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MEETING SUMMARY
MARYLAND ADAPTATION & RESPONSE
WORK GROUP (ARWG)
Meeting #6, December 7, 2007
10:00 AM – 4:00 PM

Attendance:

ARWG Members:

Don Halligan, *MDP*
Zoe Johnson, *DNR*

Jenn Aiosa, *CB Foundation*
Ron Bowen, *Anne Arundel County*
Sherwood “Duke” Brooks, *MD Assoc. of Realtors*
David Burke, *Burke Environmental Assoc.*
Phillip Connor, *Marine Trade Association of Maryland*
Peter Conrad, *Baltimore City Planning*
Gil Dissen, *Dissen & Juhn Corp.*
Ira Feldman, *Green Track*
Bill Giese, *USFWS*
Julia Gorte, *Pax World (by phone)*
Lynn Heller, *Citizen*
Jesse Houston, *Town of Ocean City*
Dennis King, *UMCES*
John Kostyack, *NWF (by phone)*
Joe Maheady, *USGBC*
Ellen Moyer, *City of Annapolis (by phone)*
Joy Oakes, *NPCA (by phone)*
Robert Pace, *USACOE*
Dru Schmidt-Perkins, *1000 Friends of Maryland*
Court Stevenson, *UM*
Sue Veith, *St. Mary’s County*

MD Department of Natural Resources (DNR):

Christine Conn
Carrie Decker
Sandi Olek
Gwynne Schultz
Gwen Shaughnessy

Other Maryland Departments:

Dave Guignet, MDE
Robert Ward, MEMA
Ruth Mascari, *Department of Health and Mental Standards & MEMA* (by phone)

Center for Climate Strategies (CCS):

Ken Colburn, *Facilitator*
Bill Dougherty, *Facilitator*
Gloria Flora, *Facilitator*
Brian Joyce, *Facilitator* (by phone)
Linda Schade, *Assistant*

Members of the Public:

Mark Feinroth, *MD Assoc. of Realtors*
Jay Pentergrass, *Environmental Law Institute* (by phone)

Background documents:

All posted at: <http://www.mdclimatechange.us/twg.cfm>

1. Meeting Agenda
2. Overview of the ARWG PowerPoint presentation
3. Draft Catalog Descriptions of State Adaptation Options

Discussion and Key Issues

Ken Colburn opened the meeting and asked for introductions. He reviewed the agenda for the meeting. The ARWG will review catalog of recommended policy options from each TWG. Each option must be approved by the ARWG in order for the appropriate TWGs to then craft it into a Straw Proposal. The ARWG can also add policy options if it wishes.

Update on MCCC and Interim Report

The MCCC met in Bethesda on December 4, 2007. The draft Interim Report was accepted with minor changes, which will be made by the MDE next week. The report will then be forwarded to the Governor, who will coordinate its release to the public. At the meeting, Zoe Johnson presented the vision statement from the ARWG, which was well-received by Shari Wilson, especially the portion regarding sea level rise.

The MCCC accepted the ARWG recommendations with no changes.

The MCCC approved the recommended GHG reduction goals of 25% below 1990 levels by 2020, and 90% below 1990 levels by 2050. It was noted that Maryland's goal makes it a national leader. It was also noted that the 90% reduction goal is an aspirational goal and will therefore require extremely aggressive actions in order to achieve it.

Sea Level Rise Vulnerability Mapping

Zoe Johnson reviewed the Vulnerability Mapping done by DNR. Around 2000, DNR began to gather data on Sea Level Rise and initiated mapping the changes. The rise over the last century

has been about one foot. Thirteen islands in the Chesapeake Bay have disappeared during this time due to sea level rise and erosion.

The causes of sea level rise are attributed to land subsidence, exacerbated by melting polar ice, due to global warming. There are other factors involved; however, the contribution levels are unknown.

Dorchester County currently is experiencing annual shoreline erosion of eight feet, one of the most rapid in MD. Johnson noted that 14% of the shoreline in MD is stabilized.

Various assessment tools are currently available. These include the Erosion Vulnerability Assessment Tool, a comprehensive shoreline inventory of historic sites, protected zones, etc. New maps and data are available at www.shorelines.dnr.state.md.us. The second assessment tool being used is the Living Shoreline Suitability Tool which measures various factors to assess vulnerability. It is important to include fetch, the amount of open water in front of a land mass. The IPCC report suggests that global warming will accelerate erosion and shoreline vulnerability.

