

WORKSHOP REPORT

Conserve Florida Conservation Clearinghouse Research Agenda Workshop

November 30, 2007, 9:00 am – 4:00 pm
Terrace Room, Norman Hall, UF, Gainesville

Prepared by:

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Conserve Florida Water Clearinghouse

WORKSHOP REPORT

The Conserve Florida Conservation Clearinghouse Research Agenda workshop provided significant input for the CFWCC Research Agenda in fulfillment of *Core Service 5: Applied Research Agenda/Program- The Clearinghouse will coordinate and maintain an applied research agenda that identifies and prioritizes applied research needed to further the state of knowledge regarding effective water conservation programs and practices in Florida. The research agenda will be developed, and periodically updated, in coordination with the Conserve Florida Water participants, with input from appropriate sources including related UF programs.* The goal of the workshop was to bring Conserve Florida Members and UF Faculty together to articulate an applied research agenda for Conserve Florida to support current Clearinghouse efforts and beyond. The helped the research agenda to reflect the interests of Conserve Florida Water and supports the Clearinghouse efforts. During the workshop the participants 1) discussed major problems/research needs relevant to Florida water sector, 2) were exposed to research already being done in theme areas, 3) determined what still needs to be done in the theme areas, and 3) prioritized where priority research efforts should be focused.

Planning for the workshop: The planning of the Research Agenda workshop took place over several months. It included the efforts of research agenda planning task group, a review of key documents and multiple discussions considering overall needs. At the September 18, 2007 Conserve Florida Water meeting a task group was established to work with the Clearinghouse on defining the research agenda. Task group members included:

Conserve Florida Water

- Dave Bracciano, Demand Management Coordinator, Tampa Bay Water
- Norm Davis, Water Conservation Program Technical Director, Hillsborough County Water Resource Services
- Deborah Green, President, Water Media Services
- Steve Moser, Environmental Compliance Group, JEA
- Melissa Musicaro, Staff Water Conservation Analyst, Resource Conservation & Development Department, Southwest Florida Water Management District, SWFWMD
- Lois Sorenson, Demand Management Coordinator & Supervisor, Regulation Performance Management Department, Permit Data Section, SWFWMD

University of Florida

- Wendy Graham, Carl S. Swisher Chair in Water Resources, Director UF Water Institute, University of Florida
- Jim Heaney, Professor and Chair, Department of Environmental Engineering Sciences, University of Florida
- Lisette Staal, Research Coordinator, UF Water Institute, University of Florida

The task group met several times to clarify the focus of an applied research agenda, as well as establish the objectives for, and design of research agenda workshop. The Task group established that the CFWCC Applied Research Agenda should focus on applied research to help public water supply utilities to 1) identify tools and approaches to address issues of existing and projected water use, and 2) identify practices that utilities can implement that will show quantifiable results toward addressing water efficiency and conservation. The applied research should contribute to improving the Guide (support existing measures and BMPs as well contribute to new and improved BMPs for the long term that will impact water use), water use regulation, utility management and water shortage management. Reference materials included a variety of sources:

- Florida Department of Environmental Protection *Florida Water Conservation initiative – April 2002, Appendix J: Preliminary Topics of a Research Agenda*
- BMPs and Measures FROM WEB BASED Conserve Florida Conservation Clearinghouse GUIDE
- *Statement of Mary Ann Dickinson, Executive Director, Alliance for Water Efficiency Regarding, Water Efficiency Research Needs, For the Record of the Hearing of October 30, 2007 on H.R. 3957, Subcommittee on Energy and Environment, House Science Committee, November 13, 2008 (available on line - <http://www.allianceforwaterefficiency.org/resourcelibrary.html>)*
- comments made by the Conserve Florida Water landscape irrigation subgroup during discussions leading up to the drought smart document
- Database of issues and research compiled as part of the process (UF research and Extension Programs)
- comments made at several Conserve Florida Water meetings
- Implementing the “Drought Smart” Report, FDEP, July 20, 2007
- Landscape Irrigation and Florida Friendly Design Standards, FDEP, December 2006
- WORK PLAN TO IMPLEMENT SECTION 373.227, F.S. (SECTION 8 OF HOUSE BILL 293)
- AND THE JOINT STATEMENT OF COMMITMENT FOR THE DEVELOPMENT AND IMPLEMENTATION OF A STATEWIDE COMPREHENSIVE WATER CONSERVATION PROGRAM FOR PUBLIC WATER SUPPLY
- Hazen and Sawyer Environmental Engineers and Scientists, Potable Water Conservation Best Management Practices for the Tampa Bay Region, Tampa Bay Water, Sept 2003

