A.....	43
Appendix B.....	48
Appendix C	60
Appendix D.....	68

Introduction

King County Housing Authority seeks to reduce its impact on the natural environment through the implementation of this Resource Management Plan (RMP, or the Plan). The Authority recognizes that lowering resource consumption will also result in reduced or avoided utility costs, thereby improving the agency's stewardship of public funds.

This Plan is written in accordance with KCHA Board Resolution 5005, "Commitment to Sustainable Communities through Excellence in Environmental Stewardship", the 2004 Sustainability Report (O'Brien & Co)¹ and the Conservation Standards adopted in 2010. The RMP complements ongoing conservation efforts by identifying five conservation target areas: **energy, water, solid waste, hazardous waste and communication and awareness**. Individual opportunities within those target areas that have the greatest potential for improvement have been identified, and specific strategies to reduce the agency's impact in those areas are outlined. The Plan also provides the framework to evaluate and measure our progress by establishing specific outcomes, and indicators of success for each strategy. The Plan will be implemented by KCHA department directors, staff, the Resource Conservation Manager (RCM) and the Resource Conservation Specialist (RCS), and contracted property management companies.

¹ Board Resolution 5005 and the 2004 O'Brien Sustainability Report are available at: P:\Resource Conservation Management Program

Executive Summary

Current Environment

KCHA significantly increased resource conservation efforts beginning in 2004. This ongoing commitment to responsible resource use is demonstrated in many ways, including:

- Employing two full-time resource conservation staff;
- \$94,000 savings from reduced gas and electric consumption in 2010 vs 2008;
- Water conservation measures resulting in a 40% decrease in water use in 2008 compared to 2004;
- LEED Silver certification for Birch Creek Recreation Center
- 24 properties certified for exceptional management of hazardous waste through the King County EnviroStars program;
- Installation of Energy Star-rated refrigerators and washing machines;
- Recycling service available at over 90% of properties;
- Construction waste recycling; and
- 4 solar photovoltaic and 9 solar thermal installations.

Construction waste recycling at Birch Creek



Solar thermal water heating at Somerset Gardens

KCHA is committed to continuing and improving upon these sustainability efforts through implementation of this long-term Resource Management Plan.

The following pages outline the five conservation targets, the individual opportunities to be addressed within those target areas, and strategies (with intended outcomes) that will significantly reduce KCHA's environmental impact between 2011 and 2016.

Actions from Opportunities: A Strategic Approach to Resource Management

The Plan identifies the primary areas in which KCHA operations impact our environment, and contains the action items necessary to meaningfully reduce that impact. These areas are known as *targets*, and include energy, water, solid waste, hazardous waste and staff communication and awareness.

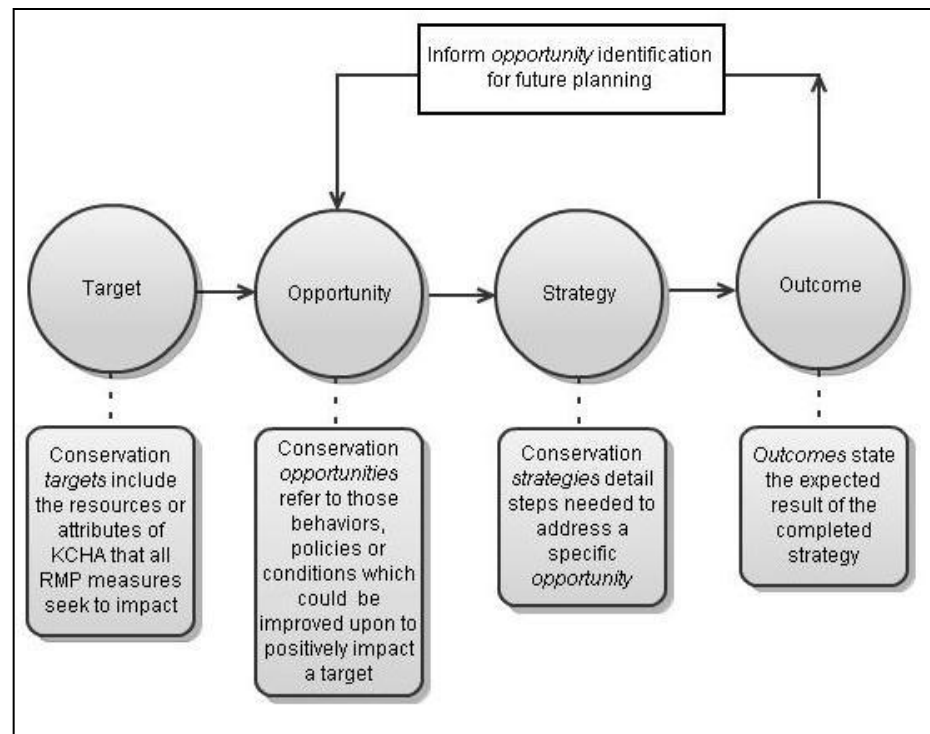
Within each of the 5 target areas, *opportunities* were identified, scored and ranked based on the opportunity's current status within the agency, and the feasibility, cost and expected impact of addressing it in the next five years.

One or more *strategies* were identified to address each opportunity. These strategies were also considered against the criteria of feasibility, cost and potential impact.

Finally, *outcomes* were established to define the expected result or results of each strategy.

This methodology was utilized in order to produce specific strategies that can be evaluated and measured, and will address opportunities with the largest impacts on our target resource categories.

Figure 1: Resource Conservation Planning Methodology



Plan Summary

The Resource Management Plan contains 40 strategies designed to contribute to the achievement of 5 conservation outcomes in the areas of energy, water, solid waste, hazardous waste and communication & awareness. Progress toward these long-term outcomes will be measured annually against the benchmarks described below, and as shown in **Table 1** on page 7.

ENERGY:

Reduce KCHA-paid energy consumption by 10% by end of 2016
At least \$155,000 in KCHA-paid energy costs avoided in year 2016 and annually thereafter
Reduce whole-building electric consumption by 5% by end of 2016

The strategies detailed in the main body of The Plan are designed to enable KCHA to reduce energy consumption significantly over 5 years. Strategies include implementing site-specific energy conservation plans and implementing best practices for energy conservation in maintenance, among others.

KCHA will measure progress toward this outcome by analyzing annual gas and electricity consumption. To benchmark progress, we seek a 2% reduction in consumption per year for the KCHA-paid portion of utilities. In addition, in 2011 and early 2012, Resource Conservation staff will obtain and analyze whole-building energy consumption data which will provide a baseline against which to begin annual tracking of whole-building electricity and gas consumption by KCHA properties. Finally, the number of kilowatts of solar energy generation capacity installed will also be monitored and reported annually.

WATER:

Reduce water use by 5% by end of 2016
\$106,000 in water costs avoided in year 2016 and annually thereafter, plus avoided sewer costs

The installation of WaterSense rated water fixtures, and monthly consumption monitoring coupled with response to high use, are two of the strategies that will enable KCHA to reduce water use by 5% by 2016.

Water consumption data is currently tracked monthly for Public Housing, and is reported in gallons used per resident, per day. In late 2011 and early 2012, data will be obtained for Asset Managed properties, thereby enabling KCHA to determine the agency-wide baseline for water consumption, also in gallons/person/day. We will target a 1% annual decrease in agency-wide consumption compared to the 2008 baseline to benchmark progress.

SOLID WASTE:

Divert 40% of residential and office solid waste from landfill by end of 2016

95% of KCHA paper purchases comply with Environmental Purchasing Policy

Implementing new recycling programs at KCHA properties, and providing door-to-door education for residents living at properties with existing recycling service, are two primary strategies that will facilitate diverting from the landfill 40% of the waste generated by KCHA operations.

The baseline data against which progress will be charted will be established in late 2011. KCHA's annual waste diversion rate will be calculated by dividing the total volume (in yards) of recycling and yard waste by the total waste collection volume (recycling + garbage + yard waste) subscribed to by KCHA. Volume data will be obtained annually through phone calls to waste hauling companies and by viewing bills electronically.

HAZARDOUS WASTE:

60 additional properties receive 3-star EnviroStars certification

The purchase of non-toxic products for use in maintenance, and achieving and maintaining EnviroStars certification for hazardous waste management practices, are the primary strategies by which KCHA will achieve outcomes in the Hazardous Waste target area.

Seven Managed Asset and three Public Housing portfolio offices will obtain EnviroStars certification annually through 2016.

Training for Public Housing and Managed Asset maintenance staff on environmentally preferable cleaning and other maintenance products will be complete by Q2 2013.

COMMUNICATION & AWARENESS:

Resource conservation is integral to KCHA's mission

Resident behaviors contribute to energy, water and solid waste outcomes

Education initiatives for staff designed by the Green Team and Resource Conservation Program are the primary strategy through which KCHA will achieve this outcome.

Progress will be tracked by reporting the number of residents educated per year on conservation topics, with programmatic targets to be established annually. We will also track progress by reporting the number of staff participating in Green Team and Resource Conservation initiatives, per annually established, initiative-specific targets.

Table 1: Metrics & Outcomes

Target Areas	Metrics	2016 Outcome
Energy	<ul style="list-style-type: none"> • MBTU/ft² total gas consumption for all buildings (all gas is KCHA-paid) • MBTU/ft² total KCHA-paid electric consumption for all buildings • MBTU/ft² whole-building electric consumption for all buildings • # kilowatts (kW) of solar power generated 	<ul style="list-style-type: none"> • 10% minimum reduction in KCHA energy consumption from 2010 baseline • At least \$155,000 in energy costs avoided in year 2016, and annually thereafter • 5% reduction in whole-building electric use by end 2016
Water	<ul style="list-style-type: none"> • Gallons consumed per resident, per day (g/r/d) 	<ul style="list-style-type: none"> • 5% reduction in consumption from 2010 baseline • \$106,000 in water costs avoided in year 2016 and annually thereafter, plus avoided sewer costs
Solid Waste	<ul style="list-style-type: none"> • Ratio of cubic yards of garbage vs. total cubic yards of combined recycling and yard waste collection 	<ul style="list-style-type: none"> • 40% waste diversion by end 2016 *May be increased or decreased in 2012 upon establishment of 2010 baseline diversion rate • 95% of KCHA paper purchases comply with Environmental Purchasing Policy
Hazardous Waste	<ul style="list-style-type: none"> • # properties per year receiving certification for excellent management of hazardous waste 	<ul style="list-style-type: none"> • 60 additional properties (100% of applicable remaining properties) are 3-star EnviroStars certified by end 2016
Communication & Awareness	<ul style="list-style-type: none"> • # of residents educated per year on conservation topics (per programmatic targets to be established annually) • # of staff participating in resource conservation initiatives (per initiative-specific targets to be established annually) • # of staff responding “yes” to survey question regarding resource conservation as part of KCHA mission 	<ul style="list-style-type: none"> • Resident behaviors contribute to energy, water and solid waste outcomes • Resource conservation is understood by staff to be an integral part of KCHA’s mission

² MBTU is a standard unit of measure for energy reporting, meaning thousand British Thermal Units. One kilowatt hour is equal to 3,413 BTUs.

Implementation

The strategies outlined in this document will reduce KCHA's impact on the environment only if staff commit to and participate in their implementation. The position titles of staff and the departments responsible for each strategy are identified in the Strategic Plan and in Appendix B. Many strategies are based on the Conservation Standards adopted in 2010. Supervisors are responsible for ensuring that their employees follow all applicable Conservation Standards, in addition to the specific conservation strategies outlined in this plan. The RCM and RCS will facilitate the implementation of many strategies in direct cooperation with departments. Staff are encouraged to comment on and seek assistance with implementation of the RMP from the RCM and RCS at any time.

The RMP will be reviewed semi-annually by the RCM and RCS, and updates recommended to senior staff and the Executive Director.

