UF | Water Institute
UNIVERSITY of FLORIDA

Florida Climate Institute

"Public Water Supply Utilities Climate Impacts Working Group"

WORKSHOP TWO

Report

Thursday, January 20, 2011

9:00 – 4pm

Prepared by
Lisette Staal, Research Coordinator
UF Water Institute

Hosted by
Orlando Utilities Commission in Orlando, Florida

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WORKSHOP Two – "Public Water Supply Utilities Climate Impacts Working Group"
Thursday, January 20, 2011, 9:00 – 4pm, Orlando Florida

Background:

The UF Water Institute, Florida Climate Institute and the UF IFAS Center for Public Issues Education are partnering with six major public water supply utilities, and three water management districts in Florida to explore interests in and potential benefits of forming a "Public Water Utilities Climate Impacts Working Group" focused on increasing the relevance and usability of climate change and variability data and tools to the specific needs of public water supply utilities in Florida. Initial stakeholder discussions *(synthesis available on-line)* and Workshop One *(summary available on-line)* aimed to determine if a "working group" will serve a purpose that is not being addressed through other venues and if there is business value in such a group for all stakeholders. At Workshop One the participants agreed it would be useful to continue to interact and that a second workshop should include learning about group members' participation in various regional and national organizations and group participants projects, focused on evaluating potential climate impacts to water utilities. This information would provide a basis to further define "What is it that we can/will do together as a group that will be of mutual benefit, and that is not already being done through other venues?"

Participants:

A total of twenty-two participants represented these partner institutions including the UF Water Institute, the Florida Climate Institute, the Southeast Climate Consortium (SECC), Florida Atlantic University, four major public water supply utilities (representatives from two of the Utilities were not available) and three Water Management Districts (see Appendix 2 for workshop participant list).

Goal:

Getting to know other groups in order to frame a dialogue of what is out there, how they are structured and what CIWG can learn from them. By the end of the workshop, participants would:

- ✓ Understand what several other groups are already doing relevant to evaluating potential impacts of climate change, climate variability and sea level rise on public utilities
- ✓ Identify 3 concrete activities the group would like to pursue
- ✓ Develop a suite of options for consideration of CIWG composition, structure, and modes of operation.
- ✓ Define specific next steps for the group.

Outcomes:

1. Gained information about other groups that are evaluating potential impacts of climate change, climate variability and sea level rise on public utilities through presentations and written summaries provided by participants. Written descriptions of relevant current projects underway by participants were also included in the document prepared for the workshop "What can we learn from other 'Groups' to build a vision for our future?". A suggestion was made to include the Water Reuse Association, as well as other groups in future discussions, and the possibility for including other groups was also mentioned.

2. Identified three main items that CIWG is most interested in tackling first. Formed three task groups for each of the three items identified during the workshop. The task group leaders will call meetings, set agenda and share outcomes with the larger group.

   Task 1: Develop a Florida Public Water Supply Utility Research Agenda (for climate change and variability impacts
   Task 2: Plan a science workshop to highlight PWSU-CWIG members' recent climate change/climate variability/sea level rise projects relevant to Public Water Supply Utilities.
   Task 3: Explore ways to leverage SUS/FAU/FCI white papers (to address the needs of PWSU-CIWG. This should contribute to the potential for the SUS project to structure white papers to better meet the needs of the Utilities.

3. Rather than develop options for a formal structure, agreed to remain a "loosely formed group' at this point. Participants suggested that a "letter of collaboration/declaration of collaboration" be drafted for consideration. A draft statement of "who we are" and letter of collaboration/ declaration of collaboration will be shared with the group for consideration.

4. Meet again within the next quarter (no month selected, or topic identified, however noting that a logical topic might be the science workshop (Task 2 identified above).

