Weather- or Sensor-Based Irrigation Control Technologies

Notification of Intent Stakeholder Meeting

April 19, 2007
Today’s Agenda:
1. Meeting Purpose and Format
2. Overview of WaterSense Approach to Product Specifications
3. Product Category Name and Scope
4. SWAT Protocol Development & Status
5. Review of Notification of Intent and Associated Technical Issues
6. Technical Discussion Topics
   - Performance Requirements
   - User Interface Features
   - Testing Requirements
   - Certification Process
7. Next Steps
Notification of Intent
Meeting Purpose

- Marks the **beginning** of the specification development process.
- Define issues that need to be resolved to have an effective WaterSense specification.
- Collect various stakeholder perspectives on those issues.
- Resolve issues, to the extent possible.
  - Follow-up discussions on specific issues are anticipated.
Other Options for Input

- Write comment on note cards
- Sign up for a discussion group at the end of the day
- Email watersense-irrigation@erg.com
Overview of WaterSense
Approach to Product Specifications

April 19, 2007
WaterSense Overview
Need for Water Efficiency

Water shortages expected in 36 states

Consumers looking for ways to save on rising utility bills

High-performing technology available

Opportunity to change practices—up to 50% of water used in our yards is wasted

Water efficiency has potential for significant infrastructure savings
WaterSense Overview
Vision & Mission

**Vision**
Create an ethic of water efficiency.

**Mission**
To promote the value of water and help Americans make smart decisions regarding water use and water-using products.

Transform the marketplace by encouraging consumers and organizations to purchase water-efficient products and services.
WaterSense Overview

Philosophy

- Products labeled through WaterSense will:
  - Be backed by the credibility of the U.S. EPA
  - Be promoted through partnerships with utilities, manufacturers and retailers

- To be considered for the label, a product area must be able to:
  - Realize water savings on national level
  - Perform as well or better than their less efficient counterparts
  - Be about 20% more efficient than conventional counterparts
  - Achieve water efficiency through several technology options
  - Be effectively differentiated by the WaterSense label
  - Be independently verified by a third party to confirm that the product meets EPA criteria for efficiency and performance
  - Provide measurable results
WaterSense Overview: Specification Development Process

**Key Documentation**
- Product Research Report
- Presentation of Key Issues and Initial Positions/Options
  - Cover Letter
  - Draft Specification
  - Supporting Statement Documenting Rationale Behind Draft Specification
- Comment Summary Document
- Timeline for Final Specification Development
- Rollout Materials

**WaterSense Actions**
- Conduct Technical and Market Research
- Issue Notice of Intent
- Issue Draft Specification and Open Comment Period
- Hold Public Meeting
- Close Public Comment Period
- Review Comments and Make Revisions
- Issue Final Specification
- Finalize Research Report
- Finalize Draft Spec
- Collect Comments
- Collect Comments
- 180 days
- Variable
- 30 days

**Interested Party Actions**
- Receive Notice of Intent and Provide Information on Key Issues
- Receive Spec Packet and Provide Written Comments
- Provide Feedback
- Have Products Certified and Promote WaterSense Products
Weather- or Sensor-Based Irrigation Control Technologies

Category Name and Scope
WaterSense
Landscape Irrigation Efficiency

- Outdoor water use accounts for up to 50% residential water use.
- To improve landscape irrigation efficiency, WaterSense is labeling certification programs for irrigation professionals.
- Irrigation system efficiency is achieved through a systems approach & requires efficient components, installed and maintained properly.
- WaterSense intends to label water efficient irrigation products.
WaterSense
Landscape Irrigation Efficiency

Weather Based Irrigation Controller Water Savings Results from Publicly Available Studies

