

MEETING MINUTES
Meeting of the Climate Change and Water Resources Workgroup
of the
Advisory Committee on Water Information (ACWI)
January 10-11, 2017
Crowne Plaza Dulles in Herndon, Virginia (Washington, D.C. area)

OBJECTIVES OF MEETING

- Consider key policy challenges related to climate change and water resources including:
 1. Promoting State Water Resources Planning for Climate Resilience
 2. Defining Incentives and Support for Corporate Water Resilience
 3. Strengthening Local Flood Reduction Planning, Practices and Measures
 4. Promoting Climate Resilience of New Federal Water Infrastructure Investments
 5. Improving Planning and Financing of Natural Infrastructure for Climate Resilience
- Develop recommendations for the new Administration concerning key actions that Federal agencies should take to address these and other challenges for improving water resources management in a changing climate.
- Review existing Federal agency plans and priorities for climate change adaptation for water resources, including the White House “Climate Opportunities” report and the interagency report on climate and water resources (i.e.; “Looking Forward” report).
- Agree on process for providing recommendations to full Advisory Committee on Water Information and conduct other Workgroup business.
- Inform Workgroup members about Workgroup mission and climate change interests and activities of member organizations and nonmembers.

All presentation slides are available here: https://acwi.gov/climate_wkg/minutes/

TUESDAY JANUARY 10

WELCOME and OPENING REMARKS

Co-chairs Paul Freedman; Water Environment Federation and Jeff Peterson; US Environmental Protection Agency

WORKGROUP INTRODUCTIONS ;

Each Workgroup member gave a short introduction that included name and organization represented, and the organization's most significant climate change adaptation activities or accomplishments

PRESENTATION AND DISCUSSION: *Looking Forward: Priorities for Managing Freshwater Resources in a Changing Climate*

White House Council on Environmental Quality; Charles Kovatch; Deputy Associate Director for Water

- Collectively we have collected a lot of info on freshwater resources. The question is: where do we go from here? We need to continue to be effective, and that requires collaboration and coordination through meetings like this one.
- The Nation faces lots of challenges costing millions of dollars (risks, vulnerabilities from droughts, floods, aging infrastructure, etc.), and it's imperative that we continue to coordinate our efforts and focus on resilient communities, so that those communities can deal with current and future challenges.
- Activities within the past year include –
 - White House Water Summit (raising the importance of cross-cutting water solutions) resulted in commitments of billions of dollars over the next decade related to water sustainability;
 - Water Innovation Technology Summit (new technologies for water conservation, using clean energy);
 - Water Data Challenge (White House partnership with California that examines CA challenges and how to leverage existing Federal and State datasets to help us meet those challenges); this builds off the Open Water Data Initiative
 - Sensor Challenge – nitrogen and phosphorous sensor data and making the data available;
 - Resilient design and construction for schools infrastructure;
- NAP Looking Forward report was released in late 2016 and was an update from the 2011 NAP. This report includes many areas that fit with the mission of ACWI and its subcommittees (OWDI, Water Quality Portal, others).
- As we think about next steps, we need to consider a couple of things:
 - The U.S. has committed to the U.N. sustainability goals, ranging from public health issues, sanitation, infrastructure, power and energy, sustainability and water efficiency, improving water quality; information used to measure progress on these sustainability goals comes from existing Federal datasets,

- though lots of States have now integrated these goals into their own processes.
- For the sake of efficiency, we need to continue to coordinate with each other, sharing collaboration and research priorities, data accessibility, etc.
 - We need to make public-private financial connections, to attract private sector financial resources to the State/local efforts that need funding.
 - We need to demonstrate our value/ability in helping solve the big issues like those related to the food-energy-water nexus.
- *Comment:* I've spent most of my time on Western drought issues in the past couple years. Given that most water management decisions are made at State/local level, the Federal government seems to have limited capability to provide near term relief for water management challenges. Do you agree there's a limited role for Feds to play? *Response:* This is a complex issue because of State autonomy, so the first role for the Feds is to understand what the State needs. WESTFAST has been very effective in helping the Feds listen to States' needs. What can the Federal government provide/do? It can remove barriers for permitting processes, provide data to help States/locals make decisions, facilitate connections among State/local groups that have common needs or solutions.
 - *Question:* Can you give us a link where you can see the 17 sustainability goals? *Response:* Yes, I'll send it to Jeff and we'll include it in the meeting minutes.
 - *Question:* Re public/private infrastructure investments, what is the White House role in making a path to action, involving Federal agencies and taking the goals to action? *Response:* Those commitments (which came from industry) were from the participants, so this was a bottom-up process. The White House role was one of convening and connecting the various players. There is no reason that Federal coordination role can't continue.

POLICY CHALLENGE 1: PROMOTING STATE WATER RESOURCE PLANNING FOR CLIMATE CHANGE RESILIENCE

ABSTRACT: State agencies play a central role in water resources management and some states have developed water resources management plans with strong climate adaptation elements while others have not. What incentives or practices should the Federal government adopt to promote wider development of climate resilient water management plans by States?