Applied Research Agenda Planning Workshop: The Research Agenda Workshop was held on November 30, 2007 from 9:00 am to 4:00 pm in the Terrace Room at Norman Hall on the University of Florida campus in Gainesville. Over 35 people attended representing WMDs, Utilities, UF, FDEP and private organizations. The workshop was designed to be participatory and to bring Conserve Florida Members and UF Faculty together to articulate an applied research agenda for Conserve Florida to support current Clearinghouse efforts and beyond. This helped to ensure that the research agenda reflects the interests of Conserve Florida Water and will support the Clearinghouse efforts. The workshop focused on research to support refinement of water conservation practices and development of utility-specific programs. See *appendix 1* for Workshop Agenda, *Appendix 2* for List of Participants, and *Appendix 3* for Participant Expectations.

The Research Workshop was designed to address each of the following themes:

- Water Efficient Landscapes – Residential Irrigation
- Water Efficient Landscapes – Sustainable Building/New Development
- Residential Indoor Use
- Industrial-Commercial-Institutional Use
- Utility Management Efficiency and Optimization.

During the workshop all participants were able to address each of the themes. The participants were exposed to what is already being done and considered what still needs to be done, identified priority research needs relevant to Florida water sector, and decided on where priority research efforts should be focused. They worked in groups to identify needs and in plenary to refine those to approximately five per theme area. Then, at the end of the workshop, as a large group, they individually ranked the importance of the needs including all the theme areas. Each participant could rank their top 5 issues. Results were totaled by all, and by type of institution that the participant represented (university, utility, water management district, and other).

Criteria for prioritizing research that was developed by the Research Agenda task group was incorporated into the Workshop. These criteria included 1) relevance and fundability, 2) ease of implementation, and 3) research impacts. Details of the questions helping to determine priorities are attached in *Appendix 3*.

Workshop output: Workshop Results of Participant Priority Ranking Exercise

Participants worked in mixed groups (to include all institutional affiliations) to identify needs and in plenary to refine those to approximately five per theme area. In plenary, the top needs were identified for all groups working in one theme. Workshop participants were then given 5 different colored dots to rank the top 5 of their most important needs. They were also asked to identify on the colored dot to which institutional affiliation they belonged. The results of the voting showed clear emphasis on at least two areas, and significant interest in several others.

1. Top 7 Priority Research Needs Identified by Workshop Participant Ranking

- 1. Identification of barriers and methods to address to behavioral change, behavioral practices** (homeowners, Home owner associations, developers, corporations, green industry) – (*Utility Management efficiency and optimization*) Observation: This need rated as highest in both number of votes and value of votes for both the WMD participants and the UF participants. It was in the middle for UTILITIES and did not rate at all for OTHER.
- 2. Pricing and water rates– looking at rate levels, rate standard, tiers to savings, impact fees** (take advantage of the Whitcomb study) – (*Residential Indoor Water Use*) Observation: This need rated low for WMD, rated second highest in number of votes and tied for highest in value of votes for UF participants, and although rated 4th overall for Utilities, each of the votes received was for the highest priority .
- 3. What are models for making incentives work for different groups (people, builders, government, utilities, developers)?** (*Water Efficient Landscapes – Sustainable Building/New Development*) Observation: This need tied as highest in number of votes but with less total value for WMD participants, was in the middle for UF, and 2nd highest in both number and value of votes for UTILITY and OTHER.
- 4. Benchmarks for minimum volume of water standards for building (retro and new building, efficacy of certifications, pattern book as reference.** (*Water Efficient Landscapes – Sustainable Building/New Development*) Observation: This need did not register at all for WMD, was in the middle for UF, was rated as highest in both number of votes and value of votes for UTILITY, and was in the middle for OTHER.
- 5. Quantification of Low Impact Development (LID) and water savings- environmental saving and comparisons to other, effect of delaying capital improvements, impact of use of “pattern book” for new development landscaping.** (*Water Efficient Landscapes – Sustainable Building/New Development*) Observation: This need tied at 2nd for WMD, at 3rd for UF, low for UTILITY and did not register for OTHER.
- 6. What is the minimum amount of water required for landscaping? Relationship between water amount and quality of landscape?** (*Water Efficient Landscapes – Residential Irrigation*) Observation: This need tied at 3rd for WMD, was 3rd for UF, rated low by UTILITY, and did not register for OTHER.
- 7. More creative strategies for conservation as a planning tool (refer to capacity buy-back, including Pierce’s trading- need specific reference for this.** (*Water Efficient Landscapes – Sustainable Building/New Development*) Observation: This need was in the middle for WMD, rated as 3rd for UTILITY, low for UF and did not register for OTHER.