Strategic Plan

STRATEGY	ACTION STEPS	RESPONSIBLE PARTIES	START DATE	OUTCOME
<p style="text-align: center;">TARGET 1: ENERGY</p> <p>Outcomes:</p> <p>Reduce KCHA-paid energy consumption by 10% by end of 2016</p> <p>At least \$155,000 in KCHA-paid energy costs avoided in year 2016 and annually thereafter</p> <p>Reduce whole-building electric consumption by 5% by end of 2016</p>				
OPPORTUNITY: Implement Consistent Best Practice Maintenance for Furnaces and Boilers				
E1: Automate furnace and boiler work orders	<ol style="list-style-type: none"> 1. Director of Public Housing requires Property Managers of sites with furnaces and boilers to input ongoing work orders for filter changes in September, December and March; annual work order for boiler service; and work order for full boiler tune-up every second year. 2. Regional Managers request email confirmation from all Property Managers within 10 business days that work orders were entered. 3. Maintenance Manager or Director of Public Housing provides 30- and 60-day Outstanding Work Order Report monthly to Regional Managers and RCM via e-mail. 4. Regional Managers and RCM review reports within 5 business days for outstanding furnace and boiler work orders. 	Director of Public Housing, Regional Managers, Maintenance Manager, RCM, Property Managers	Q4 2011	<ol style="list-style-type: none"> 1. 100% of properties with furnaces and boilers have automated work orders for maintenance set up by 12/31/11. 2. 50% of properties with furnaces or boilers complete regularly scheduled maintenance on time in 2012; 75% in 2013; 90% by 2014.

Strategic Plan

STRATEGY	ACTION STEPS	RESPONSIBLE PARTIES	START DATE	OUTCOME
	5. Regional Managers require that Property Managers schedule maintenance for completion within 30 days for outstanding furnace and boiler work orders. Property Managers email Regional Managers to confirm completion.			
E2: Budget for furnace and boiler maintenance costs	1. Director of Public Housing sends out email every August reminding Public Housing Property Managers to make budget request for annual estimated furnace and boiler maintenance costs.	Director of Public Housing, Property Managers, Regional Managers	Q3 2011	1. 90% of applicable Public Housing properties have funds allocated for best practice HVAC maintenance each year.
OPPORTUNITY: Programmable Thermostats in Heated Common Area Spaces				
E3: Install programmable thermostats in Public Housing and Asset Managed Properties	<p>Public Housing:</p> <ol style="list-style-type: none"> 1. RCM creates a spreadsheet for Property Managers to inventory sites for the following information: type of heating, areas without programmable thermostats, status of programming for existing programmable thermostats, and presence of lockable thermostat covers. 2. RCM creates written instructions for inclusion with spreadsheet that indicates how to determine the model(s) of programmable thermostats to install. 3. RCM posts spreadsheet on the P:drive and notifies Regional Managers that it is 	Property Managers, RCM, Maintenance Staff, Asset Managers	<p>Public Housing: Q3 2012</p> <p>Asset Management: Q1 2012</p>	<ol style="list-style-type: none"> 1. 75% of applicable Public Housing interior spaces in have programmable thermostats and are programmed to match operating hours by 9/30/2012; 95% by 3/31/2013. 2. 75% of applicable Asset Managed interior spaces have programmable thermostats and are programmed to match operating hours by 3/31/2012; 95% by 6/30/2012. 3. Energy use for heating reduced by 3% after 1 year of

Strategic Plan

STRATEGY	ACTION STEPS	RESPONSIBLE PARTIES	START DATE	OUTCOME
E3: Install programmable thermostats in Public Housing and Asset Managed Properties, <i>continued</i>	<p>available for Property Managers to complete. RCM requests that Regional Managers ask staff to complete inventory within 30 days.</p> <p>4. Thirty days after request is made to Regional Managers, RCM checks spreadsheet on P:drive. If necessary, RCM requests that Regional Managers follow up with Property Managers for any sites with incomplete inventories.</p> <p>5. RCM reviews information provided in completed spreadsheets to determine the thermostat model(s) appropriate for each property, and emails recommended models to Property Managers within 4 weeks.</p> <p>6. Property Managers create work order for purchase and installation of thermostat(s).</p> <p>7. Maintenance purchases, installs and properly programs thermostats within 45 days. Property Manager or maintenance mechanic provides itemized invoice to RCM.</p> <p>8. RCM applies to PSE for thermostat rebate for each property.</p> <p>9. Regional Managers request that Property Managers confirm via email that thermostat, lock box installation and programming are completed within 60 days of purchase.</p>			installation.

Strategic Plan

STRATEGY	ACTION STEPS	RESPONSIBLE PARTIES	START DATE	OUTCOME
	<p>Asset Managed Properties:</p> <ol style="list-style-type: none"> RCM sends email to Asset Managers describing procedure for completing inventory sheet (to be used for E4, W1, SW1). Attach list of acceptable thermostat models. Asset Managers request that management companies return completed inventory within 3 months. Asset Managers forward completed inventory sheets to RCM. Management companies purchase thermostats, install within 30 days, complete PSE thermostat rebate form, and CC Asset Manager and RCM upon electronic submission to PSE. 			
OPPORTUNITY: Implement Lighting Controls and T8 Lighting Technology in Common Area Spaces				
E4: Identify properties with inefficient lighting	<p>Public Housing:</p> <ol style="list-style-type: none"> Q1 2012: RCM creates a spreadsheet for Property Managers to inventory sites for presence of T12 lamps and magnetic ballasts. RCM creates written instructions for inclusion with spreadsheet that indicates how to identify T12 lamps and magnetic ballasts, and where electronic ballasts can be purchased. RCM posts spreadsheet on the P:drive and notifies Regional Managers that it is 	Property Managers, Maintenance Staff, RCM, Asset Managers	<p>Asset Management: Q3 2012</p> <p>Public Housing: <i>Inventory:</i> Q1 2012 <i>Install:</i> Q1 2013</p>	<ol style="list-style-type: none"> 75% of T12 fixtures upgraded to T8 lamps, electronic ballasts and lighting controls by 9/30/12 and 3/31/13 respectively.

Strategic Plan

STRATEGY	ACTION STEPS	RESPONSIBLE PARTIES	START DATE	OUTCOME
E4: Identify properties with inefficient lighting, <i>continued</i>	<p>available for Property Managers to complete. RCM requests that Regional Managers ask staff to complete inventory within 30 days. (Inventory to be completed at the same time as inventory for Strategy E3).</p> <p>4. Thirty days after request is made to Regional Managers, RCM checks spreadsheet on P:drive. If necessary, RCM requests that Regional Managers follow up with Property Managers for any sites with incomplete inventories.</p> <p>5. RCM reviews completed spreadsheets, and determines the appropriate lighting retrofit and control methods to be installed for each applicable property.</p> <p>6. RCM emails recommended product descriptions to Property Managers and maintenance staff within 4 weeks of receipt of completed portfolio spreadsheet.</p> <p>7. Q1 2013: RCM applies to PSE for lighting rebate for each property, and notifies Property Manager upon receiving pre-approval from PSE.</p> <p>8. Property Manager creates work order for purchase and installation of lighting.</p> <p>9. Maintenance purchases and installs lighting within 45 days.</p>			<p><i>**Note: Combine with inventory strategy in E3</i></p>

Strategic Plan

STRATEGY	ACTION STEPS	RESPONSIBLE PARTIES	START DATE	OUTCOME
E4: Identify properties with inefficient lighting, <i>continued</i>	<p>10. Within 60 days, RCM calls all Property Managers to ensure that lighting is installed and functioning.</p> <p>Asset Managed Properties:</p> <ol style="list-style-type: none"> 1. RCM sends email to Asset Managers describing procedure for completing inventory sheet (same inventory used in E3), and attaches list of acceptable products. 2. Asset Managers send email to management companies and request completion within 3 months. 3. Asset Managers forward completed inventory sheets to RCM. 4. Management companies complete PSE pre-approval lighting rebate application, and copies RCM and Asset Manager on submission. 5. Upon notice of pre-approval from PSE, maintenance purchases lighting and installs. 6. Management company completes rebate application paperwork, including submitting invoices to PSE and CCing RCM. 			

Strategic Plan

STRATEGY	ACTION STEPS	RESPONSIBLE PARTIES	START DATE	OUTCOME
OPPORTUNITY: Assess Properties Holistically for Conservation Opportunities				
E5: Resource Conservation Manager assesses 10 properties per year, implements conservation plans and follows up on plans from prior years	<ol style="list-style-type: none"> 1. RCM prioritizes conservation plans based on size of common area space, energy use and other property characteristics. 2. RCM schedules assessments with site staff. 3. RCM writes Conservation Plan, sets timeline for implementation, and estimates energy and cost savings within 4 weeks. 4. RCM works with site staff to begin implementation within 8 weeks. 5. RCM confirms conservation measures are installed within 16 weeks. 6. RCM returns to sites after 6, 12 and 18 months of plan completion to ensure measures remain in place and function effectively. 	RCM, Property Managers, Maintenance Staff, Asset Managers	Ongoing 2008-2016	<ol style="list-style-type: none"> 1. Conduct 10 assessments per year and initiate implementation of conservation measures within 8 weeks. 2. Reduce energy consumption by 5% after first year implementation of Conservation Plan.
OPPORTUNITY: Address Potential Utility Overcharges				
E6: Utility bill auditing	<ol style="list-style-type: none"> 1. Resource Conservation Specialist conducts audit of KCHA-paid gas, electric, water and refuse bills once yearly using Utility Manager reports. 2. RCS attempts to favorably resolve suspected opportunities such as overcharges or mischarges, or incorrect rate schedules. 	RCS, RCM	Ongoing 2011-2016	<ol style="list-style-type: none"> 1. Complete annual bill audit. 2. Investigate 100% of suspected overcharges over \$100.

Strategic Plan

STRATEGY	ACTION STEPS	RESPONSIBLE PARTIES	START DATE	OUTCOME
	<ol style="list-style-type: none"> 3. RCS tracks monetary savings from bill auditing activities and reports to RCM. 4. RCM reports savings in Resource Conservation Program Annual Report. 5. After second year, RCM assesses value of annual bill audits based on cost savings from audit activities. 			
OPPORTUNITY: Apply Green Building Practices Consistently to New Construction and Major Rehabilitation Projects				
E7: Implement established green building standards for all new construction and major rehabilitation projects	<ol style="list-style-type: none"> 1. KCHA project staff in Capital Construction and Hope VI departments discusses applicability of an established green building standard to each existing and new project in coordination with the existing capital plans. 2. KCHA Planning Team or Project Manager recommends to the Director the applicable established green building standard to apply each project. 3. Project Managers write the desired green building standard into the bid documents. 4. If a standard is not applicable, or not followed for project-related reasons, the Project Manager submits a brief (no more than one page) justification to the department director and the RCM. 5. RCM reviews justifications annually to identify barriers and potential solutions. 	Capital Construction and Hope VI Project Managers and Department Directors, RCM	Q1 2012	<ol style="list-style-type: none"> 1. 100% of new construction and major rehabilitation projects follow, and where feasible, apply for and receive a green building certification starting 6/30/2012. 2. Written justification is provided for 100% of projects for which a green building standard is not applicable. 3. New and significantly rehabilitated buildings consume 25% less energy than existing buildings by building type and square footage. <p><i>**Note: Acceptable standards</i></p>

Strategic Plan

STRATEGY	ACTION STEPS	RESPONSIBLE PARTIES	START DATE	OUTCOME
	6. RCM holds meeting with all capital project directors to identify solutions that will result in compliance with an established green building standard for future projects.			<i>include: Enterprise Green Communities, Evergreen Standard, Built Green, LEED, Living Building Challenge, Passive House, EnergyStar and BuiltSmart.</i>
OPPORTUNITY: Apply Green Building Practices Consistently to Maintenance and Repair Projects in Public Housing and Asset Management Departments				
E8: Establish and implement department-specific standards to reduce energy and water consumption, and solid and hazardous waste generation	<ol style="list-style-type: none"> 1. Asset Management Director and Maintenance Manager convene committees of staff, including the RCM, to develop specific standards to reduce environmental impact in the four Target areas. 2. Asset Management Director and Maintenance Manager solicit input on proposed protocol/standards from Property Managers and maintenance staff. 3. Asset Management finalizes protocol or standards by 3/31/2012. Public Housing finalizes by June 30, 2013. 4. Determine method for training the appropriate staff in each department by 12/31/2011 and June 30, 2013 respectively. 5. Train staff by 3/31/12 and 8/31/13 respectively. 	Director of Asset Management, Maintenance Manager, RCM	<p>Asset Management: Q4 2011</p> <p>Public Housing: Q2 2013</p>	<ol style="list-style-type: none"> 1. Develop standards to reduce the environmental impact of all repair and maintenance projects. 2. 100% of Asset Management projects initiated after 3/31/2012 implement the standard. 3. 100% of Public Housing project initiated after 6/30/13 implement the standard.