PANEL:

- Association of State Drinking Water Administrators; Brandon Kernen
- Groundwater Protection Council; Marty Link; Nebraska Department of Environmental Quality
- Western States Water Council; Jeanine Jones; California Department of Water Resources

Moderator; Association of Clean Water Administrators; Jeff Manning; North Carolina Department of Environmental Quality

- *Question:* The data need is very real and I think we all agree with it; we're leading into an environment administratively where we'll have very limited Federal resources, so our inclination is to focus on data, but there are some challenges. I

would like to see this group coalesce around a commitment to investing in the scientific data that's needed, and then following the science that comes out of that data.

- CADWR is doing a partnership research pilot project right now that's looking at reservoirs to see how they could have operated more efficiently during certain recent events (droughts, storms).
- *Comment:* A lot of the slides talked about data, and the conversation we just had was about science. We are moving into new territory; systems are being forced to react to stresses they've never had to react to before (deeper droughts, for example). Also, we have other fish and wildlife issues that we need to deal with other than salmonids, which were addressed by two of the talks we just heard; we need to encourage fish and wildlife planning to begin looking at those other species *before* they are put on the endangered species list.
- *Comment:* In terms of Fed role in supporting State planning, I'll join the bandwagon on emphasizing the need for data and science. What I didn't hear much about is the need to deal with inter-State issues. Most of our water systems span State boundaries; is there an enhanced Federal role in helping States coordinate their planning and perhaps convening or mediating?
- *Comment:* In the Northeast, there is actually a law that requires States to convene. Most of the basins in the West are compacted, and there's a specific Federal role (that varies widely) spelled out in the compact agreement; the question is how we can creatively work within the structure of these existing compacts.
- *Question:* How can Federal government adopt to promote wider development of climate resilient water management plans by States? I wonder if States, working with Feds or on their own, can look at economic development as a driver to get the wheel rolling? *Answer:* Some States are using economic analyses to figure out \$ damages associated with floods, sea level rise, etc. As more of those products are released, insurers may start pushing communities and individuals to make improvements necessary to ensure resilience. Identifying problems (snowpack dearth, etc.) may be even more effective than economic analyses, especially in the eyes of State water management agencies.
- *Comment:* Looking at the goals of this meeting, I think we can take a lot of what's been said here about data and outline the problems faced by States/communities first, and use that to outline recommendations that will help States and communities solve real problems that they're having right now.
- *Comment:* NOAA data collection is decentralized, and has exploded hugely in recent years. There's a ton of precipitation data being gathered, but not much quality control. The real issue for precipitation data lies in the need to QA the data. Also, the States really need evaporation data, and we collect less of that than we used to (also, it needs QA as much as the precipitation data).
- *Comment:* There are a number of problems we need to start planning for. Climate change is always seen as a future problem, so it gets pushed to the back burner. That mentality breaks down when the impacts of climate change arrive on your doorstep in the form of a severe flood or drought. If you could only get what you needed to implement one project/plan this year, which project/plan would you choose?

Response: This is something we should save for lunchtime discussion because everyone will have a different answer.

- *Comment:* What strategies do we or should we use to cope with uncertainty in modeling, due to resolution of data, downscaling, confidence intervals, or other factors? *Response:* That's a really hard question to answer, partly because the uncertainty doesn't come only from science issues like confidence intervals and downscaling of models. For example, many of our towns in Nebraska are small (median population 300), and are shrinking, so the demographic, social, and economic issues are thrown into the mix too. The uncertainty isn't just because of the science and modeling; there are a lot of other factors that come into play too, and it's virtually impossible to predict or quantify them.
- *Comment:* In addition to the Feds providing data, is there another role we can play in terms of vetting or analysis? Is that overstepping, or would that type of role by the Feds be helpful? *Response:* Usually when the Feds do that it's too broad to downscale for use by individual States/communities. But people do tend to ground their decision-making in Federal datasets because Feds have rigorous QA and peer view processes. Scale is important; data are valuable, but everyone collects data for a different purpose, so data from one agency may not be useful for another agency.
- *Comment:* The way the messaging connects to the data is fascinating. We don't do enough yet about some of the economic consequences of changing water conditions; this isn't an aspect of water data that immediately comes up in discussion. I would be interested if people know of any good metrics that speak to economic consequences, so that we can identify/justify areas where new investments will make the biggest impact. We should discuss what data we need in order to make the economic case.
- *Comment:* It's maybe not the econ data that we need; what we need is a reframing of everything in terms of economic impacts.

POLICY CHALLENGE 2: IDENTIFY FEDERAL INCENTIVES AND OTHER SUPPORT TO STRENGTHEN WATER ELEMENTS OF CORPORATE SUSTAINABILITY AND CLIMATE RESILIENCE PLANS

ABSTRACT: Corporate sustainability programs have the potential to improve water use by the private sector and promote more climate resilient investments related to water. What programs, incentives, or support can the Federal government undertake to strengthen corporate water sustainability and encourage corporate adoption of water sustainability programs and practices?

