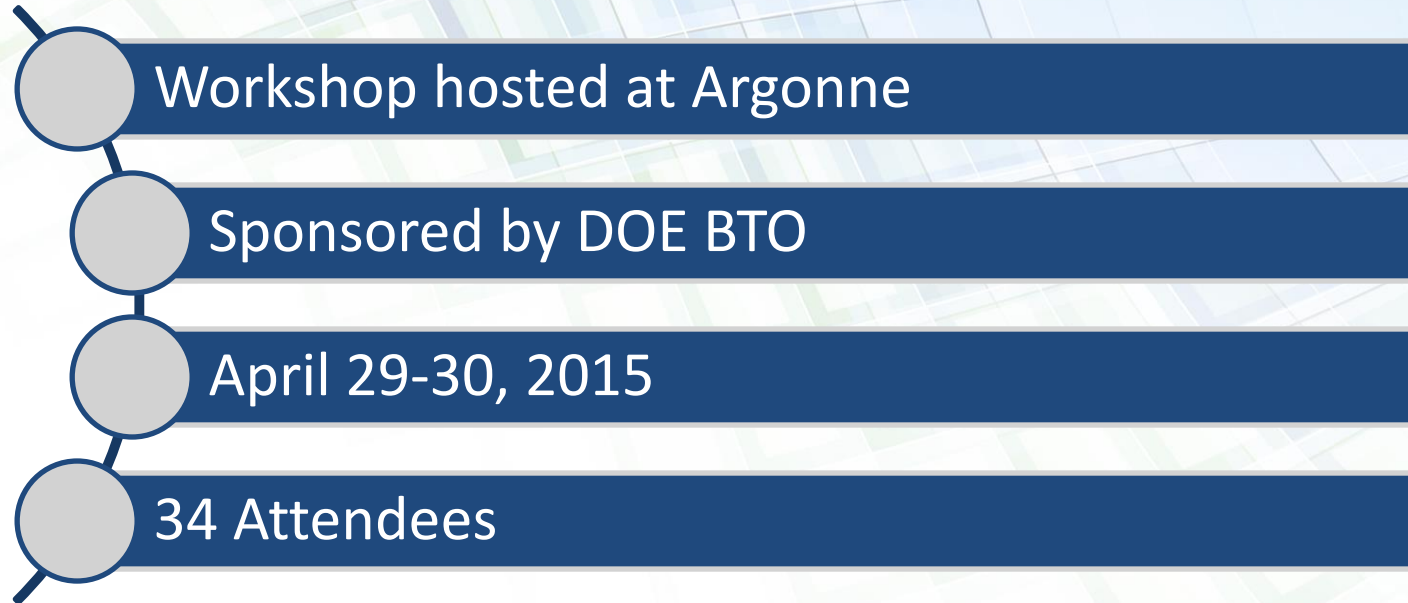


Saving Water Through Behavior Changing Technologies



Todd Levin
Argonne National Laboratory
Behavior Energy and Climate Conference
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Background



