

Executive Summary: Water Conservation and Codes: Leveraging Global Water-Efficient Building Standards to Avert Shortfalls

Nearly two-thirds of the world's population experience severe water scarcity for at least one month each year, and some 700 million people could be displaced by intense water scarcity by 2030. Over the next 50 years, nearly half the U.S.'s freshwater basins may not be able to meet the monthly water demand with anticipated shortages beyond the Southwest, including in the central and southern Great Plains, central Rocky Mountain states, as well as parts of California, the South, and the Midwest. Facing these challenges, solutions at all levels of government are critical.

Although, to date, [many](#) water conservation efforts have focused on utility-scale solutions, including reclamation, desalination, and storage projects, decentralized efforts at the individual building scale can, in the aggregate, be equally as impactful.

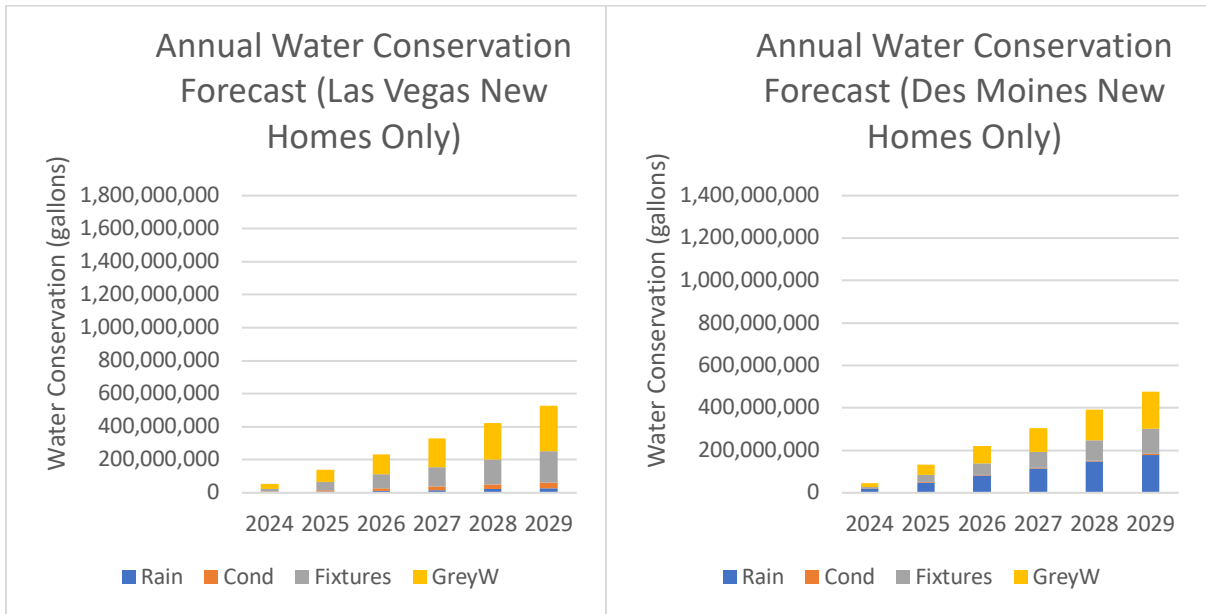
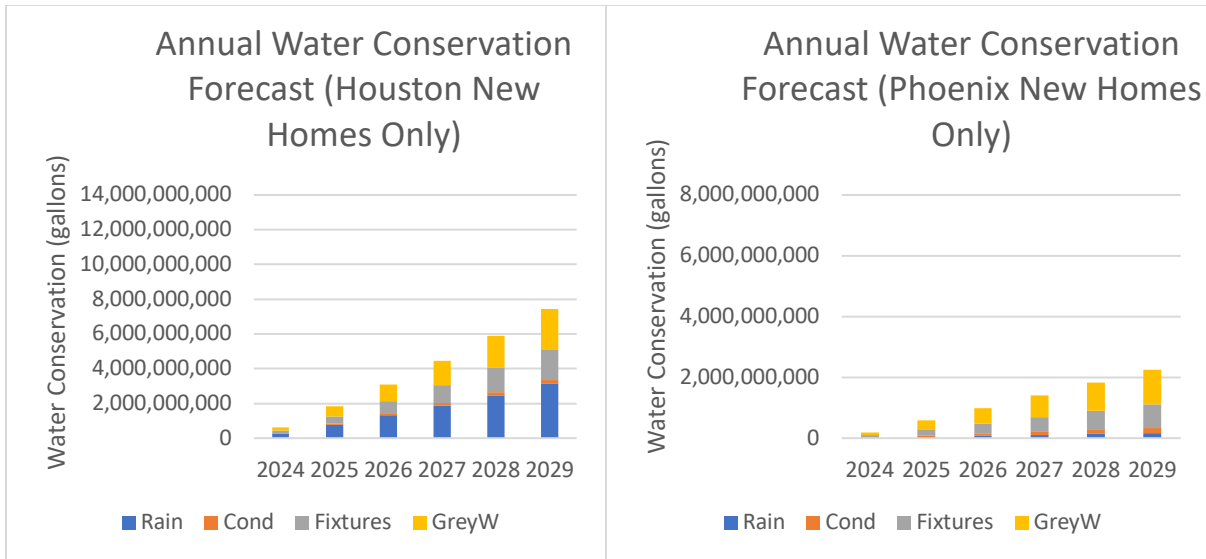
To quantify this opportunity, the Code Council, which develops and publishes a set of codes and standards that play a crucial role in shaping construction practices, partnered with the University of Miami to release **“Water Conservation and Codes: Leveraging Global Water-Efficient Building Standards to Avert Shortfalls.”** This report, produced by the University of Miami, examines the critical need for the rapid adoption of the updated water conservation standards contained in the 2021 International Water Conservation Code Provisions (IWCCP).

After determining baseline potable and non-potable water use, the Study shows potential water savings for one-and two-family dwellings in Phoenix, Las Vegas, Houston and Des Moines based on adoption of four different water conservation strategies within the IWCCP:

- Adoption of more efficient plumbing fixtures;
- Rainwater harvesting, treatment, storage, and reuse;
- Grey water treatment, storage, and reuse; and
- HVAC condensate catchment, treatment, storage, and reuse.

Recognizing that some but not all these strategies may be additive and that some may be more optimal for different climate zones and geographies than others, the report also includes recommended combined approaches for the 4 areas studied.

Over six years, the total annual potential aggregate water conservation for new construction homes in Houston, Texas alone is 23.34 billion gallons. In Phoenix, Arizona it's 7.3 billion gallons. For all four markets included in the study, including Des Moines, Iowa (1.7 billion) and Las Vegas, Nevada (1.7 billion) respectively, the aggregate water conservation is more than 34 billion gallons of water for American families in four major cities. This is an astonishing finding, confined to new construction homes. Even more notable, in each of the four cities studied, conservation measures can be utilized at a cost per gallon that equates with the current per gallon cost of potable water.



The measures studied provide solutions to address meaningful water demand challenges in these regions. Over the next 50 years, Houston faces a 72-billion-gallon shortfall, Arizona has limited new housing construction in the Phoenix area that depends on groundwater, and the Las Vegas Valley Water District sees a high risk of ongoing shortage conditions in future years while Des Moines Water Works says that if drought conditions – now in their fourth year – continue, water shortage measures will be required.

Ultimately, the report demonstrates the enormous potential that building-level approaches offer and provides policymakers with a ready-made toolkit to integrate lasting water conservation measures in communities in the U.S. and beyond.