



Shoreline erosion, Managaha Island, Northern Mariana Islands

Photo credit: Stanton Enomoto, Pacific Islands Climate Change Cooperative

# U.S. Insular Areas Climate Change Stakeholder Meeting

U.S. Department of the Interior, Office of Insular Affairs



Tumon, Guam  
June 4-5, 2015

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## **INTRODUCTION**

The U.S. Department of the Interior Office of Insular Affairs, on behalf of the Secretary of the Interior, coordinates federal policy for the territories of American Samoa, Guam, the U.S. Virgin Islands and the Commonwealth of the Northern Mariana Islands, and administers U.S. federal assistance to the freely associated states of the Federated States of Micronesia, the Republic of the Marshall Islands, and the Republic of Palau.

In the wake of Presidential Executive Order 13653, *Preparing the United States for the Impacts of Climate Change*, on November 1, 2013, the State, Local, and Tribal Leaders Task Force on Climate Preparedness and Resilience was established in November 2014. Recommendations from the Committee, of which the Governor of Guam, Eddie Calvo, is a key member, coupled with the leadership of Assistant Secretary for Insular Areas, Esther Kia'aina, in championing a greater understanding of climate risks and adaptive capacities, provided the impetus for the launching of the first stakeholder meeting among all insular area governments and key federal agencies on climate change.

The *U.S. Insular Areas Climate Change Stakeholder Meeting*, co-hosted by the U.S. Department of the Interior Office of Insular Affairs and the Government of Guam, was convened at the Hyatt Regency Hotel in Tumon, Guam, from June 4-5, 2015. Approximately ninety participants representing U.S. insular area governments in the Pacific and Caribbean regions, U.S. federal departments and agencies, non-governmental and regional organizations, and representatives from sectors of climate change coordination, disaster preparedness, energy, natural and cultural resources management, and higher education attended the inaugural meeting.

### **Objectives**

The rationale and objectives of the meeting were:

- to bring key insular area government and federal government officials together to discuss climate change;
- to discuss efforts to develop and strengthen climate change adaptation and resiliency plans and strategies for insular area representatives of the Pacific and Caribbean regions;
- to share information and knowledge about policies, plans, data, tools, resources, needs, and successful programs addressing climate change adaptation in the two regions;
- to get updates from insular area governments on their climate change efforts; and
- to identify ways in which the federal government can help the insular area governments with funding, technical expertise, and collaborative efforts.

### **Opening Remarks**

The session began with inspirational opening remarks from several prominent leaders of federal and insular area government agencies including:

- Eddie B. Calvo, Governor of Guam;
- Madeline Z. Bordallo, Member from Guam, U.S. House of Representatives;

- Christy Goldfuss, Managing Director, White House Council on Environmental Quality (video);
- Sally Jewell, Secretary of the Interior (video);
- Esther Kia’aina, Assistant Secretary for Insular Areas, U.S. Department of the Interior;
- Winston Bowman, Acting Director of the Pacific Islands Office and Senior Global Climate Change Advisor, U.S. Agency for International Development.

The speakers identified initiatives underway at insular, federal, and regional government levels to proactively address climate-related threats in the insular areas:

**Government of Guam**

Governor Calvo is providing leadership in addressing climate change and formulated a Strategic Energy Plan in 2013, that reduces fossil fuel use and promotes renewable energy. Most recently, the Governor issued Executive Order 2015-08, establishing a climate change adaptation policy, including creation of a Climate Change Task Force. Plans are now underway to undertake a vulnerability assessment that will inform a Guam plan on climate change.

**White House Council on Environmental Quality**

The Council on Environmental Quality is spearheading U.S. federal efforts to coordinate President Obama’s Climate Action Plan, and welcomed all participants by highlighting the critical role that insular area governments and communities play “on the front lines” in combatting the threats of climate change. The Managing Director, Ms. Christy Goldfuss, underscored the importance of Governor Calvo’s participation on the White House Task Force on Climate Preparedness and Resilience which prepared recommendations for anticipatory action “to make our communities stronger and better prepared for what is to come...we have to build and plan, not for the last storm, but for the next one.” Ms. Goldfuss also emphasized the need for a more concerted effort to coordinate across government borders and to share resources and best practices.

**Department of the Interior, Office of the Secretary**

Secretary Jewel welcomed meeting participants, citing climate change as one of the Obama administration’s top priorities, “a moral challenge we must tackle now,” and asserting that it is “the most pressing challenge of our times.” The Secretary made a personal observation on the impacts of climate change, noting in her September, 2013, visit to the Marshall Islands that the airport runway was shored up by sandbags due to coastal erosion. She also applauded Assistant Secretary Kia’aina’s recent efforts to engage insular area government authorities in discussions on climate change, such as at the annual meeting of the Interagency Group on Insular Areas.

**Department of the Interior, Office of Insular Affairs**

Assistant Secretary Kia’aina expressed her gratitude to the key insular area government representatives and to all meeting participants for their attendance at the inaugural meeting. She pledged human and financial resources, including the recent recruitment of a Climate Change Coordinator within the Office of Insular Affairs, to support insular area government efforts in the design and implementation of climate change policies, plans, assessments and new program initiatives to combat the impacts of climate change. The Office of Insular Affairs modified their grant programs (capital improvement projects, coral reef initiatives, renewable energy, and technical assistance) to take climate change into consideration, and the Assistant Secretary encouraged all insular area governments to consider developing climate change adaptation plans and policies to better prepare for the impacts of climate change.

She underscored the importance of building partnerships across the U.S. federal agencies in combatting climate change in the Pacific and Caribbean regions, and emphasized the need for better intra-agency coordination within the U.S. Department of the Interior (e.g., U.S. Fish and Wildlife Service, National Park Service, U.S. Geological Survey, etc.), regional climate research centers and boundary organizations (e.g., Pacific Islands Climate Change Cooperative, Pacific Islands Climate Science Center) and across other federal agencies (e.g., NOAA, USAID, State Department, EPA, Energy, etc.). Such coordination would include better leveraging of federal funding and technical expertise.

She also highlighted the need for institutional capacity building on climate change in the insular areas and stressed the critical role of many non-governmental, regional, and international organizations, and higher education institutions attending the session in leading the way through professional knowledge exchange and learning platforms, special training curriculums, etc.

The Assistant Secretary also acknowledged the important role of foreign governments such as New Zealand, Australia, Germany, and Japan in providing support to the freely associated states, and lauded recent efforts by the Japanese government to launch a new \$450 million fund to address climate change impacts in the Pacific region. She called upon all concerned parties to reach out to the private sector in instituting new public-private partnerships to support climate resilient development activities throughout the region.

In closing, the Assistant Secretary renewed her commitment to a range of climate-related initiatives in the insular areas. These include:

- to prioritize climate change initiatives through the Office of Insular Affairs grants program that strengthen adaptive capacity and resilience of communities, institutions, infrastructure, livelihoods, and ecosystems;
- to strengthen OIA's capacity to help insular area governments in stewarding their land and natural resources, including combatting invasive species;
- to establish a portal on the Office of Insular Affairs website so that insular area stakeholders and the general public can access resources, data, toolkits, plans, policies, and vulnerability assessments; and
- to identify additional resources from other federal agencies in terms of data, funding, and toolkits to assist the insular areas.

## **PANEL SESSIONS<sup>1</sup>**

Welcoming remarks were followed by panel presentations over the course of two days to allow participants to share status updates on their governmental or institutional progress and core capabilities in carrying out policy, planning, assessment, and implementation activities in their efforts to address the growing impacts of climate change.