2. Top needs identified in plenary for each theme.

The following needs were identified in plenary session through discussion and consolidated from each of the theme groups' highest priorities.

A. RESIDENTIAL IRRIGATION - WATER EFFICIENT LANDSCAPES

1. Identification of barriers to behavioral change, behavioral practices (homeowners, Home owner associations, developers, corporations, green industry)
2. What is the minimum amount of water required for landscaping? Relationship between water amount and quality of landscape?
3. Big picture cost savings - Energy, CO2, Carbon, Homeowner and others
4. Reduction of peak demand due to irrigation/landscape changes.

B. SUSTAINABLE BUILDING/NEW DEVELOPMENT - WATER EFFICIENT LANDSCAPES

1. Quantification of Low Impact Development (LID) and water savings- environmental saving and comparisons to other, effect of delaying capital improvements, impact of use of “pattern book” for new development landscaping.
2. The impact of using/offering incentives and credits for LID, not mandates and understanding for who and how to offer (for example the rain sensors experience as an example (*need specific information on this reference.*)
3. What are models for making incentives work for different groups (people, builders, government, utilities, developers)?
4. Benchmarks for minimum volume of water standards for building (retro and new building, efficacy of certifications, pattern book as reference.
5. Greenhouse gas emission and water use

C. RESIDENTIAL INDOOR USE

1. Billing Data Analysis - cost analysis for all customers for profiling, targeting conservation programs (leak detection, centralized meter reading).
2. Take advantage of existing other sources of research – including AMR,... Most thoroughly quantified water savings is available for indoor water conservation devises
3. Effects of residential water treatment, including water softners ...

D. INDUSTRIAL-COMMERCIAL-INSTITUTIONAL (ICI)

1. Inventory of equipment, including cooling towers throughout all industries
2. Identify inefficiencies as a basis for developing new BMPs - through understanding potential for common uses, and the barriers to efficiencies.
3. Link between spent water and water treatment facilities to help identify incentives.

E. UTILITY MANAGEMENT EFFICIENCY AND OPTIMIZATION

1. Pricing and water rates– looking at rate levels, rate standard, tiers to savings, impact fees (take advantage of the Whitcomb study) Observation –
2. Costs as related to stakeholders, decision makers - including the full opportunity costs (including environmental)

3. Identifying constraints, barriers and benefits to use of reclaimed water.
4. Understanding price/cost relationships (not always just looking at the average...)
5. More creative strategies for conservation as a planning tool (refer to capacity buy –back, including Pierce’s trading- *need specific reference for this.*)

3. Needs Identified by Theme Discussion Groups

Each Theme was discussed by several groups with a focus on identifying key needs based on previous presentations and documentation provided. The following shows the results of those initial group discussions.

