

**Recommendations for Senate Climate and Clean Energy Legislation**  
**Climate Change Adaptation Planning and Preparedness**  
**National Climate Service**  
**U.S. Global Change Research Program**

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Climate Science Watch<sup>1</sup> is a nonprofit public interest education and advocacy project dedicated to holding public officials accountable for using climate science and related research with integrity, toward the goal of enabling society to respond effectively to the challenges posed by global climate disruption.

The American Clean Energy and Security Act (H.R. 2454) passed by the House in June 2009 contains, in Title IV, a Subtitle E on Adapting to Climate Change.<sup>2</sup> We have reviewed this Subtitle, as well as S. 2307, the Global Change Research Improvement Act of 2007<sup>3</sup> and S. 2355, the Climate Change Adaptation Act,<sup>4</sup> which were reported by the Senate Commerce, Science and Transportation Committee in 2008.

Based on our review of this legislation, our experience with and analysis of the U.S. Global Change Research Program (USGCRP), our review of proposals to establish a National Climate Service, and the findings to date of our ongoing National Climate Change Preparedness Initiative, Climate Science Watch offers the following recommendations for the components of the Senate's climate and clean energy legislation that deal with the interrelated issues of national planning and preparedness for adaptation to climate change impacts, national climate services, and climate and global change research.

**I. Climate Change Adaptation Planning and Preparedness**

**National Climate Change Adaptation Strategy**

The Senate climate and clean energy bill should require the development and implementation of a comprehensive, proactive national planning and preparedness strategy for limiting (mitigating) and adapting to the socioeconomic and environmental impacts of climate change.

Broadly speaking, the bill should require the development of agency-specific plans by all federal agencies with jurisdiction over activities and resources likely to be affected by climate change;

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<sup>2</sup> See [http://energycommerce.house.gov/Press\\_111/20090701/hr2454\\_house.pdf](http://energycommerce.house.gov/Press_111/20090701/hr2454_house.pdf) for the full text of H.R. 2454.

<sup>3</sup> S. 2307, Senate Report 110-341, May 22, 2008. The bill was introduced by Sen. Kerry, with co-sponsors Sen. Snowe, Sen. Klobuchar, and Sen. Nelson of Florida on November 5, 2007.

<sup>4</sup> S. 2355, Senate Report 110-347, reported June 5, 2008. The bill was introduced by Sen. Cantwell, with co-sponsors Sen. Kerry, Sen. Lautenberg, and Sen. Klobuchar on November 14, 2007.

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interagency coordination and development and implementation of an integrated federal strategy; and federal support for the development and implementation of state-level plans. It should provide for the establishment of a federal entity responsible for coordinating interagency activity and federal-state-local cooperation on planning and preparedness.

S. 2355, the Climate Change Adaptation Act reported in 2008 (hereafter S.2355/Cantwell), proposed a statutory framework for the development of a national strategic plan for climate change adaptation. This bill addressed an essential issue and in some respects potentially represented a step in the right direction.

S. 2355/Cantwell would have required the President to provide to Congress a periodically updated five-year National Strategic Plan for Climate Change Adaptation to address the impacts of climate change within the United States. The bill would have required a mechanism for consulting with state and local governments, the private sector, universities, and other nongovernmental entities in developing the Plan.

The bill would have required that the Plan identify federal capabilities for addressing climate change impacts on federally managed resources and with respect to federal actions and policies, and measures to improve and utilize such capabilities; include guidance for integrating the consideration of climate change impacts on federally-managed resources and on federal actions and policies; address vulnerabilities and priorities identified through assessments carried out by the U.S. Global Change Research Program; establish a mechanism for information exchange and technical assistance to state and local governments and nongovernmental entities and recommend partnerships; include implementation and funding strategies; establish a process to develop more detailed agency-specific plans; identify existing and needed additional legal authorities; include steps for international partnerships, and so forth.

The above general elements of a national adaptation strategic plan, with some modification and further development, could form part of the framework for an adaptation planning requirement in the Senate bill. We believe the S. 2355/Cantwell framework could be improved with a number of modifications and additions:

1. Include a strong and updated statement of findings on adaptation and be made less NOAA-centric.
2. Include a strong statement of purpose that clearly expresses legislative intent to put the federal government on a proactive preparedness footing in dealing with the full range of expected socioeconomic and environmental impacts of climate change.
3. Specify that a robust climate impacts preparedness planning process be carried out by an interagency task force under White House leadership – by CEQ, or co-led by CEQ and OSTP. S. 2355/Cantwell does not specify a lead agency. Strong White House leadership is essential for elevating the problem of climate change impacts and adaptation commensurate with the need, and for driving home the importance of realigning agency priorities across the federal government.
4. Include language specifying the range of socioeconomic and resource sectors that should be addressed in the Plan -- for example, water resources, public health, energy systems,

transportation infrastructure, coastal settlements and ecosystems, food production, forestry, and fish and wildlife habitat.

