

Climate Change Science Adequately Reflected in the “Climate Change Sense of the Congress Resolution”

A Response to the Senate Republican Policy Committee’s document entitled
“The Shaky Science Behind the Climate Change Sense of the Congress Resolution”
(by Paul Georgia), dated June 2, 2003.

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The RPC document states five reasons why the Congressional resolution on climate change is suspect and – by implication – should be withdrawn. Each of these claims is false. To make its case, the RPC document employs “classic” climate skeptic arguments and procedures, including heavy reliance on statements by climate skeptics—a tiny minority of climate scientists worldwide;
highlighting scientific uncertainties without adequate contextualization or balancing with the overriding consensus regarding the basics of climate change science;
selective, out-of-context quoting or misquoting of respected scientists to weaken the scientific conclusions;
reliance on selected older economic studies to draw inappropriate policy conclusions;
misrepresentation and attempted discrediting of respectable international institutions; and
the attempted discrediting of the National Assessment as a “Clinton era report”—despite extensive pre-publication scientific peer review.

Specifically, the five claims can be refuted as follows:

(1) There is growing and increasingly solid scientific consensus on the fundamentals of climate change. [refers to claims made on pp.2-4 of the RPC document]

The current scientific consensus on climate change is unambiguous

The RPC document misrepresents the state of climate change science and the agreement among the vast majority of climate change experts that (1) climate change is real and already underway; (2) contemporary climate change – and especially the changes observed the world over during the last 50 years – are in large measure due to emissions of heat-trapping gases from human activities; and (3) while this complex global change in our Earth system requires continued research to refine our understanding and projections of climate change and its impacts, there is sufficient understanding of the fundamentals that warrant immediate significant efforts to reduce the human causes of climate change. As noted in IPCC Reports—based on assessment of the scientific literature—there is ample evidence of climate change and its impacts already: rapid disappearing of mountain glaciers is a widespread global phenomena; plants are blooming earlier; birds are laying eggs earlier and are migrating earlier; and butterflies and marine species are moving poleward in response to warming. None of this is mentioned in the RPC selection of IPCC findings. Politicians are free to selectively quote and even misquote, but peer reviewed assessments like IPCC, NRC, or the US National Assessment do not enjoy such a luxury, and must instead undergo a rigorous peer review.

What “scientific consensus” means and how strong it is on climate change

The notion of a “scientific consensus” on the fundamentals of climate change science does not require perfect agreement on every single aspect of a very complex problem – a clearly unrealistic aim. There is not a single major problem in the business, security or medical communities for which such perfect scientific agreement exists, yet the U.S. Congress has previously acted preventively on many issues with far less of a scientific consensus than exists over climate change.

Within the IPCC, “scientific consensus” means that the working group authors agree that a fair representation of the scientific debate has been achieved. Points of dispute in the science of climate change are usually resolved either by developing appropriate intervals of uncertainty around certain projections or by crafting language that reflects the different viewpoints of experts within the scientific community and the reasons that the differences exist. (1) The very existence of the large range cited by the IPCC Working Group 1 Summary for Policy Makers for warming projections to 2100 (2.5-10.4° F) attests to the insistence of such carefully peer reviewed documents to summarize uncertainties and disagreements. This stands in stark distinction to the easy and elliptical pronouncements of climate skeptics to reporters or at Congressional hearings. They are non-representative of the scientific consensus and at variance with virtually all of the refereed literature and assessments. A small handful of contrarian counter examples do not constitute a diminution of broad scientific consensus that climate change, if unchecked, is a potentially risky prospect.

As Don Kennedy, chief editor of the international scientific flagship journal *Science* has argued, “*Consensus as strong as the one that has developed around this topic [climate change] is rare in science. ... [T]here is little room for doubt about the seriousness of the problem the world faces, and other nations, including most of our trading partners in the Organization for Economic Cooperation and Development, understand that.*” (2)

The National Academy agrees with the basic findings of the IPCC

The scientific community views the Intergovernmental Panel on Climate Change’s (IPCC) climate science assessments as the standard reference documents on the state of the science about climate change. This was confirmed in a National Academy of Science report requested by the G.W. Bush administration in 2001. That NAS report stated, “*The IPCC’s conclusion that most of the observed warming of the last 50 years is likely to have been due to the increase in greenhouse gas concentrations accurately reflects the current thinking of the scientific community on this issue. The stated degree of confidence in the IPCC assessment is higher today than it was ten, or even five years ago, but uncertainties remains because (1) the level of natural variability inherent in the climate system on time scales of centuries to decades, (2) the questionable ability of modes to accurately simulate natural variability on long time scales, and (3) the degree of confidence that can be placed on reconstruction of global mean temperature over the past millennium based on proxy evidence. Despite these uncertainties, there is general agreement that the observed warming is real and particularly strong within the last 20 years.*” (3)

