

OPPORTUNITY

What is the federally mandated water reduction goal?

36%
REDUCTION IN
POTABLE WATER USE
by 2025, compared to 2007 baseline¹

37% OF UNITED STATES
is experiencing drought conditions²

20-40% WATER SAVINGS
with smart irrigation³

TECHNOLOGY

How do Wireless Moisture Sensors work?



MEASURE SOIL MOISTURE

TO CALCULATE IRRIGATION NEEDS, AND TRANSMIT DATA TO CENTRAL IRRIGATION CONTROLLER

M&V

Where did Measurement and Verification occur?

PACIFIC NORTHWEST NATIONAL LABORATORY assessed a pre-commercial implementation of wireless soil-moisture sensors for irrigation control provided by UgMo at the Young Federal Building in Orlando, Florida.

RESULTS

How did Wireless Moisture Sensors perform in M&V?

INCONCLUSIVE RESULTS

COMMUNICATION AND SENSOR PROBLEMS OF PRE-COMMERCIAL TECHNOLOGY COMPROMISED ANALYSIS⁴
Product development continued after M&V

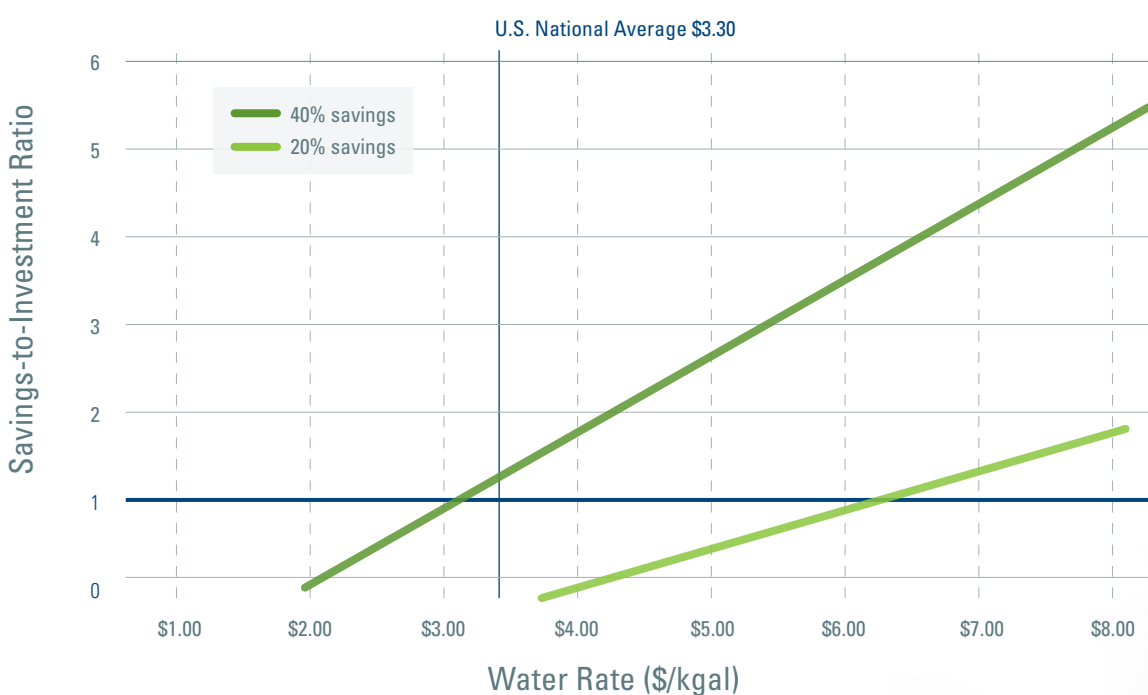
GREATER GRANULARITY

THAN WEATHER-BASED IRRIGATION CONTROL OFFERS POTENTIAL FOR GREATER SAVINGS⁵

Economic Assessment for Soil-Moisture Sensor Installation in Orlando

Cost-effective when Savings-to-Investment Ratio (SIR) is greater than 1

Assuming installed system cost of \$4,500, annual costs of \$680 and 773,700 gal/yr water use



DEPLOYMENT

Where does M&V recommend deploying Wireless Moisture Sensors?

FURTHER RESEARCH DOCUMENTING SENSOR EFFECTIVENESS

Meanwhile, turnkey weather-based controllers are recommended*

¹Executive Order 13693, <https://www.whitehouse.gov/the-press-office/2015/03/19/executive-order-planning-federal-sustainability-next-decade> ²The New York Times, Mapping the Spread of Drought Across the U.S., Accessed 4/6/2015. ³Irrigation Controls Based on Wireless Soil Moisture Technology Assessment: George C. Young Federal Building and U.S. Courthouse, Orlando, FL, KL McMordie Stoughton, RS Butner, PNNL, March 2015, p. 1 ⁴ibid, p.1 ⁵ibid, p.3 *Subject to evaluation and approval by GSA-IT and Security