PANEL:

- World Resources Institute; Paul Reig; Associate; Water Program and Business Center
- Pacific Institute/UN CEO Water Mandate; Jason Morrison; President and Corporate Sustainability Program Director
- Coca-Cola; Jon Radtke; Water Resource Sustainability Manager

Moderator; Kathryn Buckner; President; Council of Great Lakes Industries

- The panelists for this section of the agenda had no presentation slides.

- We're going to flip the abstract question above, and ask what water sustainability need or problem exists in the corporate world that the Federal government can help address.
- *Reig*: There is more and more inclination within industry to access and use information and tools on water resources because they depend heavily on water for their business, their market, and for the health of their employees. Thus, we need globally comparable data. The big gap is that taking action at the local level is hard because data aren't being collected at a frequency that's acceptable for the kind of decision-making that is now most needed. By providing data with greater frequency, and providing globally consistent data, it will provide the information that companies need to engage collaboratively outside their corporate walls, at a watershed level.
- *Radtko*: Coca-Cola operates in all but 2 countries, and water is the number one ingredient in all their products. Water is also critical for their manufacturing process, and they track water efficiency very closely (global 2 liters of water used to produce every 1 liter of product; in the U.S. the ratio is 1.7:1). The low-hanging fruit of efficiency has already been reaped. They have to be good stewards of water because they are a highly visible international corporation that (everyone knows) uses lots of water; thus, they "have a target on their back."
- Business hangs on prosperous communities. Communities can't be prosperous if they are stressed by shortages of potable water. Thus, Coca-Cola engages in source-water vulnerability assessments and other efforts to help ensure the continued viability of their product and the continued viability of the communities that provide their customer base.
- Recommend that government reach out more to corporations to let them know what data and analyses and predictive tools already exist, so the corporations aren't reinventing the wheel.
- There's a lack of public awareness of the issues. Corporate America could help to get the message out, but people look at their messages skeptically, so maybe a partnership with government is the answer to running a successful public education effort.
- *Morrison*: Coca-Cola has been leading in this area in a long time, but they are not representative of industry; most of the business community is lagging far behind. Risk factors cited by industry surveys have included water for a while, and last year water was identified as the number one issue of concern. Mitigation of climate change effects is also at the top of the list.
- Some industry sectors are more serious about water: food and beverage, apparel manufacturers (textile production), oil and gas, automobile manufacturing, etc. The NGO community has been saying for a while that sustainable water management is the best long-term risk mitigation strategy. Efforts have usually been focused on areas of the world with well-known water scarcity (Africa, Asia) and poor water management.
- Most companies are focusing on operational efficiency and their supply chain. But there is a scale of investment issue where the public sector becomes important. The business community as a technological solution provider needs to be looked at; we can't just focus on asking businesses to use less of the resource or reducing their pollution of the resource.
- Group discussion:
 - How do various industry sectors use water data, and what types of data do they use? WRI relies on data to populate indicators/metric within the aqueduct tool; their data comes from academic and government institutions. Coverage must be global in order to be useful. Coca-Cola doesn't use raw data nearly enough; what they need is for data

to be pulled together in the form of models that they and their partners can use. Pacific Institute says companies are using discharge data and their own water use data; the next concentric circle concerns where the water is sourced.

- A company can be the most efficient water user in the world, but if the surrounding community's water systems aren't well managed, the company is still at risk. Targets need to be context relevant (context-based goal setting), or we'll never mitigate risk over the long term. If you know the context, you're in a better position to talk about shared goals and progress toward meeting those goals.
- Who measures progress toward context-based goals? The business community, when they invest in a project, always wants to know what impact that investment has had. It's important to ask questions about impact regularly. Business only collects data to answer specific questions; they are not well positioned to move from data to information to knowledge.
- There is no common framework or methodology out there. This opens opportunities to build what we need and to ally with government institutions, to meet mutual goals. As soon as you know something, you want to know more (positive feedback loop).
- What efficiencies do large companies or institutions already use? Coca-Cola sets global goals and business unit goals that they have to adhere to, and that has helped them improve efficiency across the board. In regions where their water use is capped, they have to make their production process more efficient. In some cases, when they become more efficient, the municipality jacks up their rates, and some municipalities continually ask them to buy more and more water because water is a source of income for the community. Our collective goals need to be more in synch than this.
- Abundance is not the only driver for a company to pursue efficiency goals. Other drivers are interstate compacts, international treaties, desires of investors, and municipal water prices.
- What about the rest of the private sector, apart from the leading edge corporations like Coca-Cola? Maybe other companies are doing something to conserve and just aren't publicizing it. There may also be financial barriers to a lot of smaller companies, and there must be someone at the top of the company who is willing to lead the way toward sustainability and efficiency. Lots of companies need to face a water crisis before they are willing to expend resources on action. If an action has a good ROI, companies will engage in it; most companies can't afford to be altruistic for the sake of altruism. There are 1,200 publically listed companies that already publicize their actions related to water stewardship, so a lot of companies are already engaged in this process.
- Communication methods have drastically changed in the last decade; how do we frame these messages for the public, resource managers, and the new Administration? Do we focus on business case or on community health? How do we create meaningful, effective messages in an era when government and science are viewed with increasing skepticism? Social capital: shared understanding of the issue is the place to start. We need to "raise the water I.Q." in communities. Partnering with the private sector's advanced marketing capabilities is the key. Joint messaging and public awareness campaigns: multi-stakeholder coalitions that can all speak the same message may have more impact.