Government
Labs
Industry
NGOs
Academia

Engineering
Behavioral Science
Policy
Marketing
Data Analysis





WaterSmart
SOFTWARE, INC



U.S. DEPARTMENT OF
ENERGY

CLEARresult

**OAK
RIDGE**
National Laboratory



American
Water Works
Association



MEEA
Midwest Energy Efficiency Alliance



Sandia
National
Laboratories



PECAN STREET

VEOLIA



Alliance
for Water
Efficiency

waterenergy
INNOVATIONS

TOTO®

evolve
TECHNOLOGIES

Argonne
NATIONAL LABORATORY



Types of Consumer Change

Forced Change

- Regulations and Standards

Voluntary Change

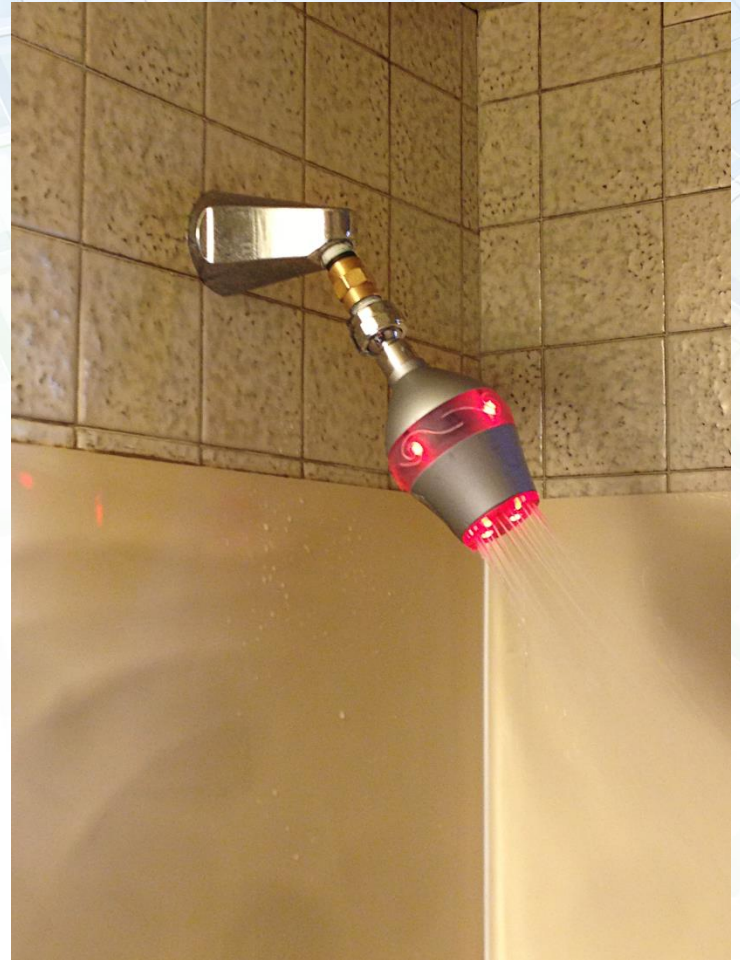
- Stop watering lawn

Behavioral Change

- Change shower routine



Uji Showerhead



<http://ujishower.com/>



ShowerStart Thermostatic Valve



<http://thinkevolve.com/products/showerstart-tsv/>



Characteristics for Behavioral Change

Access to information on demand

Active feedback

Social interactions and peer accountability

Measurable goals and gamification

Seamless integration



Barriers to Behavioral Change

Water is too cheap

Poor data availability

High segmentation

Utility revenues are tied to sales volume

Low consumer awareness

Outdated technologies and infrastructure

Research Pathways

Technological

- Improved data collection
- Next-generation appliances
- Leak and defect detection

Enabling Reforms

- Water rate reform
- Regulatory and institutional aggregation
- Integrated water and energy efficiency programs

Behavioral

- Consumer education and communication
- Behavioral science

Improved Data Collection

Next Generation Water Meters

- Plug-and-play
- Real-time
- Wireless communication
- Affordable
- Regulations and Standards

Management Software

- Controls
- Data analysis
- Communication

Next Generation Appliances

Programmable showerheads and faucets

- Unique user temperature and flow profiles

Smart toilets

- Detects how much water to flush

Smart landscaping

- Moisture sensors, weather forecast integration

Distributed water treatment

- Reduce distribution losses

Improved messaging

- Focus on lifestyle benefits

Water Rate Reform

Higher Rates

- Consumers

Increasing Block Structure

- Encourage efficiency from largest users

Revenue Decoupling

- Utility supported conservation programs

Forward Thinking Investments

- Those setting rates often have short-term outlook

Communication

Improved Data Delivery

- Intuitive, more frequent home water reports

Water as a Finite Resource

- Fundamental change in public perception

Standardized Metrics

- GPM is not part of public awareness (watts, MPG etc.)

Change Messaging

- “Save Water” too broad, need actionable information

Human Behavior, Sociology and Psychology

Consumer Perception

- Tricks to improve consumer experience

Gameification

- Contests within homes or neighborhoods, with incentives

Limiting Choices

- Too many options leads to inaction

Emotional Connection

- Tie water savings to something tangible that people care about



Questions?

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