Maps designed to be used as visualization tools to aid local planning were presented. These included maps outlining the inundation relating to elevation over time in a sample location and projected increased storm surge threats. These maps were created using high resolution LIDAR (Light Detection and Ranging) topographical data, assembled by Towson University. The maps will be available on the DNR website in about one month. DNR was charged with assessing the capacity of local governments to plan for sea level rise utilizing this data.

The USGS modeled 3 scenarios: historic rate, accelerated rate, and worst case scenario. The actual data for 2006 was beyond the worst case scenario. Colburn noted that the data for recent years is higher than both the IPCC report and the top red line shown in Johnson's tables, indicating that the rise is expected to be more significant. He noted that the freeboard standard is currently 3'.

Worcester County utilized this data in recent comprehensive planning efforts.

The Adaptation and Response Working Group could make recommendations regarding the use of this data.

Floodplain Mapping Updates

Dave Guignet of MDE provided an update of floodplain mapping efforts. Necessary floodplain data had been improved. Wave height prediction data less than 3 feet was not mapped. He stated that, based on data and funding limitations, only 17 counties were done. These floodplain maps need to be adjusted because sea level rise was not included before.

It is noted that this data does NOT take into account future rises, shorelines conditions, erosion.

2009-2013 FEMA Legislation is a pushing for new data. A three dimensional surge model is also being developed. Note that a Category 4 storm in D.C. would raise water levels by 15'. Colburn asked Court Stevenson for contacts for more information.

Inland and upland precipitation during storm surge is extremely important. Pressure from upstream flooding prevents storm surge from dissipating energy and water upstream.

Priority Adaptation Policy Options

Ken Colburn reviewed the next steps by displaying the template to be used to build straw proposals for each priority option selected by the ARWG. Each TWG has prioritized its catalog of proposed policy options. The AWRG must approve each policy option in order for the TWG to continue developing Straw Proposals for each.

The name of the Current Built Environment and Infrastructure Proposed Policy Options section and the related TWG has been changed to Existing Built Environment and Infrastructure.

Existing Built Environment and Infrastructure [EBEI]

Bill Dougherty presented a brief summary of the TWG's process and of each proposed policy option. Each TWG member received a ballot to select top priorities. Some of the options were collapsed. Each option represents a particular effort to adapt in MD based on current infrastructure. The policy options are not ranked here. Only those options receiving at least 10 out of 30 votes are listed.

EBEI-1 Public Awareness

This option may be included in every recommended policy option. One integrated public education program is also possible. Public Education issues relating to mitigation are assigned to the Cross-Cutting Issues TWG. This option should possibly be linked to EBEI-10.

Residential and commercial building sales provide opportunities for education through disclosure statements. A recent paper by Lloyds of London presented at the 4th IPCC underscored that climate change would definitely increase the intensity of weather events but there are no strong data supporting an increase in frequency of major events due to climate change.

Materials and communications packages must be developed as part of the implementation strategy. There are concerns about the role of government and identifying funding for education campaigns. The Emergency Management agencies would like to include this issue in a broader emergency education campaign. This campaign should include the use of the the new flood mapping and sea level rise maps, honing the message to educate the public. This should cause a broader range of people to understand how climate change affects them and to demand increased action and attention from the government.

The MCCC is promoting K-12 education efforts. Members of the ARWG expressed concern that students in Maryland learn about the effects of climate change on polar bears but don't learn about these effects in Maryland itself.

EBEI-2 Observation System for Changes in Coastal Zones

Surveillance and hardware are the two major issues. The Maryland DNR or other entities may already be accomplishing this with existing monitoring stations. Any existing efforts should be linked to enhance their efficacy. The importance of data confidence is paramount to prevent influencing the results.

EBEI-3 Adaptation of Vulnerable Coastal Infrastructure

The ARWG decided to edit the titles of EBEI-3 and EBEI-5, reverse the order and clarify the policy option text to eliminate any overlap. The current EBEI-3 focuses on adaptation assessment, while EBEI-5 attempts to identify vulnerabilities.

Suggested corrective actions will be included in the recommendations section of the policy option template.