Residential Irrigation - WATER EFFICIENT LANDSCAPES

Group 1

- Why do people do what they do (understanding behavior, actions, practice)? How to change behavior and identify barriers to change (involve behavioral scientists (groups, homeowners, developer, corporations, Home owners associations, landscape/green industry, political, legislature.
- How much water is required (i.e. minimum amount) - different based on site conditions, quality (visual and quantitative), how much to keep landscapes “alive”, Landscape design for no irrigation, what to do if it dies, translation of known research to actual landscapes. Assume water cut due to stress but can different types of irrigation reduced water use. Role of education?
- Big Picture cost savings (energy, Co2, Carbon footprint, Infrastructure, statewide irrigation efficiency potential for savings translate to public understanding, common database, institutionally why does Mobil Irrigation Lab not compiled statewide- statewide practical things we can do.
- Reducing Peak demand due to irrigation? Storm water reuse and reclaimed compaction? Rainwater harvesting?

Group 2

- Understand people’s (developers, homeowners associations, homeowners) behavior/preferences and design educational/policy price structures to have an effect. Plant needs are not driving water use--- people preferences and practice do. What are the most effective educational programs to change behavior.
- How to reduce peak demand due to irrigation by reuse and harvesting. How does irrigation affect peak demand? How does this influence utilities investment in new infrastructure and cost of producing water.
- Effects of water conservation landscaping on home value and saleability
- Inventory of savings (\$, environmental, energy....) and costs of various technology and programs
- Quantify energy savings, Greenhouse gas, carbon footprint, other environmental benefits associated with water savings.
- *Evaluate landscape needs in replications of actual residential settings (change in canopy cover, soils, including compacted soils, etc,) effect on water demand.*
- *Statewide implementation of promising conservation practices during some time period.*

Group 3

- How to increase number of users of reclaimed water?
- Behavior change of homeowner with regard to irrigation.
- Measure effectiveness of water restrictions and their use and consistency
- Minimum amount of water to keep turf/landscape healthy
- Cost benefit analysis of traditional landscapes vs. Waterwise landscapes
- Developer incentives.

Sustainable Building/New Development -WATER EFFICIENT LANDSCAPES

Group 1

- Knowing who are the decision makers – builders influence metrics, contractors – ok at design, Certification, Certification of irrigation land landscapes – who and how)
- Landscape Design (low or non- irrigated) Retro and existing homes, Economic evaluation/incentives,
- Effects of variability in landscape, Statewide evaluation of irrigation efficiency, Temporary irrigation systems (establishment)
- Water Application Budget based on known Crop/plant coefficient/ Alive vs. Stressed vs. Acceptable quality
- Behavior/education/marketing- Home owner Association Police
- Urban wildlife interaction

Group 2

- Gather information on landscape irrigation (on capital and other costs and efficiencies) between actions Xeriscape vs. Typical. For example delaying utility capital costs – economic benefits.
- Is there an environmental difference between xeriscape/ and Florida Friendly (cost, energy, habitat)?
- Government incentives for LID conservation practices (storm water and Landscape)
- Education – Education and demonstration of alternatives. This is all clear to us... why not everyone else (public, developers?) If LID was easier, /i.e. a choice for the public, maybe they would do it.
- *What percentage of homeowners association fees and home maintenance association fees are associated with landscape maintenance/ Existing vs. new sites-developments how to convert/Cleared site doesn't "look good" for five years/ Why are we doing now what seems obviously wrong?/ Adding Organic Material? Is the science available on this? Can we evaluate the cost/benefit of organic addition? /How to create C.C.R. to ensure LID, Florida Friendly, etc. performance./ What are other utilities doing and how much did they save?/ Enhance communication between utility and permitting , How can utility have an impact in the process? / Educating planners*

Group 3

- Greenhouse gas and water use research (\$\$funding)
- LID research, practice by practice
- Benchmarks for minimum standards for an efficient community.
- Innovative irrigation controller that tie run time to gallons used to \$\$
- Research organics in new development.
- Water savings in developments where efficiency is achieved through ordinances vrs. Voluntary participation - what is the balance?