5. Find a better acronym than PWSU-CIWG to reflect the group's identity.

Detailed Summary:



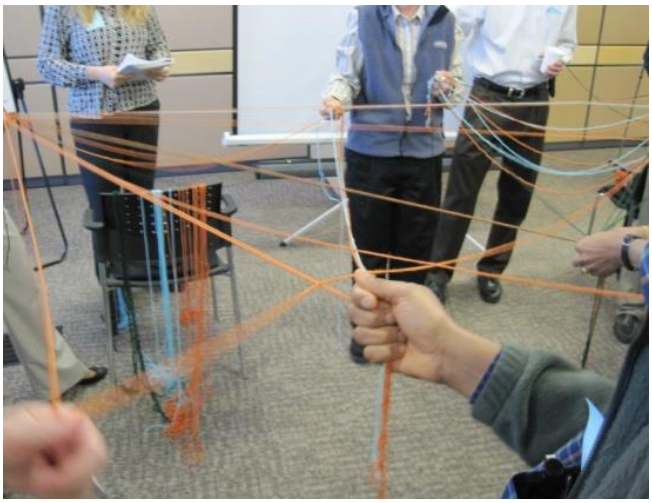
The workshop format was participant presentation/discussion/activity-based in which participants drew on information from presentations, pre-workshop documents, and their own

experiences to explore what the PWSU-CIWG can do, how it should function, and specific items of immediate interest for action.

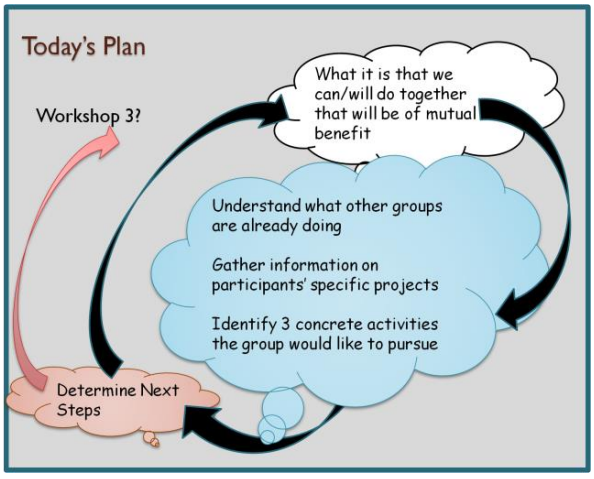
Session 1 – Context

Dr. Wendy Graham, Director, UF Water Institute, opened the workshop and shared the UF Water Institute's interests and role in convening this group. She mentioned the proposal submitted to NOAA-Climate and Societal Interactions with the partners represented at the workshop, activities of interest since the last workshop and shared enthusiasm for the developing partnership and relevant products. Participants introduced themselves (participant list attached – Appendix 2).

Dr. Wendylin Bartels (Florida Climate Institute), a member of the facilitation team member implementing research to both understand and improve the group process, shared the results of interviews carried out following the first workshop summarized from Monitoring and Feedback Report 1. She articulated the role of research as an integral part of the working group process. She then facilitated an icebreaker engaging participants in getting an idea of the current web of connections within the group of climate information sharing.



Lisette Staal (Water Institute), workshop facilitator, introduced the day's activities which were designed to build on the outcomes of Workshop One and provide a platform to identify selected actions of the working group. The plan would enable the group to consider unique products and outputs of CIWG that would not duplicate, and might contribute to, efforts of other similar groups. By the end of the day, the group would identify three main things that CIWG is most interested in tackling first and actions needed (Appendix 1 - agenda).



Session 2: Learning from other groups - This session included two parts, the first included presentations and the second emphasized small group discussion.

Part 1:

Prior to the workshop, a pre-workshop document, "What can we learn from other 'Groups' to build a vision for our future?" with descriptions of selected of national, regional and local groups focused on impacts of climate change, climate variability and sea level rise on public water utilities was compiled. It included written descriptions prepared by participants using a standard format to summarize history and origin, goals, people, focus and actions, modes of operation, products/outputs and lessons learned relevant to the interests of the PWSU-CIWG. In addition, several other participants had submitted similar information on specific science projects being implemented by their institutions that they would like to share with other PWSU-CIWG participants. These project descriptions were included in the pre-workshop document; however, presentations were not possible given the timeframe of the workshop. It was noted that participants may want to see these and other specific projects presented in future workshops.

The presentations and presenters are noted below.