Current language appears to assume that all items should be protected. Choices must be outlined on when to protect assets and when they should be abandoned. A definition for “unprotected” must be outlined.

Delineate the existing versus future built items in the relationship with the FBEI TWG recommendations.

EBEI – 4 Inundation Mapping

The ARWG agrees that all maps should be comprehensive, regular and continuous. Specifics on timing and frequency of updates will be developed through the straw proposal process. Models and comprehensiveness need to be updated too, with gradations of hazard and risks.

It was noted that cliff collapse is missing from the current set of maps. However, cliff collapse and erosion are dynamic actions, yielding inconsistent baselines. This makes mapping and quantification difficult.

A suggestion was made to rename this option ‘Vulnerability Mapping’. Surges, sea level rise, cliff collapse, etc are all included in this option and should be listed and explained in the straw proposal. The TWG is asked to determine if there should be one Maryland Map for Vulnerability with different layers or several maps with one for each variable.

The straw proposal should also include recommendations for making the maps accessible to the public so that individuals can determine if they are vulnerable to shoreline stability issues. This should also include mechanisms for home-buyers to be informed about this issue and determine how to research their particular circumstances.

Several suggestions were brought forth: Contour interval mapping with gradations indicating data for specific statistical storms such as 100 yr. floods; Maps with high, medium and low vulnerability.

Several TWGs may be addressing various aspects of this.

EBEI- 5 Inventory of the Vulnerability of Coastal Zone Infrastructure

See comments outlined under EBEI – 3.

The phrase ‘developing a system for potentially siting facilities away from vulnerable areas’ refers to relocation of facilities.

EBEI – 6 Assessment of Coastal Zone Adaptation Options

Structural assessment includes all hardscapes such as diking, versus landscaping of shorelines.

The effectiveness and unintended consequences of all options must be assessed. Implementation of recommendations could call for relocation of structures, possibly with incentives. This could possibly be converted to a ‘best practices’ product.

Change the word 'beach' to 'coastal'.

Caution is urged to prevent overlap with EBEI-3.

Guidelines are needed for significant adaptation measures, such as building an 8 foot wall.

A member recommends regulatory mechanisms to make the necessary changes in actions. Assessment and recommendation have limited effectiveness. Mandates to landowners to take action regarding shoreline erosion on their property can be made, however, provisions must be made for owners without the financial means to protect their shoreline.

Insurance for rebuilding in the event of flood or erosion was discussed. Areas can be designated that will not be eligible for insurance if it is rebuilt.

EBEI – 7 Adaptation Planning

Strike the word 'sheltered' when referring to coastline. However, add more detail regarding this concept in the description.

There is an emphasis on catastrophic planning. If this is not intended, then the description must be modified.

A suggestion was made to change the title to 'Early Warning System', possibly limiting the focus to sea level rise issues only. Further discussion clarified that this policy is intended to cover the range from early warning systems to putting evacuation plans in place. Early warning systems are distinct from planning processes.

Two recommendations, 2.6 and 2.11, had been combined. The ARWG decided by consensus to keep these separate, 2.6 *Increase erosion and hazard planning focused on all coastlines, especially sheltered coastlines* and 2.11 *Develop an early warning system (i.e. enhance hazard preparedness) through incorporation of sea level rise in hurricane and storm-surge evacuation planning*.

Efforts to address these matters are underway at the National Weather Service. The ARWG will work to ensure that climate change and storm surge are addressed.

EBEI – 8 Building Code Revisions

The TWG has discussed options addressing awareness, advisory, educational and regulatory approaches. Members expressed pleasure that not all the emphasis is on regulatory approaches, but others are concerned that there aren't enough teeth to accomplish the objectives.

There is a strong potential for overlap with FBEI-3. TWG members are warned to be cognizant of this in designing the policy option.

All building codes, standards, local zoning regulations and land use planning guides should be analyzed together to ensure a comprehensive plan is presented. The description should also include phrasing such as 'Strengthen existing building codes in vulnerable areas.'

EBEI – 9 Hazard Preparedness

Add public facilities, institutions, and entities to this description, including town halls, schools, roads, sewage treatment plants, etc. Ensure that the emphasis is on sea level rise.

FEMA/MEMA are already addressing hazard and emergency preparedness. Efforts must be made to ensure that climate change issues are included in this work.