Panel sessions included:

- Climate Change Status Reports from the U.S. Insular Territories and Freely Associated States;
- Disaster Preparedness;
- Energy Needs and Planning;

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<sup>1</sup> A list of speakers for each panel is found in the meeting agenda, Annex 1. A list of all participants attending the meeting is found in Annex 2.

- Role of Non-Governmental and Regional Organizations in Climate Change;
- Natural and Cultural Resources Management;
- The Role of Insular Areas Higher Education Institutions in Capacity Building.

Representatives from the panels were asked to present governmental or institutional profiles of their core capabilities and status updates of current and planned activities to address climate change. This included progress to date in the areas of policy, planning, assessment, and implementation of climate change adaptation and resiliency strategies. They were also asked to provide an overview of climate change resources, data, and toolkits that have been used in addressing climate change adaptation, as well as identify key gaps in such resources that they feel are needed.

## PANEL SUMMARIES

The U.S. insular governments in the Pacific and Caribbean provided status updates on their current activities relating to climate change. Highlights of progress to date are summarized below.

### Climate Change Status Report Update Sessions of Insular Areas

#### U.S. Territories

##### Guam

- 2015 - Executive Order 2015-08 establishes a formal policy to take action on climate change, including creation of a Climate Change Task Force, and current plans to undertake a vulnerability assessment that will inform a Guam climate change plan.
- 2013 - Guam Strategic Energy Plan completed, outlining goals to diversify fuel sources and reduce fossil energy consumption 20% by 2020; case studies presented on investments in green technology.
- 2010 - Energy Task Force created; completion of a strategic plan and action plan.
- 2008 - Local Action Strategy developed on coral reef resilience; resilience action plans completed and actions now underway to protect reefs and watersheds.
- Communications and disaster risk management - enhancing communications during emergencies with plans to replace land mobile radio with new mobile apps.

##### American Samoa

- Present - Plans underway to undertake a vulnerability assessment.
- 2013 - American Samoa Renewable Energy Committee (ASREC) was established by Executive Order 004-2010 in 2010, and amended by Executive Order 009-2013 in 2013; activities include:
  - expanding solar energy installation
  - exploring the option of geothermal energy
  - developing a trash to energy plant
- 2013 - Restoration of Leone Village Coastal Wetlands project, funded by the U.S. Fish & Wildlife Service supports community management, tsunami debris removal, coral reef restoration, and mangrove restoration.
- 2012 - Territorial Climate Change Adaptation Framework established covering seven sector focus areas: coral reefs and mangroves; human health; forestry, water and agriculture; education and outreach; coastal hazards; development (infrastructure); and energy. The Framework addresses threats, risks, data gaps, current and future potential adaptation projects.



### **Commonwealth of the Northern Mariana Islands (CNMI)**

- 2015 - Vulnerability assessments of coastal resources on Rota and Tinian islands (funded by NOAA) designed using climate analog and scenario building methodologies. Results used to identify focus areas for adaptation.
- 2014 – Saipan Vulnerability Assessment (funded by NOAA) of coastal resources and infrastructure conducted involving methodologies in community-based social vulnerability and technical modeling of sea level rise. The study identified the most vulnerable populations and resources on Saipan. Assessment findings being used to mainstream adaptation into CNMI development priorities - conservation action plans, homeland security/emergency management, state hazard mitigation planning, road improvement projects, wastewater and freshwater infrastructure, and tourism.
- 2012 – Climate Change Task Force and Working Group established, representing over 33 agencies, NGOs, and community groups to assess climate vulnerability in the islands.

### **United States Virgin Islands (USVI)**

- Present - working closely with NOAA and The Nature Conservancy on coral reef protection and ecosystem-based adaptation, research on mesophotic reefs.
- USVI initiatives on climate change effects on human health, acidification of coral reefs, climate scenarios modeling on urbanization, species distribution, and vegetation dynamics.
- 2014 – Completed U.S. Virgin Islands Climate Change Ecosystem-based Adaptation: Promoting Resilient Coastal and Marine Communities. This ecosystem-based vulnerability assessment and guidance document identifies 10 coastal areas vulnerable to climate change.
- 2013 – USVI Energy Roadmap – sets a goal of reducing fossil fuel-based energy consumption 60% by 2025.
- Participating in the Caribbean Challenge Initiative, goal of conserving at least 20% of nearshore marine and coastal environments in national marine protected areas systems by 2020.
- Adaptation initiatives in community use of household cisterns for rainwater harvesting, Caribbean Coastal Ocean Observing System Storm Surge Atlas, fisheries management plans, adoption of storm water standards, seawater reverse osmosis.
- Next steps - assessment from a multi-dimensional perspective (hazards, ecosystems, tourism, and others) in order to build a comprehensive climate strategy for the territory.

### **Freely Associated States**

#### **Republic of Palau**

- 2015 – new policies nearing completion include - Palau National Energy Policy, Palau National Disaster Risk Management Framework, and Palau Climate Change Policy and Action Plan
- Palau Climate Change Policy and Action Plan - addresses ten sectors: health; finance, commerce and economic development; society and culture; critical infrastructure; food security; utilities; good governance; tourism; education; biodiversity, conservation and natural resources. Major focus now underway to build political will and increase stakeholder awareness and participation.
- Climate Change Office – soon to be established.
- Green Climate Fund (GCF) National Implementing Entities (NIE) Accreditation is underway.
- Planning 2015 – 2017 – goal is to build institutional capacity of key offices, improve climate change-related information management, increase resilience and engagement of communities and the private sector, and initiate as many identified urgent action items for each of the ten sectors in the Palau Climate Change Policy and Action Plan.
- Assistance needs – in the areas of institutional capacity, information management, and increasing community resilience and engagement.

### **Republic of the Marshall Islands (RMI)**

- 2014 - expanding upon the Pacific Climate Change Finance Assessment Framework (PCCFAF) methodology, the RMI has undertaken a climate change finance assessment. This builds upon the Nauru Case Study finance assessment undertaken in 2013. Six thematic areas analyzed include: funding resources, public financial management and expenditure, policies and plans, institutional arrangements, human capacity, and development effectiveness.
- 2015 - 2017 - National Strategic Plan - Prioritizes five sector areas, including environment, climate change and resilience
- 2014 - Vulnerability and Adaptation Assessment for the Water Sector in Majuro, RMI
- 2014-2018 - Joint National Action Plan for Climate Change and Disaster Risk Management
- 2011 - National Climate Change Policy Framework
- 2008-2018 – National Action Plan for Disaster Risk Management

### **Federated States of Micronesia (FSM)**

- Mitigation Activities – undertaking mitigation actions on renewable energy, sea level monitoring, climate negotiations, and carbon capture projects (mangrove reforestation).
- Key constraints to climate change adaptation – include limited information/data for vulnerability assessment, measuring impact/changes on climate-ecosystem interactions, limited scientific, technical, professional expertise on adaptation, lack of funding for adaptation measures, and in general, challenges in mainstreaming and coordination.
- Progress on Climate Change Framework - Amended Title 25, Nationwide Integrated Disaster Risk Management and Climate Change Policy (2013), Joint Strategic Action Plan on Disaster Risk Management Climate Change Adaptation, and Climate Change Act (2014). Secondary progress on risk management, agriculture policy, food security policy, and health.
- Vulnerability Assessments – underway or completed in many sectors including: agriculture, food security, freshwater resources, biodiversity and coral reefs, mangrove forests, forestry, outer islands, coastal community infrastructure, disaster risk, and human health.
- Adaptation Activities – underway in a broad range of sectors including food security and agriculture, water supply, marine protected areas, health, disaster risk management, coastal zone protection and management, education, infrastructure, etc.
- Gaps – in information/data, funding, expertise, technology, GIS and updated digital elevation models (DEM). Sectors noted are insufficiently addressed (assessments, research, piloting, implementation), and others not yet addressed (pelagic fisheries, tourism, lending institutions, insurance, etc.).