RESIDENTIAL INDOOR USE -

Group 1

- Water softener (rinsate quantity/# of units)
- Geothermal heat pumps
- Participate in national research

Group 2

- Most thoroughly quantified water savings is available for indoor water conservation devices
- Cost analysis (including environmental) of water saving equipment practices.
- Develop statistical algorithms to detect leaks for billing data
- Educational programs for homeowners to detect leaks from meters

Group 3

- Clarify and disseminate laws on use of grey water/sullage
- Feasibility of sullage in Florida
- Cisterns – feasibility study (financial, water quality, space, quantity)
- Feasibility of washing machine rebates (efficient)

INDUSTRIAL – COMMERCIAL – INSTITUTIONAL USES

Group 1

- Cooling towers - # of towers/ water use inventory
- Inventory of industrial water use and equipment
- Water use and classifications systems (NAICS,SIC)

Group 2

- Inventory water using equipment for I.C.I and water reduction methods for particular equipment.
- Identify common water using equipment across industries.
- Methodologies for profiling ICI customers to target conservation programs.
- Link to P2 program/industrial pre-treatment.
- Cost analysis (including environmental) of water saving equipment practices.
- Develop statistical algorithms to detect leaks for billing data
- Education incentive program for water conservation in restaurants.

Group 3

- Evaluate need and feasibility of widespread use of BMP's for ICI uses.
- Quantify existing cooling towers and water waste.

UTILITY MANAGEMENT EFFICIENCY AND OPTIMIZATION

Group one

- Pricing –
 - how does it affect outside, other peak-impacting system demand (including difference)
 - optimizing frequency, relative amount of rate changes (how often should we update?)
 - to develop a BMP (establish tiers based on quantity used for inverted rates, educated decision makers, create \$ for next increment of supply, to “sell” to the customers based on social issues and use facts, full cost accounting for education and selling of potable and alternative sources-RCW,etc.
- Demand planning/forecasting (outdoor use, peak as well as average, inventory methodology for established green space- irrigated area)
- Utility system audit (pick a formula /mutodo-WIP, follow-up)
- Reclaimed Water – optimize use via volumetric rates, better estimate of generation vs use, offset – storage—cost and efficiency (6:1?, goal?)

Group 2

- Research methods to price water according to highest use. Price water according to price needed to meet peak demand for that user. Study to determine how high water must be priced to induce conservation. How can private utilities charge enough to induce conservation? Identify “real” cost of potable water and reuse water (opportunity cost, environmental costs, operational costs, and cost of ageing infrastructure)
- Identify barriers to accurately pricing water—strategies to overcome (severance tax, trust funds, peak demand rates)
- Identify local regulatory constraints to water reuse strategies for removing. Identify public perception barriers to water reuse and education programs to overcome.
- Evaluate impact fee structure (are users using more than developer paid for?)
- Identify opportunities for more efficient water use as infrastructure needs to be replaced.
- *Evaluate conservation benefits of informational billing. What information works?*

Group 3

- Develop framework for analyzing cost effectiveness of supply alternatives (including conservation)
- Pre and post billing evaluation of water use for BMPs
 - Drought rate analysis
- Implement “trade paradigm” (re: Pierce Jones).

Group Discussion Group Participants

GROUP 1	GROUP 2	GROUP 3
Dave Bracciano (Utility) Howard Beck (Academic) Charles Wright (Utility) Suzanne Goss (Utility) Melissa Musicaro (WMD) Lois Sorenson (WMD) Haley Baum (Academic) Liz Krentz (Consultant) Barbara Larson (Academic) Lukasz Ziemba (Academic)	Wendy Graham (Academic) Camilo Cornejo (Academic) Jorge Patino (WMD) Bob McVay (Utility) Liz Block (Utility) Don Brandes (WMD) Glen Acomb (Academic) Ben Koopman (Academic) Richard Beeson (Academic)	Dierdra Irwin (WMD) Norm Davis WMD) Pierce Jones (Academic) Tom Swihart (State-FDEP) Sandy Berg (Academic) Wayne Williams (Utility) Jim Heaney (Academic) Tom Olmsted (Academic) Deborah Green (County)

Workshop Follow-up: Results of the workshop and analysis of votes on priorities were tallied and incorporated and shared with the task group for comment on February 12th and presented to the CFWCC meeting on February 19th. A draft of the Research Agenda was also sent to the Task Group on February 12th for comment. We anticipate that this research agenda will help provide some insight for Conserve Florida stakeholders and other partners in formulating and supporting projects that will support the conserve Florida objectives. In the next year of the CFWCC project (2008-09), the Clearinghouse will focus on two of the top key priority areas to provide further synthesis and document state of the art research, research gaps, and recommended studies. These two areas will be identified soon.