5. Identify those agencies required to develop agency-specific plans and participate in an interagency planning process, allowing for the inclusion of additional agencies as appropriate.
6. Require the agency-specific climate preparedness planning process to begin immediately (S. 2355/Cantwell allows two years after enactment for establishing a process to develop detailed agency-specific plans). In addition, an interagency coordination process that works in tandem with agency-specific planning should be initiated immediately. The interagency process can help to identify issues, priorities, division of labor, and areas of coordination, while agency-specific plans can provide needed detail for implementation.
7. Require the national strategic plan to set priorities for action, identify barriers to implementing options for managing impacts, and specify areas best suited for federal interagency coordination and for ongoing federal interactions with regional, state, local, and tribal entities.
8. Establish a mechanism for federal funding that does not necessarily rely on revenues generated from the sale or auction of allowances under a cap-and-trade program, for development of state-level adaptation plans and implementation of federally approved state plans, as well as provisions in S. 2355/ Cantwell for state coastal and ocean adaptation plans.
9. Require the draft national strategic plan to be published in the Federal Register with adequate time (*e.g.*, 60 or 90 days) for formal public review and comment prior to being finalized and sent to Congress.
10. Amend the Global Change Research Act of 1990, or establish new legislation, rather than amending the moribund National Climate Program Act of 1978. This approach is cleaner and more relevant to the current realities of the USGCRP as codified by the GCRA of 1990.
11. Avoid embedding a national climate change adaptation strategic planning process in a prospective National Climate Service Act that would pre-empt the current OSTP-led interagency planning process by establishing a National Climate Service in NOAA.

We recommend the Senate consider the text in a discussion draft released by the House Energy and Commerce Committee in October 2008, authored by Reps. Dingell and Boucher, requiring adaptation plans in each federal agency (Title IV, Sec. 606). This draft was stronger in a number of ways than the analogous language in S. 2355/Cantwell in that it required a faster pace for agency planning and reporting, and greater specificity for ensuring accountability for effectiveness (see text in footnote below).<sup>5</sup>

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<sup>5</sup> SEC. 606. FEDERAL AGENCY CLIMATE CHANGE ADAPTATION PLANS.

(a) PUBLICATION AND REVIEW.—

(1) PRESIDENTIAL REVIEW.—Within 1 year after the date of publication of each National Assessment, each Federal agency with representation on the Council shall—

(A) complete an agency climate change adaptation plan detailing the agency's current and projected efforts to address the potential impacts of climate change on matters within the agency's jurisdiction; and

## **Federal Interagency Adaptation Plans for Socioeconomic and Resource Sectors**

The Senate bill should require the interagency task force on adaptation planning to identify specific socioeconomic and natural resource sectors that require interagency coordination on adaptation. The relevant agencies for each sector should be required to develop a plan for that sector that draws on and integrates agency-specific plans. Agency and sector plans would form the basis for an integrated national strategic plan.

H.R. 2454 includes two examples of how a statutory basis could be established for sectoral adaptation planning – one for natural resources and one for public health. A well-developed subpart on Natural Resources Adaptation specifies in detail the essential basis for developing and implementing a national adaptation strategy for natural resources. H.R. 2454 also includes a well-developed mandate for planning process for preparing the nation’s health care systems to respond to the impacts of climate change.

While H.R. 2454 covers these two important components of an overall adaptation strategy, it does not address numerous additional socioeconomic and resource sectors, such as water resources, coastal settlements and ecosystems, transportation and energy systems and infrastructure, food production, and forestry. Adaptation planning needs for these sectors apparently have not yet been conceptualized with the same degree of coherence and development as has been done with public health and natural resources, and have not been put

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(B) submit such agency climate change adaptation plan to the President for review.

8 (2) SUBMISSION TO CONGRESS.—Within 18 months after the date of publication of each National Assessment, each Federal agency with representation on the Council shall submit the agency climate change adaptation plan described in paragraph (1), as finalized following Presidential review, to the House Committee on Energy and Commerce, the Senate Committee on Environment and Public Works, and the committees in the House of Representatives and the Senate with principal jurisdiction over the relevant agency.

(b) REQUIREMENTS.—Each agency climate change adaptation plan shall include—

- (1) a review of the current impacts of climate change on matters within the agency’s jurisdiction;
- (2) a review of anticipated future (short-term, medium-term, and long-term) impacts of climate change on matters within the agency’s jurisdiction, including an assessment of the probability of such impacts that follows the guidelines on treatment of uncertainty established for the National Assessments;
- (3) a description of priorities, within the scope of the agency’s jurisdiction, for building the adaptive capacity of the United States and its territories;
- (4) a review of the agency’s current efforts to address climate change impacts on matters within its jurisdiction, including a description of how current and future impacts are being integrated into agency decisionmaking and a description of budgetary and human resources dedicated to adaptation to climate change;
- (5) a description of initiatives that will be undertaken to address climate change impacts on matters within the jurisdiction of the agency, including—
  - (A) the strategic objectives of such initiatives;
  - (B) the resources that will be dedicated to such initiatives;
  - (C) timelines for implementation; and
  - (D) benchmarks and methods for assessing effectiveness;
- (6) a description of current and proposed mechanisms to enhance cooperation on climate change adaptation efforts with other Federal agencies and with State, local, and tribal governments and nongovernmental stakeholders;
- (7) an assessment of the agency’s success in meeting the objectives outlined in its most recent agency climate change adaptation plan, except that this paragraph shall not apply to the first agency climate change adaptation plan; and
- (8) an estimate of the budgetary and human resources needed to address climate change impacts on matters within the jurisdiction of the agency.