### **Summary Comments from U.S. Territories and Freely Associated States**

- Household cisterns for rainwater harvesting in the U.S. Virgin Islands foster community resilience and provide a case study of effective community response in adapting to climate change.
- Adaptation responses across sectors are intertwined, such as resilience of both environmental and health communities.
- Adaptation is not necessarily by formula rather the emphasis is on process, important to draw upon community-based island ingenuity and knowledge.
- Technology apps foster improved communication, encourage the next generation to use technology apps and IT communications to provide adaptive solutions.
- Information access (data, tools, resources) needs to be tailored to island scale and context.
- Federal coordination on the announcement of awards needs to filter down, be made accessible at the community level.
- Island communities need the right information, resources, and tools – they are often the last to receive it.
- Grant awards are competitive, need for less competitive sharing of resources – “tourism is all of us” (U.S. Virgin Islands).
- There is considerable complexity in trying to address climate variability and long term climate change processes.
- Cross-sectoral community engagement requires uniquely tailored approaches to each sector, at different



stages on the adaptation continuum.

- Link communities who are having signs of successful adaptation with others to share, diffuse learning of effective adaptation strategies.
- Financing is needed to reduce bureaucratic barriers to adaptation.

## Sector Panels – Disaster Preparedness, Energy, Non-Governmental and Regional Organizations, Natural and Cultural Resources Management, Higher Education

### Disaster Preparedness

#### **Federal Emergency Management Agency (FEMA)**

Hazard and flood mitigation funds are available to each U.S. territory. Recipients must have an approved standard mitigation plan, conduct a Threat and Hazard Identification and Risk Assessment, and also meet a Federal Flood Risk Management Standard.

#### **U.S. Coast Guard (USCG)**

Serves as first responder in the region in responding to storms and extreme climate events, and works in close partnership with NOAA on disaster preparedness. Currently developing environmental response plans in the insular areas.

#### **U.S. Department of Health and Human Services (DHHS)**

Health impacts of climate change are not distributed evenly among populations; synergies exist between HHS prevention strategies and sustainable and climate resilient communities; DHHS resources available include:

- CDC's Building Resilience Against Climate Effects (BRACE) framework and guidance documents <http://www.cdc.gov/climateandhealth/default.htm>
- 3<sup>rd</sup> National Climate Assessment <http://nca2014.globalchange.gov/report/sectors/human-health>
- Interim Special Report on Health Impacts of Climate Change in the United States
- Climate Resilience Tool Kit <http://toolkit.climate.gov/>

#### **U.S. Army Corps of Engineers (USACE)**

Collaborating with various U.S. government partners in the Pacific and Caribbean regions, conducting environmental assessments using risk-informed decision-making, and development of water resources infrastructure; including Tinian and Rota harbors project to be completed by FY2023-2024.

#### **U.S. Pacific Command (USPACOM)**

Providing military assets to respond to all hazards (natural, man-made), and supporting regional partners to build resilience through various Executive Orders and Task Forces.

#### **National Oceanic and Atmospheric Administration (NOAA), National Weather Service**

Providing weather forecasts and warnings, aviation forecasts for all airports, weather and electronic training, equipment maintenance and software management. Training and outreach activities include: an annual 2-day, 18-module Tropical Cyclone, Disaster Preparedness and Climate Workshop.

#### **Summary Comments**

- FEMA plays a critical role in addressing flood risk management and hazard mitigation in the U.S. territories.
- Coast Guard serves as the first responder on inland oil spills for EPA, and conducts mass rescue exercises.
- DHHS focuses on climate change as a major public health threat.
- Frameworks such as Building Resilience Against Climate Effects (used by DHHS) and risk based-decision making tools (USACE) are useful.
- Climate change is a non-traditional threat for the work of USPACOM.
- Need for central repository for climate change data.
- Two recommended sources: <http://www.data.gov/climate/> and <http://www.globalchange.gov/>.

## Energy Needs and Planning

### **Department of the Interior, Office of Insular Affairs (DOI/OIA)**

OIA assisted in the establishment of energy task forces and strategic energy plans in the territories and is now working to implement those plans with funding from its Empowering Insular Communities grant program. OIA, in partnership with the National Renewable Energy Lab, is also providing technical assistance to the U.S. territories and freely associated states with the goal to reduce the cost of electricity, reduce dependence on imported fossil fuels, and promote the use of renewable resources.

### **Department of Energy (DOE)**

Promoting *Energy Transition Initiative: Islands*, aimed at reducing dependence of island economies on imported fuels and focusing on community resources. Developed the Island Playbook (<http://www.eere.energy.gov/islandsplaybook/>), an action-oriented guide involving community organizing and project management tools, lessons learned and case studies (U.S. Virgin Islands, Hawaii) to support energy transition efforts in other islands.

### **National Renewable Energy Laboratory (NREL)**

Supporting the insular areas in transition to renewable energy sources; energy sector poised for fundamental transformation due to declining cost of renewable energy technologies and decentralization of energy utilities. Targeting critical infrastructure for climate resiliency.

### **Summary Comments**

- Need for more planning and a comprehensive transition in the energy sector that focuses on long term costs and benefits.
- Need for greater sharing of lessons learned, more cross-sector collaboration and interaction.
- Declining costs of renewables poses a window of opportunity.
- Office of Insular Affairs is leading by example, saving money and increasing resiliency through their renewable energy strategy.
- Approach energy plans as living documents that are flexible, open to change.

## Role of Non-Governmental and Regional Organizations in Climate Change

### **The Nature Conservancy, Micronesia Program**

Supporting the Micronesia Challenge since 2006 to implement ridge to reef planning and management strategies. Collaboration with NOAA, National Marine Fisheries Service Office of Habitat Conservation, and OIA coral reef conservation programs. Development of assessment tools with other partners (Micronesia Conservation Trust, NOAA, etc.). Key gaps: 1-page summaries of climate change projections for each island, funding for sustained adaptation actions and monitoring, guidance on measures (e.g., adaptive capacity, effectiveness of adaptation strategies), policy/long term planning so decisions now reflect future scenarios, and better assessment of opportunities/constraints for vulnerable/marginalized groups.

### **Micronesia Conservation Trust (MCT)**

MCT focuses on developing and expanding sustainable finance mechanisms and institutional and technical capacity building of communities in climate change adaptation. MCT manages the Micronesia Challenge Endowment Fund.