Conserve Florida Conservation Clearinghouse Research Agenda Workshop

November 30, 2007, 9:00 am – 4:00 pm, Terrace Room, Norman Hall, UF, Gainesville

Goal: To bring Conserve Florida Members and UF Faculty together to articulate an applied research agenda for Conserve Florida to support current Clearinghouse efforts and beyond. The research agenda will reflect the interests of Conserve Florida Water and will support the Clearinghouse efforts.

Objective: During the workshop we will:

- Identify major problems/research needs relevant to Florida water sector.
- Know what research is already being done and determine what still needs to be done
- Decide on where priority research efforts should be focused.
- Consider who might fund the research and who might do it

Output: Input for a document that lists key research topics (rationale, current state of the art research in each of the topic areas, needs/questions relevant to Florida water sector, and an initial ranking of priority for Conserve Florida).

9:00 – 9:35 – Introductions, workshop schedule and CFW Research Agenda Planning Process

9:35 – 9:50 Research Agenda Themes and Criteria

9:50 – 10:00 Introduce AWE research efforts: Testimony on Water Efficiency Research needs (Jim Heaney)

10:00 – 10:15 BREAK

10:15 – 12:15 **WATER EFFICIENT LANDSCAPES**

10:15 – 11:15 Landscape Irrigation/Outdoor Water Use (Mike Dukes, Norm Davis)

11:15 – 12:15 Sustainable Building/New Development-Growth (Pierce Jones, Dave Bracciano)

12:15 – 1:15 LUNCH (provided)

1:15 – 2:15 **RESIDENTIAL – INDOOR WATER AND INDUSTRIAL- COMMERCIAL-INSTITUTIONAL**

(Jim Heaney, Maribel Balbin, Wayne West)

2:15 – 3:15 **UTILITY MANAGEMENT (EFFICIENCY AND OPTIMIZATION)**

(Sandy Berg, Lois Sorensen, Ben Koopman, Kathy Scott)

3:15 – 3:45 Determining Priorities and Funding opportunities

3:45 – 4:00 Next Steps and Closure

**APPENDIX 2 - Conserve Florida Water Conservation Clearinghouse LIST OF PARTICIPANTS -RESEARCH AGENDA
WORKSHOP November 30, 2007 University of Florida, Gainesville, FL**