- What does the Federal government have to give corporations that would help them implement corporate sustainability practices? How can we make this path seem attractive to corporate America? Corporate America is waiting and watching right now, to see where the Federal government goes in the next few months. Most of the government associations and issues we run into are local; the Federal government doesn't touch on our efforts much, except in terms of sustainable infrastructure to ensure reliable supply for many years into the future. Corporations have a desire to ensure they have reliable, sustainable resources going forward; they need to be able to communicate that to the new Administration, and the Federal government probably doesn't need to provide incentives to encourage sustainable water practices.
- Are there water innovations that the business community can share? As mentioned in the Dow Chemical example and Lake Lanier example, industry has water re-use strategies and other strategies that could be useful to governments in dealing with water crises. Industry could provide measurement strategies, information on impacts and barriers to scaling, and identification of long-term financing opportunities.
- Can you say something about what's going on the energy generation sector, since they're one of the biggest users of water? This gets into the technicality of what constitutes water consumption versus water withdrawal. The energy industry is very engaged; it's a highly regulated industry, so many of their efforts are driven by compliance, but they have other drivers too, in many cases.
- What role can the Federal government play in communicating the message that some sectors of industry will be harmed if we don't manage sustainably? Is that a role for individual companies to take on, or can the Feds help get out the message? Maybe a municipal government could communicate the message "this plant means this many jobs." USGS water use data could help if an economic component was added to the data. Government may not be able to talk much about risk in terms of loss; could be more effective for individual for the business community to get out that message (i.e., "we can't site a plant here because of water shortages or high risks to resiliency").
- Everyone seems to agree that the best role the Feds can play is in data collection; can we have a conversation about what action needs to be taken, to prevent those data collection systems from being reduced further? At some agencies we can help to communicate that, but maybe industry needs to help facilitate that conversation better.
- What are the barriers to sharing info you have about source water? The info has been collected from other people who had the data (Coca-Cola doesn't collect data themselves). We use the data to develop our own plans, but we are willing to share the data with customers (other companies, like McDonalds), municipalities, etc. In some cases, industry doesn't share their data because they don't think the local government will trust the data, or there could be legal liability.

POLICY CHALLENGE 3: PROVIDE SUPPORT AND CREATE INCENTIVES FOR LOCAL FLOOD REDUCTION

ABSTRACT: Flooding is the cause of significant loss of life and property across the country and climate change is likely to increase flooding in river systems and coastal areas. What should Federal agencies do to support or promote development of local and state plans, practices, or measures that will reduce the harm caused by increased flooding?

PANEL:

- Association of State Floodplain Managers; John McShane; Environmental Scientist
- American Water Resources Association: Carol Collier; Senior Advisor for Watershed Management and Policy
- Natural Resources Defense Council; Rob Moore; Senior Policy Analyst, Water Program

Moderator; American Society of Civil Engineers; Mitch Heineman; CDM Smith

- Feds can incentivize localities to keep their emergency action plans active. Plans are no good; what we need is planning.
- EPA and other Feds are pushing green infrastructure, but that's not necessarily the best solution for urban areas; it's only a small piece of the solution. Triage is important. To buy out the properties in the LA floodplain would be astronomical, so it's not feasible. This is true in other places too: costs may be too great to make certain actions worthwhile. Where is green infrastructure appropriate? We need cost-benefit analysis on green versus gray.
- Feds could do a better job of incentivizing improvements for infrastructure resilience BEFORE they're needed. Perhaps to require people receiving funding to rebuild after floods could be required to have a plan for improving their property during the rebuilding process, so that they don't get destroyed again by the next big flood. The Federal flood standard (which was updated last year) has been around since the 1970s, so there is already some requirement along this vein. State and local governments need to step up as well; we can't expect the Feds to provide all the incentives for improving infrastructure. GAO surveyed States and found zero cases where State rainy-day funds were identified as a source for post-disaster rebuilding; if the Federal government is going to put more money in this pot (and it probably needs to do so), then that money should be matched (cash or in-kind) by non-Federal sources.
- Framing floodplains around economic benefits might be more beneficial than focusing on local zoning authority and land use decisions. Some State/local government organizations may not have good access to Federal agency expertise or may not trust their Federal contacts to help.
- There is a lot of political reward in responding to a flood disaster. There's a lot less benefit in using tax money to purchase flood-prone properties in order to get people out of harm's way. There are State and local officials who want to do more to help break the cycle of flooding and rebuilding, but the political risks of doing so are too high. The whole point of the flood insurance program is to help people rebuild; there is no energy put through this program to help people relocate to less flood-prone areas. Maybe this approach (of the flood insurance program) needs to be modified to help people afford flood insurance in the short term while they seek to relocate in the long term.