- ☑ **The Water Research Foundation (WRF),** Douglas Yoder, Deputy Director, Miami-Dade Water and Sewer Department *(preworkshop document page 5)*

- ☑ **The Water Environment Research Foundation (WERF),** Douglas Yoder, Deputy Director, Miami-Dade Water and Sewer Department (*preworkshop document page 9)*

- ☑ **EPA Climate Ready Utilities, National Drinking Water Advisory Council,** Douglas Yoder, Deputy Director, Miami-Dade Water **and Sewer Department (***preworkshop document page 11)*

- ☑ **Southeast Florida Regional Climate Compact, Larry Johnson, P.E, Palm Be**ach County Water Utilities Department (link to presentation) (*preworkshop document page 13)*

- ☑ **Local Governments for Sustainability, ICLEI Climate Program, Jayantha O**beysekera, SFWMD (*preworkshop document page 15)*

- ☑ **Water Utility Climate Alliance (WUCA), Alison Adams, Source Rotation an**d Environmental Pr**otection Manager, Tampa Bay Water** (*preworkshop document page17)*

A suggestion was made during the discussion to include information on the Water Reuse Association in future discussions, and the possibility for including other groups was also mentioned. This may be something that the group would like to consider for future.

Part 2:

To help better define specific foci, actions, products, participants and operation of the PWSU-CIWG, participants worked in small mixed-groups (utility, WMD, and academic representatives) and were presented with a scenario and task (see figure 1).

Figure 1: Small group task

Scenario/Situation: It is **2 years** from today's date and you have, outrageously enough, created the PWSU-CIWG that you most wanted to create, and achieved the things you most desired. Now it is your job, as a team, to describe the GROUP as if you are able to see it, realistically, around you at this present moment.

The Task: Develop a description of the PWSU-CIWG as you hope someone would write the description at the end of 2 years.

Table 1:	Origin, Goals and Impacts (Measures of Success)
Table 2:	Focus and Actions
Table 3:	Products and Outputs
Table 4:	Partners, Participants and People, and Modes of Operation

Each group was responsible to describe one of the topics for the PWSU-CIWG in the scenario. Participants were encouraged to use the information provided in the presentations and the written document as part of the discussions. Each group stayed at their initial table for approximately 30 minutes and then went, as a group, around the room to each of the tables spending approximately 5 minutes to add their input for consideration by the group that started at that table. Each group, upon returning to their initial table in a final plenary discussion, asked others for clarifications of any of the comments that they did not understand in order to consolidate their "description" of a successful PWSU-CIWG.

Lunch – Open Space

Participants were provided an opportunity to suggest a topic for an open space discussion during lunch. Two participants indicated interest in convening an open space for informal discussions. The topics included "State of Regional Climate Modeling in Florida," led by Jayantha Obeysekera, SFWMD and "Capacity of Utilities to respond to climate change, led by Jim Jones, FCI, University of Florida. Both conveners reported briefly after lunch regarding the discussions. Both found the discussions as useful avenues for sharing information.

Session 3: Vision to Product/Outcomes for PWSU-CIWG

After lunch, each group refined their descriptions that resulted during session 2, and prepared brief presentations of the top 3 items of importance from their group discussion. The detailed information developed during the small group process appears in figures 1-5. Session 3 built on the results of the top 3 items presented by each group. During this plenary session, each group

presented the top 3 items of importance from their group discussion and the overall group then focused on defining concrete items/activities/products that the PWSU-CIWG would be most interested in tackling first? It was important to clarify what could and should be done in the immediate timeframe. Through discussion, commonalities were identified in which all groups had activities falling into basically three areas: 1) communication/engagement and networking, 2) synthesizing status of current climate science and impact relevant to utilities in Florida, and 3) specific research and tools. The results of the presentations and discussion are summarized in the following table. The columns show the top three items identified by each group presented to the plenary.

Figure 2: Presentation of top 3 priorities from each small group discussions

Group 1: (Goals and Impacts *Develop strong mission statement and strategic plan)*	**Group 2: (Focus and Actions)**	**Group 3: (Products and Outputs)**	**Group 4: (People, Participants, Partners)**	**Group 4: (Modes of Operation)**
●Network for dissemination	◆Synthesize and disseminate national research pertinent to Florida Water Resources and Demand	◆2 year Climate Science and Impacts update. Unbiased, actionable, short (1-12 months) and midterm (10-50 years)	❂Identification and engagement of partners, people and participants and DonoOrs	❂Developing a structure (steering committee, staff, roles and responsibilities
◆White paper on research baselines	■Form and facilitate research coalitions to fill gaps in research pertinent to Florida	■Improved rainfall prediction tools for Florida (North, Central, and South) at seasonal (1-12mo.) and Midterm (10-50yrs.) Include sub seasonal?	❂Define level of commitment of people, participants, and partners and donors	❂Secure funding (seed money, fiscal agent agreement)
■Influence research priorities of those doing relevant research, funding relevant research and posing research questions.	●Disseminate research findings to Florida Water Utilities.	❂●Communication Plan to include website and data sharing	❂Identify possible beneficiaries and possible benefits (resilient water supply)	❂Communication (meetings, website, conference calls, publications…)
Key to symbols: ●External Communication/Engagement (❂internal group communication and networking) ◆Synthesizing status of current climate science and impact relevant to utilities in Florida ■Specific Research *and Tools*				