Implementation design must include provisions regarding property owners who choose to rebuild after damage regardless of map, indicating that support and incentives will not be provided under these circumstances.

Clarify the phrase ‘incentives to local government’ in the description.

Ensure that overlap with EBEI-7 is avoided, as EBEI-9 is intended to be more long term.

EBEI – 10 Disclosure

The disclosure language must express the proper level of concern about coastal hazards. Information about the available level of insurance for a given property must be provided early in the sales process, not at closing. It could possibly be a required part of the listing form.

General EBEI Discussion and Summary

Several points were discussed before closing discussion of this TWG:

- The issue of rebuilding could be in either Existing or Future TWGs.
- Hazard preparedness requires connecting multiple aspects of all policy options.
- The TWG and ARWG need to address concerns regarding existing structures, especially conversion to green buildings and incorporating smart growth techniques. The Green Building Council can be consulted for concepts. The Mitigation RCI TWG is also working in this area. CCS facilitators will coordinate any overlap issues.
- The Maryland Insurance Commissioner should be consulted, as insurance companies are broadening the definition of ‘coastal’ to include property further from the coast. Insurance companies, through rate adjustments or refusal to cover properties, can discourage construction in vulnerable zones.
- A review of vulnerability zone assessment by municipalities in Maryland is needed. Cambridge, Easton and Annapolis have budgeted funds for assessing how to protect coastal zones, but this is unlikely to influence town budgeting.
- The Current Action section of the Straw Proposal should also include the review of local actions and resource needs.

The ARWG unanimously approved further work on all ten of the Existing Built Environment and Infrastructure options.

Future Built Environment and Infrastructure (FBEI)

Bill Dougherty explained that this group started with fifty proposed policy options which were reduced to nine priority options.

FBEI-1 Integrated Planning for SLR and Associated Coastal Hazards

- 1a. State and Local Coordination to Reduce Risks from SLR and Associated Coastal Hazards
- 1b. Planning for Reduced Number and Maintenance of Threatened Access Roads

The hazards associated with sea level rise such as storm surge, coastal flooding and erosion. Short and long term hazards should also be outlined. It must be clearly stated that sea level might not happen gradually, but catastrophically. The 4th IPCC report clearly said that this is the least well understood factor. Sea level rise effects have been observed in Worcester County, where some towns are now in marshland.

Displacement locations and habitats should be identified, as well as examination of the changing boundaries of critical zones and expansion of buffer and jurisdictional limits.

The State Highway Administration would be a key resource to this TWG. They can provide significant information about current evacuation routes and current efforts in this area.

The evacuation capacity of new and existing roads should also be included. The number killed from storm surges is down due to enhanced early warning systems but the potential for evacuation related deaths remains extremely high. Some high risk towns, such as Ocean City, have only two routes out of the area.

The accuracy of evacuation warnings is crucial, as 'wrong' warnings lead to lower response for future events. In order to be effective, evacuations must begin 30 hours before a storm strikes the effected area. The range of an evacuation is approximately 260 miles. The cost of evacuation systems is approximately \$1M per mile of coastline.

The basis for the current 1000 foot jurisdictional coastal boundary should be reviewed, possibly to change it to a defined height above sea level. The original boundary was based on water quality concerns, not boundary protections.

FBEI-2 Mandate Integration of MD CCC Findings and Recommendations into All Appropriate State and Local Programs

The Executive Order recommended that state agencies incorporate and accommodate Commission findings where applicable. This proposed option goes beyond a recommendation to ensure action. Findings and recommendation must be integrated into existing business plans and processes.

Local officials must receive clear information about the consequences of inaction in addressing sea level rise. A combination of support, enforcement and demonstrated costs of inaction needs to be provided to local municipalities in addressing sea level rise issues, in order to encourage them to coordinate efforts. If necessary, legislation could be created to compel these very difficult decisions.

Expansion of the wild land/urban interface in coastal areas generates more problems. The state may not have a mandate or authority for dealing with the localized consequences of sea level rise, but it will be assumed liable. For example, with wildfires in California, the U.S. Forest Service is not obliged to fight fires that encroach into an urban area but the political pressure is such that they do it anyway. Therefore, clarity in advance planning by state agencies benefits the public and helps to prevent confusion and unmet expectations when crises happen.