National academies from around the world confirm IPCC findings

Moreover, seventeen national academies from around the world released a joint statement in May 2001, also confirming the reality of climate change, the scientific consensus as reflected in the IPCC documents, and the need for immediate action. In its conclusion, the statement said, “*The balance of scientific evidence demands effective steps now to avert damaging changes to Earth’s climate.*” (4)

The nature of scientific progress

It is the nature of scientific progress that scientists continually aim to reduce scientific uncertainties and in the process uncover new areas needing additional research. The vast international scientific effort over the past two decades to detect current, understand past and present, and project future climate change has produced an accumulation of evidence that overwhelmingly points to the reality of human-caused climate change and the corollary need to reduce emissions of heat-trapping greenhouse gases.

New scientific findings since the IPCC 2001 assessment confirm climate crisis

Scientific findings since the release of the 2001 IPCC assessment are very much in line with this general tendency: refinement of our understanding, reducing some while uncovering new potential problems and uncertainties, but none that was published in a respected, peer-reviewed science journal that would fundamentally question the reality of global climate warming, and the causative role of greenhouse gases emitted from human activities in affecting the Earth's climate.

(2) The Congressional resolution does indeed adequately and appropriately reflect the summary findings and full content of the IPCC and National Academy of Science reports.
[refers to claims made on pp.3-4 and 7-8 of the RPC document]

NAS and IPCC summaries adequately reflect underlying science

The RPC document alleges that the Congressional resolution only relies on the NAS report's executive summary and the IPCC report's Summary for Policy-Makers (SPM), thus supposedly missing aspects of, and misrepresenting, the scientific consensus. If so, this would be entirely appropriate. The established process for producing summaries of both NAS and IPCC reports is that these summaries must adequately capture and reflect the findings and tone of the full underlying document. This is assured by peer review and plenary meetings in which documents—like the IPCC Summaries of Policymakers—are approved word for word.

Clear NAS guidelines for writing executive summaries

Established procedural guidelines for the writing of NAS reports state that, "Every report should have a brief executive summary [...] that describes the study charge and provides a synopsis of key findings. This summary should be easily comprehensible to nonexperts. While the executive summary should accurately reflect the text of the report, it need not include all of the conclusions and recommendations." (5)

IPCC procedures for producing Summary for Policy-Makers is transparent

Procedures for the production of IPCC Summaries for Policymakers (SPMs) are equally public and stringent. The RPC document claims falsely that government representatives write the SPMs, and scientists only the underlying reports. In reality, the process is as follows (6): The Summary for Policymakers of each working group goes through a writing and review process that is concurrent but separate from that of the underlying report. Drafted by the lead authors, and reviewed in two stages by technical experts, the final draft of the SPM is "approved" in the working group plenary after extensive discussion and line-by-line review and revision by the governmental representatives. In this process, governmental representatives may certainly try to influence the wording in ways that support their negotiating positions. However, the overriding check in this system – and the key challenge and goal – is that the SPM must adequately and appropriately represent the underlying technical report that has been prepared by the

scientific community. To ensure that this occurs, dozens of lead and several contributing authors are typically on hand at IPCC plenaries to render interpretations, suggest clarifications, and ensure scientific integrity. The entire process ensures that there are many opportunities for differing views to be expressed and included, if there is empirical evidence or plausible reasons to support them.

Representatives of governments do indeed have the right to argue for wording they prefer, but if the many IPCC Lead Authors present do not agree that the language is scientifically credible, the process halts until language acceptable to all parties is crafted. While painstaking, this process does NOT alter the tone and meaning of the SPMs perceptibly relative to the full underlying text because the Lead Authors—scientists, not government representatives—present at these drafting meetings do not permit it. Claims to the contrary are made either by those who have not been present at these events – and hence are inadequately informed of the process – or by those who are being disingenuous.