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forward with the same effectiveness in the legislative process. However, the Senate bill should, without undercutting the kind of public health and natural resources adaptation planning laid out in H.R. 2454, incorporate a wider range of sectoral impacts with appropriate bill language.

S. 2355/Cantwell also included a section on Ocean and Coastal Vulnerability that required a coastal and ocean adaptation plan. The coastal and marine sector will require substantial preparedness planning. We have several concerns with how this section of S. 2355/Cantwell was structured: (1) The bill would have directed the Commerce Department (*i.e.*, in practice, primarily NOAA) to coordinate regional vulnerability assessments of coastal and ocean areas and waters, including a wide range of physical, biological, ecological, social, cultural, and economic impacts on coastal communities and coastal and marine natural resources. We believe that assessments of this scope are more appropriately coordinated and conducted within the larger framework of the U.S. Global Change Research Program. (2) The bill would have required the Commerce Department to develop an agency-specific coastal and ocean adaptation plan, made up of regional plans to deal with impacts of climate change, sea level rise, and ocean acidification. We believe that a sectoral adaptation plan of this scope should be developed within the larger framework of an interagency national adaptation task force and planning process rather than assigned by statute to a single lead agency. The same goes for the bill's requirements for federal technical planning assistance and products to state and local governments, and for federal funding to states for coastal and ocean adaptation programs.

### **Federal Support for State-level Adaptation Plans**

While H.R. 2454, Sec. 453, on State Programs to Build Resilience to Climate Change Impacts, is well-crafted, it does not adequately link state adaptation plans and programs to a parallel process at the federal level for developing and implementing a national strategic plan that addresses the full range of sectors expected to be affected by climate change. This limitation of H.R. 2454 should be corrected by embedding the provision for state programs in the larger context of a comprehensive national plan.

H.R. 2454 designates EPA as the lead agency for rulemaking and administering the federal program for supporting state adaptation plans. We question whether EPA has the range of expertise to address the full set of issues state plans would be expected to include. We recommend the Senate consider giving the lead role to the Council on Environmental Quality. CEQ could draw on the interagency adaptation task force and call upon the full range of federal expertise in guiding, evaluating, and supporting state programs. Alternatively, a new federal coordinating entity for federal adaptation programs and federal-state interactions could be designated as the lead for administering federal support for state programs. (See our recommendation below, for establishing a National Climate Change Preparedness Center.)

### **Stakeholder Participation and Oversight**

The Senate bill should include a strong requirement that climate change adaptation plans be developed using consultation with and the active participation of relevant stakeholders. The national plan should include a well-designed, formal process for involving state and local government officials and other nongovernmental stakeholders in setting priorities and providing ongoing evaluation of the effectiveness of implementation of the national strategy. The bill should specify modes of accountability to stakeholder input, with periodic reporting to the White House and Congress.

### **Vulnerable Communities**

The Senate bill should require that federal and state adaptation planning identify vulnerable communities and populations that are likely to bear disproportionately or inequitably the impacts of climate change. Adaptation planning and implementation should include communication with and participation by relevant affected communities and populations, and address their particular circumstances.

### **Need for a Strong Coordinating Entity for Climate Change Preparedness**

We recommend that the Senate bill establish a national climate change adaptation program integrating entity – our proposed term for it is the National Center for Climate Change Preparedness – that can serve as a point of entry for states and local communities to access the federal operational expertise across multiple agencies and across the full range of impacts issues. This Center should be able to entrain the relevant expertise and support across the federal agencies to work with states and local communities on collaborative solutions to problems of adaptation planning and action. The bill should establish a framework for this preparedness center that is sufficiently integrative and flexible in its mandate that it can evolve over time as needed to meet the challenge of climate change as it develops.

At a minimum, a national climate change adaptation program coordination office should be established, to support the overall interagency program. Carrying out an integrated, effective national program for climate change adaptation will require more than agency-specific or interagency plans and activities, and more than an interagency task force. A program coordination office would integrate activities and resources across agencies and sectors and support the preparation of a national strategic plan for adaptation. A national adaptation program office could perform functions that have been served by the USGCRP Coordination Office. But, just as the USGCRP Coordination Office should be substantially strengthened in order to play its proper role more effectively, so a national adaptation program office should have a strong mandate and clearly specified responsibilities for coordinating and integrating the program.

We recommend adding another essential dimension to the interagency coordination of a national adaptation program, *i.e.*, the coordination of federal planning, expertise, and resources with the adaptation planning and implementation needs of states and local communities and nongovernmental stakeholders. The Senate bill should establish a national climate change planning and preparedness entity both for integrating federal planning and activities and for connecting the federal government to the rest of the country in managing the nation's preparedness for and response to the impacts of global climate disruption.

### **National Climate Service**

We support the provision in H.R. 2454 for a 2-year interagency planning process, led by OSTP, to develop a proposal for the structure and functions of a National Climate Service.

We agree with a planning approach led by the White House, as outlined in Office of Science and Technology Policy Director John Holdren's testimony before the Senate Commerce,

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Science and Transportation Committee at its July 30 hearing on Climate Services: Solutions from Commerce to Communities:<sup>6</sup>

“No single agency is capable of providing all of the information and services needed to inform decision-making. To be successful, the delivery of climate services will require sustained federal agency partnerships and collaboration with climate service providers and end users.

