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·	Finance, Efficiency, Economy and Sustainability Subcommittee, December 16, 2015, Item 4
	CITY COUNCIL REPORT
TO:	Karen Peters Deputy City Manager
FROM:	Mark Hartman Chief Sustainability Officer
SUBJECT:	PROGRESS TOWARD 2020 ENERGY EFFICIENCY AND 2025 RENEWABLE ENERGY GOALS

This report to the Finance, Efficiency, Economy and Sustainability (FEES) Subcommittee provides an update on the City's 2020 energy use reduction goal and the 2025 renewable energy goal.

THE ISSUE

The City has two goals related to energy efficiency and renewable energy:

- 1. On May 15, 2012, as part of the national leadership initiative called the Better Buildings Challenge, City Council adopted a "20x20" goal seeking to reduce energy use in City buildings 20% by the year 2020, using 2009 as a baseline.
- 2. On April 9, 2008, the Parks, Education, Bio-Science and Sustainability Subcommittee recommended a "15x25" goal seeking to generate the equivalent of 15% of the City's total energy needs through City-owned or City-facilitated renewable energy projects by the year 2025.

The following sections highlight the progress to date and planned next steps.

The 20% Energy Use Reduction Goal

Energy efficiency and innovation have been hallmarks of the City of Phoenix. In 2012, the City joined the national Better Building Challenge to commit to reducing energy use in City-owned and operated buildings 20% by the year 2020. Since that time, energy upgrades have been implemented in the majority of City facilities resulting in the energy use per square foot (energy intensity) decreasing in City buildings by 8.4% from 2009 to 2014. During that same period, there was also an increase in the total number of buildings and a growth in total square footage of 3%, yet the total energy use, in absolute terms, declined by 5.7%, saving over \$1 million annually. Appendix 1 provides a summary of the data related to the City's energy use comparing the 2009 baseline to 2014.

Staff will continue to evaluate and pursue all cost-effective energy use opportunities, and are seeking to meet the energy use reduction goal of 20% by

2020. However, this may be challenging given that departments have already implemented many of the common low-cost energy efficiency measures. Looking at best practices, other cities have launched aggressive programs that evaluate all possible cost-effective measures (leveraging market tools such as energy performance contracts) and found that reductions in the 20% to 30% range are possible.

As a next step, to assess what would be required to achieve the 2020 energy use reduction goal, staff is preparing to issue a Request for Information (RFI) to energy service providers to solicit best practice approaches, costs and savings of a comprehensive program to achieve the 20% reduction. Once responses have been evaluated, staff will bring forward a report and recommendation to this Subcommittee.

The 15% Renewable Energy Goal

Over 30 renewable energy projects have advanced on City property through City ownership, sponsorship or partnerships, and those projects generate over half the energy needed to achieve the goal of 15% renewable energy. This amount of energy is equivalent to powering 5,000 homes in a year. Future project development opportunities, including the proposed Hoover Dam Hydropower capacity allocated to the City, have the potential to significantly exceed the City's renewable energy goal.

Going forward, staff will continue to research and pursue all cost-effective renewable energy opportunities and partnerships, and seek grant funding in support of those projects whenever possible. Appendix 2 provides a summary of opportunities currently being explored. However, these are presented with a caveat that market forces and regulatory changes could significantly influence the viability of any of the envisioned projects. If all projects proceed, each with the projections as identified, then the City could far surpass its 15% renewable energy goal.

RECOMMENDATION

This report is for information and discussion.

⁴ The Subset of Typical Buildings highlights speci	³ Annual Energy Metric measures the energy effi indicate energy performance. Using that metric,	² Building Energy Consumption pertains specific has declined by 5.22% even while adding over 1.	¹ Citywide consumption pertains to the sum of a pumping, wastewater treatment, and street light						Subset of Typica	Annual Energy Metric ^a kWh/s	Building Area sq. ft.	Number of Facilities (No.)	Total Energy Bill for Buildings \$	Building Energy Consumption ² kWh/Y	Citywide Energy Consumption ¹ kWh/Y	Energy Efficiency Savings from 2009 to 2014	Appendix 1: Changes in Energy Use and Energy
ific savings by department. It is m and are less impacted by occupar	iciency per square foot per year o energy performance has improve	ally to energy use in City owned a 5 million square feet of space duri	all electricity and natural gas bills e ting. Total energy use citywide has	Convention	Aviation Terminals	Parking Garage/Office	Fire Stations	Public Works/Office	al Buildings ⁴ kWh	q. ft. / Үг.				r 212	ľr 700		Intensity from 2009 to 2014
ost relevant to departm .cy. Energy efficiency in	r "energy intensity", whi d by 19.5% for the perio	nd operated buildings. I ing the same period.	wen those that that do r s declined by 4.65% sinc	12.0	48.9	37,1	18.1	20.3	/Sq.ft./Yr kW	24,4	,693,038	162	\$19.8M	2038,056),762,433 66	2009	
ents that have building departments such as A	ich is commonly used l d 2009 to 2014.	In absolute terms, enei	not pertain to building: e 2009.	11.4	47.6	10,5	16,6	15,6	h/Sq.ft./Yr	19.6	8,955,683	172	\$18,7M	00,968,955	58,198,271	2014 %	
gs with standard wiation would be	by industry to	rgy use in buildings	s—including water	-5.6%	-2.7%	-71.8%	-8.2%	-23.2%		-8.4%	+3.0%		-5.6%	-5.2%	-4.7%	change	

the energy savings in parking garages, where lighting upgrades and solar have reduced energy intensity by 72%.

29

B MWh/Yr 660,000 585,500 560,1
2015 (Projected) (Projected) (Project

Appendix 2: Current and Potential Sources of Renewable Energy

⁵ The renewable energy target assumes the total energy use at the City will decline by 15% over the next 10 years. If total energy use does not decline, then a higher percentage of renewable energy will need to be generated in order to meet the 15% renewable energy target.

30