Strategic Plan

STRATEGY	ACTION STEPS	RESPONSIBLE PARTIES	START DATE	OUTCOME
OPPORTUNITY: Improve Fuel Efficiency of KCHA Vehicle Fleet				
E9: Obtain 1-star Evergreen Fleets Certification	<ol style="list-style-type: none"> 1. Senior Management Analyst in Administrative Services, Deputy Director of Administration and RCM write Green Fleet Plan, including policies to address vehicle purchases, right-sizing vehicles, green car renting, idling, and alternative fuels. Submit for comments to Directors of Public Housing and Housing Management. 2. Senior Management Analyst submits documentation to receive 1-star Evergreen Fleet Certification. 3. Senior Management Analyst and RCM collaborate on programming and education for staff to comply with 1-star certification requirements. 4. Senior Management Analyst completes any additional paperwork to ensure continued compliance with 1-star Evergreen Fleet standards. 	Senior Management Analyst in Administrative Services, Directors of Housing Management and Public Housing, Deputy Director of Administration, Maintenance Manager, RCM, Regional Managers	Q4 2011	1. KCHA implements fleet policies that reduce greenhouse gas emissions and gallons of fuel purchased by 3/31/2012.
OPPORTUNITY: Install Alternative Energy Sources				
E10: Install solar photovoltaic systems	<ol style="list-style-type: none"> 1. RCM identifies team including staff from the Capital Construction, Weatherization, Asset Management and Executive departments to meet by 3/31/12 to assess funding sources and project feasibility. 2. Team identifies one Project Manager to 	RCM, Capital Construction, Weatherization & Rehabilitation and Asset Management Project	Q1 2012	1. Generate 195 kWh of power by 2016 (triple 2010 production).

Strategic Plan

STRATEGY	ACTION STEPS	RESPONSIBLE PARTIES	START DATE	OUTCOME
E10: Install solar photovoltaic systems, cont'd.	<p>identify funding opportunities, and coordinate photovoltaic installation projects.</p> <p>3. Project Manager identifies training on PV system maintenance and operation for Property Managers and Maintenance Staff.</p> <p>4. RCM monitors and reports on annual energy production and production credits from utilities.</p>	Managers		
OPPORTUNITY: Request and Analyze Whole-building Consumption and Cost Data from Electric and Gas Utilities				
E11: RCM analyzes whole-building consumption and cost data from electric and gas utility companies	<p>1. RCM requests from PSE and SCL two years' worth of historical energy data for every property.</p> <p>2. If utilities will provide data for only select sites, RCM requests that Executive Director appeals to utilities.</p> <p>3. If utilities will still only provide a proportion of buildings, RCM works with Capital Construction to determine priority sites.</p> <p>4. RCM requests data from PSE for chosen sites.</p> <p>5. RCS or RCM reviews data to determine completeness and usability.</p> <p>6. RCM determines total square footage for all buildings.</p>	RCM, RCS, Capital Construction Project Manager, Department Directors	Q3 2011	<p>1. Comprehensive ranking and understanding of property energy consumption and cost.</p> <p>2. Utilize data to plan whole-building energy conservation projects.</p>

Strategic Plan

STRATEGY	ACTION STEPS	RESPONSIBLE PARTIES	START DATE	OUTCOME
E11: RCM analyzes whole-building consumption and cost data from electric and gas utility companies, cont'd.	<ol style="list-style-type: none"> 7. RCS imports data to Utility Manager or Portfolio Manager, and calculates energy use index (EUI) for every site. 8. RCM ranks properties by EUI and total energy consumption. 9. RCM reports on analysis to Senior Staff. 			
OPPORTUNITY: Utilize Whole-Building Data Analysis to Determine Feasibility of Building Retrofits for Energy Conservation				
E12: RCM convenes group to discuss data	<ol style="list-style-type: none"> 1. RCM facilitates study group to determine whether improvements to building performance can be budgeted. 2. Study group makes recommendations to Executive Director. 3. Deputy Executive Director designates staff to lead financing and construction. 	RCM, Capital Construction Project Manager, Deputy Director, Director of Capital Construction, Weatherization Construction Project Manager	Q2 2012	<ol style="list-style-type: none"> 1. All KCHA properties prioritized for energy conserving retrofits. 2. Energy consumption in upgraded buildings reduced by 20% after 1 year of installation, and thereafter compared to baseline consumption.
OPPORTUNITY: Evaluate Cost Effectiveness of Solar Hot Water Installations; Expand Installation				
E13: Evaluate cost effectiveness of solar hot water installations; expand installations	<ol style="list-style-type: none"> 1. RCS identifies utility meters associated with each installation, and provides data to Asset Management Construction Project Manager. 2. Asset Management CPM analyzes pre- and post-installation electricity cost and 	RCM, Asset Management Construction Project manager (CPM), Director of Asset Management,	Q1 2012	<ol style="list-style-type: none"> 1. KCHA understands impacts of solar thermal installations on energy consumption and cost. 2. Analysis informs decision about future solar thermal

Strategic Plan

STRATEGY	ACTION STEPS	RESPONSIBLE PARTIES	START DATE	OUTCOME
	<p>consumption for each meter.</p> <p>3. CPM reports findings and makes recommendations about program expansion to Director of Asset Management and Deputy Director.</p> <p>4. Deputy Director reports to Executive Director.</p>	Deputy Director, Executive Director		installations.
OPPORTUNITY: Address High Energy Usage				
E14: Energy usage monitoring for Public Housing	<p>1. RCM provides training on basic utility terminology and analysis at annual Property Manager meeting. Introduces new format of monthly report on data.</p> <p>2. RCS provides monthly energy consumption data to Property Managers and Regional Managers.</p> <p>3. Property Managers work with RCS to resolve known causes of increased energy consumption.</p>	RCM, Property Managers, Regional Managers, Director of Public Housing	Ongoing 2008-2016	<p>1. Property Managers view utility data every month and alert RCM of issues.</p> <p>2. Known causes of increased consumption are acted upon and resolved to the extent possible within budget constraints.</p>
OPPORTUNITY: Consistently Purchase Energy Star Appliances and Equipment				
E15: Maintenance coordinators and manager ensure maintenance mechanics purchase Energy Star products	<p>1. Maintenance Manager, in cooperation with Maintenance Coordinators, develops an Energy Star List detailing product make and model numbers that meet cost and performance needs.</p> <p>2. Maintenance Manager ensures products</p>	Maintenance Manager, Maintenance Coordinators, Property Managers, Regional	Q2 2012	<p>1. By 6/30/2012, 100% of KCHA refrigerator, range hood, dishwasher and washing machine purchases are Energy Star qualified.</p> <p>2. 90% of printers and copiers</p>

Strategic Plan

STRATEGY	ACTION STEPS	RESPONSIBLE PARTIES	START DATE	OUTCOME
E15: Maintenance coordinators and manager ensure maintenance mechanics purchase Energy Star products	<p>identified are readily available on the market.</p> <p>3. Maintenance Manager directs Maintenance Coordinators and Property Managers to purchase items on the Energy Star List.</p> <p>4. Maintenance Manager sends annual reminder message to Regional Manager, Property Managers and Maintenance Coordinators.</p> <p>5. RCM provides list to Director of Asset Management to share with third-party Management Companies.</p> <p>6. Maintenance Coordinators and Maintenance Supervisors for third-party Management Companies direct Maintenance Mechanics and staff to purchase items from the Energy Star List or other qualified Energy Star products.</p>	Managers, Director of Asset Management, Asset Managers, RCM		are Energy Star qualified.

Strategic Plan

STRATEGY	ACTION STEPS	RESPONSIBLE PARTIES	START DATE	OUTCOME
<p style="text-align: center;">TARGET 2: WATER</p> <p>Outcomes: Reduce water use by 5% by end of 2016 \$106,000 in water costs avoided in year 2016 and annually thereafter, plus avoided sewer costs</p>				
OPPORTUNITY: Water Conserving Irrigation Practices				
W1: Install hand-operated spray nozzles on hoses	Public Housing: Property Managers input work order for outdoor hoses receive hand-operated spray nozzle. Regional Managers verify during Spring site visits that nozzles are present. Asset Managed Properties: 1. Asset Managers direct Property Managers to create work order to have hand-operated hose nozzles installed. 2. Portfolio Managers verify during Spring site visits that nozzles are present, and notify Asset Managers.	Property Managers, Regional Managers Maintenance Staff, Asset Managers	Q2 2012	1. 100% of identified hoses have nozzles by 6/30/2012.
W2: Water during morning hours	1. Regional Managers and Asset Managers provide annual reminders at staff meetings to all site staff about policy prior to irrigation season.	Regional Managers, Asset Managers, Maintenance Staff	Q2 2012	1. Annual reminders are provided by Director of Public Housing and Asset Managers to Property Managers.
OPPORTUNITY: Efficient Water Fixtures Present in Housing Stock				

Strategic Plan

STRATEGY	ACTION STEPS	RESPONSIBLE PARTIES	START DATE	OUTCOME
W3: Install WaterSense rated or better fixtures in all unit upgrades, renovation and significant rehabilitation or redevelopment projects	<ol style="list-style-type: none"> RCM provides list of tested products to Hope VI, Asset Management, Public Housing and Capital Construction Department Directors and relevant staff. Asset Management and Hope VI requires implementation of KCHA Conservation Standard to install only WaterSense rated products by 3/31/2012; Public Housing by 3/31/13. Directors and staff request implementation assistance from RCM as necessary. RCS or RCM completes on-site observation of 10% of projects annually. 	RCM, Unit Upgrade Crews, Maintenance staff, Asset Management Director, Public Housing Director, Hope VI Director, RCS	<p>Hope VI and Asset Management: Q4 2011</p> <p>Public Housing: Q1 2013</p>	<ol style="list-style-type: none"> Install WaterSense rated or better sink aerators, showerheads and toilets in unit upgrade, renovation and significant rehab projects starting 12/31/11 in Asset Management; 3/31/13 in Public Housing. Properties with WaterSense rated toilets, showerheads and aerators use 20% less water than sites with code-compliant fixtures. (Excluding sites that irrigate). <p>Note: Toilets are 1.6 gpf in nearly every property, and are relatively new, so should not be replaced with 1.28 gpf unless the toilet is no longer functioning properly, or unless upgrade is needed for special projects.</p>

Strategic Plan

STRATEGY	ACTION STEPS	RESPONSIBLE PARTIES	START DATE	OUTCOME
OPPORTUNITY: Understand Water Consumption History of Managed Asset Properties				
W4: Calculate average use/person/day for 2010 in Managed Asset properties	<ol style="list-style-type: none"> RCM requests that all managed asset sites provide spreadsheets with consumption and cost data to RCM via Asset Managers. If data is not available from Management Companies, RCS research number of accounts and determine feasibility of manual entry each month. Resource Conservation staff identify 10 highest consuming sites. Set meetings with Asset Manager and site staff to identify conservation strategies. RCS or RCM assists site maintenance and property management staff with strategy implementation as needed. 	Asset Managers, Management Companies, RCM, RCS	Q3 2011	<ol style="list-style-type: none"> Determine feasibility of electronic or manual entry by 9/30/2011. Identify highest consuming sites and conservation strategies by 12/31/ 2011.
OPPORTUNITY: Address Leaks and High Consumption				
W5: Water consumption monitoring for Public Housing	<ol style="list-style-type: none"> RCM provides training on basic utility terminology and analysis at annual Property Manager meeting. Introduces new format of monthly data. RCS provides monthly water consumption data to Property Managers via email, and CC regional managers. 	RCM, Property Managers, Regional Managers, Director of Public Housing	Ongoing 2010-2016	<ol style="list-style-type: none"> Property Managers view utility data every month and alert RCM of issues.