“While much work has been done to evaluate the need for climate services and a National Climate Service, the Administration believes that additional assessment and analysis of existing climate-service capabilities and user needs for climate services is necessary....

“To promptly address this issue, the OSTP is working to convene a task force with representation from a diverse group of key agencies whose charge will be to examine national assets, existing data and information gaps, and costs related to the development of a cohesive framework for delivering accurate climate-related information to the public. This process is intended to result in a more detailed functional and organizational approach for delivering climate services to the nation, in concert with the Administration’s views presented here for a broad authorizing framework.”

We believe the Administration’s current approach is preferable to creating a National Climate Service within a single agency, or designating a single lead agency, such as NOAA, at this stage. NOAA has an essential role to play, but the process of developing a proposal for a National Climate Service must have White House leadership. We believe this leadership can best be provided by OSTP. In addition, we believe that H.R. 2454 could be improved by requiring that OSTP work in collaboration with the Council on Environmental Quality on this matter.

Thus we would not recommend using the National Climate Service title of S. 2307, the Global Change Research Improvement Act of 2007, as reported by the Commerce, Science and Transportation Committee in 2008 (hereafter GCRIA 2008) as a template for the current bill. GCRIA 2008 would have established a National Climate Service within NOAA. We believe that NOAA should not be the sole implementer of a National Climate Service. GCRIA 2008 does not adequately address the role of other federal agencies. It does not address the wide range of climate-related issues of concern to decisionmakers that extend well beyond the range of NOAA’s expertise. It does not specify a strong enough process for developing an information user-driven agenda for federal climate services.

We believe the history of the failed National Climate Program Act of 1978 (NCPA) argues against designating NOAA as a lead agency. The NCPA designated NOAA as the lead agency for a multiagency national climate program, but multiagency support for this arrangement was lacking. As a result, the NCPA was essentially stillborn and has long been moribund and worthy of repeal. (H.R. 2454 would repeal the National Climate Program Act. This action is overdue.) When, in the late 1980s, Congress moved once again to establish a multiagency program for climate and global change research, it started over and developed the Global Change Research Act — which specifies OSTP oversight of the USGCRP and does not specify a lead agency.

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<sup>6</sup> Dr. Holdren’s testimony is posted at [http://commerce.senate.gov/public/\\_files/HoldrenTestimony.pdf](http://commerce.senate.gov/public/_files/HoldrenTestimony.pdf).

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We note that NOAA itself contains a conglomeration of climate-related research, observations, assessments, and service activities, which have had a tendency to be stovepiped and are certainly not yet fully integrated. The lengthy planning process undertaken by NOAA to develop a conception for a National Climate Service revealed a lack of consensus internally on how such an entity should be designed. NOAA has yet to demonstrate that it is ready to establish and lead an integrated, effective National Climate Service. Until then, this role at NOAA should be called a "Climate Services Program," without presupposing the relationship of this program to the overall provision of national climate services.

Toward this end, H.R. 2454 provides for NOAA to develop an *intra*-agency climate services program and climate services program office, including liaison with other federal agencies. We support the approach to developing NOAA's role included in H.R. 2454. It will enable NOAA to further develop its essential role, which should both inform and be compatible with the OSTP-led interagency process, and does not preclude any particular future role, including a leadership role, for NOAA in the larger federal climate services effort.

We note that our position on this also is consistent with the recommendations of the National Research Council in its 2009 report, *Informing Decisions in a Changing Climate*. We agree with the NRC that, if a National Climate Service is created, it should follow an interagency organizational model. (This should not be taken as support for creating an unfocused multiagency effort or a cumbersome new bureaucracy.) We agree with the NRC that climate services must involve going well beyond developing and providing information and forecasts about climate, but must also include many kinds of non-climate information that climate-affected decisionmakers need. It must be user-driven on the services end, and closely coupled with the USGCRP on the information and assessments end. Thus, we agree with the NRC that an extension of the NOAA National Weather Service is an inappropriate model for designing a climate service.

### **Stakeholder Participation and Oversight**

The Senate bill should include a strong requirement that national climate services be developed using consultation with and the active participation of relevant stakeholders. The development of national climate services should include a well-designed, formal process for involving state and local government officials and other nongovernmental stakeholders in setting user-driven priorities and providing ongoing evaluation of the effectiveness of delivery of climate services. The bill should specify modes of accountability to stakeholder input, with periodic reporting to the White House and Congress.

### **Relationship to the U.S. Global Change Research Program**

The USGCRP is the appropriate federal program for planning and implementing climate observing systems, climate science research, climate predictive modeling, and national climate change impacts and vulnerability assessments. A National Climate Service, wherever it is located and however it is structured, should draw on these USGCRP capabilities and products, but not engage in duplicative activities, i.e., the NCS should not be tasked with running observing systems and modeling centers, nor with conducting national assessments. It should not have a funding authorization to, in effect, establish a climate change observations, research, and assessment program that is parallel to and not accountable to the overall USGCRP multiagency effort and its Strategic Plan for Research and Assessment.