- We have talked a lot today about tools we already have. We need to talk about what we can do that's different. It's not easy to tell people what the future will look like; we need to be able to make a better case to decision makers about what we think the future will look like and what our adaptation response to that future should be. Yes, we have to think differently, and that's hard. The scale of climate change is huge; just in the last 10 years, the conversation has changed enormously, and hopefully the next 10 years will bring additional change to the conversation. Increase in riparian flooding frequency is less critical than an increase in coastal flooding frequency. However, we also have an increase in magnitude of floods, and that is as critical to address in riparian areas as it is on the coast.
- Bulletin 17B revisions are proceeding at a glacial pace and need to take better advantage of cutting edge science/technology.
- Gray/green infrastructure should be combined. Suggestions for combination. Green for major flood control; reduces heat sinks. For rivers.
- With buy-outs, how can we ensure that EVERYONE is bought out, since partial buy-outs are actually detrimental to the neighborhood?
- Multiple benefits and tradeoffs for various management decisions at the local level – tiny sources of revenue require municipalities to do a precarious balancing act that must address many different types of priorities. Short-term investment models need to be turned into long-term investment models; short-term models have a short-term benefit for the community but don't help in the long term. Also, flood mitigation measures can have adverse impact on communities upstream or downstream, and that needs to be considered as well.
- Repetitive loss – agricultural acreage, crop insurance, CRP.
- More funding for buy-outs is a no-brainer. It's a good investment because you avoid \$5 in losses for every \$1 you spend.

POLICY CHALLENGE 4: DEFINE PRIORITIES AND CRITERIA FOR CLIMATE RESILIENT FEDERAL WATER INFRASTRUCTURE INVESTMENTS

ABSTRACT: A new Administration may consider a major investment in infrastructure, including upgrading of water infrastructure. What policies, priorities, and criteria might the Federal government adopt to make these new investments as climate resilient as possible? What other kinds of support should the Federal government undertake to encourage this?

PANEL:

- Water Utility Climate Alliance; Allen Cohen; New York City Department of Environmental Protection
- National Association of Clean Water Agencies (NACWA); Kristina Surfus; Manager, Legislative Affairs
- Association of Metropolitan Water Agencies; Erica Brown; Chief Strategy and Sustainability Officer

Moderator: US Water Alliance; Emily Feenstra; Deputy Director

- Priorities? Dedicated funding for projects that incorporate resiliency. Equipment upgrades. Regulatory flexibility may be less important to us now than it used to be; instead, cities may

need to be better at expressing their priorities. It's important to focus on resilience before it is needed, rather than waiting until after the disaster. A good economic case can be made for this because it's more cost effective to be proactive instead of reactive.

- The issue of streamlining and cutting back on permits is not what's really needed. What we need is active partnerships to put good resilient infrastructure in place. Weakening NEPA or clean water protections is not the way to reach that goal.
- A Federal definition of what it means to build resilient infrastructure would be helpful on the local level.
- Don't ask for Federal money first; tell the Feds what you want to do and what the result will be, and THEN begin the conversation about money.
- Is it possible to use Federal money (State Revolving Funds) to spur additional investments by the States? What should the SRFs do? A big piece of this is education: helping States think about the fact that resilience-building is public-health protection.
- Subsidies similar to low-income heating assistance programs. This allows utilities to make needed investments in their infrastructure without raising rates to a degree that hurts lower income communities.
- Some of the most resilient infrastructure responds to multiple threats. When you talk about integrated planning, is that what municipalities envision, or is it just related to clean water responsibilities? The way we were talking about it earlier it was just related to CWA responsibilities, but it makes sense to think more holistically because that broadens the stakeholder base and the impact of your investment. One challenge to integrated planning is that the way we measure progress, we seem to only be able to work within the confines of the Clean Water Act; if we start to add more parameters like minimizing flooding and sewer backups, we start to move toward a more integrated approach, but we don't currently have a framework to do that (though they do in the U.K., so it's not impossible).
- We've been focusing almost exclusively on the urban sector, but agriculture is the biggest user of water, so we shouldn't lose sight of them – tools in the Farm Bill for encouraging water conservation. In the Colorado Basin, salinity control is a big issue, and USDA is spending money on some sloppy irrigation practices that affect water quality and availability for adjacent urban areas.
- What exactly is climate resilience? We should use the broadest possible definition because there are a lot of creative opportunities for private investment, as well as for Federal or State investment.
- With respect to recommendations about financing, what about the sectors/communities who aren't big "rock star" players in the bond market? Ceres is trying to help investors in the municipal bond market to invest in projects that can be helpful *and* successful. There is opportunity for regional collaboration to step in, working with watershed communities to promote BMPs, working with wastewater treatment plants to keep them good shape, etc. Small utilities and small communities can band together in regional coalitions.
- Incentive grant programs for infrastructure would be great. Technology clusters is also something that was mentioned earlier today.
- Often when new infrastructure packages come down the line from Congress, there's always an interest in shovel-ready projects that will move the money quickly. That's a problem because the benefit of the spending is so far down the road that nobody sees it. Is there something that can be done to spend money in a quick, responsive, resilient way? Is there a piece of equipment that can be invested in quickly and that also has a resilient benefit? One