Strategic Plan

STRATEGY	ACTION STEPS	RESPONSIBLE PARTIES	START DATE	OUTCOME
W6: Water consumption monitoring for Asset Managed properties	<ol style="list-style-type: none"> 1. RCS or contracted Management Company staff inputs water cost and consumption data into Utility Manager. 2. RCS runs monthly report and identifies high-consuming sites. 3. RCS provides consumption report to Asset Managers for sites with high consumption. 4. RCS, Asset Manager and contracted Management Company staff identify conservation plans as applicable for high consuming sites. 	RCS, Management Companies, Asset Managers	Q4 2011	<ol style="list-style-type: none"> 1. Identify high consuming sites and implement a water conservation plan for at least one property per quarter. 2. Sites for which conservation strategies are identified reduce consumption by at least 5% after one year of implementation.
W7: Public Housing water use monitoring and water conservation plan implementation	<ol style="list-style-type: none"> 1. RCM reports on water consumption at monthly Public Housing meeting. 2. RCM or RCS notifies Property Manager and designs water conservation plan for sites consuming greater than 90 g/p/d with Property Manager and maintenance staff. 3. RCM or RCS follows up with site staff as necessary to track progress and facilitate implementation. 	RCM, RCS, Property Managers, Maintenance Staff	Ongoing 2010-2016	<ol style="list-style-type: none"> 1. Identify sites consuming >90g/p/d and implement a water conservation plan for at least one property per quarter (if applicable). 2. Sites for which conservation strategies are identified reduce consumption by at least 5% after one year of implementation.

Strategic Plan

STRATEGY	ACTION STEPS	RESPONSIBLE PARTIES	START DATE	OUTCOME
<p style="text-align: center;">TARGET 3: SOLID WASTE</p> <p>Outcomes: Divert 40% of residential and office solid waste from landfill by end of 2016 95% of KCHA paper purchases comply with Environmental Purchasing Policy</p>				
OPPORTUNITY: Track and Understand KCHA Waste Disposal Costs and Diversion Rate				
SW 1: Determine 2009 baseline and annual waste disposal costs and diversion rate	<ol style="list-style-type: none"> 1. RCS determines method for obtaining garbage/recycling bills for Public Housing and other properties for which data is available to KCHA. 2. RCS calls waste disposal companies to request the typical monthly number of yards of solid waste picked up as recycling, and the number of yards picked up as garbage for each managed asset. 3. RCS determines percent of solid waste that is recycled by dividing total number of yards collected by number of yards recycled, and reports to RCM. 4. RCS utilizes KCHA Accounting Department Solid Waste Charges tracking spreadsheet to report the number of tons dumped annually by Public Housing at transfer stations. 5. Repeat steps 2-4 annually. 6. RCM reports findings annually in Resource Conservation Program Annual Report, or via email to directors of Asset 	RCS, RCM	Q4 2011	<ol style="list-style-type: none"> 1. RCM reports annual rate of diversion from landfill and total costs to dispose of and recycle solid waste to Directors of Public Housing and Asset Management. 2. RCS prioritizes sites with low diversion rates and/or largest disposal amounts for incorporation into recycling program work plan (SW4) for years 2012-2016.

Strategic Plan

STRATEGY	ACTION STEPS	RESPONSIBLE PARTIES	START DATE	OUTCOME
	Management and Public Housing.			
OPPORTUNITY: Implement Environmental Purchasing Policy (EPP)				
SW 2: Ensure office supply purchases comply with KCHA Environmental Purchasing Policy (EPP)	<ol style="list-style-type: none"> RCM creates spreadsheet that lists EPP-compliant office items, including a check list to be completed by Property Managers and Procurement Technician to indicate which office items already comply with EPP. RCM posts to P:drive. RCM emails link to spreadsheet to Regional Managers and Procurement Technician, and requests that it be filled out by Property Managers and Procurement Technician within 3 weeks. Property Managers and Procurement Technician indicate on spreadsheet within three weeks which products are already purchased in compliance with EPP, and save to P:drive. Thirty days after request is made to Regional Managers, RCM checks spreadsheet on P:drive. If necessary, RCM requests that Regional Managers follow up with Property Managers for any sites without complete inventories. Upon next order for supplies, Property Managers and Procurement Technician order from EPP list. Assess implementation after 6 months and 1 year: 	Procurement Technician, RCM, RCS, Property Managers, Director of Public Housing, Asset Managers	Asset Management and Procurement Technician:: Q2 2012 Public Housing: Q1 2013	<ol style="list-style-type: none"> 100% of Public Housing Property Managers and purchasers complete spreadsheet by 2/28/13. 75% of office product purchases and at each Public Housing site meet 30% recycled content standard by 3/31/13. 100% of Asset Managed properties have agreed to follow EPP as possible by 6/30/12. Central Office purchases comply with EPP by 6/30/12.

Strategic Plan

STRATEGY	ACTION STEPS	RESPONSIBLE PARTIES	START DATE	OUTCOME
SW 2: Ensure office supply purchases comply with KCHA Environmental Purchasing Policy , <i>continued</i>	<ol style="list-style-type: none"> a. Six month evaluation: RCS or RCM obtains purchasing records and calculates percent of paper products purchased that meet EPP. b. One year evaluation: RCS or RCM obtains purchasing records and quantifies change in percent of recycled content paper items purchased in 2011 vs 2012. <ol style="list-style-type: none"> 7. Procurement Technician works with RCM annually to update and expand preferred purchasing list and distributes to Property Managers. 8. Director of Public Housing requires compliance with EPP from all Property Managers annually. 9. RCM reviews purchasing records annually through 2016 to monitor and quantify compliance. <p>Asset Managed Properties:</p> <ol style="list-style-type: none"> 1. RCM sends email to Asset Managers describing procedure for completing inventory sheet. 2. Asset Managers request that management companies return completed inventory within 1 month. 3. Asset Managers forward completed inventory sheets to RCM. 			

Strategic Plan

STRATEGY	ACTION STEPS	RESPONSIBLE PARTIES	START DATE	OUTCOME
	4. Asset Managers provide written or verbal annual reminder to Property Managers regarding KCHA Environmental Purchasing Policy.			
SW3: Utilize technology changes to reduce paper consumption	<ol style="list-style-type: none"> RCM provides draft announcement for staff to IT Director outlining expectations for compliance with double-sided printing policy. RCM confirms with IT Director that defaulted duplex printing is ready for implementation within 1 week of receiving announcement. IT Director or Network Systems Manager e-mails all staff with announcement from RCM announcing that compliance with Standards for defaulted double-sided printing settings for all staff with duplex-capable printers will be implemented within 1 week. Network Systems Manager implements duplex-printing, informs staff via e-mail that duplexing is in effect, and provides link to directions for single-sided printed for special printing needs. RCM or RCS accesses paper purchasing records and quantifies change in paper consumption after 6 months and one year of implementation. Network Systems Manager re-sets duplex printing settings for all staff annually 	Director of IT, Network Systems Manager, RCM, RCS	Q1 2012	<ol style="list-style-type: none"> Reduce paper consumption by 20% within 1 year of defaulted duplex implementation. Reduce baseline consumption by additional 10% by 2014.

Strategic Plan

STRATEGY	ACTION STEPS	RESPONSIBLE PARTIES	START DATE	OUTCOME
OPPORTUNITY: Recycle More Resident and Office Solid Waste				
SW4: RCS identifies focal sites for recycling implementation and education for each year	<ol style="list-style-type: none"> 1. In coordination with Public Housing and Asset Management Property Managers, RCS identifies 4 properties per year to start recycling programs. 2. RCS requests that Public Housing Property Manager and Regional Manager, and Asset Managers budget for recycling service in August of each year. 3. Resource Conservation Program budgets for recycling outreach and education materials in August of each year. 4. By December of each year, RCS submits recycling plan to RCM. 5. RCS implements recycling service at 4 properties per year until all properties have recycling. <ol style="list-style-type: none"> a. RCP meets with Property Managers and one maintenance staff member at each focal property. b. Recycling program is designed by Property Manager and RCS. c. Where feasible, RCS holds community meeting to kick-off recycling program. d. RCS conducts door-to-door 	RCS, Property Managers, Asset Managers, Maintenance Staff, Regional Managers	Ongoing 2010-2016	<ol style="list-style-type: none"> 1. All housing sites and offices have recycling by 12/31/13. 2. Contamination rates below 15% at each property that receives intensive resident education. 3. Reduce garbage volume at sites with new programs by 25% (average) within 6 months of new recycling program.

Strategic Plan

STRATEGY	ACTION STEPS	RESPONSIBLE PARTIES	START DATE	OUTCOME
SW4: RCS identify focal sites for recycling implementation and education for each year, <i>continued</i>	<p>follow-ups with residents.</p> <p>e. RCS collects contamination data and follows-up with appropriate residents.</p> <p>f. Site staff (Property Manager or Maintenance) is available for additional door-to-door visits with RCS on limited basis.</p> <p>6. RCS implements 3 recycling education events/programs per year at 3 properties with existing recycling programs.</p> <p>a. RCP meets with Property Managers of each focal property.</p> <p>b. RCS and Property Manager decide on three event types and dates.</p> <p>c. RCS collects contamination data and follows-up with appropriate residents.</p> <p>d. Site staff (Property Manager or Maintenance) is available for additional door-to-door outreach with RCS on limited basis.</p>			
OPPORTUNITY: Inform Residents of KCHA Site Recycling Program				
SW5: Write a clause for compliance with recycling program (if applicable) into	<p>1. Asset Management and Public Housing Directors determine appropriate means and method for incorporating recycling</p>	<p>Director of Public Housing, Director of</p>	<p>Asset Management: Q1 2012</p>	<p>1. Asset Management and Public Housing include written expectation of compliance</p>

Strategic Plan

STRATEGY	ACTION STEPS	RESPONSIBLE PARTIES	START DATE	OUTCOME
lease agreements or lease addendums in Public Housing and Asset Management	<p>compliance into lease agreements.</p> <p>2. Appropriate Asset Management and Public Housing staff drafts language for inclusion in lease agreements, and shares with RCM for review and comments.</p> <p>3. RCM comments on proposed language within 10 business days</p> <p>4. Property Managers and Management Companies ensure language is included in all new leases, and that addendum is signed by residents at annual reviews for existing leases.</p>	Asset Management, RCM, Property Managers, Management Companies	Public Housing: Q4 2012	with recycling guidelines in all resident leases or addendums by 3/31/2012 and 12/31/12, respectively.
OPPORTUNITY: Recycle Waste Created by Unit Upgrades				
SW6: Implement construction waste recycling pilot for unit upgrades	<p>1. RCM meets with representatives from NE Unit Upgrade crew by Winter 2011 to discuss feasibility.</p> <p>2. RCM works with upgrade crew supervisor to implement construction waste recycling.</p> <p>3. Crew supervisor and RCM trains site maintenance staff on demolition techniques for recycling prior to start of unit upgrade.</p> <p>4. Crew supervisor and RCM train upgrade crew on recycling guidelines for unit turns.</p> <p>5. Unit upgrade supervisor and RCM work with hauler to quantify waste diverted and waste landfilled.</p>	NE Unit Upgrade Crew, Unit Upgrade Crew Supervisor, RCM, Property Managers	Q1 2012	1. Divert 25% by weight of NE Region unit turn waste from the landfill by 3/31/12.

Strategic Plan

STRATEGY	ACTION STEPS	RESPONSIBLE PARTIES	START DATE	OUTCOME
SW6: Implement construction waste recycling pilot for unit upgrades, cont'd	<ol style="list-style-type: none"> RCM assesses program for diversion and cost effectiveness. RCM determines feasibility of expansion to West and South Unit Upgrade Crews by 6/30/2012. 			
OPPORTUNITY: Recycle Waste Created by New Construction and Major Rehabilitation Projects				
SW7: Recycling specifications for Construction, Demolition and Landclearing (CDL) debris are included in all new construction and major rehabilitation bids	<ol style="list-style-type: none"> RCM or RCS distributes draft specification for review by all departments. Department Directors provide input to RCM within 2 weeks. RCM provides second draft to Directors within 2 weeks. RCM requests confirmation from Construction Project Managers that specifications are included in contracts and CDL waste is recycled. 	RCM, RCS, Directors of Capital Construction, Hope VI and Asset Management	Q1 2012	<ol style="list-style-type: none"> CDL recycling specifications incorporated into all new construction and major rehabilitation contracts by 6/30/2012 and specification is met. New construction and rehabilitation projects recycle average of 75% of CDL debris by weight.
OPPORTUNITY: Compost Yard and Landscaping Debris				
SW8: Implement yard waste collection for KCHA operations at all Portfolio Offices	<ol style="list-style-type: none"> KCHA Asset Managers and Public Housing Managers budget in 2011 for 2012 yard waste collection service for KCHA landscaping debris. Property Managers work with RCS to request yard waste collection from hauler for at least one site in each portfolio. 	Asset Managers, Property Managers, RCS, Maintenance staff	Q2 2012	<ol style="list-style-type: none"> Yard waste is collected and recycled from at least one site in each portfolio. 95% reduction in staff trips to transfer station for disposal of yard waste.

