

## OPPORTUNITY

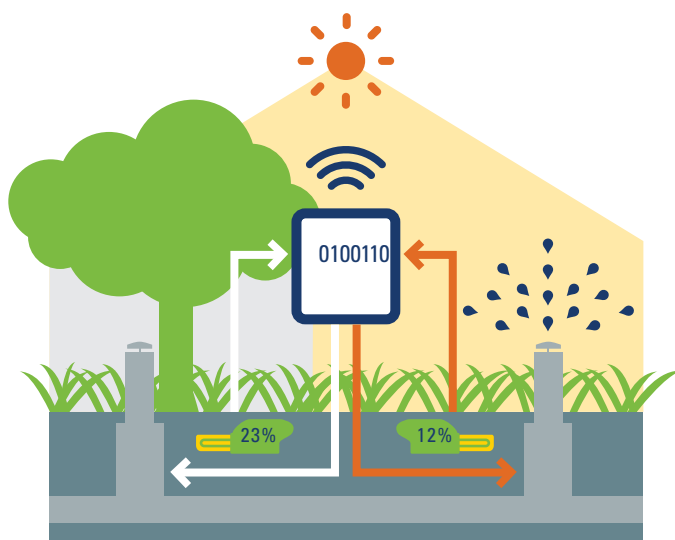
What is the federally mandated water reduction goal?

**36%**  
**REDUCTION IN POTABLE WATER USE**  
by 2025, compared to 2007 baseline<sup>1</sup>

**37% OF UNITED STATES** is experiencing drought conditions<sup>2</sup>  
**20–40% WATER SAVINGS** with smart irrigation<sup>3</sup>

## 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 analysis<sup>4</sup>

Product development continued after M&V

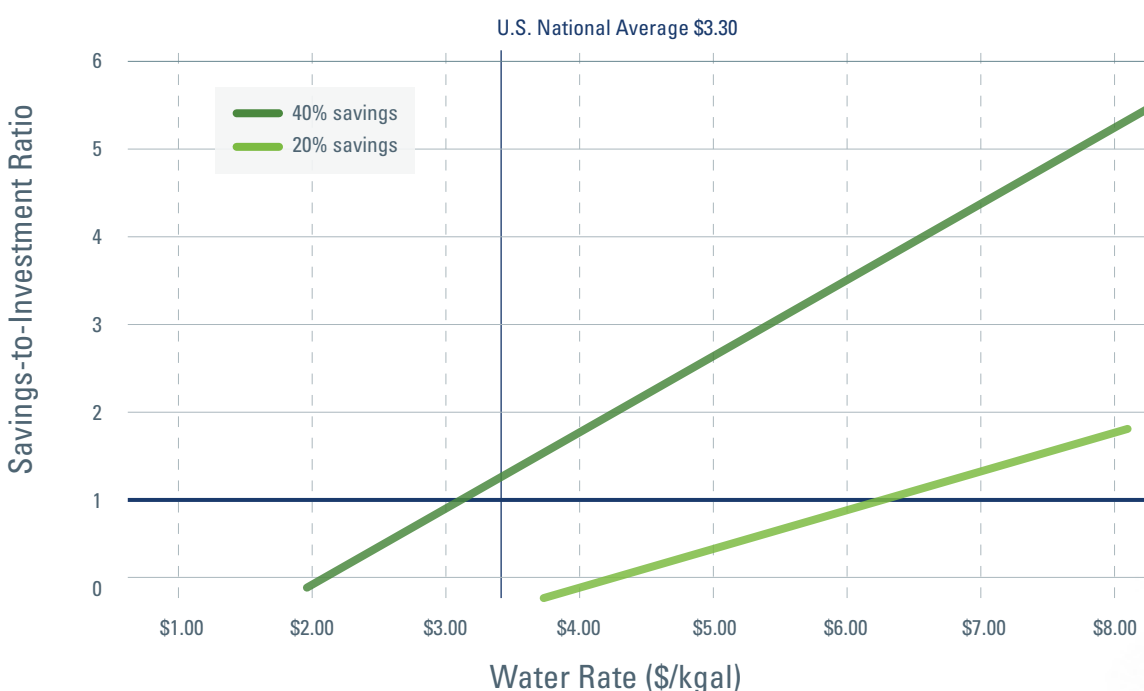
## GREATER GRANULARITY

than weather-based irrigation control offers potential for greater savings<sup>5</sup>

## 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\*

<sup>1</sup>Executive Order 13693, <https://www.whitehouse.gov/the-press-office/2015/03/19/executive-order-planning-federal-sustainability-next-decade>

<sup>2</sup>The New York Times, Mapping the Spread of Drought Across the U.S., Accessed 4/6/2015. <sup>3</sup>Irrigation 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 <sup>4</sup>Ibid, p.1 <sup>5</sup>Ibid, p.3 \*Subject to evaluation and approval by GSA-IT and Security