Instead, if an NCS is created, it should be designed as a partner of the USGCRP and serve the purpose of meeting a wide range of time-sensitive stakeholder needs for data, information, and targeted assessments. It should be a lean, flexible organization, designed to provide value-added to existing climate change observations, research, modeling, and assessments through delivery of timely and relevant information to policymakers, other stakeholders, and the public.

### **Relationship to a National Climate Change Adaptation Strategy**

A few brief comments about the relationship between National Adaptation Strategy, the USGCRP, and a prospective National Climate Service:

1. The United States needs a strategy for preparedness and adaptation to the impacts and potential impacts of global climatic disruption. This should be included in comprehensive climate and clean energy legislation. Further, interagency planning activities should proceed under White House leadership even in advance of the enactment of legislation.
2. The U.S. adaptation strategy should include the full set of relevant federal agencies. It should include water resources and infrastructure, public health, transportation and energy systems, food production, forestry, wildlife and plant habitat and ecosystems, coastal zones, and other sectors as appropriate. The federal strategy should include a structure and process for connecting the federal government to state and local governments and other stakeholders who will have to deal with climate change impacts.
3. A national climate change adaptation strategy should have an operational, programmatic focus, with technical assistance and funding for states and localities. This goes well beyond the purview of either the USGCRP as a scientific research and impacts assessment program, or a complementary National Climate Service as a mechanism for meeting stakeholder-driven information needs.
4. The USGCRP and NCS should stop short of having direct involvement in adaptation-related policymaking and management decisionmaking. The federal-state-local adaptation program should be a vehicle for applying USGCRP and NCS information in operational contexts. We call for the creation of a "center," i.e., coordinating entity, to connect the various operational climate change planning and preparedness activities across the federal, state, and local levels.

### **III. U.S. Global Change Research Program (USGCRP)<sup>7</sup>**

Both H.R. 2454, as passed by the House, and S. 2307, the Global Change Research and Improvement Act as amended and reported by the Commerce Committee in 2008 (GCRIA 2008), contain significant improvements on the Global Change Research Act of 1990 (GCRA),<sup>8</sup> the authorizing statute for the USGCRP. Elements of both of these bills should be combined in a USGCRP section of the Senate climate and energy legislation currently being developed. In

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<sup>7</sup> Prior to founding Climate Science Watch in 2005, CSW Director Rick Piltz served for 10 years in senior positions in the coordination office of the U.S. Global Change Research Program/Climate Change Science Program. Prior to that he was a professional staff member of the House Committee on Science, Space, and Technology, supporting the Committee's oversight of the U.S. Global Change Research Program and the science-policy relationship on climate change. CSW Senior Associate Anne Polansky was part of the Congressional staff group that developed the Global Change Research Act of 1990.

<sup>8</sup> P.L. 101-606, 15 U.S.C. 2921 *et seq.*)

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addition, we recommend the inclusion of some key provisions that are not present in either H.R. 2454 or GCRIA 2008.

### **Strong Role for OSTP**

We believe the USGCRP needs White House leadership and a full-time senior leadership group. The Senate bill should specify OSTP as the chair of the USGCRP committee. H.R. 2454 specifies that OSTP is the “lead agency” for the program — without elaborating on what this entails in governing structure beyond OSTP’s status under the GCRA. The Global Change Research Act currently specifies that the USGCRP interagency principals-level committee shall be chaired by an agency representative selected by the OSTP Director.

A full-time program leadership group reporting to the OSTP Director should be located in the USGCRP Coordination Office — but that will require senior-level leadership in that office that has a much stronger mandate to drive interagency program and budget priorities and coordination than does the current USGCRP Office, which basically serves an under-resourced staff support function (see below).

We believe OSTP, in conjunction with a strengthened USGCRP Coordination Office, should be given a mandate to play a stronger role in governing the USGCRP and shaping participating agency research and budget priorities for climate and global change research than it has been able to in the past.

H.R. 2454 authorizes \$10M/yr to OSTP for funding interagency activities that are not included in the current year budget of any individual participating agency, including funding for regional workshops to promote stakeholder engagement. We believe this provision, which has been recommended by some of the earlier USGCRP leadership, is worth considering for inclusion in the Senate bill. But OSTP’s authority vis-à-vis the USGCRP budget, exercised in collaboration with the Office of Management, should involve the entire interagency crosscut.

### **Expanded USGCRP Agency Participation**

H.R. 2454 and GCRIA 2008 differ in how they would structure the USGCRP interagency committee. Both approaches have merit and they potentially could be combined.

GCRIA 2008 specifies that agency representatives shall be the Deputy Secretary (or designee) of cabinet departments and deputy head of other participating agencies. Mandating that agencies be represented by high-level, Senate-confirmed officials could have the advantage of promoting more substantial program and budget authority for the committee and more accountability to Congress. However, this also raises a concern about whether having the USGCRP governed directly by political appointees might increase the possibility that the program will be subjected to inappropriately politicized decisionmaking. The USGCRP’s past experience, especially during the last Administration, necessitates raising this concern.

H.R. 2454 specifies that the USGCRP committee shall include both “research and program representatives of agencies conducting global change research, agencies with authority over resources likely to be affected by global change, and agencies with authority to mitigate human-induced global change.” (underlining added) This could have the advantage of promoting more substantial connectivity between the USGCRP’s scientific observation and research mission and its mission as (to quote the Purpose language in GCRIA 2008) an “assessment and

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outreach program which will assist the Nation and the world to...mitigate and adapt to the effects of human-induced and natural processes of global change.” We note that this would, in effect, mandate the inclusion of representatives whose jurisdiction spans the full range of issues included in the IPCC assessment reports: (1) the science of climate and global change; (2) impacts, vulnerability, and adaptation; and (3) mitigation.