Strategic Plan

STRATEGY	ACTION STEPS	RESPONSIBLE PARTIES	START DATE	OUTCOME
	<ol style="list-style-type: none"> 3. RCS provides on-site training, and written and graphic yard waste instructions to maintenance and property management staff. 4. Maintenance staff checks yard waste for contamination, and contacts Resource Conservation staff for assistance if necessary. 			
OPPORTUNITY: Compost Resident Food Waste and Yard Waste				
SW 9: Implement food waste recycling pilot at two Public Housing properties	<ol style="list-style-type: none"> 1. RCS and RCM identify 2 properties with successful recycling collection programs. 2. RCS requests participation by site property manager(s). 3. RCM requests funds in Q3 2011 for FY 2012 budget. 4. RCS works with site staff to roll out food waste collection. 5. RCS monitors program and reports to RCM and Property Manager. 6. RCM and RCS assess pilot, and make recommendation regarding food waste collection for additional Public Housing sites. 	RCS, RCM, Property Managers	Q3 2012	<ol style="list-style-type: none"> 1. Implement pilot food waste recycling program to two sites by 12/31/2012. 2. Contamination rates of 20% or less at pilot sites. 3. 50% of capacity reached for each food waste cart provided at pilot properties.
SW 10: Expand food and yard waste collection if pilot is successful	<ol style="list-style-type: none"> 1. RCS determines number of properties per year for which food waste collection can be implemented based on number of hours required to implement pilot. 	RCS, Regional Managers, Director of Public Housing, Property	Q1 2013	<ol style="list-style-type: none"> 1. Two properties per year implement food and yard waste collection. 2. 25% of units per property

Strategic Plan

STRATEGY	ACTION STEPS	RESPONSIBLE PARTIES	START DATE	OUTCOME
Expand food and yard waste collection if pilot is successful, cont'd	<ol style="list-style-type: none"> 2. RCS determines annual cost and requests support for funding (if funding is required) from Regional Manager(s), Director of Public Housing and Asset Managers 3. RCS requests participation from Public Housing managers; Asset Managers request participation from management companies. 4. Public Housing Property Manager and Asset Manager request funds in August 2012 for FY 2013 budget. 5. Property Manager and Asset Manager notify RCS regarding funding determination. 6. RCS works with site staff to implement food waste collection. 7. RCS monitors program and reports to RCM, Asset Managers and Property Managers. 	Managers, Asset Managers, RCM, RCS		<ol style="list-style-type: none"> participate. 3. Less than 20% contamination of yard and food waste bins. 4. 50% of capacity reached for each food waste cart provided at participating properties.

Strategic Plan

STRATEGY	ACTION STEPS	RESPONSIBLE PARTIES	START DATE	OUTCOME
TARGET 4: HAZARDOUS WASTE Outcome: 60 additional properties receive at least 3-star EnviroStars certification				
OPPORTUNITY: Excellent Management of Hazardous Waste				
HW1: Obtain EnviroStars certification for Public Housing portfolio offices and all Asset Managed sites	<ol style="list-style-type: none"> 1. RCM meets with Asset Managers to explain Enviro Stars program and request participation. <ol style="list-style-type: none"> a. Asset Managers request participation from third-party portfolio managers. b. RCM visits portfolio offices to determine eligibility for EnviroStars certification. 2. RCM develops written instructions and guidelines to enable sites to comply with EnviroStars requirements. 3. RCM works with Management Companies and Public Housing Managers to meet EnviroStars standards, and complete application for 3, 4 or 5-star certification. 4. RCM reviews applications and submits them to EnviroStars program. 5. Property Manager, maintenance staff, RCM and EnviroStars representative conduct site walk-through. 6. EnviroStars notifies RCM and Property Manager when certification is awarded. 	RCM, Property Managers, Maintenance Staff, Asset Managers, Management Companies	Ongoing 2010-2016	<ol style="list-style-type: none"> 1. All KCHA AMP offices and all Asset Managed properties EnviroStars (3-star or higher) certified by 12/31/2016.

Strategic Plan

STRATEGY	ACTION STEPS	RESPONSIBLE PARTIES	START DATE	OUTCOME
HW2: Maintain EnviroStars certifications	<ol style="list-style-type: none"> 1. EnviroStars program notifies RCM when re-certification is due. 2. RCM works with EnviroStars representative and site staff to establish goals for recertification period, and provides written instructions for steps to maintain certification or increase star rating, if applicable. 3. RCM or Property Manager schedules site walk-through with EnviroStars representative and site staff. 4. RCM submits application for higher-level star, if applicable. 5. RCM notifies Property Manager when re-certification or higher star certification is awarded. 	RCM, Property Managers, Maintenance Staff	Ongoing 2010-2016 (as needed)	<ol style="list-style-type: none"> 1. All certified sites maintain certification 3-star sites and become 4-star certified within 2 years of initial certification.
OPPORTUNITY: Reduce Toxic Cleaning and Landscaping Supplies in Operations				
HW3: Identify and purchase GreenSeal-certified or low-toxic products	<ol style="list-style-type: none"> 1. Resource Conservation staff commissions committee of Maintenance Staff from each region to discuss current methods, successes and solutions to existing challenges. Committee should include Northeast Region staff and the list of materials used there that meet the needs of chemically-sensitive residents. 2. Resource Conservation staff creates and provides list of green alternatives and product lines, with price comparison to all maintenance staff, Property Managers and 	Maintenance Staff, RCM, RCS, Director of Public Housing, Property Managers, Asset Managers	Q4 2012	<ol style="list-style-type: none"> 1. Implement KCHA Environmental Purchasing Policy by minimizing the use of toxic materials used in maintenance operations by 12/31/2012. 2. All products for which viable green alternatives exist are purchased according to EPP.

Strategic Plan

STRATEGY	ACTION STEPS	RESPONSIBLE PARTIES	START DATE	OUTCOME
HW3: Identify and purchase GreenSeal-certified or low-toxic materials, cont'd	<p>Asset Managers.</p> <p>3. Resource Conservation staff rolls out effort in Communicator article. Director of Public Housing e-mails Property Managers to request compliance.</p> <p>4. Asset Managers distribute list to portfolio managers of third-party management companies.</p> <p>5. RCM sets up training by landscape and green cleaning experts for committee members.</p> <p>6. RCM follows-up with 20% of Public Housing sites to check implementation of EPP regarding green alternatives.</p>			
<p style="text-align: center;">TARGET 5: COMMUNICATION AND AWARENESS</p> <p>Outcomes:</p> <p>Resource conservation is integral to KCHA's mission</p> <p>Resident behaviors contribute to energy, water and solid waste outcomes</p>				
OPPORTUNITY: Effectively Implement Strategies in RMP				
CA1: RCM provides written report on RMP implementation twice yearly to Executive Director and Senior Staff	<p>1. RCM prepares and submits to Senior Staff and Executive Director semi-annual written report including implementation status, successes, challenges and top recommendations to improve implementation.</p> <p>2. RCM presents report and facilitates</p>	RCM, Department Directors, Executive Director	Q2 2012	<p>1. RCM provides written and oral update on RMP at two Senior Staff meetings per year.</p> <p>2. RCM and Department Directors identify and implement steps to address strategies with</p>

Strategic Plan

STRATEGY	ACTION STEPS	RESPONSIBLE PARTIES	START DATE	OUTCOME
	discussion about RMP implementation at Senior Staff meeting. 3. RCM follows-up with Department Directors as needed to address challenges.			implementation challenges.
OPPORTUNITY: Raise Staff Awareness of Conservation Principals				
CA2: Green Team engages staff in conservation initiatives	<ol style="list-style-type: none"> 1. RCM and RCS co-chair the Green Team. 2. Retain at least one representative from every department on the Team. 3. RCM and RCS schedule meetings quarterly, and set agenda. 4. Establish annual initiatives for staff outreach and education at July meeting. 5. RCS and RCM chair committees to complete several annual initiatives involving staff participation. 6. RCM includes report on Green Team accomplishments in Resource Conservation Program <i>Annual Report to Staff</i>. 	RCM, RCS, Green Team	Ongoing 2008-2016	<ol style="list-style-type: none"> 1. Engage at least 100 non-Green Team staff in at least 3 activities annually. 2. All departments are represented on Green Team.
CA3: Resource Conservation Program provides outreach to staff	<ol style="list-style-type: none"> 1. RCS publishes Conservation News You Can Use Intranet Blog once a month. 2. RCM films <i>Lifestyles of the Green and Famous</i> episodes for E-Communicator at least 3 times per year. 3. RCS writes article for every print edition of The Communicator. 	RCM, RCS	Ongoing 2008-2016	<ol style="list-style-type: none"> 1. 12 publications of CNYCU, 3 E-communicator clips and 6 articles in the Communicator. 2. 90 staff members view CNYCU per month.

Strategic Plan

STRATEGY	ACTION STEPS	RESPONSIBLE PARTIES	START DATE	OUTCOME
CA4: New employees receive orientation by RCM on Conservation Standards and RMP	<ol style="list-style-type: none"> 1. RCM requests permission from HR Director to include requirement on New Employee Orientation Checklist. 2. HR includes requirement to contact RCM by phone on New Employee Orientation Checklist. 3. RCM contacts new hires after introductory email to schedule Conservation Standards and RMP orientation. 4. RCM emails Intranet link to both Conservation Standards and RMP to new hires. 5. RCM creates spreadsheet listing new employees and indicates date of orientation. 	Director of Human Resources, Human Resources Manager, RCM	Q3 2011	<ol style="list-style-type: none"> 1. 100% of new employees are familiar with Conservation Standards and are aware of RMP.
Opportunity: Educate KCHA Residents about Energy and Water Conservation				
CA5: Partner with non-profit organizations to provide door-to-door education	<ol style="list-style-type: none"> 1. Director of Resident Services budgets funds in August 2012 for 2013 budget. 2. RCM coordinates with Construction and Weatherization department staff to identify priority properties for resident education. 3. Resident Service Coordinators coordinate outreach efforts with organizations. 4. RCM requests and RCS analyzes post-education energy bills for targeted sites. 	Director of Resident Services, RCM, Resident Services Coordinators	Q2 2012	<ol style="list-style-type: none"> 1. Average resident energy consumption decreases by 5% within 1 year of education.


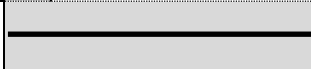
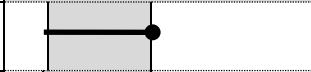
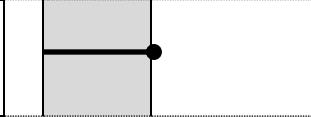
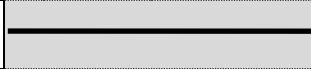

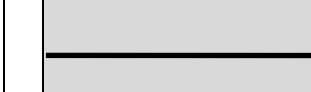
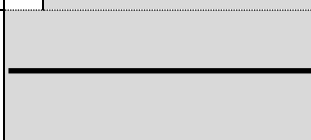
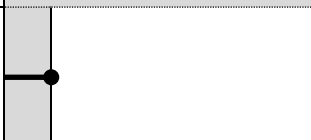
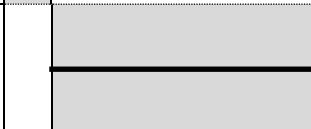
Conclusion

A copy of the Resource Management Plan will be provided to all KCHA departments/offices for posting. Questions about the Plan should be directed to the RCM.