Participants noted that the lists developed by the groups included too much for the PWSU-CIWG to embark on and expect to accomplish in the short run. To accomplish some of the tasks, participants discussed the possibilities of identifying existing groups to leverage and work through, rather than formalizing immediately with the idea of accomplishing everything at once. The group suggested and considered a variety of activities that they would like to take on immediately.

The group narrowed the activities to focus on first to the following three:

- Develop a Florida Public Water Supply Utility Research Agenda (for climate change and variability impacts), i.e. Scope research needs, timeframes and budgets for potential projects. (**Larry Johnson-lead**, **Doug Yoder, Kim Shugar, Tirusew Asefa, Vasu Misra, Jim Jones)**

- Plan a science workshop to highlight PWSU-CWIG members' recent climate change/climate variability/sea level rise projects relevant to Public Water Supply Utilities. This will contribute to a longer range effort to synthesize national research of climate science status and impact relevant to Florida Public Water Supply Utilities. **(Wendy Graham - Lead**, **Jayantha Obeysekera, Mike Cullen, Keith Ingram, Alison Adams)**

- Explore ways to leverage SUS/FAU/FCI white papers (see page Project #9 in pre-Workshop document, page 37) to address the needs of PWSUCIWG. This should contribute to the potential for the SUS project to structure white papers to better meet the needs of the Utilities. **(Nicole Hammer/Len Berry- Lead, Alison Adams, Jim Jones, Vasu Misra, Wendy Graham)**

The group agreed that at this point we would consider ourselves a Group with a "loose structure" and suggested that a general letter of collaboration be drafted and considered before the next workshop. It was also suggested that we try to find a different name and acronym for identifying the group.

Session 4: Bringing it all together

Lisette Staal revisited the goals set for the day, noting that the workshop was designed as a deliberate collaborative and iterative learning process and that the outcomes of this workshop will feed into the development of a future workshop (Workshop Three). She mentioned the integral role that research and feedback plays as part of implementing and sustaining a working group process.

As outcomes of the PWSU-CIWG Workshop Two, participants agreed to:

1) Remain a "loosely formed group' and that a "letter of collaboration/declaration of collaboration" should be drafted for consideration. Draft statement of "who we are" and letter of collaboration/ declaration of collaboration for consideration. **(Lisette Staal-Lead, Wendylin Bartels)**

2) Form three small groups to meet and determine actions to reach the three items identified in Session. The LEADs will call meetings, set agenda and share outcomes with the larger group.

3) Meet again within the next quarter (no month selected, or topic identified, however noting that a logical topic might be the science workshop noted in session 3). Planning group volunteers included **(Marty Kelly, David Zierden, Keith Ingram, Alison Adams, Nicole Hammer)**

4) Find a better acronym than PWSU-CIWG

Evaluation:

Lisette Staal thanked the participants, OUC as the host, and distributed a feedback form and requested written input from the participants. A total of 14 participants responded. In general, respondents expressed a high level of satisfaction with the workshop output, organization, use of time, level of participation with each of those ranking above 4.2 on as scale of 1-5 with 5 being the highest. However, when breaking down by participant type there was a distinct drop in the rating for "participation" from Utility respondents. The question posed was "How well did we do on making sure everyone was involved." This lower ranking may reflect the fact that two out of the six utilities were not able to send representatives to this workshop, where they were all represented at the first workshop. However, it may also reflect another issue regarding the design or facilitation of the workshop. This should be taken into account while planning for the next workshop. Clarity of next steps received a lower rating of 3.79. Again, effort should be made in future workshops to work with participants focusing on generating specific next steps. A brief summary of exit feedback survey responses appears in Figure 7.