<table>
<thead>
<tr>
<th>Study Reference</th>
<th>Water Savings</th>
<th>Duration of Study</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Savings Compared to Historical Water Use Data</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AquaConserve, 2002</td>
<td>Denver demonstrated 21% total outdoor water savings in 37 households (average of 21% per participant). Sonoma demonstrated 23% total outdoor water savings in 27 households (average of 7% per participant). Valley of the Moon demonstrated 28% total outdoor water savings in 10 households (average of 25% per participant).</td>
<td>1 year</td>
</tr>
<tr>
<td>Aquacraft, Inc., 2003</td>
<td>Reduction in irrigation applications by 21%.</td>
<td>1 year</td>
</tr>
<tr>
<td>Santa Barbara County Water District, 2003</td>
<td>Average reduction in monthly water use of 26% (with results ranging from a low of 8% to a high of 59%).</td>
<td>1 year</td>
</tr>
<tr>
<td>IRWD and MWDOC, 2004</td>
<td>10% total household water savings (41gpd).</td>
<td>18 months</td>
</tr>
<tr>
<td>LADWP, 2004</td>
<td>Water2Save demonstrated a 28% reduction in irrigation. HydroPoint demonstrated a 17% reduction in irrigation.</td>
<td>1 year</td>
</tr>
<tr>
<td>University of Arizona, 2006</td>
<td>29% reduction in total monthly water use.</td>
<td>1 year</td>
</tr>
<tr>
<td><strong>Savings Compared to Similar Sites with No WBIC</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carlos et al., 2001</td>
<td>Water savings between 15% and 30% in residential landscape irrigation.</td>
<td>1 year</td>
</tr>
<tr>
<td>IRWD, 2001</td>
<td>Year 1: Reduction of 7% total household water use and ~16% irrigation water use. Year 2: Reduction in 7.7% total household water use and ~18% irrigation water use.</td>
<td>2 years</td>
</tr>
<tr>
<td>Saving Water Partnership, 2003</td>
<td>Average water savings of 20,735 gpy per account using controller with rain sensor (~15%). Average water savings of 10,071 gpy per account using controller with no rain sensor (~7%).</td>
<td>1 year</td>
</tr>
</tbody>
</table>
## Soil Moisture Sensor Water Savings Results from Publicly Available Studies

<table>
<thead>
<tr>
<th>Study Reference</th>
<th>Water Savings</th>
<th>Duration of Study</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Savings Compared to Theoretical ET</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DeOreo, 1997</td>
<td>Applications at 76% of ET</td>
<td>1 year</td>
</tr>
<tr>
<td>DeOreo and Lander, 1994</td>
<td>Applications closely matched the ET requirements</td>
<td>1 year</td>
</tr>
<tr>
<td><strong>Savings Compared to Similar Sites with No Sensor</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allen, 1997</td>
<td>10% reduction compared to the control sites with no sensor</td>
<td>1 year</td>
</tr>
<tr>
<td>Irrigation of Australia, 2004</td>
<td>41% water savings compared to other households with no sensor</td>
<td>4 years</td>
</tr>
<tr>
<td>Cardenas-Laihacar et al., 2005</td>
<td>46% to 88% for three of four properly functioning sensors compared to sites with no sensor</td>
<td>1 season</td>
</tr>
<tr>
<td>Augustin and Snyder, 1984</td>
<td>26% water savings compared to plots with no sensor</td>
<td>2 years</td>
</tr>
<tr>
<td>Pathan et al., 2003</td>
<td>25% water savings compared to plots using Best Management Practices</td>
<td>1 year</td>
</tr>
<tr>
<td><strong>Savings Compared to Historical Water Use Data</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arizona Department of Water Resources, 2004</td>
<td>5% water savings to previous years</td>
<td>1 year (preliminary results)</td>
</tr>
</tbody>
</table>
As a first step, WaterSense intends to develop product specifications for weather- or sensor-based irrigation control technologies.

- Weather-based irrigation controllers
- Soil moisture sensors
Irrigation Control
Category Name and Scope

- **WaterSense** labeled weather- or sensor-based irrigation control technologies will:
  - Include all products that are within the scope and are certified to meet the performance specifications.
  - All product types will have the **same** water efficiency **performance** requirements.
    - **Testing** requirements will **differ** for each type of product.

- **WaterSense** specifications will be developed in conjunction with appropriate industry-accepted testing protocols
  - Weather-based irrigation controllers based on the Draft 7 SWAT™ protocol.
  - Soil moisture sensor SWAT™ protocol is still being developed.
Irrigation Control
Category Name and Scope

Product Category Name:
- Weather- or Sensor-Based Irrigation Control Technologies

Product Category Scope:
- Products that establish an irrigation schedule, or modify a predetermined irrigation schedule, based on data input from offsite weather stations or onsite weather stations or sensors
Discussion Questions

1. Is this general approach appropriate?

2. Is the scope definition of the intended product category appropriate?

3. Are there other irrigation control technologies that WaterSense should consider within the scope of this product category?
   - Rain Sensors?
   - Others?