Concern was expressed about the unintended consequences of policies. Potential undesired outcomes and related avoidance strategies should be considered. Efforts must be made to ensure that local actions are consistent with the recommendations included in the Final Report. Also see FBEI-1. One of the roles of the ARWG is to provide guidance to the Governor and legislature through specific language and recommendations.

Some of these enforcement mechanisms could be implemented through the Office of Climate Change that is being recommended.

The FBEI TWG has also recommended an Office of Sustainability.

FBEI-3 New Design Standards and Codes to Facilitate Retreat, Avoid SLR Risks and Increase Resilience

State regulations and statutory capability must be reviewed, especially zoning codes. State statutory authority should be revised in vulnerable areas. The State Highway Administration may have contributions to this area.

New construction designs should be premised on the 100 year sea level peak. Standards that may not have applied in the past to certain structures or in certain areas now may apply. Facilities that will not be allowed to rebuild in adjacent areas, such as boating facilities, sewage treatment plants, etc. must have relocation plans prepared. Currently, rebuilding a damaged home or remodeling an existing one is considered new construction if the new work increases the building's value by 50% or more, requiring a new permit. Note that San Francisco is currently revising their building codes to respond to climate change.

Individual actions by property owners should be addressed. Issues such as diverting water from one property to another should be reviewed, as well as the right of people to take individual actions. Existing zoning codes address these situations, following the principle of not harming neighboring properties.

Relocation issues should be considered, in concert with efforts by the Existing Built Environment TWG.

Coordination of local, state and federal agencies and regulations is needed. Inland floodplain ordinances stop at the tidal floodplains, which are under federal jurisdiction. Current state regulations do have not strong enforcement mechanisms. All recommendations regarding sea level rise should provide such enforcement mechanisms.

The IPCC has developed timeline curves to estimate sea level rise assuming global population levels off at 2050. Timing is important for public education but also timing lifecycles of infrastructure. Having a time estimate would guide level of control and align projected life with projections of sea level rise.

The MCCC has set greenhouse gas (GHG) reduction goals for 2020, 2050, and 2100. The ARWG should consider similar goals for sea level rise adaptation.

FBEI-4 Preserve Underdeveloped, Vulnerable Lands

Change 'Protect' to 'Preserve' and 'Properties to Lands' in title, as shown.

The recommended strategy should begin with zoning approached, with purchase or conservation easements as backup. Precautions should be instituted to limit the buying of lands that will be inundated as a potential waste of money.

Ownership of inundated lands, now sea bed or lakebottom lands, needs to be determined, i.e. would it remain with the original landowner or revert to the state.

There is overlap in this area with the Mitigation policy options. CCS will resolve these issues as they arise.

FBEI-5 Create a Climate Change and Insurance Commission

There are several issues regarding insurance that must be addressed, in conjunction with the Insurance Commission:

- Insurance regulations can affect change and should be utilized to positively impact climate change goals.
- The state will not assume the role of underwriter, especially in vulnerable areas.
- The Coastal Barrier Resources Act (CBRA) should be reviewed and potentially broadened.
- The difference between flood insurance coverage of floodplains and coastal areas.

FBEI-6 Monitor, Map and Inventory SLR and Vulnerable Areas and Properties

This is a cross-cutting issue, to be resolved by the facilitators. All recommendations will be combined into a unified approach.

FBEI-7 Evaluate Shoreline Protection Structures

Caution in developing hardscape protection specifications is needed to ensure current protections do not become hazards later, creating underwater obstacles, blocking drainage or preventing new or expanded infrastructure.

FBEI-8 Economic Development Initiative

The state should track new technologies addressing climate change initiatives and position itself to take advantage of the inherent economic opportunities. State pension plan investments can be targeted to drive economic development tied to sea level rise protection goals. The State Treasurer, as well as other agency heads, needs to be included in these discussions.

FBEI-9 Training and Capacity Building

This is part of a broad, integrated issue to target many audiences.

The ARWG unanimously approved further work on all nine of the Future Built Environment and Infrastructure options.

Human Health, Safety and Welfare (HHSW)

Concern was expressed that there has been only limited participation, and none by public health experts from Maryland, in the TWG meetings. There has perhaps been too much emphasis on emergencies and not enough on long-term planning, preparation and education.