Last	First	Affiliation/ UF Department	Type	CFW or UF	email
Acomb	Glen	Architecture	Faculty	CFW	acomb@ufl.edu
Balbin	Maribel	Miami-Dade Water and	Utility	CFW	Balbin@miamidade.gov
Baum	Melissa	Agricultural and Biological	Graduate Student	UF	MsHMbaum@juno.com
Beck	Howard	Agricultural and Biological Engineering	Faculty	UF	hwb@ufl.edu
Beeson	Richard	Environmental Horticulture	Faculty	UF	rcbeeson@ufl.edu
Berg	Sandy	Economics	Faculty	UF	sberg@ufl.edu
Block	Liz	TOHO Water Osceola	Utility	CFW	lblock@kissimmee.org
Bracciano	Dave	Tampa Bay Water	Utility	CFW	DBracciano@tampabaywater.org
Brandes	Don	SJWMD	WMD	CFW	dbrandes@sjrwm.com
Brown	Mark	Environmental Engineering	Faculty	UF	mtb@ufl.edu
Cornejo	Camilo	Agricultural and Biological	Graduate Student	UF	ccordav1@ufl.edu
Davis	Norman	Hillsborough County Water Res.	Utility	CFW	davisn@hillsboroughcounty.org
Dukes	Mike	Agricultural and Biological Engineering	Faculty	UF	mddukes@ufl.edu
Goss	Suzanne	JEA	Utility	CFW	GossSE@jea.com
Graham	Wendy	Water Institute Director	Faculty	UF	wgraham@ufl.edu
Green	Deborah	Water Authority of Volusia	Utility	CFW	dgreen@wavh2o.com
Heaney	Jim	Environmental Engineering Sciences	Faculty	UF	heaney@eng.ufl.edu
Hicks	Henry	FWEA Ocala	Utility	CFW	HHicks@Ocalafl.org
Irwin	Deirdre	SJWMD	WMD	CFW	dirwin@sjrwm.com
Jamison	Mark	Economics and PURC	Faculty	UF	jamisoma@ufl.edu
Jones	Pierce	Agricultural and Biological	Faculty	UF	pjones10@ufl.edu
Koopman	Ben	Environmental Engineering	Faculty	UF	bkoop2gmail.com
Krentz	Lisa	Hazen and Sawyer	Consulting	CFW	lkrentz@hazendandsawyer.com
Larson	Barbara	Environmental Horticulture	Faculty	UF	bcl@ufl.edu
Lindner	Angela	Environmental Engineering	Faculty	UF	ALIND@eng.ufl.edu
McVay	Bob	Florida Rural Water	Utility	CFW	Robert.McVay@frwa.net
Musicaro	Melissa	SWFMD	WMD	CFW	Melissa.Musicaro@swfwmd.state.fl.us
Olmsted	Tom	Agricultural and Biological	Graduate Student	UF	olmsted@ufl.edu
Patino	Jorge	SFWMD	WMD	CFW	jpatino@sfwmd.gov
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Sorensen	Lois	SWFMD	WMD	CFW	Lois.Sorensen@swfwmd.state.fl.us
Staal	Lisette	Water Institute Research	Staff	UF	lstaal@ufl.edu
Swihart	Tom	FDEP	State	CFW	Tom.Swihart@dep.state.fl.us
West	Wayne	Pinellas County Utilities	Utility	CFW	wwest@co.pinellas.fl.us
Wright	Charles	Orlando Regional Utilities	Utility	CFW	Charles_Wright@ouc.com
Ziemba	Lukasz	Agricultural and Biological	Graduate Student	UF	uki@ufl.edu

Appendix 3 – Participant Expectations

Utility participants

- I expect that public attitudes towards water use will be focused on and that priorities will be placed on that
- Evaluate and identify critical factors that significantly influence a component important to society.
- Research agenda that identifies specific concepts that need to be funded. These concepts can and will affect potable water use in Florida
- Utilities main interest are: 1) documented BMP in the distribution of water to end users minimal losses and maximizing long term infrastructure; 2) end use BMPs (water savings) documented best BMPs –cost effective incentive for domestic irrigation and residential commercial
- Identify most effective methods for alternative water supply including disposal options associated with any by products,
- Practical!

Water Management Districts participants (yellow)

- To learn of any research that is presently being conducted or has been completed that the district is not aware of.
- Identify data gaps, prioritize them, identify plan of action and tentative schedule.
- Concrete plans for needed research relating to water savings in yards using efficient irrigations systems and Florida friendly yards.

University of Florida participants (blue)

- Prioritized list of important knowledge gaps along with potential partners to execute and fund research.
- Prioritization of research – to know future funding and real water conservation contacts,.
- Quality data collection representative of focus point with clear opportunity of how determinations can be facilitated (what we are looking for, how we will find it, what we will do with it, how it benefits goal)
- Essentially what, when, where and how much will it cost?
- Specific priorities for research needs and plan to fund and implement in order of priorities. Identify gaps in research knowledge and connections among disciplinary programs.
- The research agenda specifies and prioritizes issues of concern in a defined topical areas, established a strategic plan to address issue in priority order.
- Data knowledge sharing and integration via IT Infrastructures. Beck)
- Understand problem, funding source, potential collaborators, and past research – what is the state of the art?
- Collaboration opportunities, avoid duplication of efforts and storing information,
- To quantify a question that illuminates and informs.
- Direction as to what research is needed. State of knowledge in this area, and representing different viewpoints from my own.
- Identify projects with high economic/ecological payoff and answer important scientific questions. Syh

Other participants

- A very credible and almost self-convincing coordinated program of integrating current information and describing new research topics.
- Identify research opportunities that investigate/improve strategies used by water professionals/water industry.