The IPCC process works

A similar point was made in an editorial published in the internationally renowned journal *Nature* about the IPCC process that produces the Summaries for Policy-Makers: “Detailed examination of the process shows that it has a reasonable track record of producing summary documents that, while lacking all the detailed qualifications contained in the full working-group reports, honestly reflects their findings.” (7)

A detailed review article of the process, published in *Nature*, stated, “[The IPCC’s] Working Group I SPM, concluded the NAS, is ‘consistent with the main body of the report’,” even though the SPM does not fully reflect all the caveats and uncertainties discussed in the main report. (8, p.113)

By definition, a summary of only a few dozen pages cannot be expected to contain the full detail of a report several hundred pages long. The important criterion is whether the summary fairly reflects the overarching messages, key findings, and range of expert opinions on the matter. Typically climate change skeptics in making the argument that the summary does not adequately reflect the underlying report – imply that only more skeptical views are omitted from the summary. The above cited IPCC process review, however, concludes that, “The fact that the IPCC’s consensus is backed by [John] Christy, whose views on climate change have on occasion provided ammunition for global-warming skeptics, provides one indication that – despite its critics – the organization is working effectively.” (8, p.114)

(3) Critique of IPCC emissions scenarios creates a problem that does not exist [refers to claims made on pp.4-6 of the RPC document]

The RPC document claims that the IPCC’s temperature projections are to be dismissed because they are based on flawed economic and therefore emissions scenarios. The critiques raised recently by statistician Ian Castles and economist David Henderson have been reviewed by IPCC experts, assessed through new economic studies, and refuted in a recently published article (details below).

IPCC emissions scenarios are based on many factors, not just economic growth

The claims by Castles and Henderson are simply based on the assumption that only one measure of economic product—purchasing power parity [PPP]—is appropriate for

underlying analysis of emissions projections. It is indeed true that there is a large difference between the market exchange rate-based equivalence of incomes across countries and the PPP measures. But what is far more important for the calculations underlying SRES scenarios are those relevant factors that determine population, affluence and technology trends. PPP is but a small part of that assessment, which requires modeling of demographic, technological and social changes in addition to economic growth modeling. To concentrate on one equivalence measure for GDP across countries, cannot tell the SRES story, not even a significant part.

Moreover, Castles and Henderson's claims are false, as they were apparently unaware that SRES authors also used PPP in some of their projection exercises, and some did not use economic projections at all but rather energy per capita in their modeling exercises.

A detailed rebuttal to Castles/Henderson from a team of 15 scientists, technologists and policy analysts can be found at (9). Their basic findings are as follows:

- The IPCC SRES are based on reviews of the existing literature, most of which is based on Market Exchange Rates (MER), including reports from the World Bank, IEA and USDoE.
- Scenarios of GDP growth are typically expressed as MER (the preferred measure for GDP growth, as opposed to PPP, which is a preferred measure for assessing differences in economic welfare).
- IPCC scenarios did include PPP-based scenarios, which Mr. Castles and Mr. Henderson have apparently ignored.
- Contrary to Mr. Castles' and Mr. Henderson's claim, IPCC scenarios are consistent with historical data, including those from 1990 to 2000, and they are also consistent with the most recent near term (up to 2020) projections published by other institutions.
- Long-term emissions are based on multiple, interdependent driving forces, and not just economic growth. Castles and Henderson focus on just GDP are woefully inadequate to capture the full storylines reflected in SRES scenarios.
- The IPCC scenarios provide information for four world regions, not for specific countries. Mr. Castles' and Mr. Henderson's critique is not of IPCC scenarios but of ongoing unpublished work in progress that is not part of SRES.

A radical revision of IPCC emission scenarios is not needed!

It is clear therefore that Mr. Castles and Mr. Henderson have constructed a "problem" that does not exist. SRES scenarios are sound and the IPCC has responded seriously and conscientiously by reviewing the points of critique thoroughly and by initiating follow-up studies to assess the impact of using different economic measures on emissions scenarios. Moreover, after attending a recent meeting of IPCC experts, Chairman Dr. Rajendra Pachauri with Castles and Henderson, Mr. Henderson stated in response to the questions whether "... a radical revision need[s] to be put in place, or attempted, specifically for [the IPCC's Fourth Assessment Report] AR4? I think the answer... is no." (10)

This conclusion was upheld in a recent study by Richard Richels (EPRI) and Alan Manne (Stanford), whose original calculations used market exchange rates rather than PPP in calculations of emissions projections. These experts recalculated their emissions profiles, this time using PPP and concluded that, "we find that the choice of conversion factor makes only a small difference when projecting future temperature change." (11)

Many different paths lead to Rome: all show it will get significantly warmer!