One way to combine the strengths of these two approaches would be to require that the USGCRP committee be made up of high-level principal agency representatives, but also specifying that the program must include interagency working groups, made up of senior federal program leaders in participating agencies, that are designed to plan and implement effective programs that address (1), (2), and (3) in the previous paragraph. The first, on climate and global change research, would most closely resemble the existing USGCRP committee. The existing USGCRP committee set-up has not proven adequate to address impacts and response strategies. Those concerns, which are increasingly urgent, call for new interagency coordination groups, one on impacts and adaptation, and one on mitigation research and assessment. (The latter should not be thought of as equivalent to energy technology R&D.) All three should be overseen by a high-level committee of principals that can integrate the combined effort and set overall budget and program priorities.

### **Climate Change Assessments**

With the benefit of 20 years of experience since the development of the original Global Change Research Act, and 10 years since the first National Assessment of Climate Change Impacts was carried out, Congress should use this opportunity to update and substantially upgrade the climate change assessment mandate in the bill.

H.R. 2454 contains requirements for the production of Vulnerability Assessments and Policy Assessments and provides a general outline of what they should address. These are a step in the right direction, but they have significant limitations in meeting the critical U.S. need for climate change impacts and response strategy assessments.

GCRIA 2008 adds language to the current Assessment section of the GCRA to emphasize usefulness to decisionmakers, but otherwise does not specify a stronger and more detailed mandate for what the USGCRP should produce and transmit to the Congress in the way of climate and global change assessments.

Both GCRIA and H.R. 2454 leave in place existing statutory language for the assessment requirement that is either too general and unfocused to provide meaningful guidance (*i.e.*, the assessment “integrates, evaluates, and interprets the findings of the Program”), or is both too unfocused and restrictively specific (“analyzes current trends in global change...and projects major trends for the subsequent 25 to 100 years”). Such language is not particularly useful for identifying what policymakers and stakeholders need from the USGCRP in terms of climate and global change impacts and response strategy assessments. Neither bill makes specific reference to a need for “climate change” assessments – a striking omission, considering the extraordinary significance of and urgency of the climate change problem as a driver of high-level interest in this research program – instead sticking with the catch-all term “global change.”

The Assessments section of the bill should make more use of lessons learned from the first National Assessment of Climate Change Impacts, conducted during 1997-2001, than is reflected either in H.R. 2454 or GCRIA 2008. It should mandate a process that:

- is not simply an intermittent, report-driven exercise, but rather is continuous and ongoing;
- includes requirements of periodic reporting to the President and Congress, as well as targeted intermittent reporting to a range of user groups, as appropriate;
- is government-wide, with the active engagement and funding contribution of multiple agencies and departments;
- has national, regional, state, local, and sectoral (socioeconomic and resource sectors) components;
- allows for consideration of both mitigation and adaptation, and their interrelationships;
- develops its agenda via an ongoing partnership with national, state, and local officials (including Indian tribes), businesses, nongovernmental organizations, and other stakeholders;
- has a dedicated, full-time coordinating entity with a mandate and budget;
- is coordinated appropriately with all federal “climate services” programs at NOAA and other agencies, as well as with a National Climate Service if one is established;
- is applications-oriented and mission-driven, designed to provide decision-relevant assessment information on climate change impacts to agencies providing climate services, as well as to federal and nonfederal entities engaged in providing technical support and resources for operational mitigation and adaptation policymaking and problem-solving at the national, state, and local levels; and
- is used to help shape the USGCRP research agenda, which should be demonstrably responsive to additional research needs identified as part of the assessment process.

### **Scientific Integrity of USGCRP Products and Communications**

We support the inclusion of text from GCRIA 2008, Sec. 112 on Independent Review of USGCRP Products, and Sec. 113 on Scientific Communications, or text that accomplishes the same basic purpose. It is essential to include language that is at least as strong as the following in GCRIA 2008 Sec. 113:

The President shall establish guidelines and implement a plan that requires...Federal agencies with scientific research programs to adopt policies that ensure the integrity of scientific communications. Such policies shall include provisions regarding the approval of final text and communications, and enable scientists to disseminate research results and freely communicate with the Congress, the media, and colleagues in a timely fashion.

In addition, scientific reports and communications of the USGCRP and its participating agencies should be protected from inappropriate political interference. In Sec. 112(b), Implementation of Act, we suggest not limiting the review to the process used by “participating agencies,” but instead using language that also would address inappropriate intervention by the White House and Executive Office of the President. In the past, inappropriate actions, or failures to take appropriate action, in clearing testimony and other communications to Congress, have either originated from or been implemented by the Council on Environmental Quality, the Office of Management and Budget, or the Office of Science and Technology Policy.