SUGGESTED CRITERIA FOR DETERMINING PRIORITIES
CFW Conservation Clearinghouse Research Agenda Planning

CRITERIA 1: RELEVANCE AND FUNDABILITY

- Fundability? Are the projects fundable? Do we think that WMD's, water utilities, the state, private entities like FNGLA or others might want to fund the research specifically?,
- Relevance to subscribers? How relevant is the issue to the subscriber base? Who is most interested in the results? Is CFW well positioned to address the issue? Is it appropriate for another water research organization or utility sector to take the lead? How broadly and deeply does the issue affect subscribers? Is it widely cross-cutting or confined to particular region or subset of subscribers? Is the issue being raised often? Is it being identified by a broad cross-section of stakeholders.
- Urgency of need? Is the research already being done by someone? Is the driver for the issue time-critical, eg. a pending regulation. Can research deliver timely results to subscribers? What are the potential impacts if the issue is not addressed?

CRITERIA 2: EASE OF IMPLEMENTATION or RESEARCH CONSTRAINTS

- Potential for collaboration? Does the issue have a high potential for leveraging of funds and knowledge through partnering with another organization?
- Status of ongoing work? Is there ongoing work that should be substantially completed before addition work is undertaken? Is this work being done by another organization?
- Availability of data? Is data available, is it currently being accessed or used to its' best advantage?

CRITERIA 3: RESEARCH IMPACTS

- What impact will the research have on water use and water sectors?
- Potential to save water ? Will the research provide sufficient information to estimate water savings) Savings potential on a regional or larger geographic basis (i.e., savings not just applicable to only a small geographic area).
- Potential transformational effect? Will the research contribute to making water use more efficient? Will the research contribute to reducing water usage?
- Marketability-Implementability? Is there a demand for the research, and is it marketable to target audiences? Who is interested in the results? How will the results be used?

Appendix 5 – Ranking results of priorities

	B	C	H	I	P	Q	Z	AA	AE	AF	AJ	AK	AL	AM
1														
2														
3			Water Management District	Utility	University of Florida	Other	No designation	ALL COMBINED						
4	Research Theme	ISSUE - Priority Need	Total # of votes	Total value of votes	Total # of votes	Total value of votes	Total # of votes	Total value of votes	Total # of votes	Total value of votes	Total # of votes	Total value of votes	Total # of votes	Total value of votes
5	Residential Irrigation	Identification of barriers to and methods to affect behavioral change, behavioral practices (homeowners, Home owner associations, developers, corporations, green industry)	3	13	2	5	7	23	0	0	1	1	13	42
6	Utility Management (efficiency and optimization)	Pricing and water rates– looking at rate levels, rate standard, tiers to savings, impact fees (take advantage of the Whitcomb study)	1	5	2	10	6	23	1	4	0	0	10	42
7	Sustainable Building-New Development	What are models for making incentives work for different groups (people, builders, government, utilities, developers?)	3	5	4	15	4	11	1	2	2	4	14	37
8	Sustainable Building-New Development	Benchmarks for minimum volume of water standards for building (retro and new building, efficacy of certifications, patternbook as reference	0	0	5	19	3	13	1	2	0	0	9	34
9	Sustainable Building-New Development	Quantification of Low Impact Development (LID) and water savings- environmental saving and comparisons to other, effect of delaying capital improvements, impact of use of "pattern book" for new development landscaping.	2	5	2	5	4	15	0	0	2	8	10	33
10	Residential Irrigation	What is the minimum amount of water required for landscaping? Relationship between water amount and quality of landscape?	2	5	4	10	3	8	0	0	0	0	9	23
11	Utility Management (efficiency and optimization)	More creative strategies for conservation as a planning tool (refer to capacity buy –back, including Pierce’s trading- need specific reference for this.)	0	0	4	12	3	6	0	0	2	5	9	23
12	Residential Irrigation	Big picture cost savings - Energy, CO2, Carbon, Homeowner and others	1	4	3	11	1	3	0	0	0	0	5	18
13	Industrial-Commercial-institutional Use	Inventory of equipment, including cooling towers throughout all industries	0	0	3	10	1	3	1	1	1	4	6	18
14	Industrial-Commercial-institutional Use	Identify inefficiencies as a basis for developing new BMPs - through understanding potential for common uses, and the barriers to efficiencies.	1	4	3	8	3	6	0	0	0	0	7	18