approach is to establish a design standard. Another way is to identify what we need and then ask a consultant to develop it. There's also a scale issue (pothole repairs are quick and easy and small). In coastal regions, pumping makes a lot of sense, so we can install pumps instead of adding large gray infrastructure; that's an investment that could be made quickly, and pumps fall under resilience even though they don't fall under sustainability.

ADJOURN DAY ONE

WEDNESDAY JANUARY 11

DAY ONE SUMMARY AND DAY 2 REMARKS: Paul Freedman; Co-chair; ACWI Climate Change Workgroup

POLICY CHALLENGE 5: FINANCING INVESTMENTS IN NATURAL INFRASTRUCTURE FOR CLIMATE RESILIENCE

ABSTRACT: Building the adaptive capacity of water resources to a changing climate will require investing in the natural infrastructure needed to strengthen watershed resilience to flooding and drought and help fish, animals, and plants adapt to changing climatic conditions. What should the Federal government do to promote planning and financing for these natural infrastructure investments?

PANEL:

- The Nature Conservancy; James Hague; Senior Water Policy Advisor
- Association of State Wetland Managers; Marla Stelk; Policy Analyst
- US Army Corps of Engineers; Rachel Grandpre; Physical Scientist, Institute for Water Resources

Moderator; National Wildlife Federation; Jan Goldman-Carter; Director, Water Resources Program

- The panelists for this section of the agenda had no presentation slides.
- Natural infrastructure = green infrastructure = nature-based solutions. We are using these terms interchangeably and may need some communications experts to help us figure out the best nomenclature.
- TNC recommendations:
 - Federal investments need to consider nature-based solutions alone or in combination with gray infrastructure. This would provide better value to taxpayers than gray infrastructure alone.
 - Changes to crop insurance, flood insurance.
 - Benefit-cost analyses should incorporate the FULL RANGE of benefits and costs. No silos; projects need to be integrated.

Examples of natural infrastructure include:

- dune systems providing storm surge buffers
- wetlands to build flood and drought resilience
- corridors that allow fish, animals, and plants to migrate as the climate changes
- conventional infrastructure that allows for continuity of corridors across obstacles such as highways (e.g.; a tunnel under a highway or fish passage/obstacle removal)

- Provide more flexible funding sources and coordinate across government funding sources (especially with respect to timing of funds availability).
- When building our systems, we need to keep in mind what happens to conserved water. If water you conserve upstream gets used downstream, you haven't saved anything or made anything more resilient.
- The permitting process needs to recognize all the goals for putting a new project on the ground.
- FEMA needs updated maps; currently there are situations where maps are being "dumbed down" in order to match old maps and old data; thus, we're not taking advantage of new knowledge.
- There is a lack of consistency from one COE district to another, in what they require of various wetland-related projects. Some States span two COE districts and have to comply with two different sets of instructions.
- Using agriculture as a form of green infrastructure is an area where we need to focus. We need to do more outreach to rural and agricultural communities. Rather than focusing on regulations, let's work with these communities to build bridges and find solutions. Education and communication is key.
- Natural infrastructure is a hard concept to explain; we need to figure out how to communicate this concept to people.
- Long-term monitoring can cause cost overruns in some of these infrastructure projects, and so it's usually the first thing to go when cutting costs. But we have to keep the long-term monitoring piece of the puzzle because without it we can't figure out our return on investment.
- COE terms:
 - Natural features = beaches, marshes, dunes that provide benefits
 - Nature-based features = features created/engineered by man to mimic natural features
 - Non-structural measures = changes in policy or management practices, relocation for flood-proofing structures
 - Traditional structural measures = gray infrastructure like levees, storm surge barriers, etc.
 - Green infrastructure = wilderness parks, greenways, conservation easements, green roofs
- COE does consider nature-based features and infrastructure but mostly for the purpose of aquatic ecosystem restoration; they aren't yet able to incorporate this into their cost-benefit analyses however.
- There is often a public perception that gray infrastructure is superior when that isn't necessarily true. The public also sometimes thinks gray infrastructure will protect them from all natural disasters, when in reality they are risk reduction measures (not risk elimination measures).
- There are few studies looking at economic impacts of implementing flood reduction strategies.
- COE lacks structured approach to considering the benefits of ecosystem services at a scale that's applicable to decision-making contexts. We need to better understand the value that these services provide.