### **Stronger USGCRP Coordination Office**

We support putting the USGCRP Coordination Office in statute and assigning it significant responsibilities, as GCRIA 2008 does. There is no similar provision in H.R. 2454. The

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USGCRP participating agencies have consistently underfunded the USGCRP Office through their voluntary multiagency allocation system. They do not allow the USGCRP Office to play a role in influencing individual agency research budget priorities. They have kept the USGCRP Office's role in communications and outreach on behalf of the USGCRP as a government-wide program limited, while concentrating their efforts on promoting individual agencies. The USGCRP Office is currently not a strong point of contact on federal climate change activities for government and private sector organizations, academia, the media, and other stakeholders.

An effective USGCRP Coordination Office, working in conjunction with OSTP and the USGCRP principals committee, interagency subcommittees and working groups, could make an essential contribution. Without a substantially stronger USGCRP Coordination Office than the one in place now, and more high-level leadership, particularly from OSTP, the USGCRP will remain a loosely coordinated set of research activities and will not achieve the GCRA statutory intent "to provide for development and coordination of a comprehensive and integrated United States research program which will assist the Nation and the world to understand, assess, predict, and respond to human-induced and natural processes of global change."

The Senate should consider specifying a more detailed mandate for the USGCRP Coordination Office's role in communications and outreach, in particular for the role of the Office in communications and outreach to Congress. The USGCRP Office has been seriously restricted in terms of meaningful two-way communications and outreach to Congress, state and local governments, the media, academia, stakeholder groups, and even the scientific community.

We recommend modifying the requirement in GCRIA 2008 that the director of the USGCRP Coordination Office be "a senior scientist or other qualified professional with research expertise in climate change science...." The additional requirements are good, but the specific wording of this requirement would unduly narrow the field of potential candidates for this position. There are leaders in the areas of science program management, coordinators of scientifically based assessments, ecosystem research, the social sciences, and bridge-building between the worlds of science and policymaking, whose careers and expertise are not based on conducting peer-reviewed "climate change science research" *per se*.

### **Strategic Plan for Research and Assessment**

The strategic planning language in GCRIA 2008 establishes a good basis for developing the planning requirements in a new bill. H.R. 2454 includes much but not all of these changes, which are improvements on current statute. There do not appear to be any substantial conflicts between the two bills on strategic planning for research and assessment.

GCRIA 2008 improves on the GCRA in specifying the contents and elements of the strategic plan for the USGCRP, both by strengthening and updating language on requirements in the GCRA and by adding new components that reflect new priorities on outreach and public participation; regional scenarios and impacts assessment; identifying decisionmaker information needs; strengthening and sustaining observing systems; identifying and addressing gaps in scenario-based modeling capabilities; identifying vulnerable ecosystems; climate change science issues including ice sheet melting, hurricanes, Great Lakes water levels, and droughts in the western U.S.; and development of a common assessment and modeling framework for use in vulnerability assessments.

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Stakeholder oversight: The Senate should consider requiring the establishment of an external committee of program stakeholders to provide ongoing oversight, with periodic reporting to the White House and Congress from a stakeholder perspective on USGCRP research and assessment priorities and program implementation. The bill should specify multiple modes of USGCRP accountability to stakeholder input. H.R. 2454 contains several examples of this in its requirements for the USGCRP strategic planning process, e.g.: Sec. 451(b)(5)(A) requires that the development of the Strategic Plan include a formal assessment process to determine stakeholder information needs, and requires that these assessments be utilized. Sec. 451(b)(5)(B)(viii) requires showing how the USGCRP will satisfy information needs identified by decisionmakers to develop policies to reduce vulnerability. Sec. 451(b)(5)(F) requires the USGCRP to contract for an evaluation by the National Governors Association of the utility of the Strategic Plan and its anticipated outputs to policymakers, with recommendations on future research and assessment priorities.

Social, behavioral, and economic sciences: The bill should require that the Strategic Plan specify how the USGCRP will adequately support the range of research in the social, behavioral, and economic sciences that will be needed for the analysis of the socioeconomic impacts of climate and global change and the analysis of mitigation and adaptation response strategies and assessment of their effectiveness. The Strategic Plan should indicate how social science and natural science activities will be coordinated in developing the USGCRP agenda for research and assessment. Roles and contributions of USGCRP participating agencies should be specified. The “human dimensions” research agenda has never been adequately addressed by the USGCRP, never been appropriately funded, and has not had strong ownership by participating agencies (with a few limited exceptions). There has long been an increasingly urgent need to require the USGCRP to address this fundamental deficiency in the program.

“Research and Assessment”: We recommend including the provision in H.R. 2454 that would amend the GCRA to change the title of the research plan to include both “Research and Assessment.” Climate change impacts assessments have been undersupported and underpublicized by the agencies and treated as sensitive and potentially controversial. Climate change response strategy assessments have been virtually nonexistent. Assessments are not research *per se*, but are a principal means by which the USGCRP must carry out its mission, communicating with society and translating the state of scientific knowledge into support for decisionmaking. Highlighting assessments in the mandate for USGCRP strategic planning would send a signal that support for the research program is premised on this mission orientation, and that research priorities should be set in connection with the need to produce decision-relevant assessments.