Next steps:

1. Send email with meeting outcomes to participants, and those that were not able to participate (Lisette Staal).
2. Convene small groups as identified above (Group leads: Larry Johnson, Wendy Graham, Nicole Hammer/Len Berry)
3. Draft statement of "who we are" and letter of collaboration/ declaration of collaboration for consideration. (Lisette Staal-lead, Wendylin Bartels)
4. Draft workshop Two report (Lisette Staal)
5. Suggest new acronyms/names for the working group (all)

Some items mentioned during discussions that do not appear in actions or outcomes and that should be kept on the table for future consideration are noted below:

- Presentations of Projects that were included in the pre-workshop document and other specific projects should be presented in future workshops.

- Information on the Water Reuse Association (and other relevant groups) might be included in the pre-workshop document to be included in future discussions.
- Consider leveraging and working through existing groups as much as possible, rather than formalizing this group structure immediately.

Results from feedback for consideration in future workshop planning included:

- Consider ways to help make sure everyone is involved
- Focus on generating specific next steps

Figure 3: Group 1 results

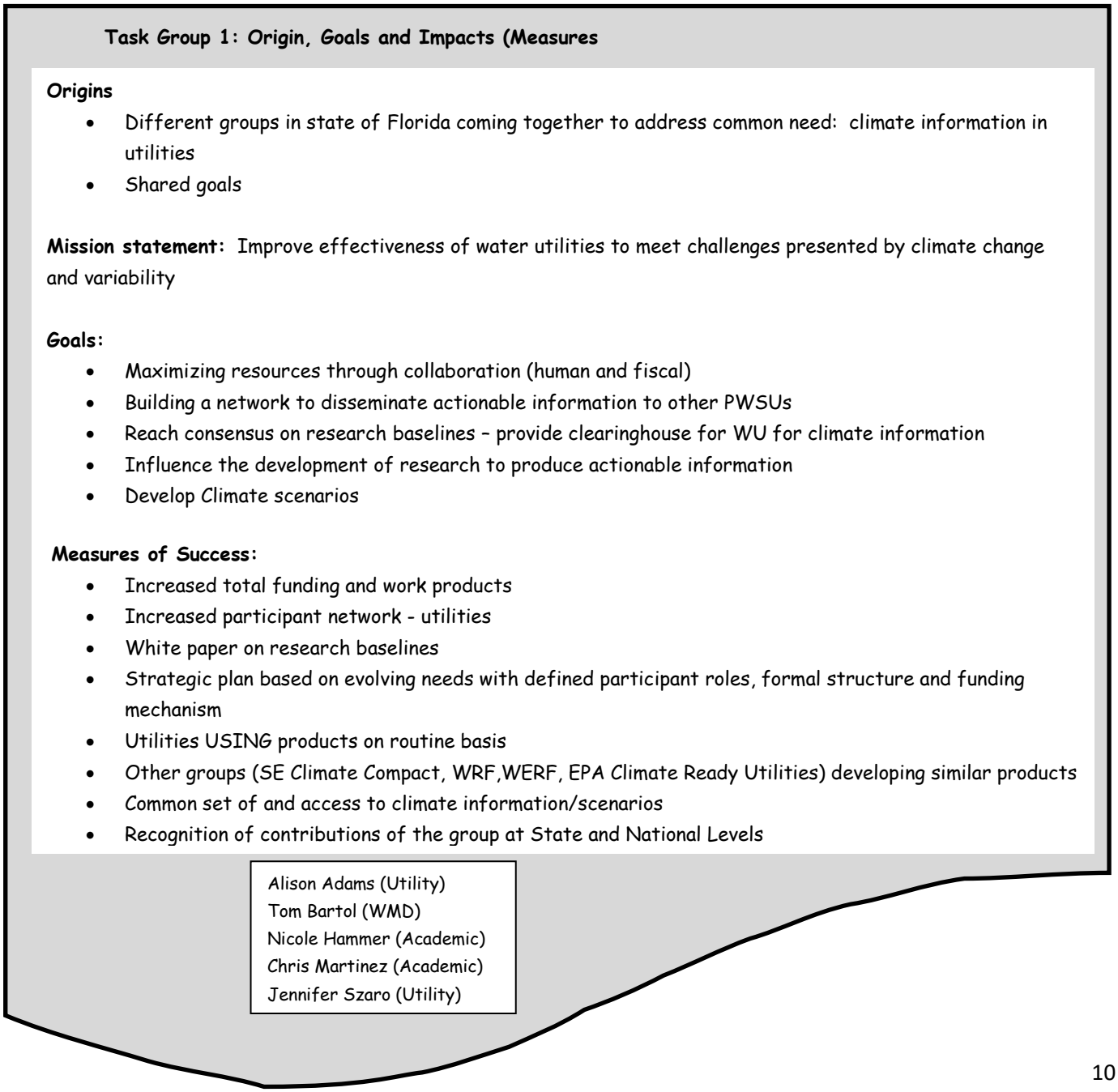


Figure 4: Group 2 results

Task Group 2: Focus and Actions

ACTIONS:

- Monitor national research, share most pertinent with Florida Public Water Supply Utility (PWSU).
  ----→Filter, communicate outreach
- Identify additional Florida Focused, actionable research needs
- Form research coalitions,
- generate $,
- facilitate research groups
- Non-biased dissemination of findings
- Annual meeting – state of science, practice, education, decision making, adaptation
- Monitor, documentation, and assess this group: impact on Water Utilities

FOCUS: Florida

- Emphasize actionable research (* indicate priorities)
  * Salt water intrusion sea level rise
  * Rainfall extremes/variability/trends
  * Temperature extremes/variability/trends

  Storm surge – *(not so much for water utility)*- suggested to delete this one – added water quality, water demand, stormwater impacts)

  Climate driven changes to population, development, land use, land cover change, socioeconomics, policy, natural resources.

- Develop consensus on range of future scenarios (sea level rise, tropical cyclone activity, ENSO, temperature, wind, humidity) with probabilities

- Avoid duplication with what other groups are doing.

Wendy Graham (Academic)
Marty Kelly (WMD)
Vasu Misra (Academic)
Douglas Yoder (Utility)
Lonnie Dunn (Utility)

Figure 5: Group 3 results

Task Group 3: Products and Outputs

- Communication Plan
  - Website/interactive e- communication system for information sharing with activities
  - Plan for disseminating climate information to utilities

- Annual (Strategic Plan) that evolves over time based on knowledge/ needs
- Collaborative research projects that fill Florida information gaps
- Data sharing
  - Florida reanalysis
  - Monitoring data (sea level, precipitation, temperature)

- White papers
  - Assessment of climate predictions (unbiased science assessment- 2 year climate science and impacts update, including actionable predictions, short term seasonal and intermediate term Infrastructural permitting (10-50 Years)
  - Report on sustainable water supplies and technology in light of global climatic change and sea level rise
  - Case studies, etc.

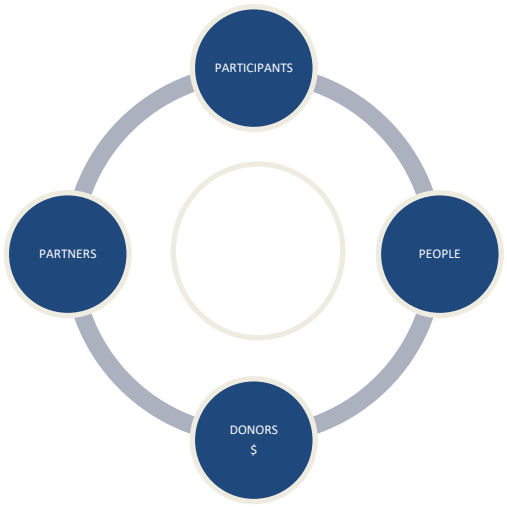
- Advancement in GCC model Predictions Long term 80-100 years
- Network with other groups (WERF, etc.)
- Network with each other (this group)
- Cross cut budget (from each participant showing activities
- Recommendations for Utility operations, research, policy/Proposals ($)
- Improved rainfall prediction tools for Florida (N, Central South) seasonal and mid term (10-50 year) – verification, track record, attribution

Mike Cullum (WMD)
Larry Johnson (Utility)
Jim Jones (Academic)
Kim Shugar(WMD)

Figure 6: Group 4 results

Task Group 4: Partners, Participants, People and Modes of Operation

Partners, Participants, People



Partners– Associated with common interest - Florida DEP, WUCA, ICLEI, SE FL Reg.Clim Compact, PUMA, Climate Ready Utilities (?), USACE(?), Florida Section AWWA, Florida Water Envi. Association

Participants – members
Current members plus…. Broward County, Monroe County, Lee County, Collier County, Hillsborough County, Orange County, Polk County, Duval County, Flagler County, JEA, all utilities, Panhandle? Suwannee basin? stormwater(?), wastewater(?),electric(?)