Online tools:

1. *Adapting to a Changing Climate: Guide to Local Early Action Planning (LEAP) and Management Planning* - <https://static.weadapt.org/knowledge-base/files/1344/5342cc6b82c1dadapting-to-a-changing-climate-final-dec.-2013.pdf>
2. *Designing Effective Locally Managed Areas in Tropical Marine Environments: Guidance to Help Sustain Community Benefits through Management for Fisheries, Ecosystems, and Climate Change* - [http://www.coraltriangleinitiative.org/sites/default/files/resources/9\\_Designing%20Effective%20Locally%20Managed%20Areas%20in%20Tropical%20Marine%20Environments\\_Facilitators%20Guide%20\(English\).pdf](http://www.coraltriangleinitiative.org/sites/default/files/resources/9_Designing%20Effective%20Locally%20Managed%20Areas%20in%20Tropical%20Marine%20Environments_Facilitators%20Guide%20(English).pdf)
3. *Coastal Change in the Pacific Islands: A Guide to Support Community Understanding and Decision Making on Coastal Erosion and Flooding Issues* - <http://www.pimpac.org/activities.php?pg2=2&pg3=8>

Gaps identified include:

- Higher level planning at community level
- Climate change policies and cross-sectoral policies at national, state, and municipal levels
- Climate communications plans and tools to reach decision makers at all levels
- Local solutions that are practical and viable for insular area governments, private sector and communities to implement
- Alternative livelihoods/supplemental income
- Sustainable and readily accessible funding

Recommendations:

- Communicating climate policy to all levels of decision making is critical
- Policy should support community-based enterprises that align sustainable natural resource use and protection
- Funding needed to support general costs of resource management and protection
- Sustained, long-term commitment to capacity building at the community level
- Greater support of marine enforcement and nearshore fisheries management
- Improved communication and work between government and lending institutions to ensure better adherence to climate policies
- Planning for sea level rise and shoreline management plans (Kosrae)
- Invest in energy efficiency and alternative technologies that can support long term energy needs at low cost
- Planning with long-term climate horizons for low lying islands that will require population resettlement over generations in a manner that maintains cultural traditions and values

### **Secretariat of the Pacific Community (SPC)**

Support to development of Joint National Action Plans in the freely associated states for climate change and disaster risk management in the Pacific. Adaptation and resilience technical assistance in agriculture, fisheries, renewable energy, public health, integrated water resource management, sea level monitoring and coastal zone management, and disaster preparedness.

**The Nature Conservancy, Virgin Islands**

USVI climate change work on coral reefs is based on The Nature Conservancy's Conservation Framework on Global Challenges and Global Solutions and 50 State Climate Strategy to model ecosystem-based adaptation and migration analysis of mangroves with sea level rise. Participating in the global network for Coastal Resilience (<http://coastalresilience.org/>) and use of web-based mapping tools to manage, protect, and restore the islands' coral reefs.

**Pacific Resources for Education and Learning (PREL)**

PREL manages the Pacific Islands Climate Education Partnership, a network of Pacific island communities and technical experts, collaborating to address the urgency of climate change through education. Programs include Water for Life, School Learning Gardens, and Integrated Thematic Learning (math and culture, Pacific Regional Comprehensive Center).

**Summary Comments**

- Climate change is complex - build partnerships, link community engagement to global action networks.
- Communities need sustainable funding, financing sources, and alternative livelihoods.
- Science curriculum needs to be revised to integrate climate change.
- Integrate climate change and disaster risk management; seek collaboration and synergies, not competition for resources.
- Practical solutions for communities may be market-based.
- Move forward even if government policies are not in place (i.e., TNC in the U.S. Virgin Islands).
- Link school learning to science and math.

## Natural and Cultural Resources Management

### **Pacific Islands Climate Change Cooperative (PICCC)**

Pacific Islands Climate Change Cooperative is funded by the U.S. Fish and Wildlife Service with a primary purpose to assist natural and cultural resource managers in adapting their management practices to the impacts of climate change. PICCC provides access to needed research, synthesis analyses, planning or decision-support tools, and other visualization products, some of which are developed by PICCC or procured through grants or contracts. PICCC supports an 'Adaptation Initiatives' strategy that involves collaboration with one or more partner agencies to achieve their defined adaptation outcomes. Initiatives currently focus on island-scale impacts to bio-cultural resources through a solicitation mechanism (i.e., Expression of Interest).

### **Pacific Islands Climate Science Center (PICSC)**

Pacific Islands Climate Science Center is funded by the U.S. Geological Survey with a mission to conduct climate-related actionable research and education that is used to inform resource management and planning with tools, knowledge, training, and technical navigation. PICSC involves a network of experts who support regional climate programming in technical areas such as climate modeling, remote imaging and mapping, ecosystems and species biology, coastal systems hazards, decision-making and scenario planning, etc. PICSC facilitates a co-development dialogue among scientists, policy analysts and decision-makers in conducting vulnerability assessments and climate action plans.

### **National Oceanic and Atmospheric Administration (NOAA), Office for Coastal Management – Pacific Islands; Coral Reef Conservation Program**

NOAA is a primary provider of climate science, data, tools, and information used by stakeholders and citizens in decision-making contexts to reduce vulnerability to extreme climate and weather events; prepare for drought and long-term water resource challenges; protect and preserve coasts and coastal infrastructure; identify and manage risks to marine ecosystems and the services they provide; and mitigate and adapt to climate impacts. NOAA promotes community resilience through various mechanisms (partnerships, capacity building, technical assistance, grant programs, etc.). Key thematic areas include coastal zone management, vulnerability assessments, and coral reef conservation. NOAA administers several grant and cooperative agreement programs, with funds up to \$5 million to support regional approaches to build resilience of coastal regions, communities, and economic sectors to the negative impacts from extreme weather events, climate hazards, and changing ocean conditions.

### **National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service**

The NOAA fisheries program produced a draft climate science strategy in 2015 with a goal to increase the production, delivery, and use of climate-related information to support agency and stakeholder decisions on fisheries management.

The strategy recommends the commissioning of long and medium range regional climate vulnerability analyses. The analyses are expected to produce the following results:

- Better tracking of ecosystem changes that provide early warnings of climate-related changes
- Increased understanding of the mechanisms of change and the vulnerability of fish stocks, communities
- Near and long term forecasts of ocean and resource conditions
- Climate sensitive stock assessments and biological reference points, and
- Robust management scenarios

### **Western Pacific Regional Fishery Management Council**

Western Pacific Regional Fishery Management Council is a federal instrumentality with a 501(c)(3) nonprofit status. The Council assists of communities regarding fishery management, and has a mission to prevent overfishing, protect marine ecosystems, support the fishing industry and associated livelihoods and cultures, and provide consultation and recommendations as required by law. Climate change planning and capacity building activities include:

- Current - Educator workshops, Fishers Forum, K-12 outreach activities (e.g., traditional ecological knowledge) in American Samoa, CNMI, Guam and Hawaii



- 2015 – Marine Planning and Climate Change Policy
- 2014 – Marine Planning and Climate Change Action Plan
- 2014-2019 - Climate change and ocean acidification research priorities
- 2013 - Marine Planning and Climate Change Committee established

Reported on activities of the Caribbean Fishery Management Council, which is currently working on fisheries and habitat issues, but upon request of municipal governments can assist and participate in climate change outreach and education in the fishing communities of the U.S. Virgin Islands.

#### **U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS)**

Supports natural resource conservation practices with landowners, many practices such as increasing soil carbon and soil health have positive benefits for mitigation and adaption to climate change. Extensive partnerships with island soil and water conservation districts and councils, regional universities and colleges, and other community-based, public and private institutions. NRCS is promoting climate resilient traditional food production practices (animal agriculture, agroforestry, gardens, etc.) and incorporating them in an NRCS Field Office Technical Guide.

#### **U.S. Department of Agriculture, Forest Service**

Forest Service manages a forest health grant program and provides technical assistance in working with invasive species, bioenergy/biomass, carbon markets, and forest inventories in the insular areas. Forest Service also works closely with the USDA Climate Hubs in collaborations across agencies.