The RMP will be reviewed semi-annually by the RCM and RCS, and updates recommended to senior staff and the Executive Director.

Appendix A

Strategy Implementation Schedule

Opportunity	Strategy	Department Responsible	Start Date	Duration					
				2011	2012	2013	2014	2015	2016
TARGET 1: ENERGY									
Implement Consistent Best Practice Maintenance for Furnaces and Boilers	E1	Director of Public Housing, Regional Managers, Maintenance Manager, RCM, Property Managers	Q4 2011						
	E2	Director of Public Housing, Property Managers, Regional Managers	Q3 2011						
Programmable Thermostats in Heated Common Area Spaces	E3	Property Managers, RCM, Maintenance Staff, Asset Managers	AM: Q1 2012 PH: Q3 2012						
Implement Lighting Controls and T8 Lighting Technology in Common Area Spaces	E4	Property Managers, Maintenance Staff, RCM, Asset Managers	PH: Q1 2012 AM: Q3 2012						
Assess Properties Holistically for Conservation Opportunities	E5	RCM, Property Managers, Maintenance Staff, Asset Managers	Ongoing 2008-2016						
Address Potential Utility Overcharges	E6	RCS, RCM	Ongoing 2011-2016						
Apply Green Building Practices Consistently to New Construction and Major Rehabilitation Projects	E7	Capital Construction and Hope VI Project Managers and Department Directors, RCM	Q1 2012						
Apply Green Building Practices Consistently to Maintenance and Repair Projects in Public Housing Maintenance and Asset Management Departments	E8	Director of Asset Management, Maintenance Manager, RCM	AM: Q4 2011 PH: Q2 2013						
Improve Fuel Efficiency of KCHA Vehicle Fleet	E9	Senior Management Analyst in Administrative Services, Directors of Housing Management and Public Housing, Deputy Director of Administration, Maintenance Manager, RCM, Regional Managers	Q4 2011						
Install Alternative Energy Sources	E10	RCM, Capital Construction, Weatherization & Rehabilitation and Asset Management Staff	Q1 2012						




Strategy Implementation Schedule

Opportunity	Strategy	Department Responsible	Start Date	Duration					
				2011	2012	2013	2014	2015	2016
Request and Analyze Whole-building Consumption and Cost Data from Electric and Gas Utilities	E11	RCM, RCS, Capital Construction Project Manager, Department Directors	Q3 2011						
Utilize Whole-Building Data Analysis to Determine Feasibility of Building Retrofits for Energy Conservation	E12	RCM, Capital Construction Project Manager, Deputy Director, Director of Capital Construction, Weatherization Construction Project Manager	Q2 2012						
Evaluate Cost Effectiveness of Solar Hot Water Installations; Expand Installation	E13	RCM, Asset Management Construction Project manager (CPM), Director of Asset Management, Deputy Director, Executive Director	Q1 2012						
Address High Energy Usage	E14	RCM, Property Managers, Regional Managers, Director of Public Housing	Ongoing 2008-2016						
Consistently Purchase Energy Star Appliances and Equipment	E15	Maintenance Manager, Maintenance Coordinators, Property Managers, Regional Managers, Director of Asset Management, Asset Managers, RCM	Q2 2012						
TARGET 2: WATER									
Water Conserving Irrigation Practices	W1	Property Managers, Regional Managers Maintenance Staff, Asset Managers	Q2 2012						
	W2	Regional Managers, Asset Managers, Maintenance Staff	Q2 2012						
Efficient Water Fixtures Present in Housing Stock	W3	RCM, Unit Upgrade Crews, Maintenance staff, Asset Management Director, Public Housing Director, Hope VI Director, RCS	AM & HopeVI: Q4 2011 PH: Q1 2013						
Understand Water Consumption History of Managed Asset Properties	W4	Asset Managers, Management Companies, RCM, RCS	Q3 2011						
Address Leaks and High Consumption	W5	RCM, Property Managers, Regional Managers, Director of Public Housing	Ongoing 2010-2016						
	W6	RCS, Management Companies, Asset Managers	Q3 2011						
	W7	RCM, RCS, Property Managers, Maintenance Staff	Ongoing 2010-2016						
TARGET 3: SOLID WASTE									

Strategy Implementation Schedule

Opportunity	Strategy	Department Responsible	Start Date	Duration					
				2011	2012	2013	2014	2015	2016
Track and Understand KCHA Waste Disposal Costs and Diversion Rates	SW 1	RCS, RCM	Q4 2011						
Implement Environmental Purchasing Policy (EPP)	SW 2	Procurement Technician, RCM, RCS, Property Managers, Director of Public Housing, Asset Managers	AM & PT: Q2 2012 PH: Q1 2013						
	SW3	Director of IT, Network Systems Manager, RCM, RCS	Q1 2012						
Recycle More Resident and Office Solid Waste	SW4	RCS, Property Managers, Asset Managers, Maintenance Staff, Regional Managers	Ongoing 2010-2016						
Inform Residents of KCHA Site Recycling Program	SW5	Director of Public Housing, Director of Asset Management, RCM, Property Managers, Management Companies	AM: Q1 2012 PH: Q4 2012						
Recycle Waste Created by Unit Upgrades	SW6	NE Unit Upgrade Crew, Unit Upgrade Crew Supervisor, RCM, Property Managers	Q1 2012						
Recycle Waste Created by New Construction and Major Rehabilitation Projects	SW7	RCM, RCS, Directors of Capital Construction, Hope VI and Asset Management	Q1 2012						
Compost Yard and Landscaping Debris	SW8	Asset Managers, Property Managers, RCS, Maintenance staff	Q2 2012						
Compost Resident Food Waste and Yard Waste	SW9	RCS, RCM, Property Managers	Q3 2012						
	SW10	RCS, Regional Managers, Director of Public Housing, Property Managers, Asset Managers, RCM	Q1 2013						
TARGET 4: HAZARDOUS WASTE									
Excellent Management of Hazardous Waste	HW1	RCM, Property Managers, Maintenance Staff, Asset Managers	Ongoing 2010-2016						
	HW2	RCM, Property Managers, Maintenance Staff	Ongoing 2010-2016						
Reduce Toxic Cleaning and Landscaping Supplies in Public Housing Operations	HW3	Maintenance Staff, RCM, RCS, Director of Public Housing, Property Managers, Asset Managers	Q4 2012						
TARGET 5: COMMUNICATION & AWARENESS									
Effectively Implement Strategies in RMP	CA1	RCM, Department Directors, Executive Director	Q2 2012						
Raise Staff Awareness of Conservation	CA2	RCM, RCS, Green Team	Ongoing						

Strategy Implementation Schedule

Opportunity	Strategy	Department Responsible	Start Date	Duration					
				2011	2012	2013	2014	2015	2016
Principals			2008-2016						
	CA3	RCM, RCS	Ongoing 2008-2016						
	CA4	Director of Human Resources, Human Resources Manager, RCM	Q3 2011						
Educate Residents about Energy and Water Conservation	CA5	Director of Resident Services, RCM, Resident Services Coordinators	Q2 2012						

Appendix B

Strategy by Responsible Party 2011

Department Responsible	STRATEGIES				
	Energy	Water	Solid Waste	Hazardous Waste	Communication & Awareness
All KCHA Staff					
Executive Director					
Department Directors	E11				
Director of Housing Management	E9				
Deputy Director of Administration	E9				
Public Housing					
Public Housing					
Director of Public Housing	E1, E2, E9, E11, E14	W5			
Regional Managers	E1, E2, E11, E14	W5	SW4		
Property Managers	E1, E2, E4, E5, E6, E14	W5, W7	SW4	HW1, HW2	
Public Housing Site Staff	E1				
Asset Management					
Asset Management					
Director of Asset Management	E8,	W3			
Asset Managers	E4, E5,	W4, W6	SW4	HW1	
Asset Management Construction Project Manager					
Management Companies		W4, W6		HW1	
Maintenance					
Maintenance Coordinators					
Maintenance Manager	E1, E9, E11,				
Maintenance Staff	E4, E6, E7	W7	SW4	HW1, HW2	
Upgrade Crew Supervisor					

Strategy by Responsible Party 2011

Department Responsible	STRATEGIES				
	Energy	Water	Solid Waste	Hazardous Waste	Communication & Awareness
Unit Upgrade Crews					
NE Unit Upgrade Crew					
Capital Construction					
Capital Construction Project Manager	E11				
Capital Construction Director					
Hope VI					
Hope VI					
Hope VI Director		W3			
Hope VI Project Managers					
Other					
Resource Conservation Manager	E1, E2, E4, E5, E6, E8, E9, E11, E14	W3, W4, W5, W7	SW1,	HW1, HW2	CA2, CA3, CA4
Resource Conservation Specialist	E6, E8	W3, W4, W6, W7	SW1, SW4		CA2, CA3
Weatherization & Rehabilitation					
Green Team					CA2
Procurement Technician					
Human Resources Director					CA4
Human Resources Manager					CA4
Senior Management Analyst	E9, E11				
IT Director					
Network Systems Manager					
Office Purchaser					

Strategy by Responsible Party 2012

Department Responsible	STRATEGIES				
	Energy	Water	Solid Waste	Hazardous Waste	Communication & Awareness
All KCHA Staff					
Executive Director	E13				CA1
Deputy Director	E12, E13				
Department Directors	E11				CA1
Director of Housing Management					
Public Housing					
Public Housing					
Director of Public Housing	E2, E3, E14	W5	SW5	HW3	
Regional Managers	E2, E3, E14, E15	W1, W2, W5	SW4		
Property Managers	E2, E3, E4, E5 E6, E7, E14, E15	W1, W5, W7	SW4, SW5, SW6, SW8, SW9	HW1, HW2, HW3	
Public Housing Site Staff					
Asset Management					
Asset Management					
Director of Asset Management	E8, E10, E13, E15	W3	SW5, SW7		
Asset Managers	E3, E4, E5, E6, E15	W1, W2, W6	SW2, SW4, SW8	HW1, HW3	
Asset Management Construction Project Manager	E10, E13				
Management Companies	E3	W6	SW5	HW1	
Maintenance					
Maintenance Coordinators	E15				
Maintenance Manager	E10, E15				
Maintenance Staff	E4, E6, E7	W1, W2, W7	SW4, SW8	HW1, HW2, HW3	
Upgrade Crew Supervisor			SW6		

Strategy by Responsible Party 2012

Department Responsible	STRATEGIES				
	Energy	Water	Solid Waste	Hazardous Waste	Communication & Awareness
Unit Upgrade Crews					
NE Unit Upgrade Crew			SW6		
Capital Construction					
Capital Construction Project Manager	E7, E9, E10, E11, E12				
Capital Construction Director	E7, E9, E12		SW7		
Hope VI					
Hope VI					
Hope VI Director	E7, E9	W3	SW7		
Hope VI Project Managers	E7, E9				
Other					
Resource Conservation Manager	E4, E5, E6, E7, E8, E9, E10, E11, E12, E13, E14, E15	W3, W5, W7	SW2, SW3, SW5, SW6, SW7, SW9	HW1, HW2, HW3	CA1, CA2, CA3, CA4, CA5
Resource Conservation Specialist	E6, E8,	W3, W6, W7	SW2, SW3, SW4, SW7, SW8, SW9	HW3	CA2, CA3
Weatherization & Rehabilitation					
Weatherization & Rehabilitation Construction Project Manager	E10, E12				
Green Team					CA2
Procurement Technician			SW2		
Human Resources Director					CA4
Human Resources Manager					CA4
Senior Management Analyst					
IT Director			SW3		
Network Systems Manager			SW3		

Strategy by Responsible Party 2012

Department Responsible	STRATEGIES				
	Energy	Water	Solid Waste	Hazardous Waste	Communication & Awareness
Office Purchaser					
Director of Resident Services					CA5
Resident Services Coordinators					CA5