People – Administration, staff, beneficiaries

Donors – member dues, sponsors, funding agencies - Granting Agencies – NOAA, EPA, NSF, NASA, USGS, WRF, WERF, Federal Earmarks, State Appropriations

	Academic	Utility	WMD	*FDEP (?)*
operations		✓✓	✓	
regulatory		✓	✓✓	
research and communication	✓✓	✓	✓	✓✓
communications general public	✓	✓	✓	✓

Tirusew Asefa (Utility)
Keith Ingram (Academic)
Victoria Keener (Academic)
Jayantha Obeysekera (WMD)
David Zierden (Academic)

Modes of Operation

- Website
- Steering committee with quarterly meeting *(this group?)*

  → All participant groups represented

- Annual meeting with all (?)
- Seed money contribution from participants (?) → fiscal agent agreement (?)- *WUCA example shared*
- Working groups for projects/initiatives
- Dedicated staff time ($)
- Formal commitment by agency heads
- Monthly teleconferences

Figure 7: Brief summary of exit feedback survey responses (1 low - 5 high)

	Public Water Supply Utility	Water Management District	Academics	NA (affiliation not indicated)	TOTAL
Output	4.5	3.75	4.4	4.33	**4.21**
Organization	4.5	3.75	4.8	4.67	**4.43**
Use of Time	4.5	4.25	4.4	5.0	**4.50**
Participation-involvement	3.5	4.25	4.6	4.67	**4.36**
Next Steps clear	4.0	3.125	4.1	4.0	**3.79**
The most important thing that you are taking away from this meeting	* Able to meet and coordinate with colleagues (WMD) * Climate Institute may be a viable mechanism to advance group objectives (Utility) * Scoping research needs (Academic) * Vision for structuring whitepapers to better meet the needs of the focus group of this workshop (Academic) * Becoming more organized and focus … continuing to form relationships… getting defined actions.(na) * that a group will likely exist that can help me in the performance of my duties * plan for moving forward (WMD) * now it is more refined and defined on where we are heading (Utility) * a better sense of how SECC research and outreach can meet the needs of Water Utilities and WMDs. (Academic) * the strong interest among participants in need for "actionable research" -- unbiased.(na)				
This group is important to me because:	* It can provide/promote broader engagement in Climate Change issue (Utility) * new collaborations are going to be fostered Academic) * fits with the goals of my organization (Academic) * I want to see climate information used effectively in practical decision-making.(Academic) * we are building relationships with water utilities, WMD and research community on an important topic of climate (na) * answers to some of these research questions that the group might address are directly applicable to the performance of my job.(WMD) * forum to discuss climate change (WMD) * It brings people from different places. It seems we have wider approach now. (Utility) * It helps me better understand how to organize, guide the SECC water programs.(Academic)				
This group is not important to me but could be if….:	* …. if it were in Hawaii				
Additional comments:	* Good facilitation * Refine what can be achieved the next two years—prioritize * An excellent group of people. I look forward to our next activities.				

APPENDIX 1- Agenda

WORKSHOP – "Public Water Supply Utilities Climate Impacts Working Group"
Workshop Two
Thursday, January 20, 2011 9:00 – 4:00pm
Location – OUC Downtown, 100 W. Anderson Street, Orlando

Purpose: Getting to know other groups that are evaluating potential impacts of climate change, climate variability and sea level rise on public utilities in order to frame a dialogue of what is out there, how they are structured and what CIWG can learn from them. Identify unique products and outputs of CIWG that do not duplicate, and might contribute to, efforts of other groups. Consider options for CIWG structure, governance, and outputs.

Outcomes:

- ✓ Know about other groups that are evaluating potential impacts of climate change, climate variability and sea level rise on public utilities
- ✓ Identify three main items that CIWG is most interested in tackling first
- ✓ Develop a suite of options for consideration of CIWG composition, structure, and modes of operation.
- ✓ Define specific next steps for the group.

9:00 – 10:00 **CONTEXT -** Introductions, review of process learning, and expectations

10:00 – 10:15 Break

10:15 – 12:30 **WHAT CAN WE LEARN FROM OTHER "GROUPS" TO BUILD A VISION FOR THE FUTURE? -** What we learn about other groups that are evaluating potential impacts of climate change, climate variability and sea level rise on public utilities will inform the composition, structure, and modes of operation for our Working Group (PWSU-CIWG).