It is ironic to note that John Reilly (MIT), who is quoted in the RPC document as severely critical of the IPCC climate scenarios, and who is otherwise known to be supportive of climate change science and of long-range forecasts that project temperature increases over the next 100 years, produced – together with his MIT research team – a similar range of temperature projections by 2100 as the IPCC, though based on different methods than SRES. (12)

SRES story lines have been peer reviewed

Finally, Stephen Schneider is quoted in the RPC document (p.7) as allegedly confessing in a Nature article that the IPCC scenarios have not undergone scientific peer review. That Nature article contains no such statement. To the contrary, in an article published in Scientific American, Dr. Schneider noted clearly the peer reviewed nature of SRES in rebutting Bjorn Lomborg's false claims against climate change science and these scenarios. (13)

IPCC 2001 temperature projections are higher than in 1995 because of more realistic treatment of aerosols

In addition, one of the contributing authors to the IPCC Working Group I report stated that, “although climate modeling has advanced during the past five years, this is not the main reason for the revised range in temperature projections. The higher estimates of maximum warming by the year 2100 [compared to those made in 1995] stem from a more realistic view of sulphate aerosol emissions. The new emissions assume [aerosol] emissions will be reduced substantially in the coming decades, as this becomes technically and economically feasible, to avoid acid rain. Sulphate emissions have a cooling effect, so reducing them leads to higher estimates of warming.” (14)

New climate science suggests temperature projections could be even higher than those in IPCC reports

In arguing that the IPCC's latest temperature projections are based on the allegedly flawed emission scenarios and hence not to be taken seriously, the RPC document misinterprets scientific findings by T. Wigley and S. Raper (paper cited in RPC document). In that paper Wigley and Raper did not “charge” the IPCC with anything. Their only critique, repeated by Schneider and Moss (15) was the lack of probabilistic evaluation of either climate sensitivities or SRES. An even more recent scientific paper (16) argues in fact, for a considerable increase of the upper limit of 2100 temperature projections presented in the IPCC report. Wigley and Raper did not have this latest study available, thus they actually underestimate the range of temperature projections. What these latest scientific findings suggest, however, is that significant emissions reductions are required to avert even more catastrophic change at the upper end of the probability distribution.

Scenarios are valuable tools to assess the desirability of future climates

Independent of the specific story lines behind each emission scenario, the projections can be read as reflecting high-, medium- and relatively low-emissions futures, however society will evolve to produce them. Having such scenarios is typically considered an extremely valuable tool to assess whether such futures are desirable or to be avoided.

There is a clear human fingerprint on the Earth's atmosphere and climate.

The RPC claim that humans do not exert a significant impact on the Earth's climate is a nonsequitor from the discussion about the adequacy of *future* emissions scenarios and climate projections. The IPCC has devoted substantial space and effort to the question of attributing observed climatic changes to natural and human drivers of climate

change. The overwhelming balance of evidence suggests that there is a clear human “fingerprint” on the Earth’s atmosphere and observed climatic changes (17). Scientific arguments in support of this conclusion include:

- The energy balance of the atmosphere is determined by three factors: solar radiation entering the atmosphere, the chemical composition affecting the retention of heat; and the Earth’s capacity to reflect incoming radiation back into space. The only factor that has significantly changed over the last few hundred years is the chemical composition of the atmosphere. Emissions of heat-trapping gases and aerosols due to human activities continue to alter the atmosphere in ways that affect the climate (based on the physical principle of radiative forcing, i.e., the ability of gases and particles to cause warming or cooling).
- Different forcings display different patterns of response, also known as characteristic “fingerprints,” e.g., temperature increase varies by latitude, longitude, height above the Earth’s surface and through time. Based on the comparison of observed patterns and model simulations, it is clear that the human factor is needed to account for the observed changes.
- There are now longer and more closely scrutinized temperature records, underscoring earlier findings that the observed temperature increase is a statistically significant deviation from earlier temperature records.
- There is also a better understanding and estimates of natural climate variability and forcing, leading scientists to conclude that it is very unlikely that the observed warming is simply a high in the naturally varying record.
- A wide range of detection techniques is being employed to test the robustness of findings under varying modeling assumptions. While specific results are sensitive to temporal and spatial scales considered, the signals and patterns pointing to human causation hold across the studies.
- Simulations of the response to natural causes (e.g., solar irradiance, volcanic eruptions) cannot explain the warming observed in the second half of the 20th century.

(4) Mitigating climate change will not cause harm to the US economy as a whole. Doing nothing about climate change is the most expensive course of action the US could possibly take. [refers to claims on pp.8-9 in the RPC document]

The RPC document relies on a single study from a conservative think tank to claim that implementing emission reduction policies would be too expensive for the U.S. economy to shoulder. Moreover, it states that the expense for implementing the Kyoto Protocol would only make a negligible difference in future climate.