- We need an application of uniform techniques for accounting the effects of disclosure and decision-relevant information.
- Best path forward (already doing some of this): using pilot and demonstration projects. This may allow us to work outside of some of the policy constraints, and requires just a small amount of funding.
- SAGE = systems approach to geomorphic engineering = considering (mostly in coastal areas) a hybrid approach that incorporates nature-based features in concert with traditional (gray) structural measures.
- New permits: construction/maintenance of living shorelines; removal or low-height dams to improve/restore rivers and streams and to improve public safety.
- *Question:* Is there more that can be done by Feds to give voice to and encourage the science community to be actively promoting some of these pilots, and hopefully promote cultural change in acceptance of the limits of gray infrastructure and the benefits of natural infrastructure? *Answer:* COE is looking for more literature on this to the extent that pilots are documenting their successes with peer reviewed literature; some sources of information may come from other countries where there is more political will to use natural infrastructure. Claiming life-safety benefits is hard at this point; we are better able to claim ecosystem benefits based on the information we have now. But we're trying to encourage people to carefully document the science, so that we can have a better knowledge base for future communications about the benefits of natural infrastructure.
- *Comment:* There needs to be consideration of maintenance issues when grants are issued. Also, we need to move away from car-based culture and not make our green infrastructure simply focus on make prettier parking lots.
- *Comment:* Post-disaster grants need to consider supporting green infrastructure, rather than just rebuilding/replacing gray systems. Also need to make more use of green infrastructure for flood mitigation, and not just use it for ecosystem benefits.
- *Comment:* Current Administration has spent a lot of effort revising guidelines and principles for water infrastructure investments. I was surprised to hear no one mention that during this meeting, because it will continue. There has been significant emphasis on consideration of ecosystem services in Federal decision-making that has caused agencies to say how they're going to utilize those services in decision-making; by definition, this will include more of the nature-based features when considering issues/problems with gray infrastructure. It's unknown how that will continue to play out with Federal agencies, but there has been a huge push toward that in the last few years.
- *Comment:* A lot of green infrastructure projects improve quality of life for communities overall. These projects can gentrify a neighborhood. They are not applied to all communities equally. Low-income communities often get left out. Tying green infrastructure to transportation planning and new developments, smart growth, etc., makes so much sense. Hybrid approaches can have a powerful impact on communities.
- *Comment:* A key lesson from experience on the ground in Flint, MI, is that low-income communities really want training and opportunity to figure out the water infrastructure world at the State level; what are the levers, and how do communities find a voice and figure out what is the most important infrastructure for them? Tribal communities have a similar need.
- *Comment:* Regarding inconsistency among COE districts and among regions of other Federal agencies: is there value in promoting consistent national standards for some of these

issues? Why do these differences exist among the regions of COE, FEMA, NRCS, and other Federal agencies? *Response:* Some differences come about because of our understanding of some of these natural features; shoreline concepts are very east-coast centric and may not be as applicable to other coastlines. Making some concepts nationally scalable may be a challenge. In some cases there is inconsistency because some variation is needed, due to geographic variability. There is also an issue of insufficient financial resources for training and technical assistance, particularly with COE.

- *Comment:* Partnering with private sector is important because you need big trucks and engineers to implement green infrastructure projects too, just like gray infrastructure.
- *Comment:* We haven't talked about how to fund natural infrastructure. The new Administration hasn't released details yet on its infrastructure plans. Lots of good examples of projects resulting from Hurricane Sandy aftermath could be used to demonstrate the benefit of such projects. Maybe ask for LARGE pots of money for a national grants competition. Also, in the land of floodplain guy-outs, there's a lost opportunity in what happens once you remove the structure from the property; many properties become parks, but in most cases, there is no ecosystem restoration done, even though that could enhance natural flood mitigation functions of the property.
- *Comment:* It sounds like there's a case to make for trying to articulate a broader concept for natural infrastructure. Link to transportation projects; think outside of the traditional natural infrastructure box. A second concept of broadening is in the area of dam removal (could be characterized as inverse natural infrastructure); we need broad national work to help determine which dams could be removed for the greatest benefit. Third area of broadening is the notion that agriculture in general is a potential area of natural infrastructure; some work that's been done on soil health moves in that direction, as well as carbon science relating to soil health and the measures put in place to enhance that health (these measures also have water quality benefits). We also need to take a better look at the question: do we really want/need to build in a floodplain? Why build structures to a higher standard in the floodplain when you can build outside the floodplain?
- *Comment:* Regarding urban flooding and sea-level rise, how will green infrastructure relate to addressing that issue, if at all? Are all our coastal cities going to end up like New Orleans, with a lot of pumps and dikes? We can't move Manhattan; are we going to jack up all the buildings? We need to think about how green infrastructure plays into this, as we plan during the next 50 years. *Response:* Some people are looking at a hybrid approach to communities like New York (Dr. Adrian Sutton Greer, NOAA). With respect to urban flooding that's *not* related to sea-level rise, a lot of the flooding is coming from rural communities upstream and needs to be addressed there. We also need to look at places like the Netherlands, where they have been dealing with issues like this for a long time.
- *Question:* With respect to the concept of self-sustaining projects (including O&M costs), can you design projects to be self sustaining, without the need for lots of maintenance? *Response:* Yes, for some projects we can, and many natural infrastructure projects (like wetlands) are already designed that way, but it depends on what feature you're talking about. Dunes and beach replenishments provide only temporary benefits before they get washed out again. There may also be Federal benefits to a project (e.g., water-quality improvement) that the COE can't consider in their decision process because it falls outside their mission; this problem must be addressed at the OMB level and isn't something that individual agencies can solve.