HHSW-1 Health Impacts Assessments of the Climate Change Action Plan

Change title from “Health Impacts Assessments”.

The impacts of sea level rise, flooding, evacuation and climate change on Human Health, Safety and Welfare should be delineated.

The purpose of this policy option is to review all policy options in MD Climate Change Plan for unintended impacts on health, safety and welfare. The implementation strategy needs to be clarified, especially regarding the timing.

Elucidate specific disaster possibilities that could result from sea level rise related to health, safety and welfare. Use, with measurable indicators where appropriate. Don't assume people understand the ramifications and scope of potential problems.

HHSW-2 Inter-governmental Coordination

Identify differences in capacity, on all health issues, between different counties across the state. Determine if there is a geographical basis for these differences. Gap analysis may be required to determine the scope of the problem, if any.

HHSW-3 Uniform Data Standards

There is a lack of available data, but Bay Stat will provide some data on standards. The viability of health data research at local levels will be assessed by the TWG. Local planning can address severe storm preparation.

It is noted that no public health experts were present at the meeting, but that Ruth Mascari, Department of Health and Mental Standards, from Maryland Emergency Management Agency was in attendance via teleconference. The key public health member, Kathy O'Neill, could have answered many detailed questions, but was unavailable due to illness.

The current public health system faces many challenges, so it is very difficult to address adaptation. Short and long term recovery strategies must be addressed. The need for programs and the resources to fully implement them should be emphasized in this Straw Proposal. UASI utilizes pyramiding (or cascading) conditions to allocate Homeland Security funds.

There is a need for an inventory of what the human impacts are and to develop standards to track the needs indicated in HHSW-1.

HHSW-4 Emergency Capacity Support

Change ‘Surge’ to ‘Emergency’ as shown, since this issue addresses the surge in emergency medical and support response necessary in the event of an emergency related to sea level rise, not just a storm surge.

The focus of this policy option is specifically on sea level rise, including surge capacity, not just storm surge.

The MD Emergency Assistance Compact (MEMAC) provides a forum for counties to reach out to each other for assistance. This agency has a coordinated plan to bring in outside resources in an ever-widening circle, including EMAC and FEMA, as any or all existing resources are over-taxed or rendered useless.

MEMA recently completed a Phase II analysis of gaps in medical resources with federal government encompassing all hazards. This analysis should be reviewed to determine how much relates to climate change and not just hazard planning, such as transporting high risk individuals to safety.

The Health Department has a good understanding of the needs for planning for sea level rise, having plans for water movement and mold issues. A list of facilities and supplies in vulnerable areas should be included, as well as planning for facilities, such as hospitals, rendered unusable by flooding.

There are five stages of planning to address: Pre-event, Event, Response, Protection, Aid.

Installation of emergency equipment should include requirements that such equipment be placed in locations above projected peak sea levels.

HHSW-5 Coordinate Disaster Response Plans with Long Range Planning

Change title from Disaster Response Plans as shown.

A link is need between disaster planning and long range planners at state and local level, or county and land use plans. For example, roads and subdivisions should not be sited in vulnerable areas.

MEMA has informed the TWG that these efforts are completed. The TWG is charged with documenting the extent that such efforts have been implemented. A concern that the plans do not include sea level rise issues, as well as additional capacity due to sea level rise, has been expressed and should be investigated by the TWG. This is an area where gap analysis will be extremely useful.

There has been inadequate public communication about the health effects of disaster response.

A member suggested that the mental health policy option be added to the priority options under investigation, since people suffer from dislocation, loss of identity through work or lifestyle, and disruption of sense of place.

The state needs to be prepared to deny permission to rebuild in vulnerable areas.

The plan should be reviewed and updated every five years.

HHSW-6 Early Warning Systems

No comments were made.

HHSW-7 Education and Training for Emergency Medical Services Personnel

A comment was made by the MEMA representative that evacuation is a local issue. The Delmarva Taskforce knows who goes where and the planning is largely under control.

Evacuation Planning is under way through the state highway and transportation agency, with local agency involvement.

Questions were raised about the level of resources available to provide training, etc. Identification of all gaps and requirements should be delineated.