No reasonable scientist, economist or policy-maker today believes that the initial reduction commitments of the Kyoto Protocol are the complete solution to the global climate crisis. Far greater emission reductions will be required to stabilize the climate – using and building on flexible, multi-lateral approaches with significant leadership from the United States.

U.S. studies find that climate change mitigation is affordable and beneficial

Several studies for the U.S. have demonstrated that climate mitigation is affordable and beneficial for this country. For example, a 2000 Interlaboratory Working Group report found that smart public policies can significantly reduce not only carbon dioxide emissions, but also air pollution, petroleum dependence, and inefficiencies in energy production and use. A range of policies exists – including voluntary agreements;

efficiency standards; increased research, development and demonstration; electric sector restructuring; and domestic carbon trading – that could move the United States a long way toward returning its carbon dioxide emissions to 1990 levels by 2010. Additional means would be needed to achieve further reductions, such as international carbon trading and stronger domestic policies. The overall economic benefits of these policies appear to be comparable to their overall costs. Policies promoting a clean energy future could produce direct benefits, including energy savings, which exceed their direct costs (e.g., technology and policy investments). Indirect macroeconomic costs are in the same range as these net direct benefits. The clean energy future scenarios developed in this study could produce important transition impacts and dislocation such as reduced coal and railroad employment; but at the same time, jobs in wind, biomass, energy efficiency, and other "green" industries could grow significantly (18).

Meeting Kyoto reduction goals would not be costly or unfair to U.S.

Another study (19) found that the perception that emissions reduction targets such as those of the Kyoto Protocol are unavoidably costly or unfair is the result of outdated modeling assessments. In fact, the study demonstrated how the U.S. could meet targets in the Kyoto Protocol by 2010 and exceed them by 2020 while increasing economic output from baseline growth projections. By 2010 an integrated least-cost strategy would produce an annual net gain of \$50-60 billion/year. By 2020, this gain could grow to \$120 billion/year or 1% of GDP. On a cumulative net present value basis, the U.S. would gain \$250 billion by 2010 and \$600 billion by 2020. Moreover, the experts found that a strong synergy exists between a national energy policy aimed at safeguarding the economy and a least-cost policy aimed at slowing climate change. By reducing consumption of oil and natural gas relative to rising business-as-usual trends, a climate policy would help protect the U.S. against energy price shocks.

In summary, many of the technological and policy measures aimed at reducing energy consumption, energy waste, and greenhouse gas emissions will save expenses, create immediate environmental and economic co-benefits, generate new economic opportunities, ensure that the U.S. will continue to be a technological and economic leader in the world, and prevent future costs and losses from climate change impacts.

Mitigating climate change will not break the bank!

The IPCC Working Group III – studying mitigation options globally – came to similar conclusions reviewing many more studies and for many other countries and regions. It stated, “*Estimates of costs and benefits of mitigation actions differ because of (i) how welfare is measured, (ii) the scope and methodology of the analysis, and (iii) the underlying assumptions built into the analysis.*” (20, p.9) Thus many economic cost and benefit analyses produce widely ranging conclusions about the economic impacts of dealing with climate change. The IPCC concluded also, however, that, “*Some sources of greenhouse gas emissions can be limited at no or negative social cost [i.e., a benefit] to the extent that the policies can exploit no regrets options*” (20, p.9). The IPCC review of economic studies on the cost of implementing the Kyoto Protocol concluded, that implementation without emission trading would result in 0.2% to 2% reductions in global GDP by 2010, and half that amount with emissions trading (20, p.10). It also concluded that CO₂ stabilization at various, even the lowest, levels in this century is technologically and economically feasible, however, that the cost of stabilizing increase the lower the stabilization level and the faster such a transition has to be achieved (20, p.10). Finally, the IPCC concluded that, “*National responses to climate change can be more effective if deployed as a portfolio of policy instruments to limit or reduce greenhouse gas emissions,*” when “*integrated with the non-climate objectives of*

national and sectorial policy development,” and when “coordinated among countries and sectors to reduce mitigation costs” (20, p.12)