1. Presentations

- The Water Research Foundation (WRF), Douglas Yoder
- The Water Environment Research Foundation (WERF), Douglas Yoder
- EPA Climate Ready Utilities, National Drinking Water Advisory Council, Douglas Yoder
- Southeast Florida Regional Climate Compact, Larry Johnson
- Local Governments for Sustainability, ICLEI Climate Program, Jayantha Obeysekera
- Water Utility Climate Alliance (WUCA), Alison Adams

2. **Small group activity –** Using the information from presentations and pre-workshop document about other groups and projects to build a vision of PWSU-CIWG.

12:30 – 1:30 LUNCH ("open space" for participants to share topics of interest)

1:30 – 2:30 **VISION TO PRODUCT/OUTCOMES FOR PWSU-CIWIG-**
What concrete items/activities/products are CIWG most interested in tackling first? What are the options for structure, framework for collaboration, rules of cooperation, institutional innovation, and values of group decision making, sponsor (s) / champion (s)?

2:30 Break

2:45 – 3:30 **IMPLEMENTING THE VISION – SPECIFY ACTIONS -**
What is our role in the context that we work (e.g. our start-up, our organization, our community)? What forces are currently affecting our work and our team, inside and outside? Consider strengths, weaknesses, opportunities and threats for reaching our identified activities

3:30 – 4:00 **BRINGING IT ALL TOGETHER AND EVALUATION**
Decisions made today? What items of action? Another workshop? If so, what substance? Who else should be at the table? What needs to be done before the next meeting? Planning meetings? Who, what…..

APPENDIX 2 – List of Participants

1/20/2012 WORKSHOP TWO PARTICIPANTS – PWSU-CIWG

Last name	First name	Organization	email	
Adams	Alison	Tampa Bay Water	AADAMS@tampabaywater.org	PWS Utility
Asefa	Tirusew	Tampa Bay Water	tasefa@tampabaywater.org	PWS Utility
Bartels	Wendylin	University of Florida/Florida Climate Institute/ Southeast Climate Consortium	wendylin@ufl.edu	Academic/facilitation
Bartol	Tom	Saint Johns River Water Management District	TBartol@sjrwmd.com	WMD
Cox	Carolyn	University of Florida/Florida Climate Institute	crcox@ufl.edu	Academic/facilitation
Cullum	Mike	Saint Johns River Water Management District	mcullum@SJRWMD.COM	WMD
Dunn	Lonnie	Orlando Utilities Commission	ldunn@ouc.com	PWS Utility
Graham	Wendy	University of Florida Water Institute	wgraham@ufl.edu	Academic
Hammer	Nicole	Florida Atlantic University	nicole.hammer@fau.edu	Academic
Ingram	Keith	University of Florida/Florida Climate Institute/ Southeast Climate Consortium	ktingram@ufl.edu	Academic
Johnson	Larry	Palm Beach County Water Utilities	ljohnson@pbcwater.com	PWS Utility
Jones	James	University of Florida/Florida Climate Institute/ Southeast Climate Consortium	jimj@ufl.edu	Academic
Keener	Victoria	University of Florida/Florida Climate Institute/ Southeast Climate Consortium	vicko@ufl.edu	Academic
Kelly	Marty	South West Florida Water Management District	Marty.Kelly@swfwmd.state.fl.us	WMD
Martinez	Christopher	University of Florida/Florida Climate Institute/ Southeast Climate Consortium	chrisjm@ufl.edu	Academic
Misra	Vasu	Florida State University/Florida Climate Institute/ Southeast Climate Consortium	vmisra@fsu.edu	Academic
Obeysekera	Jayantha	South Florida Water Management District	jobey@sfwmd.gov	WMD
Shugar	Kim	South Florida Water Management District	kshugar@sfwmd.gov	WMD
Staal	Lisette	University of Florida Water Institute	lstaal@ufl.edu	Academic/facilitation
Szaro	Jennifer	Orlando Utilities Commission	Jszaro@ouc.com	PWS Utility
Yoder	Douglas	Miami-Dade Water and Sewer Department *(not available for Sept 22 meeting)*	yoderd@miamidade.gov	PWS Utility
Zierden	David	Florida State University/Florida Climate Institute/ Southeast Climate Consortium	zierden@coaps.fsu.edu	Academic

Note: Rob Teegarden and Chip Merriam, Orlando Utilities Commission attended the opening session but were not able to participate in the rest of the workshop.