HHSW-8 Protection of Service and Security Infrastructure

The representative from MEMA insisted that public safety is a local issue, not a state issue. Health and police officials have planned for emergencies. The local people know all the critical needs patients and criminals in the area.

There need to be a focus on essential services to be provided, not just the physical infrastructure. Training is a vital part of ongoing awareness and education. Presentations on emergency services to those organizations and agencies that have equipment and could provide services, resources, etc. in an emergency, such as Blackwater Wildlife Refuge. These people need to understand how they fit in and can best support capacity gaps in acute situations.

Define prioritization codes, for example, a high priority would be a hospital that deals only with non-mobile patients.

Strike the phrase ‘during an extreme event’.

A presentation to the ARWG will be requested from the head of MEMA, including a description of current plans and how and when those plans are updated. In addition, Zoe Johnson will send the report and recommendations from the post-Hurricane Isabel debriefing. Post-Katrina conference information is also requested.

HHSW-9 Vectorborne Surveillance and Control Programs

Make this policy option a subset of HHSW-3. The threats and preventative actions must be identified.

Integrated Pest Management programs are preferred over toxic control programs which can cause other health problems.

Include ‘such as’ in last sentence, to read “Develop new strategies to control vector breeding sites, *such as* in swales, storm water drainage systems, ponds, and agricultural ditches.”

Prevention, both acute and long-term, is more important than the subsequent response. Address methods to deal with new viruses and vectors that move into a warming climate where they have not previously been present.

HHSW-10 Vector- and Waterborne Disease Awareness and Education

The TWG is asked to review potential reassignment of this policy option to HHSW-9, HHSW-7 or HHSW-3. The option can be broken up and the parts can be assigned as appropriate.

The key issue is educating the public, emphasizing prevention techniques. The school age population can be targeted.

A comment was made that this is more from chronic conditions, rather than event driven disasters. Chronic and acute aspects should be explicitly clarified.

The TWG has wrestled with the breadth of the charge. Sea level rise is the primary focus at this time.

HHSW-11 Awareness and Early Warning

Drop 'Heatwave' from the title, as shown. The focus should be expanded beyond heatwaves.

This policy option should be included in HHSW-7.

MEMA believes that this policy option has already been accomplished, however, there is no documentation to that effect. There exists an excellent set of caregivers and emergency services information conduits that could be more fully utilized. These sources are an Important way to reach under-served individuals or those who do not look to government sources for information. Many people refuse to respond to government evacuation plans. They refuse food, to evacuate without pets or at all. Some individuals are unable to respond. All must be addressed in planning.

The ARWG unanimously approved further work on all eleven of the Human Health, Safety and Welfare policy options, with the reconfigurations suggested above.

Resources and Resource-based Industry (RRI)**RRI-1 New criteria for identifying priority protection areas**

This policy option includes inventory and planning and assessment issues. This overlap will be addressed by the CCS facilitators.

Vulnerabilities due to private ownership of dams and levies should be addressed.

The TWG is asked to develop test criteria for identifying ecologically and economically critical lands to aid vulnerability mapping.

Criteria to identify specific conservation zones must be developed. Possible criteria are species habitat and migration corridors.

RRI-2 Community realignment plans

This policy option includes planning and land use issues, similar to one FBEI policy option. This overlap will be addressed by the CCS facilitators and the focus kept on the resource-based industry relationship.

There is a direct relationship to the seafood business.

Compensation plans should also include elements such as infrastructure, conservation, wetland retreat and supported utilities.

Gap analysis, reviewing tweaking and new elements, should be performed.

Sea level rise must be considered in considering the integration of blue and green infrastructure in the policy option.

RRI-3 Monitoring programs

There are many such programs at the state level, but none that have a sea level rise focus. Pests, insects and salinization are all part of this issue, which overlaps many other policy options.

RRI-4 Forest Protection

This issue is being addressed by the Mitigation AFW TWG group, especially in relation to the Forest Conservation Act and the renewal of the Act. Their policy option is exploring no net loss of forests as well as restoration, afforestation and reforestation. It is acceptable for the ARWG to duplicate this policy option for emphasis to the MCCC.

RRI-5 Watershed Planning and Management

Funding mechanisms to support these efforts need more investigation, especially the application of RGGI efforts and funding resources to adaptation efforts in Maryland. RGGI funds may be used for conservation purposes, but they must be related to climate change. Other funding sources must also be identified.