Strategy by Responsible Party 2013

Department Responsible	STRATEGIES				
	Energy	Water	Solid Waste	Hazardous Waste	Communication & Awareness
All KCHA Staff					
Executive Director	E15				CA1
Deputy Director					
Department Directors					CA1
Director of Housing Management	E11				
Public Housing					
Public Housing					
Director of Public Housing	E2, E3, E11, E14	W3, W5	SW2, SW10	HW3	
Regional Managers	E2, E3, E11, E14, E15	W2, W5	SW4, SW10		
Property Managers	E2, E3, E4, E5 E7, E14, E15	W5, W7	SW2, SW4, SW10	HW1, HW2, HW3	
Public Housing Site Staff					
Asset Management					
Asset Management	E12				
Director of Asset Management	E8, E10, E15	W3	SW7		
Asset Managers	E3, E5, E15	W2, W6	SW2, SW4, SW10	HW1, HW3	
Asset Management Construction Project Manager					
Management Companies		W6		HW1	
Maintenance					
Maintenance Coordinators	E15				
Maintenance Manager	E8, E10, E11, E15				
Maintenance Staff	E7	W2, W3, W7	SW4	HW1, HW2, HW3	

Strategy by Responsible Party 2013

Department Responsible	STRATEGIES				
	Energy	Water	Solid Waste	Hazardous Waste	Communication & Awareness
Upgrade Crew Supervisor					
Unit Upgrade Crews		W3			
NE Unit Upgrade Crew					
Capital Construction					
Capital Construction Project Manager	E7, E9,				
Capital Construction Director	E7, E9,		SW7		
Hope VI					
Hope VI					
Hope VI Director	E7	W3	SW7		
Hope VI Project Managers	E7				
Other					
Resource Conservation Manager	E5, E7, E8, E9, E10, E11, E14, E15	W3, W5, W7	SW2, SW3, SW7, SW10	HW1, HW2, HW3	CA1, CA2, CA3, CA4, CA5
Resource Conservation Specialist	E6, E8	W3, W6, W7	SW2, SW3, SW4, SW7, SW10	HW3	CA2, CA3
Weatherization & Rehabilitation					
Weatherization & Rehabilitation Construction Project Manager					
Green Team					CA2
Procurement Technician			SW2		
Human Resources Director					CA4
Human Resources Manager					CA4
Senior Management Analyst	E11				

Strategy by Responsible Party 2013

Department Responsible	STRATEGIES				
	Energy	Water	Solid Waste	Hazardous Waste	Communication & Awareness
IT Director			SW3		
Network Systems Manager			SW3		
Office Purchaser					
Director of Resident Services					CA5
Resident Services Coordinators					CA5

Strategy by Responsible Party 2014, 2015 and 2016

Department Responsible	STRATEGIES				
	Energy	Water	Solid Waste	Hazardous Waste	Communication & Awareness
All KCHA Staff					
Executive Director					CA1
Deputy Director					
Department Directors					CA1
Director of Housing Management	E11				
Public Housing					
Public Housing					
Director of Public Housing	E2, E3, E11, E14	W3, W5	SW2, SW10	HW3	
Regional Managers	E2, E3, E11, E14, E15	W2, W5	SW4, SW10		
Property Managers	E2, E3, E5, E7, E14, E15	W5, W7	SW2, SW4, SW10	HW1, HW2, HW3	
Public Housing Site Staff					
Asset Management					
Asset Management					
Director of Asset Management	E8, E10, E15	W3	SW7		
Asset Managers	E5, E15	W2, W6	SW2, SW4, SW10	HW1, HW3	
Asset Management Construction Project Manager					
Management Companies		W6		HW1	
Maintenance					
Maintenance Coordinators	E15				
Maintenance Manager	E8, E10, E11, E15				
Maintenance Staff	E7	W2, W3, W7	SW4	HW1, HW2, HW3	
Upgrade Crew Supervisor					

Strategy by Responsible Party 2014, 2015 and 2016

Department Responsible	STRATEGIES				
	Energy	Water	Solid Waste	Hazardous Waste	Communication & Awareness
Unit Upgrade Crews		W3			
NE Unit Upgrade Crew					
Capital Construction					
Capital Construction Project Manager					
Capital Construction Director			SW7		
Hope VI					
Hope VI					
Hope VI Director		W3	SW7		
Hope VI Project Managers					
Other					
Resource Conservation Manager	E5, E7, E8, E9, E10, E11, E14, E15	W3, W5, W7	SW2, SW3, SW7, SW10	HW1, HW2, HW3	CA1, CA2, CA3, CA4
Resource Conservation Specialist	E6, E8	W3, W6, W7	SW2, SW3, SW4, SW7, SW10	HW3	CA2, CA3
Weatherization & Rehabilitation					
Weatherization & Rehabilitation Construction Project Manager					
Green Team					CA2
Procurement Technician			SW2		
Human Resources Director					CA4
Human Resources Manager					CA4
Senior Management Analyst	E11				
IT Director			SW3		
Network Systems Manager			SW3		

Strategy by Responsible Party 2014, 2015 and 2016

Department Responsible	STRATEGIES				
	Energy	Water	Solid Waste	Hazardous Waste	Communication & Awareness
Office Purchaser					
Director of Resident Services					
Resident Services Coordinators					

Appendix C



Conservation Standards for Administrative Offices

August 2010

Contents

Introduction.....	63
Conservation Standards.....	64
Energy Management.....	64
Water Conservation.....	65
Recycling.....	66
Durables.....	66
Paper Use.....	66
Purchasing.....	66
Facilities Design.....	66
Glossary.....	67

Introduction

The following standards for operations apply to Central Office, and the Section 8, Rehabilitation & Weatherization and Capital Construction offices. The Conservation Standards are adopted to promote resource conservation and reduce utility bills throughout all KCHA departments.

Implementation of these types of standards has been proven to result in a 5% or greater reduction in energy and other resource use. The Standards form a significant part of KCHA's efforts to implement cost-effective methods to reduce our impact on the natural environment.

Conservation Standards

Energy Management

1. To promote maximum energy savings and comfort, the following temperature settings shall be followed:

Area	Occupied Set Points [2]		Unoccupied Set Points [2]	
	Heating	Cooling ^[1]	Heating	Cooling ^[1]
Offices	69-70	74	55	85
Copy rooms	67	75	55	85
Kitchens	65	74	55	85
Restrooms	65	75	55	85
Hallways & common areas	65	75	55	85
Storage rooms	62	78	55	85

[1] For buildings with mechanical cooling. [2] Heating shall not be set higher than these temperatures. Cooling shall not be set lower than these temperatures, but may be set higher in offices to achieve comfort and reduce energy consumption.

Thermostats shall be set to operate at these set points or ranges. Exceptions shall be granted by supervisors after consulting with the Resource Conservation Manager (RCM) to consider other measures that may result in occupant comfort. Malfunctioning thermostats or other HVAC opportunities shall be repaired promptly.

2. Employees shall set to hibernate mode or turn off computer CPUs and monitors, radios, heaters, lamps, fans, chargers, coffee pots, digital photo displays and electric calculators, etc. before leaving the office for the night.
3. CPUs shall be set to hibernate, and monitors set to automatically turn-off, when an employee is away from their work station for 30 minutes or longer.

4. Water coolers shall be put on timers to heat and cool water only during business hours. Timers shall be set to turn coolers on 30 minutes prior to the earliest scheduled staff arrival, and to turn off when the last person is scheduled to leave.
5. Personal desk lights shall use fluorescent lamps that consume 15 watts of electricity or less.
6. Employees shall turn out the lights in walled offices if they know they are leaving for more than 15 minutes unless the office has an occupancy sensor that controls lighting.
7. The last employee present in a department or work area at the end of the day is responsible for turning out common area lights, turning off or setting to sleep mode all printers, copiers, postage machines, scanners and other office equipment, and turning manual thermostats down to 55 degrees. Exceptions regarding office equipment shall be granted by the RCM in conjunction with the Director of Information Technology.
8. Staff are responsible for closing windows and window coverings in their individual work spaces at the end of each day to minimize heat transfer.
9. Incandescent lamps shall only be installed when a fluorescent lamp is inappropriate for the fixture, or the fixture location.
10. It is illegal in King County to put mercury-containing lamps (all fluorescent lamps) in the garbage. They must be recycled.³
11. Occupancy sensors shall be set to turn off lighting after no fewer than 15 minutes to maintain lamp life.
12. Lighting shall be turned off in unoccupied areas. Areas in which a legitimate safety concern exists or that are accessed by the public are exempted from this policy.

Water Conservation

1. Dishwashers shall be run only with a full load.
2. Areas receiving new landscaping shall be planted with native and drought tolerant species.⁴
3. Grass shall not be irrigated unless water is necessary for the establishment of newly landscaped areas. Market-driven properties or those operated by contract management companies are exempted from this standard to the extent necessary to maintain the appearance of the property.
4. A site-specific landscape plan that balances water conservation, maintenance and plant health shall be written and implemented for all major landscaping projects. Plans shall be reviewed annually by maintenance staff and property managers for effectiveness.
5. Landscaping staff and contractors shall be educated appropriately to ensure proper implementation of landscape plans.

³ All fluorescent lamps contain mercury, a hazardous substance harmful to humans and the environment. The City of Seattle and King County prohibit the dumping of fluorescent lamps in the garbage. Seattle Municipal Code 21.36.025 – Unlawful Disposal; 21.36.026 – Household Hazardous Waste; 21.36.029 – Small Quantity Generator and the Waste Acceptance Rule for King County Solid Waste Division Solid Waste Handling Facilities (PUT 7-1-5 [PR])

⁴ King County Department of Natural Resources and Parks guide to native plants at: <http://your.kingcounty.gov/dnrp/library/2003/gonative.pdf> (accessed 8/10/10).

Recycling

1. At offices where recycling is available, employees and contracted staff shall be provided with a desk-side recycling container and recycling guidelines. Employees are expected to recycle all items according to the recycling guidelines applicable for the jurisdiction in which their worksite is located.
2. KCHA provides free recycling to all KCHA staff for obsolete technology items such as cell phones, diskettes, CDs, laptops, etc. Staff may place personal and work items in the Techno Trash Can in the Central Office kitchen. Guidelines are listed on the can.

Durables

1. Offices with sufficient kitchen facilities (sink, storage space) are encouraged to use durable, washable dish, silver and glassware in place of disposable plastic, paper or Styrofoam.
2. Employees are responsible for washing and putting away any dishware they use on the day it is used.

Paper Use

1. Print jobs shall be set to print double-sided unless an automatic, duplex-capable printer is unavailable, or the document must be printed single-sided for functional purposes. Directions to set print jobs to default to double-sided printing for KCHA staff are provided by the IT department, and can be found on the Intranet at: <http://home/Departments/InformationTechnology/TechnologyFAQ.html>
2. Employees shall avoid printing unnecessary pages and documents that could otherwise be archived in Outlook E-mail folders, H:drives or on the appropriate server.

Purchasing

1. In 2005, KCHA adopted an environmentally preferable purchasing policy. Staff are responsible for making office supply and equipment purchases in accordance with this policy. The policy is located at: <http://home/Departments/AdministrativeServices/ProcurementPolicy.pdf> or on the P Drive at <P:\Procurement & Contracting>.
2. Only Energy Star rated electronics, appliances and lighting shall be purchased unless the desired product is not available with an Energy Star rating, or the product has been tested and found to perform below standards.

Facilities and Landscape Design

1. Construction project planning shall consider the long-term costs to operate and maintain buildings in addition to construction costs.

2. RFPs and bid documents for capital projects that impact energy and water consumption shall include specifications stating that projects shall be designed to be as energy and water efficient as possible within the project budget and scope.
3. Design teams shall set goals for energy and water conservation when applicable to the project scope.
4. Staff shall work with the RCM to maximize eligibility for utility grants and rebates for new construction, redevelopment and remodel projects.
5. Capital projects shall utilize third-party commissioning beginning in the pre-design phase of construction to ensure that building systems are integrated and perform at design specifications or better.
6. Areas receiving new landscaping shall be planted with native and drought tolerant species.⁵
7. A site-specific landscape plan that balances water conservation, maintenance and plant health shall be written and implemented for all major landscaping projects.

Glossary

CFL

Compact fluorescent lamp. An energy efficient and long-lasting replacement for the incandescent lamp.

Energy Star

A United States federal government-backed program helping businesses and individuals protect the environment through superior **energy** efficiency.

HVAC

Heating, ventilation and air-conditioning.

Set point

The temperature at which heating and cooling are set, either manually or programmed by central controls or a programmable thermostat.