### **Budget Coordination and Accountability vis-à-vis the Strategic Plan**

GCRA 2008 would have strengthened the USGCRP budget coordination requirement, in particular by requiring that: (1) the USGCRP Committee and the USGCRP Coordination Office review and comment on agency budget estimates in the context of the Strategic Plan before the President’s annual budget is submitted to Congress; (2) a report on this review be submitted to the Senate Commerce and House Science committees; and (3) the President submit an “integrated budget plan” for the USGCRP, highlighting program priorities, at the time of submitting the annual budget request to Congress. All of this would be an improvement on the current state of affairs.

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We recommend that the bill go further by specifying additional required USGCRP budget reporting that would provide greater accountability and an additional basis for Congressional oversight. OSTP, the USGCRP Committee, and the USGCRP Coordination Office should be working in conjunction with OMB from the early stages onward while annual agency budget requests are being developed. The general practice has been for OMB to develop budget requests on an agency-by-agency basis in communication with individual agencies, with neither OMB nor agency budget offices working to ensure a close coupling between agency requests and the overall strategic needs of the USGCRP as a whole.

OSTP and OMB should be required to submit a timely annual report to Congress, identifying transparently and in detail the USGCRP-crosscut research budgets of each participating agency. For each component of the statutorily required USGCRP strategic plan for research, the report should describe the participating agency program activities that are implementing that component, including agency-by-agency budget line items relevant to implementation of each component of the multiagency plan, and the function of each budget item in implementing the plan.

At present, neither the President's budget request, nor the detailed budget documents submitted by agencies, nor the USGCRP annual report to Congress, *Our Changing Planet*, are transparent, or even decipherable, in terms of identifying specific USGCRP budget and program components and their role in effective implementation of the USGCRP Strategic Plan. Without this information, OSTP, OMB, and the USGCRP participating agencies can evade meaningful Congressional oversight and frustrate efforts even to understand the USGCRP budget.

Without this information, the agencies do not have to justify research budgets in terms of the overall requirements of the USGCRP Strategic Plan, or reveal whether or not they are in accord with a Plan-based review by OSTP and the USGCRP Coordination Office. Currently there is no way to crosswalk the components of the USGCRP crosscut with the components of the Strategic Plan, or to determine whether the Plan is, in fact, driving agency priorities. Integrating currently disaggregated and stovepiped agency climate and global change research budgets requires greater specificity, continuity in reporting from year to year, and accountability by both OMB and OSTP for their actions in driving this process.

### **Annual Report**

We recommend that the Senate use this opportunity to enhance USGCRP accountability by specifying more clearly than the current language in the GCRA what should be included in the USGCRP annual report to Congress — the report that, since the program's inception in 1989, has been titled *Our Changing Planet* (OCP). The bill should require the USGCRP to seek and address input from Congress and other stakeholders (including through a public comment process) on improving and making more useful the contents of the annual report.

In practice, the OCP report is seldom, if ever, delivered to Congress in a timely manner as required by statute, defeating its usefulness to Congress as a tool for use in authorizing and appropriating funding for USGRP priorities. The report's budget tables have become increasingly opaque in terms of permitting a meaningful understanding of how specific agency programs and activities are reflected in budget line items (see "Budget Coordination" above). In recent years OCP has sought to mask critical problems, including the degradation of global climate observing systems and the program's inadequacy in developing research agendas and devoting resources to research on climate and global change impacts and response strategies.

### **National Research Council Review**

GCRIA 2008 requires the NRC to evaluate the USGCRP Strategic Plan, but does not specify how the National Science and Technology Council and the USGCRP leadership must consider the NRC's recommendations. We recommend the Senate direct the USGCRP to post the NRC evaluation on its website, give timely consideration to the NRC findings, and publish the program's responses to the evaluation, explaining whether and how it intends to implement the NRC's recommendations.

GCRIA 2008 also requires the NRC to:

- “(A) examine existing research, potential risks (including adverse impacts to the marine environment), and the effectiveness of ocean iron fertilization or other coastal and ocean carbon sequestration technologies; and
- “(B) identify domestic and international regulatory mechanisms and regulatory gaps for controlling the deployment of such technologies and provide recommendations for addressing such regulatory gaps.”

We recommend not limiting the geoengineering focus to coastal or ocean carbon sequestration. Rather than relying exclusively on the NRC, the USGCRP itself should include a research agenda on the potential risks, benefits, and consequences of potential geoengineering options. This requirement could be an element in the 10-year Plan. The requirement in (B) for looking at regulatory gaps could also be strengthened by extending it to a broader range of geoengineering issues and requiring a report to Congress on the Administration's response to the recommendations for addressing the gaps, either to develop regulations or explain why such regulations are not necessary.

### **Climate and Global Change Data Management**

We support including the provisions in H.R. 2454 Sec. 451(c) — Climate and Other Global Change Data Management — to establish an interagency climate and global change data management working group to make recommendations and develop and propose a strategy for coordinating federal climate and global change data management and archiving activities.

### **Scientific Review of GHG Emissions Reductions in Terms of Climate Change Impacts**

We support including the proposal presented by the Union of Concerned Scientists, most of which is included in H.R. 2454, pp. 684-699, to require periodic scientific reviews of the adequacy of greenhouse gas emissions reductions policy and actions to meet targeted goals in reducing the risk of climate change impacts. This provision tasks the USGCRP with providing regular feedback to policymakers on "safe" levels of GHGs in the context of current levels and projections, and indicates how much further we need to cut emissions globally to avoid "catastrophic" change.