#### **Environmental Protection Agency, Pacific Islands Office (EPA)**

The EPA has a goal of reducing U.S. carbon emissions from existing coal power plants by 30%, and vehicle emissions by 6 billion metric tons by 2025. EPA is mainstreaming climate change throughout their programs, and has created Adaptation Plans at the national and regional level. Support to the Pacific islands includes:

- \$200 million to American Samoa, CNMI, Guam, and U.S. Virgin Islands utilities since 2010 to improve water infrastructure
- Over \$10 million annually to support environmental agencies in American Samoa, CNMI, Guam, and the USVI, a portion of which goes to reduce the impacts of climate change, such as watershed protection and restoration, erosion control, etc.
- Support of renewable energy battery storage and the use of electric vehicles in American Samoa

#### **U.S. Department of Defense, Joint Region Marianas, Naval Facilities Engineering Command Marianas (NAVFAC)**

Department of Defense has developed a Regional Biosecurity Plan for Micronesia and Hawaii that evaluates terrestrial, marine, and freshwater invasive species risks. The Plan involves two phases:

- Phase I - Risk analysis of various pathways, vectors, and species associated with the importation to and exportation from Guam to other areas of Micronesia and Hawaii (e.g., brown tree snake, coconut rhinoceros beetle)
- Phase II – Independent review and development of a multi-tiered Strategic Implementation Plan

#### **Summary Comments**

- Climate change is on top of existing stressors; need to mainstream climate change into ongoing, existing practices.
- Need for inter-agency solutions, collaboration.
- Tools, training – how to better deliver with less redundancy.
- Identify alignments across agencies.
- Critical need to develop capacities and engage communities, draw upon traditional ecological knowledge.
- Need for more coordinated information on federal government resources (matrices on policies, plans, assessments, strategies).

## The Role of Insular Areas Higher Education Institutions in Capacity Building

### University of Guam

Numerous university programs are supporting research and community engagement in climate change adaptation and mitigation. Among these are involvement in:

- The Department of Defense Regional Biosecurity Plan for Micronesia and Hawaii
- Marine Spatial Planning
- Strategic Energy Planning – Guam Energy Task Force
- Water and Environmental Research Institute regional water management strategies
- Adaptive strategies through Land Grant and Sea Grant programs
- Support to NGO environmental projects
- Support to climate change vulnerability and resilience assessment projects (Government of Guam)
- Establishment of the Center for Island Sustainability in 2009
- University certificate programs (Climate Change Certificates), technical training, faculty support
- Research collaboration with the Pacific Islands Climate Science Center
- Geographic Information Systems climate science research at the Center for Island Sustainability, and archiving of remote sensing data from NASA, USGS
- Center for Island Sustainability hosting of the Western Pacific Coral Reef Institute
- Cooperative Ecosystem Studies Units agreements to link higher education research and management with the needs of agencies
- New National Science Foundation award on Experimental Program to Stimulate Competitive Research to support science and technology research infrastructure and education reform in the Pacific region

### Guam Community College

Guam Community College has integrated dimensions of climate change within the following courses and programs:

- Renewable Energy, Photovoltaic Courses, Electronics Program, Environmental and Marine Biology, Physical Geology, Chemistry, and Applied Physics
- Associates degree in Survey Technology (Level 3 Certified Survey Technician)
- A new environmental technician certificate program with an emphasis on renewable energy (Fall, 2015)
- Green building design principles in the architectural associates certificate program
- Construction technology certificate program with emphasis on renewable energy
- Three LEED-certified buildings, three more planned
- Engagement of college community in sustainability events that promote environmental stewardship

### University of the Virgin Islands (UVI)

Climate change research is led by the Center for Marine and Environmental Studies with research facilities on each island. Courses and programs addressing climate change include:

- Science 100 – taken by all UVI undergraduates
- Minor in Environmental Science
- BS and BA in both Biology and Marine Biology
- Minor in Health Science
- Alternative Energy – Solar Installation Certificate Program
- Masters in Marine and Environmental Science
- Future – Certificate Programs in Environmental Studies
- Outreach programs – Virgin Islands Marine Advisory Service
- Training for government officials

Climate change resources include: GeoCAS Data Portal, endangered species habitat maps, mesophotic coral reef (>30m) studies with multi-year temperature records, coral disease studies (raster data set), National Climatic Data Center climate data, aerial and satellite imagery, and Geographic Information Systems resources. Among key gaps include research on climate change effects on mesophotic coral reefs.

### **Northern Marianas College**

Northern Marianas College is currently integrating new curricula on climate change into existing degree programs, including:

- Associate of Science Degree in Natural Resource Management
- Bachelor of Science Degree in Natural Resource Management (in development)
- Natural Resource Environment Academy (in development)

Research and public outreach activities through the Cooperative Research Extension and Education Services include:

- Climate Change Program
- Environmental Education Training Modules
- Sea Grant Proposal
- Resilient Coastal Economies Goals
- Workshops, student internships, community outreach efforts

Northern Marianas College is a recent signatory to the American College and University Presidents' Climate Commitment pledging to eliminate campuses' net greenhouse gas emissions.

### **American Samoa Community College**

The Marine Science Program, which is building capacity to conduct marine surveys, is the most actively engaged in addressing climate change at the College. The College also undertakes community outreach activities such as support to community vegetable gardens.

### **College of Micronesia, FSM**

Climate Change is not presently a major focus but is included in environment courses in related science majors: Environmental Studies, Agriculture and Natural Resources, and Marine Sciences. Potential for training in the Administrative Services Unit (Disaster Plan Development, Simulated Training), Cooperative Research and Extension (coastline erosion reduction/control, food security, good agricultural practices). Need for disaster management plans for all campuses, and research/extension in agriculture and food science.

### **College of the Marshall Islands**

The College of the Marshall Islands offers Associate degree programs in education, liberal arts, and nursing, and certificate programs in accounting clerkship, carpentry, and special education. In 2014, a certificate specialization in climate change for teachers was established. Solar power is widely used on the campus. The Marshall Islands in general has a shortage of well-trained educators and technical specialists needed to address climate change.

### **Palau Community College**

Palau Community College is a two-year post-secondary vocational/technical institution with Associate degrees in applied science, science, technical studies and the arts. It also offers certificate programs in a number of technical trade areas. The College is a member of the Pacific Postsecondary Education Council, established in 1981 as a nonprofit benefit corporation to address the concerns and needs of Pacific island postsecondary institutions. The Pacific Postsecondary Education Council has identified a number of accreditation challenges among its Pacific island members, of which geographical isolation and distance is a major barrier.

### **Summary Comments**

- Be proactive, acknowledge risks, and build understanding of expected impacts.
- Engage leaders in communities.
- Assume leadership in providing information (e.g., food security).
- Link higher education to community-based initiatives and solutions to combat climate change and build community resilience.
- Technical capacity on climate change requires more targeted training within higher education and community-based groups.

## **GAPS IN CLIMATE CHANGE RESOURCES, DATA, TOOLS**

Panelists were asked to identify gaps in climate change resources, data, or tools that are needed to effectively design and carry out adaptation plans, assessments, and program activities. Gaps identified were extensive. Some gaps were commonly reported across panels, while others were unique to each jurisdiction.

### **Gaps in Climate Change Resources, Data, Tools**

- Limitations in known predictions of future scenarios (e.g., coastal erosion, dry season-drought aversion and emergency planning in the U.S. Virgin Islands).
- A dedicated planning entity empowered to create cohesion.
- Need for climate change considerations in coastal development permitting.
- Scientifically sound socio-culturally acceptable studies on the effect of climate change on the people.
- Study of the best institutional settings for disseminating climate change information.
- Expected changes in rainfall patterns, major storm predictions.
- Effects on food production.
- Adaptation of mesophotic coral reefs to climate change.
- Effects of climate change on invasive species.
- Availability of resources and assistance across agencies and sectors.
- Need for community level data, environmental measurements, monitoring networks.
- Co-production of knowledge – gap in understanding the distinction between science information and leadership decisions, and need to foster co-development dialogue.
- Climate-related professional and technical positions in community agencies.
- Education and training, e.g., digital mapping, statistical analysis, IT, environmental measurement.
- Need for relevant data, information exchange across agencies, and insufficient knowledge of whom and where to go to ask for information.
- Comprehensive approach in ridge to reef.
- Incorporating traditional ecological knowledge (TEK) in resource management.
- Finding appropriate skills and capabilities.
- Higher education need for curriculum and instructors for climate change courses.
- Higher education need of training toolkits for disaster mitigation and response.
- Higher education gap in human resource capacity on climate change grant writing.
- Knowledge gap among colleges, universities - extension agents could benefit from climate change knowledge of other U.S. territories and the freely associated states.

