

POWERING PHOENIX: CITY AND BUSINESS COLLABORATION ON CLEAN ENERGY



Cities around the world are showing leadership on climate action. While not subject to the U.S. Environmental Protection Agency's (EPA) Clean Power Plan, U.S. cities are increasingly making ambitious commitments and engaging in public-private partnerships to reduce their greenhouse gas emissions. For example, the City of Phoenix has developed innovative partnerships with the private sector, investors, and the state across various projects to promote energy efficiency and increase the share of renewable energy. As these projects are expanded or emulated, they may help regulated entities comply with the Clean Power Plan.

In 2008, the Phoenix City Council adopted a mandate to reduce greenhouse gas emissions from city operations 5 percent below 2005 levels by 2015. The 2012 Phoenix Greenhouse Gas Emissions Report showed that by 2012, Phoenix had exceeded its goal and reduced its municipal emissions 7.2 percent through investment in sustainable infrastructure, energy-efficiency measures, solar power projects, and waste and water upgrades. Additionally, in 2008, Phoenix adopted a goal of 15 percent of electricity use from renewable resources by 2025, the same goal as Arizona's Renewable Energy Standard and Tariff (REST).¹ The initiatives described below can help Phoenix reduce its greenhouse gas emissions and potentially aid compliance with the Clean Power Plan.

BUILDING ENERGY EFFICIENCY

According to the 2012 Phoenix Greenhouse Gas Emissions Report, city-owned buildings and facilities make up the largest share (approximately 38 percent) of its total municipal greenhouse gas emissions. To reduce emissions from this source, the city has initiatives to improve energy efficiency—a proven strategy to reduce energy

use and lower electricity costs. Moreover, energy efficiency is also expected to be a key compliance measure under the Clean Power Plan because it can reduce emissions at low cost.

Phoenix has set aggressive building codes to require energy efficiency savings in buildings. As of 2012, all new city buildings must meet minimum U.S. Green Building Council (USGBC) Leadership in Energy & Environmental Design (LEED) Standards. A voluntary green building code is available to commercial and residential construction.² Through the Department of Energy's Better Buildings Challenge Program, the city has committed to reduce energy use 20 percent below 2009 levels by 2020 in a portfolio of buildings, including commercial and residential.

Phoenix ranked 11th in EPA's list of the top 25 U.S. metropolitan areas with the most Energy-Star-certified buildings in 2014. EPA estimates the city's residents and businesses have saved more than \$31.6 million and reduced carbon dioxide emissions by 183,608 tons because of energy-efficient buildings and upgrades. This is partly attributed to successful lighting upgrades and heating and air conditioning retrofits implemented by the Arizona Public Service (APS) and the Salt River Project (SRP)—the two utilities that serve the Phoenix metropolitan area. For instance, in FY2014 the City of Phoenix completed five lighting projects under SRP's Standard Business Solutions Program that in aggregate should result in 134,175 kilowatt-hours of annual savings.

LEVERAGING MUNICIPAL LAND FOR CLEAN ENERGY

Solar power has enormous potential in Arizona, and the City of Phoenix has developed innovative partnerships

with the private sector to encourage development of this energy source.

Completed in September 2015, the 10-megawatt Desert Star Solar Plant is the ninth plant built under APS's AZ Sun Program. The plant is owned and operated by APS and is located on the city of Phoenix landfill in Buckeye. Project participants expect the full commercial operation of the plant will create enough zero-emission energy to power 2,500 homes, and will contribute to Phoenix's renewable energy goal. In addition to environmental benefits, the project has created more than 100 construction jobs and an estimated \$15 million to \$20 million of direct and indirect investments.³

The City of Phoenix partnered with SunPower Corporation to develop large-scale solar energy at the city's Phoenix Sky Harbor International Airport and Lake Pleasant Water Treatment Plant. In 2011, the city entered into a solar services agreement with SunPower to install a 5.4-megawatt, high-efficiency solar power system at Sky Harbor Airport's rental car center and two airport garages. The system generates the equivalent of 51 percent of the electricity used each year by the rental car center, parking garages, and toll plaza, which will save the city \$4.7 million over the next 20 years.⁴ In a similar agreement, the city financed a 7.5-megawatt, high-efficiency solar power system built by SunPower at the Lake Pleasant Water Treatment Plant. The plant is responsible for producing 15 billion gallons of water every year. The solar power system generates 70 percent of the plant's electrical power needs, which will save the city \$4.2 million over the project's 20-year contract.⁵ The city is buying the electricity under two power purchase agreements at rates competitive with retail prices.

OPPORTUNITIES TO AID CLEAN POWER PLAN COMPLIANCE

The building energy efficiency initiatives, AZ Desert Star Solar Plant, and solar projects at the Lake Pleasant Water

Treatment Plant and Sky Harbor International Airport have leveraged city resources to reduce emissions and provide examples of how municipal efforts may aid the utilities' compliance with the Clean Power Plan. Under a mass-based approach, these projects would aid compliance to the extent they displace generation at existing carbon-emitting sources. Under a rate-based approach, the projects installed after 2012 would potentially be eligible to generate Emission Rate Credits (ERCs) for emissions reductions and energy efficiency gains after 2021. These projects demonstrate that Phoenix has experience in developing innovative partnerships for clean energy investments and may serve as a model for other cities.

ENDNOTES

- 1 Philip McNeely et al., *2012 Greenhouse Gas Emissions Reduction Report* (Phoenix, Arizona: Walton Sustainability Solutions Services and the Global Institute of Sustainability at Arizona State University, 2013), <https://www.phoenix.gov/Documents/106458.pdf>.
- 2 "ACEEE: State and Local Policy Database: Phoenix, AZ," American Council for an Energy-Efficient Economy, last modified May, 2015, accessed December 20, 2015, <http://database.aceee.org/city/phoenix-az>.
- 3 "Powering Arizona with Solar Energy," Arizona Public Service, last modified 2015, accessed December 21, 2015, <https://www.aps.com/en/ourcompany/aboutus/solar-commitment/Pages/powering-arizona-with-solar-energy.aspx>.
- 4 Susan Defreitas, "Huge Solar Array Lands at Phoenix Sky Harbor Airport," EarthTechling, March 8, 2012, <http://earthtechling.com/2012/03/huge-solar-array-lands-at-phoenix-sky-harbor>.
- 5 SunPower Corp., "Phoenix Water Treatment Goes Solar," news release, January 15, 2013, <http://newsroom.sunpower.com/press-releases?item=122894>.



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AND ENERGY SOLUTIONS

The Center for Climate and Energy Solutions (C2ES) is an independent, nonprofit, nonpartisan organization promoting strong policy and action to address our climate and energy challenges. The C2ES Solutions Forum brings together businesses, states, and cities to expand clean energy, reduce greenhouse gas emissions, and strengthen resilience to climate change.