⁵ King County Department of Natural Resources and Parks guide to native plants at: <http://your.kingcounty.gov/dnrp/library/2003/gonative.pdf> (accessed 8/10/10).

Appendix D



Conservation Standards for Field Operations & Facilities

August 2010

Contents

Introduction.....	71
Operations & Maintenance Standards.....	72
Lighting.....	72
Heating, Ventilation and Air Conditioning (HVAC).	73
Water Conservation.....	74
Staff Roles & Responsibilities.....	75
Recycling.....	75
Durables.....	75
Energy Management.....	75
Paper Use	76
Purchasing..	76
Glossary.....	77

Introduction

The following standards for maintenance and operations apply to Public Housing and Asset Managed portfolio offices and properties, and buildings managed by the KCHA Facilities Manager. The Conservation Standards are adopted to promote resource conservation and reduce utility bills throughout all KCHA departments. Implementation of these types of standards has been proven to result in a 5% or greater reduction in energy and other resource use. The Standards form a significant part of KCHA's efforts to implement cost-effective methods to reduce our impact on the natural environment.

The Conservation Standards for Field Operations & Facilities are listed in two sections: those impacting Operations & Maintenance (O&M), and those that address Staff Roles and Responsibilities.

Conservation Standards

Operations & Maintenance

Lighting

1. Energy Star-rated T8 (or more efficient) fluorescent lamps and electronic ballasts shall be installed when replacing burned-out or malfunctioning fluorescent T12 lamps and magnetic ballasts through re-lamping projects in common areas and resident units assuming available funding. Property managers shall work with the RCM to utilize utility rebates to help pay for re-lamping projects.
2. When installing T8 and other efficient linear fluorescent lamps, magnetic ballasts shall be removed if present, recycled, and replaced with the appropriate electronic ballast.⁶
3. Energy Star-rated⁷ compact fluorescent lamps (CFLs) shall be installed to replace burned out CFL or incandescent lamps (when appropriate for the fixture and fixture location).
4. To maximize CFL performance and life, newly installed lamps shall be “burned in” the first time they are turned on. Lamps shall be burned in for no fewer than 15 minutes.
5. Incandescent lamps shall only be installed when a fluorescent lamp is inappropriate for the fixture, or the fixture location.
6. Only CFLs manufactured specifically for recessed can lighting shall be installed in cans.
7. It is illegal in King County to put mercury-containing lamps (all fluorescent lamps) in the garbage. They must be recycled.⁸
8. Occupancy sensors shall be installed in offices and common areas (bathrooms, kitchens, conference rooms, etc) as funds and time allow.
9. Program-start ballasts and lamps for T8 fluorescent fixtures shall be used in conjunction with occupancy sensors to maintain lamp life.⁹
10. Occupancy sensors shall be set to turn off lighting after no fewer than 15 minutes to maintain lamp life.

⁶ PCB ballasts are considered hazardous waste and shall be disposed of at a hazardous waste facility or recycled. Non-PCB ballasts contain DEHP, a probable human carcinogen, and shall also be recycled. See the King County Local Hazardous Waste Management Program Web site:

<http://www.govlink.org/hazwaste/business/wastedirectory/wastedetails.cfm?wasteID=88>

⁷ EnergyStar rated compact fluorescent lamps are required by the Environmental Protection Agency to have a two year manufacturer warranty.

⁸ All fluorescent lamps contain mercury, a hazardous substance harmful to humans and the environment. The City of Seattle and King County prohibit the dumping of fluorescent lamps in the garbage. Seattle Municipal Code 21.36.025 – Unlawful Disposal; 21.36.026 – Household Hazardous Waste; 21.36.029 – Small Quantity Generator and the Waste Acceptance Rule for King County Solid Waste Division Solid Waste Handling Facilities (PUT 7-1-5 [PR])

⁹ Program-start ballasts enable longer lamp life in frequently switched lighting applications. They are the best ballast for use in conjunction with occupancy sensors.

11. Lighting shall be turned off in unoccupied areas. Areas in which a legitimate safety concern exists or that are accessed by the public are exempted from this policy.
12. Maintenance and contracted janitorial services shall complete building shut-down checklists provided by the Resource Conservation Manager.
13. Outside security lights shall utilize timer or photocell technology to enable shut off during daylight hours. Maintenance staff shall adjust manual timers at least quarterly to account for changes in daylight hours.
14. Failed exterior light photocells and timers shall be promptly repaired.
15. VendingMiser sensor technology shall be installed on and lighting shall be removed from vending machines at KCHA properties.

Heating, Ventilation and Air Conditioning (HVAC)

1. To promote maximum energy savings and comfort, the following temperature settings shall be followed:

Area	Occupied Set Points [2]		Unoccupied Set Points [2]	
	Heating	Cooling ^[1]	Heating	Cooling ^[1]
Offices	69-70	74	55	85
Copy rooms	67	75	55	85
Computer labs	67	73	55	77
Shops	67	75	55	85
Gyms	67	74	55	85
Kitchens	65	74	55	85
Restrooms	65	75	55	85
Hallways & common areas	65	75	55	85
Storage rooms	62	78	55	85
Common areas in senior housing	74-75	73	55	85

[1] For buildings with mechanical cooling. [2] Heating shall not be set higher than these temperatures, except if necessary in senior buildings. Cooling shall not be set lower than these temperatures, but may be set higher to achieve comfort and reduce energy consumption.

Thermostats shall be set to operate at these set points or ranges. Exceptions shall be granted by supervisors after consulting with the RCM to consider other measures that may result in occupant comfort. Malfunctioning thermostats or other HVAC opportunities shall be repaired promptly.

2. Boilers shall be checked annually for proper operation by certified KCHA staff or a contracted certified HVAC specialist.
3. All boilers shall receive a full tune-up at least every two years by a certified HVAC specialist.
4. Filters shall be replaced in all furnaces at least three times per year, or according to manufacturer guidelines.
5. Maintenance shall be performed on HVAC units, and gas and electric furnaces according to the manufacturer's schedule.
6. Direct Digital Controls (DDCs) schedules for HVAC operation shall be set by facilities managers for regular business hours, weekends, holidays and other breaks. Schedules shall be checked quarterly for proper operation and alignment with building occupant needs.
7. Outside air shall not be used during morning warm-up periods.

Water Conservation

1. Areas receiving new landscaping shall be planted with native and drought tolerant species.¹⁰
2. Grass shall not be irrigated unless water is necessary for the establishment of newly landscaped areas. Market-driven properties or those operated by contract management companies are exempted from this standard to the extent necessary to maintain the appearance of the property.
3. A site-specific landscape plan that balances water conservation, maintenance and plant health shall be written and implemented for all major landscaping projects. Plans shall be reviewed annually by maintenance staff and property managers for effectiveness.
4. Landscaping staff and contractors shall be educated appropriately to ensure proper implementation of landscape plans.
5. Manual watering shall take place in the morning to avoid evaporation. Automatic irrigation systems shall be set to water in the early morning or late evening.
6. Watering hoses made available for resident use shall be equipped with water-saving nozzles such as those that are manually operated to turn on water flow.
7. Only 0.5 or 1.0 gpm bathroom faucet aerators, 1.5 gpm kitchen faucet aerators, and 1.75 gpm (or less) showerheads shall be purchased and installed in KCHA properties. Exceptions shall be made if 1.75 gpm or less hand-held shower heads for senior or disabled resident units are cost prohibitive.
8. Only high-efficiency (1.28 gpf or less) WaterSense rated toilets shall be installed in KCHA properties.¹¹

¹⁰ King County Department of Natural Resources and Parks guide to native plants at: <http://your.kingcounty.gov/dnrp/library/2003/gonative.pdf> (accessed 8/10/10).

Staff Roles & Responsibilities

Recycling

1. At sites where recycling is available, employees and contracted staff shall be provided with a desk-side recycling container and recycling guidelines. Employees are expected to recycle all items according to the recycling guidelines applicable for the jurisdiction in which their worksite is located.
2. KCHA provides free recycling to all KCHA staff for obsolete technology items such as cell phones, diskettes, CDs, laptops, etc. Staff may place personal and work items in the Techno Trash Can in the Central Office kitchen. Guidelines are listed on the can.
3. KCHA property managers are encouraged to check recycling and garbage dumpsters and bins monthly and request assistance from Resource Conservation Program staff when garbage or recycling receptacles are contaminated. Contract property management staff operating properties within Seattle Public Utilities territory shall check dumpsters monthly and report problems to the RCM to avoid being charged for contamination.¹²

Durables

1. Offices with sufficient kitchen facilities (sink, storage space) are encouraged to use durable, washable dish, silver and glassware in place of disposable plastic, paper or Styrofoam.
2. Employees are responsible for washing and putting away any dishware they use on the day it is used.

Energy Management

1. Employees shall set to hibernate mode or turn off computer CPUs and monitors, radios, heaters, lamps, fans, chargers, coffee pots, digital photo displays and electric calculators, etc. before leaving the office for the night.
2. CPUs shall be set to hibernate, and monitors set to automatically turn off, when employees are away from their work stations for 30 minutes or longer.
3. Water coolers shall be put on timers to heat and cool water only during business hours. Timers shall be set to turn coolers on 30 minutes prior to the earliest scheduled staff arrival, and to turn off when the last person is scheduled to leave.
4. Personal desk lights shall use fluorescent lamps that consume 15 watts of electricity or less.

¹¹ WaterSense is a program sponsored by the U.S. Environmental Protection Agency that sets water consumption standards for products and promotes water efficiency.

¹² See Seattle Public Utilities recycling law: <http://www.seattle.gov/UTIL/Services/Recycling/ForApartmentOwners/index.htm>

5. Employees shall turn out the lights in walled offices if they know they are leaving for more than 15 minutes unless an occupancy sensor is installed to control lighting.
6. The last employee present in a department or office area at the end of the day is responsible for turning out common area lights, turning off or setting to sleep mode all printers, copiers, postage machines, scanners and other office equipment, and turning manual thermostats down to 55 degrees. Exceptions regarding office equipment shall be granted by the RCM in conjunction with the Director of Information Technology.
7. Staff are responsible for closing windows and window coverings in their individual work spaces at the end of each day to minimize heat transfer.

Paper Use

1. Print jobs shall be set to print double-sided unless an automatic, duplex-capable printer is unavailable, or the document must be printed single-sided for functional purposes. Directions to set print jobs to default to double-sided printing for KCHA staff are provided by the IT department, and can be found on the Intranet at: <http://home/Departments/InformationTechnology/TechnologyFAQ.html>
2. Employees shall avoid printing unnecessary pages and documents that could otherwise be archived in Outlook E-mail folders, H:drives or on the appropriate server.

Purchasing

1. In 2005, KCHA adopted an Environmentally Preferable Purchasing policy. Staff are responsible for making office supply and equipment purchases in accordance with this policy. The policy is located at: <http://home/Departments/AdministrativeServices/ProcurementPolicy.pdf> or on the P Drive at <P:\Procurement & Contracting>.
2. Only Energy Star rated electronics, appliances and lighting shall be purchased unless the desired product is not available with an Energy Star rating, or has been tested and found not to use less energy than standard products.

Glossary

Ballast

A magnetic or electronic device required for all fluorescent and high intensity discharge lamps. The device is used to control the initial input voltage and current to the lamp and to regulate both while the lamp is operating. Electronic ballasts are more energy efficient.

CFL

Compact fluorescent lamp. An energy efficient and long-lasting replacement for the incandescent lamp.

Direct Digital Controls

A computerized system that manages the operation of building HVAC systems.

Energy Star

A United States federal government-backed program helping businesses and individuals protect the environment through superior energy efficiency. Energy Star rated compact fluorescent lamps are required by the Environmental Protection Agency to have a two year manufacturer warranty.

HVAC

Heating, ventilation and air-conditioning.

O&M measure

A modification of operation or maintenance to save energy or water.

Set point

The temperature at which heating and cooling are set, either manually or programmed by central controls or a programmable thermostat.

T8

A tubular (or linear) fluorescent lamp that is 8/8" (or 1") in diameter. T8 lamps are more energy efficient and produce better light quality than T12 lamps.

T12

A tubular (or linear) fluorescent lamp that is 12/8" (or 1.5") in diameter.