## **GUIDANCE ON POLICY, PLANNING, ASSESSMENT, AND IMPLEMENTATION OF CLIMATE CHANGE ADAPTATION AND RESILIENCY STRATEGIES**

Panelists were also asked to share advice they would give to insular area governments in terms of policy, planning, assessment, and implementation of climate change adaptation and resiliency strategies.

### **Guidance on Policy, Planning, Assessment and Implementation**

- Learn from others and collaborate.
- Work with neighbors and peers.
- Create a cohesive position and message and communicate thoroughly and repeatedly.
- Work across boundaries and sectors.
- Need to develop a multi-layered communication strategy to cross all socio-economic strata.
- Work locally with what you've got and control what you can.
- Be precautionary with resources and anticipate that the business as usual will change.
- Build community cohesion on climate change.
- Share lessons learned.
- Improve collaboration among agencies.
- Improve education and outreach.
- Improve overall resilience.
- Promote science and education in climate policy and programs.
- Long-term partnerships – work for relationships and consistency, not “one-offs”.
- Engage the community – vulnerability assessments, risk prioritization, and political support comes from an engaged and supportive community.
- Capacity building – seek out opportunities and make the investment.
- Start now –we can plan and know only so much, must start implementing and executing.
- Adopt a ‘development first’ approach (e.g., USAID Climate Change Resilient Development Framework).
- Scoping – prioritize develop goals by sector, identify climate and non-climate stresses in each sector, then inputs, stresses, solutions, and key implementing actors.

## CLOSING COMMENTS

In closing, the following are the most salient takeaways and priority actions to be undertaken.

### **Esther Kia’aina – Assistant Secretary for Insular Areas, U.S. Department of the Interior**

- Need to assess insular area government status to carry out climate change adaptation plans in a more comprehensive fashion.
- Prioritize funding needs and be more strategic in providing funds under current Insular Affairs grant mechanisms (technical assistance, energy, coral reefs, infrastructure, etc.).

### **Tony de Brum – Minister of Foreign Affairs, Republic of the Marshall Islands**

- There are “no boundaries to climate change” – the Marshalls are second in the world in out migration (according to the International Migration Organization) due to climate change.
- There is high value in sharing resources, and avoiding duplication of efforts.
- The Marshalls are adopting alternative sources of energy, such as solarized homes.
- Compact funding - Seven years remain, enhance the use of funds for energy and water use improvements, must be affordable and accessible.

### **Jean-Pierre Oriol – Director, Department of Planning and Natural Resources, U.S. Virgin Islands**

- Key challenge – how are we integrating climate change as an integral dimension to our work, and not as an add-on.

### **Deanna Spooner – Coordinator, Pacific Islands Climate Change Cooperative**

- Three Cs – collaboration, community engagement, and communication
- How to better connect, collaborate and communicate with one jurisdiction you’ve met; and how to better deliver services to one community.

### **Tony Paresa - Deputy District Engineer, Programs and Management, U.S. Army Corps of Engineers**

- Increased stressors on federal government agencies, competing priorities are a reality.
- Seek advice of harvested data, do not recreate the wheel; use what is already available.
- Next steps – need for a web-based repository, single source website.

### **Mark Brown – Energy Grant Manager, Office of Insular Affairs**

- Help motivate each other - we are most successful when we collaborate.
- Strengthen long-term relationships.
- Show impact and success to justify appropriation of funds – always begins at the community level.

### **Trina Leberer - Micronesia Program Director, The Nature Conservancy**

- NGOs bring other resources to the table, are nimble – work with the private sector and other governments to amplify and share tools, resources.

### **Dr. Robert Underwood – President, University of Guam**

- Policies not formed in a vacuum, without being tied to data collection and analysis.
- Community engagement and capacity building are critical – “pay attention to the brain game” and work collaboratively with higher education institutions at the community level.



## **NEXT STEPS**

The Office of Insular Affairs is increasing its efforts over the next three years (2016-2018) to address the effects of climate change in the U.S. territories and freely associated states. The June 4-5, 2015, Guam climate change meeting marks the first time that all insular area governments and key federal government, non-government, and higher education sectors have been convened to share progress to date in combatting climate change and discuss how best to move forward in building resilient communities, institutions, livelihoods, and ecosystems in the U.S. Pacific and Caribbean insular areas.

### **Strategic Actions**

The Office of Insular Affairs will mainstream and integrate climate change adaptation strategies into its own operations and budget, with other agencies within the Department of the Interior, with other federal agencies, and with insular area governments. In order to achieve this objective, the Office will modify relevant grant programs to ensure that climate change is a priority or taken into account in the awarding of funds, and will work with DOI Landscape Conservation Cooperatives and Climate Change Science Centers in the Pacific and Caribbean, and with other federal agencies to improve federal coordination on climate change initiatives in the insular areas, including support to insular area governments on the development and/or implementation of vulnerability assessments and climate change adaptation plans.

The Office of Insular Affairs will begin developing a roadmap that will encourage the insular area governments to undertake the mainstreaming of climate change adaptation within new or existing policies and plans, and conduct evidence-based vulnerability assessments that will help guide key decision makers in prioritizing adaptation investment options that will ultimately bolster island governments and economies in withstanding the impacts of climate change. Investment options and strategies will be translated into the actionable design of programs and projects that build the resilience of their economies, people, and natural landscapes.

As a follow up to the conference, the Office of Insular Affairs will continue to work with governments on their needs and funding priorities for climate change initiatives.

The Office of Insular Affairs hopes to identify financial and technical assistance resources internally, within the Department of the Interior, and from other federal agencies in trying to assist insular area governments in achieving their climate change objectives for the benefit of and quality of life for the people in the U.S. insular areas.

## ANNEX 1. AGENDA

### U.S. INSULAR AREAS CLIMATE CHANGE STAKEHOLDER MEETING

between Federal Officials and the Governments of Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, the U.S. Virgin Islands, the Republic of Palau, the Federated States of Micronesia, and the Republic of the Marshall Islands

June 4-5, 2015  
Hyatt Regency Guam, Tumon, Guam

#### Wednesday, June 3, 2015

4:00 pm – 6:00 pm **Registration**

6:30 pm – 8:30 pm **Welcome Reception**

Hosted by the University of Guam, The Nature Conservancy – Micronesia Program, and the Micronesia Conservation Trust

#### Thursday, June 4, 2015

7:30 am **Registration**

8:50 am **Call to Order**

9:00 am **Welcome by The Honorable Eddie Baza Calvo, Governor of Guam**

Member, White House Task Force for Climate Preparedness and Resilience

9:15 am **Welcome Remarks**

- The Honorable Madeline Z. Bordallo, Delegate to the U.S. House of Representatives
- Christy Goldfuss, Managing Director, White House Council on Environmental Quality (video)
- The Honorable Sally Jewell, Secretary of the Interior (video)

9:30 am **Strengthening Insular Areas in Climate Change Adaptation and Resiliency Strategies**

- Assistant Secretary for Insular Areas, Esther Kia'aina, U.S. Department of the Interior