Concern was expressed that funding sources not be limited to any one area when all recommendations will need support.

RRI-6 New Guidelines for Local Planning

The focus of this option should be on affected watersheds from coastal impacts, sea level rise and related flooding. Current regulations do not include the context of the watershed where development is being proposed.

RRI 7 – Modify Environmental Protection Regulations

This policy option should be combined with RRI-5 in order to generate more immediate funding.

RRI 8 – Impacts Assessment of Fish Stocks and Habitat

Add the phrase ‘Include Vulnerability considerations’.

Members of the ARWG agreed that they do not support changing the floodplain.

The policy option must ensure that transportation improvement is sensitive to items such as wildlife corridors, natural hydrology, existing wetlands and forests and should include development of a green highways program. The transportation planning process is greatly assisted by the inclusion of specific language delineating the goals in the purpose and need statement. Transportation projects are a huge source of mitigation funding.

Natural resource protection should be considered when mitigation funds are being earmarked for projects. The Mitigation TLU TWG is considering a similar option but with a different emphasis and different rationale.

This TWG should focus on the vulnerability of transportation routes in case of storm water rise, reviewing such variables as location and management of roads, avoidance of sensitive habitats, mitigating impact of floodplains, etc.

RRI-9 Community Sustainability

The explicit task for the TWG is to develop case studies and implementation mechanisms.

RRI-10 Promote Sustainable Shorelines

The TWG is asked to revise the title to better reflect the goal.

It is also asked to take a comprehensive look at current regulatory and non-regulatory programs for vulnerable areas.

Restoration issues are an overlap issue.

Bay-Stat focuses on shoreline management. The MD DNR and other agencies are looking at options for management of that zone. The TWG should identify any gaps in the Bay-Stat report recommendations.

RRI-11 Creation and Restoration of Wetlands

The TWG should explore the concept that wetland and forest restoration can be used as a RGGI offset. Non-tidal restorations could be specified. The Mitigation AFW TWG has a related recommendation.

Hydrology is re-established when streams flood from storm water runoff. Keith Underwood is an expert in the field of relating opportunities to create wetlands for carbon sequestration.

General RRI Discussion and Summary

The ARWG would like to see more emphasis on wildlife habitat. Votes by members of the TWG were split over options that were similar in context. The goal description can be revised to be broader in scope, allowing the inclusion of items important to restoration and preservation of wildlife habitats, such as ecosystem based fisheries, fishing and hunting areas.

The issue of training farmers and foresters to adapt to climate change including switching to more salt tolerant species should also be included in these straw proposals where appropriate.

Several topics should also be included in the policy options. These are: Best Management Practices for saturated soils; fish habitats in ocean and inundation zones; and fresh water conservation.

Cap and Trade and Carbon Tax policy options could be combined. Local governments should be encouraged to incorporate these programs in their plans.

The ARWG unanimously approved further work on all eleven of the Resources and Resource-based Industry policy options with following instructions:

- Check the Interim Report to verify that all options are included in the TWGs work.
- Consolidate some options and include some from the list above, such as wildlife and fish habitats.

Meeting Wrap-up

Colburn reviewed the upcoming tasks for the ARWG.

The charge to the Commission includes the creation of timelines to address impacts on ecosystems and industries in Maryland, such as health impacts, etc. This could be addressed after the April report is completed. The ARWG will work with the Science and Technical Group to accomplish this task.

Recommendations included in the Interim Report must be incorporated, especially the Early Action Items.

TWG facilitators from both Mitigation and Adaptation will work together to identify and assign responsibility for overlap between policy options.

The term ‘Capital Intensity’, referring to total costs for an option, will be changed to “total costs”.

The next meeting of the ARWG will focus on review of the consolidated and reconfigured policy options, assessment of how integrated issues are being handled and implementation mechanisms.

At every step, the ARWG can add, regroup or delete policy options from the list. However, the group is cautioned that changes further down the road will increasingly cause potential delays in meeting the April deadline.

Public Input

There was no public comment.

Next ARWG Meeting

The next meeting of the ARWG will be held on January 11th, 2008 from 10 am to 4 pm in Annapolis at the Chesapeake Bay Program Office. Information and materials will be posted on the website.