POLICY CHALLENGE REPORTS AND WORKGROUP DISCUSSION

1. Promoting Climate Resilience of New Federal Water Infrastructure Investments
2. Defining Incentives and Support for Corporate Water Resilience
3. Strengthening Local Flood Reduction Planning, Practices and Measures
4. Promoting State Water Resources Planning for Climate Resilience
5. Improving Planning and Financing of Natural Infrastructure for Climate Resilience

ABSTRACT: Each moderator provides a ten minute summary of the policy challenge discussion and identifies key ideas or recommendations to be developed in the coming weeks; workgroup discussion.

Schedule for final report from this meeting:

- Moderators will provide their 2-page summaries by January 23. Those summaries will be eventually posted at https://acwi.gov/climate_wkg/minutes/.
- Co-chairs will send the full meeting report to Workgroup members by January 27.
- Workgroup will provide comments on full meeting report back to Co-chairs by February 3.
- Co-chairs will send final draft of meeting report to Workgroup members by February 7.
- Workgroup teleconference (report approval vote) on February 9.
- Co-chairs will submit report to full ACWI February 15.
- At the meeting of the full ACWI Feb 22-23, the Workgroup will ask ACWI for approval to post the report on the [website](#) (will *not* to ask the ACWI member organizations to formally endorse the report).
- Dissenting views will be documented and released along with the report.

Some members of the workgroup requested that the 2-page write-ups being submitted by moderators (and the resulting full report, to be prepared by the co-chairs) be as specific as possible: if we're saying something should be improved, say *how* it should be improved and what the *desired outcome* is. Other members suggested that we be more general/conceptual and provide specific examples to illustrate the point, rather than being detailed about everything.

Specific "asks" should be problem-centric, rather than blanket statements.

Frame the report in terms of items that the incoming Administration has already identified as high priorities: clean water, infrastructure, etc.

Much of what we have discussed is at the State/local level, not the Federal level; thus, it would be helpful to know what States/locals need specifically (not just "more money" or "more data").

ACTION: To get some specifics into our Workgroup report, people should send their specific ideas to the moderators (and moderators will incorporate them into their 2-pagers).

The Workgroup report will build upon the *NAP Looking Forward* report. The Workgroup endorses that report and is providing (in its own report) some additional ideas, voices, and viewpoints.

Nomenclature/terminology is key; discussions during this meeting have shown that some terms mean very different things to different people, depending on which sector and science discipline you come from. Accordingly, we need to be strategic in our use of language in this report.

There is no such thing as a natural disaster. Rather, there are natural events that can lead to societal and economic disasters. The concept of building “resilient communities” isn’t about natural disasters or climate change or any of the other buzzwords; it’s about maintaining the social and economic vitality of communities in the face of natural events.

When we talk about needing better/more communication, what we really mean is that we need a culture change in the way we frame our communications. It’s more compelling for us to talk about solving flooding problems, drought problems, water-quality problems – in the context of resilience. We also need to be sure we’re communicating at the right level, with the right communities: State/local government agencies, low-income communities, communities upstream/downstream of floodplain areas.

ACWI CLIMATE WORKGROUP MANAGEMENT

ABSTRACT: ACWI Climate Workgroup Co-chairs Paul Freedman and Jeff Peterson lead a discussion of Workgroup goals, activities, and operations for 2017.

- Discussion and Approval: 2016 *Workgroup Annual Report* to full ACWI
 - Discussion and Approval: 2017 *Workplan* to Full ACWI
 - Election of Federal and Non-Federal Co-chairs for the Workgroup
 - Other Business Items
-
- 2016 Report: no questions or concerns expressed. Rob Moore moved and Mike Block seconded the movement to adopt the Report and forward it to the full ACWI. The Report was adopted by voice vote. (Will fix a couple of typos and re-update the membership list before sending to ACWI.)
 - 2017 Workplan: with the understanding that this Workplan could still change based on the priorities of the incoming Administration, do we want to adopt this Workplan officially? Nancy Turyk moved and Erica Brown seconded the movement to adopt the Workplan and forward it to the full ACWI. The Workplan was adopted by voice vote.
 - Election of new Co-chairs: The current co-chairs have been leading the group for almost 4 years, and it’s time for new leadership. Some members have expressed interest in taking a leadership role, but nothing has been settled. If you have an interest, please let [Jeff Peterson](#), [Paul Freedman](#), or [Wendy Norton](#) know so we can follow up and resolve the issue during one of our upcoming teleconferences in the next couple of months. Could also have a vice chair who would serve with Jeff and Paul this year and become full chair next year.

ADJOURN