9:45 am **Climate Change Status Reports in the U.S. Territories**

- Guam
  - Wil Castro, Bureau of Statistics and Plans
- American Samoa
  - Dr. Ruth Matagi-Tofiga, Director, American Samoa Department of Marine & Wildlife Resources
- Commonwealth of the Northern Mariana Islands
  - Robbie Greene, Climate and Coastal Hazards Specialist, Coastal Resources Management, CNMI Bureau of Environmental and Coastal Quality
- U.S. Virgin Islands
  - Jean-Pierre Oriol, Director, Department of Planning and Natural Resources, Coastal Zone Management

11:15 am *Lunch on Own*

12:45 pm **U.S. International Development and Climate Change**

- Winston Bowman, Acting Director of the Pacific Islands Office and Senior Global Climate Change Advisor, U.S. Agency for International Development

- 1:00 pm **Climate Change Status Reports in the Freely Associated States**
- Republic of Palau
    - Charlene Mersaj, National Environmental Planner & Climate Change Coordinator, Office of Environmental Response and Coordination, Office of the President
  - Federated States of Micronesia
    - Bruce Kijiner, Secretary, Ministry of Foreign Affairs
  - Republic of the Marshall Islands
    - Cynthia Ehmes, Assistant Director, Office of Energy Efficiency & Renewable Energy

2:20 pm *Break*

- 2:30 pm **Panel: Disaster Preparedness**
- U.S. Department of Homeland Security
    - Federal Emergency Management Agency  
Colby Stanton, Director, FEMA Region IX Pacific Area Office
    - U.S. Coast Guard  
CAPT James Pruett, Sector Commander Guam
  - U.S. Department of Health and Human Services
    - Dr. Betsy Thompson, Deputy Regional Health Administrator
  - U.S. Department of Defense
    - U.S. Army Corps of Engineers  
Tony Paresa, Deputy District Engineer
    - U.S. Pacific Command (PACOM)  
CAPT Barry Choy, NOAA Advisor to PACOM

4:00 pm *Break*

- 4:10 pm **Panel: Energy Needs and Planning**
- U.S. Department of the Interior
    - Office of Insular Affairs  
Mark Brown, Energy Grants Manager
  - U.S. Department of Energy
    - Office of Energy Efficiency & Renewable Energy  
Jennifer DeCesaro, Director of the Technology-to Market Program, Office of Energy Efficiency and Renewable Energy
    - National Renewable Energy Laboratory  
Scott Haase, Senior Engineer, Department of the Interior Liaison  
Misty Conrad, Senior Technical Project Lead, Integrated Applications

**Friday, June 5, 2015**

8:30 am **Welcome and Review**

- 8:45 am **Role of Non-Governmental and Regional Organizations in Climate Change**
- The Nature Conservancy Micronesia Program
    - Trina Leberer, Micronesia Program Director
  - Micronesia Conservation Trust
    - Willy Kostka, Executive Director
  - Secretariat of the Pacific Community
    - Gerald Zackios, Director, North Pacific Regional Office
    - Noa Tokavou, Officer, Disaster Risk Management North Pacific
  - The Nature Conservancy Virgin Islands Program
    - Aaron Hutchins, Director

- Pacific Resources for Education and Learning
  - Nicole Forrester, President and CEO

10:15 am *Break*

10:30 am **Natural and Cultural Resources Management**

- U.S. Department of the Interior
  - Pacific Islands Climate Change Cooperative  
Deanna Spooner, Coordinator/US Fish and Wildlife Service  
Stanton Enomoto, Cultural Adaptation Coordinator/National Park Service
  - Pacific Islands Climate Science Center  
David Helweg, Director/US Geological Survey
- U.S. Department of Commerce, National Ocean and Atmospheric Administration:
  - Office of Coastal Management  
Kristina Kekuewa, Acting Director – Pacific Islands
  - Coral Reef Conservation Program  
Jennifer Koss, Acting Director
  - National Marine Fisheries Management Service  
Michael Tossato, Regional Administrator, Pacific Islands Office
- Western Pacific Regional Fishery Management Council
  - Sylvia Spalding, Communications Director
- U.S. Department of Agriculture
  - Natural Resources Conservation Service  
Bruce Petersen, Director, Pacific Islands Area
  - Forest Service  
Jodi Chew, Pacific Island Liaison, Pacific Southwest Region
- U.S. Environmental Protection Agency
  - John McCarroll, Manager
- Department of Defense
  - Joint Region Marianas  
Mark Bonsavage, Naval Facilities Marianas Environmental Business Line Director

12:30 pm *Lunch on Own*

2:00 pm **The Role of Insular Areas Higher Education Institutions in Capacity Building**

- The University of Guam
  - Dr. Robert Underwood, President
- American Samoa Community College
  - Dr. Ruth Matagi-Tofiga, Director, American Samoa Department of Marine & Wildlife Resources
- Guam Community College
  - Francisco Palacios, Sustainability & Project Coordinator
- The University of the Virgin Islands
  - Dr. Paul Jobsis, Director, UVI Center for Marine and Environmental Studies
- Northern Marianas College
  - Dr. Sharon Hart, President
- The College of Micronesia
  - Jim Currie, Vice President for Cooperative Research and Education
- The College of the Marshall Islands
  - Tony de Brum, Minister of Foreign Affairs, Republic of the Marshall Islands
- Palau Community College
  - Dr. Patrick Tellei, President

4:00 pm *Break*

4:15 pm **Summary and Next Steps**

## ANNEX 2. PARTICIPANTS

<b>Federal Officials</b>			
Esther	Kia'aina	Assistant Secretary for Insular Areas	U.S. Department of the Interior
Krystina	Borja	American Samoa & Guam Desk Officer	U.S. Department of the Interior Office of Insular Affairs
Francisco	Taitano	CNMI Desk Officer	U.S. Department of the Interior Office of Insular Affairs
Mark	Brown	Energy Grant Manager	U.S. Department of the Interior Office of Insular Affairs
Harry	Blanco	CNMI Field Officer	U.S. Department of the Interior Office of Insular Affairs
John	Magistro	Climate Change Coordinator	U.S. Department of the Interior Office of Insular Affairs
Deanna	Spooner	Coordinator, Pacific Islands Climate Change Cooperative	U.S. Department of the Interior U.S. Fish and Wildlife Service
Stanton	Enomoto	Cultural Adaptation Coordinator, Pacific Islands Climate Change Cooperative	U.S. Department of the Interior National Park Service
David	Helweg	Director, Pacific Islands Climate Science Center	U.S. Department of the Interior U.S. Geological Survey
Jim	Richardson	Superintendent, War in the Pacific National Historic Park and American Memorial Park	U.S. Department of the Interior National Park Service
Anna	Naimark	Insular Areas Program Analyst	The White House Office of Management and Budget
Thomas	Armbruster	U.S. Ambassador to the Republic of the Marshall Islands	Embassy of the United States, Majuro, Marshall Islands
Kristina	Kekuewa	Acting Director, Office for Coastal Management - Pacific Islands	U.S. Department of Commerce National Oceanic and Atmospheric Administration
Jennifer	Koss	Acting Director, Coral Reef Conservation Program	U.S. Department of Commerce National Oceanic and Atmospheric Administration
Sylvia	Spalding	Communications Director	U.S. Department of Commerce National Oceanic and Atmospheric Administration Western Pacific Regional Fishery Management Council
Michael	Tosatto	Regional Administrator, Pacific Islands Regional Office	U.S. Department of Commerce National Oceanic and Atmospheric Administration National Marine Fisheries Service
Chip	Guard	Warning Coordination Meteorologist	U.S. Department of Commerce National Oceanic and Atmospheric Administration National Weather Service, Guam Weather Forecast Office