A more recent study (21), using conventional economic models, suggests that owing to the large projected growth rate of global GDP (and per capita income), even the most stringent greenhouse gas abatement policies would cause only a slight delay in reaching economic wealth levels five to 10 times those today. Differently put, if we assume large cost estimates for climate control policies and small annual economic growth rates (the most conservative combination of assumptions), the study finds only a 3-year delay in reaching the same level of global economic wealth. Less conservative assumptions reduce that delay to 1 year. Thus, the authors conclude, *“To be ten times richer in 2100 AD versus 2102 AD would hardly be noticed and would likely be politically acceptable as an insurance policy against the spectre of potential ‘dangerous’ climatic changes by most risk averse people” (20).*

This context suggest that although it will require careful planning and implementation to minimize costs and prevent economic dislocations to certain specific sectors, only a very trivial decrement in overall economic growth is projected from strong climate abatement policies. This suggests further that there is no economic catastrophe to be expected from global warming policies, except for that which might result from damages if climate change is left unabated, especially if we will experience the more dangerous projections of climatic change. Based on current scientific understanding, it is as likely to experience such dangerous climatic changes as it is to experience only minor effects. However, such a planetary gamble is risky, and responsible political leaders all over the world have called on themselves and other nations to cooperate to reduce this risk. The U.S., the largest economy and largest greenhouse gas emitter, has refused to take responsibility and to partake in serious international climate negotiations.

(5) The first U.S. National Assessment of the Potential Consequences of Climate Variability and Change is a thoroughly peer-reviewed scientific document, officially endorsed by the Bush Administration, and a valuable basis of continued U.S. research and assessment efforts. [refers to claims on p.8 in the RPC document]

The RPC document claims that the first U.S. National Assessment of the Potential Consequences of Climate Variability and Change – a “Clinton era report” – has been scientifically discredited and disavowed by the U.S. government. Both of these claims are false.

The National Assessment is scientifically sound

The National Assessment was required under the 1990 Global Change Research Act and completed between 1997 and 2001. The most comprehensive assessment effort ever undertaken in U.S. assessment history, it included sectoral and regional studies and two summary documents. All involved stakeholder input – an innovative approach reflecting years of learning hard lessons from previous assessment and risk management efforts – and scientific peer view. Most importantly, the summary documents were produced by a team of 14 renowned U.S. scientists, following procedures established under the 1972 Federal Advisory Committee Act (FACA, as amended) (22).

Federal Advisory Committee Act (FACA) procedures were required for assessment

FACA procedures require – among other things – that committee meetings be conducted openly and publicly, and that the writing, review, and revision process of FACA documents take into account and respond in writing to *every* review comment received from interested parties. These requirements were followed closely throughout the process of writing the final documents. They are publicly accessible for review by anyone. Moreover, Committee members have repeatedly testified before Congress and answered questions about the scientific conclusions derived. Several of the sectoral assessments underlying the summary documents in addition have been published in peer-reviewed scientific journals. As a result, the scientific validity of the findings of the National Assessment Synthesis Report is well established.

Bush administration has endorsed National Assessment findings

In 2002, the Bush administration has released a shorter summary (much of the text verbatim) of the National Assessment as part of its 2002 Climate Action Report to the United Nations (23). While under significant legal pressure from certain interested parties to withdraw the document and any reference to it from government websites and publications, the Climate Action Report remains an officially filed document and is accessible from government agency websites. (23)

U.S. officials and the NRC confirm the need to build on NA findings

During a science workshop on December 3-5, 2002, in Washington, which was focused on soliciting input from scientists on the U.S.'s draft strategic research plan for climate and global change science, scientists called for appropriate reliance on that comprehensive assessment effort. Dr. James Mahoney, head of the U.S. Climate Change Science Program, went on public record agreeing with that call.

The National Research Council in its recent review of the draft strategic research plan reiterated the need to build on existing science and assessments, including the procedural and scientific lessons learned from the National Assessment. It stated that, “*identifying the research needs regarding vulnerability, key risk areas, and interactions with stakeholders can be gleaned from the findings of the U.S. National Assessment of the Potential Impacts of Climate Variability and Change,*” (24, p.45) and recommended that, “*the plan must build on lessons learned from the U.S. National Assessment of the Potential Impacts of Climate Variability and Change...*” (24, p.6).

Conclusion

The claims made in the Republican Policy Committee document regarding the state of climate change science are clearly aimed at biasing the Congress against federal action to reduce heat-trapping greenhouse gas emissions. This document details how each of the RPC claims is false. Instead, the actual state of the science confirms the fact that climate change is real and now underway, human activities are an important contributing factor to the climatic changes observed in the past and likely in the foreseeable future, and significant greenhouse gas reductions are urgently required from the single largest emitter of heat-trapping gases in the world – the United States of America.

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