Alex	Michailiais	Coral Reef Conservation Program Specialist	U.S. Department of Commerce, National Oceanic and Atmospheric Administration Coral Reef Conservation Program
Lawrence	Bart	Assistant Director - West	U.S. Department of Agriculture Natural Resources Conservation Service
Bruce	Peterson	Director, Pacific Islands Area	U.S. Department of Agriculture Natural Resources Conservation Service
Jodi	Chew	Pacific Island Liaison, Pacific Southwest Region, Regional Office	U.S. Department of Agriculture, U.S. Forest Service
Chris	Kanazawa	Hawaii State Director, Rural Development	U.S. Department of Agriculture
Colby	Stanton	Director, FEMA Region IX Pacific Area Office	U.S. Department of Homeland Security Federal Emergency Management Agency
CAPT James	Pruett	Sector Commander Guam	U.S. Department of Homeland Security U.S. Coast Guard
Mark	Bonsavage	Naval Facilities Marianas (NAVFACMAR) Environmental Business Line Director	U.S. Department of Defense Joint Region Marianas
Derek	Chow	Chief, Civil & Public Works Branch	U.S. Department of Defense U.S. Army Corps of Engineers Honolulu District
Tony	Paresa	Deputy District Engineer, Programs and Management	U.S. Department of Defense U.S. Army Corps of Engineers Honolulu District
CAPT Barry	Choy	National Oceanic and Atmospheric Administration Advisor	U.S. Department of Defense U.S. Pacific Command
John	McCarroll	Pacific Islands Office	U.S. Environmental Protection Agency
Dr. Betsy	Thompson	Deputy Regional Health Administrator	U.S. Department of Health & Human Services Office of Asst. Secretary for Health, Region IX
Jennifer	DeCesaro	Director of the Technology-to-Market Program	U.S. Department of Energy Office of Energy Efficiency & Renewable Energy
Misty	Conrad	Senior Technical Project Lead Integrated Applications - Technology Deployment	U.S. Department of Energy National Renewable Energy Laboratory
Scott	Haase	Senior Engineer/Department of the Interior Liaison	U.S. Department of Energy National Renewable Energy Laboratory
Winston	Bowman	Acting Director of the Pacific Islands Office and Senior Global Climate Change Advisor	U.S. Agency for International Development

<b><i>Territorial Officials</i></b>			
<b><i>American Samoa</i></b>			
Dr. Ruth	Matagi-Tofiga	Director	American Samoa Department of Marine and Wildlife Resources
Faleosina	Voigt	Director	American Samoa Department of Public Works
Utu Abe	Malae	Executive Director	American Samoa Power Authority
Jerome	Ierome	Administrator, Office of Grants Oversight and Accountability	Office of the Governor of American Samoa
<b><i>Commonwealth of the Northern Mariana Islands</i></b>			
Ralph	Torres	Lieutenant Governor	CNMI
Robbie	Greene	Climate and Coastal Hazards Specialist, Coastal Resources Management	CNMI Bureau of Environmental and Coastal Quality
Geralyn	Dela Cruz	Highway Administrator	CNMI Department of Public Works
Thelma	Inos	Director, Energy Division	CNMI Department of Public Works
Manuel	Pangelinan	Director	CNMI Division of Fish and Wildlife
Marvin	Seman	Special Assistant for Homeland Security Emergency Management Operations	CNMI Homeland Security and Emergency Management
Brian	Nicholas, Jr.	Grants Manager	CNMI Homeland Security and Emergency Management
Marianne	Teregeyo	Special Assistant to the Secretary	CNMI Department of Lands and Natural Resources
<b><i>Guam</i></b>			
Eddie	Calvo	Governor	Guam
Madeleine	Bordallo	Delegate from Guam	U.S. House of Representatives
Wil	Castro	Bureau of Statistics and Plans	Government of Guam
Sheena	Black	Guam Economic Development Authority	Government of Guam
Mark	Calvo	Guam Build-up Office	Government of Guam
Melinda	Camacho	Guam Power Authority	Government of Guam
Jay	Rojas	Director, Washington Office of the Governor	Government of Guam
<b><i>U.S. Virgin Islands</i></b>			
Kenneth	Mapp	Governor	U.S. Virgin Islands
Jean-Pierre	Oriol	Director, Coastal Zone Management	USVI Department of Planning and Natural Resources
Randolph	Knight	Chief of Staff to Governor Mapp	Office of the Governor of the Virgin Islands
Dr. LaVerne	Ragster	Retired Professor and President Emerita	University of the Virgin Islands
Mona	Barnes	Director	USVI Territorial Emergency Management Agency

<b><i>Freely Associated States Officials</i></b>			
<b><i>Republic of the Marshall Islands</i></b>			
Tony	de Brum	Minister, Ministry of Foreign Affairs	Marshall Islands
Bruce	Kijiner	Secretary, Ministry of Foreign Affairs	Marshall Islands
Candice	Guavis	Deputy Chief, Monitoring & Compliance Unit, Coastal and Community Affairs Division	Marshall Islands Marine Resource Authority
<b><i>Federated States of Micronesia</i></b>			
Samson	Pretrick	Deputy Foreign Secretary	FSM
Robert	Ruecho	Consul General	FSM Consulate Office, Guam
Cynthia	Ehmes	Assistant Director	FSM Office of Environment and Emergency Management
<b><i>Republic of Palau</i></b>			
Charlene	Mersai	National Environmental Planner	Palau Office of Environmental Response & Coordination
Greg	Decherong	Director of Energy	Palau Energy Office
Priscilla	Subris	Coordinator	Palau National Emergency Management Office
Judy	Dean	Grant Coordinator	Office of the President of Palau
<b><i>Higher Education Institutions</i></b>			
Dr. Robert	Underwood	President	University of Guam
Dr. Anita	Enriquez	Senior Vice President	University of Guam
Dr. John	Peterson	Assistant Vice President for Graduate School/Sponsored Programs	University of Guam
Romina	King	Assistant Professor, Geography Department	University of Guam
Jim	Currie	Vice President for Cooperative Research and Education	College of Micronesia, FSM
Doris	Perez	Assistant Director, Planning and Development	Guam Community College
Francisco	Palacios	Sustainability & Project Coordinator, Planning and Development	Guam Community College
Dr. Sharon	Hart	President	Northern Marianas College
Dr. Paul	Jobsis	Associate Professor of Marine Biology and Director of the University of the Virgin Islands' Center for Marine and Environmental Studies	University of the Virgin Islands
Patrick	Tellei	President	Palau Community College, Cooperative Research and Extension

Dr. Clay	Trauernicht	Extension Fire Specialist, Department of Natural Resources and Environmental Management, College of Tropical Agriculture and Human Resources	University of Hawaii at Manoa
<b><i>Non-Governmental, Regional and International Organizations</i></b>			
Aaron	Hutchins	Director, Virgin Islands and Puerto Rico Program	The Nature Conservancy
Willy	Kostka	Executive Director	Micronesia Conservation Trust
Evangeline	Lujan	Board Member	Micronesia Challenge
Trina	Leberer	Micronesia Program Director	The Nature Conservancy
Stuart	Simpson	Chef de Mission	International Organization for Migration
Nicole	Forrester	President and CEO	Pacific Resources for Education & Learning
Gerald	Zackios	North Pacific Regional Office	Secretariat of the Pacific Community
Fenno	Brunken	Climate Change Advisor	Secretariat of the Pacific Community (SPC)/Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) Coping with Climate Change in the Pacific Island Region (CCCPIR) Programme
Noa	Tokavou	North Pacific Regional Office	Secretariat of the Pacific Community
<b><i>International Officials</i></b>			
Hisatsugu	Shimizu	Consul General	Consulate General of Japan, in Guam