

Comments on CCRI Overview

1 **Written Public Comments on the**
2 ***Strategic Plan for the U.S. Climate Change Science Program***
3 **Overview of the Climate Change Research Initiative (pp 14-16)**
4 **Comments Submitted 11 November 2002 through 18 January 2003**
5 **Collation dated 21 January 2003**
6

7 Page 14: The CCRI: Overview: First Overview Comment: No research on emission
8 inventory quantification and verification could be found. This is a key omission because
9 emissions are a major uncertainty for past, present and future scenarios.

10
11 Second Overview Comment: This is a good plan, however, implementation is key. The
12 next version should describe a resources (funding and staffing available) timetable,
13 ongoing projects, and results of recently completed projects. The latter two are especially
14 important because one should avoid duplication and overlap with other U.S. and
15 International efforts in order to optimize resources.

16
17 Third Overview Comment: The research included in the plan needs to be prioritized, in
18 the likelihood that only a subset will be funded.

19 **-CALIFORNIA AIR RESOURCES BOARD**

20
21 Page 14: 2001a), includes the following (summarized) recommendations:
22 This statement makes it sound like the NRC report only recommended more research.
23 Instead, it also found substantial agreement with the IPCC, underscoring the need for
24 action toward mitigation of climate change, even at the same time that research is
25 undertaken to reduce the uncertainties.

26 **RAYMOND PIERREHUMBERT, THE UNIVERSITY OF CHICAGO**

27
28 Page 14: This overview section indicates that the Climate Change Research Initiative,
29 which is part of the Climate Change Science Program (CCSP), will mostly address the
30 issues identified by the National Academy of Sciences in their report entitled Climate
31 Change Science: An Analysis of Some Key Questions (NRC, 2001). The Climate
32 Change Research Initiative “will produce deliverables useful to policymakers in a short
33 time frame (2-4 years).” Even for such a short time frame, it will be worthwhile to take
34 into account the recommendations of the Academy with respect to the possibility of
35 abrupt climate changes (NRC, 2002). There is wealth of research projects on abrupt
36 climate change that need to be initiated as soon as possible. Initiating these projects will
37 provide useful information to policymakers in the next 2 to 4 years, which is consistent
38 with the goals of the Climate Change Research Initiative.

39 The specific references for NRC, 2001 and 2002 are:

40 NRC, 2001. National Research Council, Committee on the Science of
41 Climate Change. Climate Change Science: An Analysis of Some
42 Key Questions. (Washington, DC: National Academy Press).

43 NCR, 2002. National Research Council. Committee on Abrupt Climate
44 Change. Abrupt Climate Change. Inevitable Surprises.
45 (Washington, DC: National Academy Press).

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1 CALIFORNIA ENERGY COMMISSION

2
3 Page 14, Insert at the end of line 18:

4 The monitoring system should be based on national and international chemical and
5 physical standards to ensure that measurement comparisons are meaningful between
6 nations and over long periods of time.

7 NIST, HRATCH SEMERJIAN

8
9 Page 14-16: This section is about the NRC and it's presumed role in the IPCC research
10 needs, but seems to minimize the more realistic resolution requirements, and the
11 existence of knowledge beyond academia and agency science – such as of those whose
12 lives are spent on the high seas, or on the land, often for generations.

13 GARY D. SHARP, CENTER FOR CLIMATE/OCEAN RESOURCES 14 STUDY

15
16 Page 14: 2-4 Year Climate Objectives.

17
18 The strategy of focusing on near-term goals with regard to the climate problem misses the
19 boat completely. I've enjoyed a 30-year career in climate research. I can point to the
20 progress that has been made, and I'm awestruck that we have learned so much
21 concerning problems that seemed intractable 30 years ago. Sure, we can focus on
22 projects that will yield results relevant to climate in 2-4 years, but in doing so, we risk
23 losing the battle. For the climate system, the fight isn't simply the understanding of the
24 processes—the sorts of things one might make headway on in 2-4 years, but also the
25 much more difficult problem of putting these processes in context. With regard to
26 perhaps the most challenging problem facing the climate community, the water vapor and
27 cloud feedback problems, one needs to take a long term view, even though the sky above
28 our heads might be cloudy and wet on one day and clear and dry on the next. Making
29 headway on the water vapor and cloud feedback problem will entail building
30 comprehensive, global-scale data sets of clouds and water vapor spanning decades. The
31 present decade and the next are particularly crucial, as these are the decades in which the
32 change will become recognizable. With regard to clouds, satellite observations are a key
33 element. Much of what we've learned over the past decade or so, comes from the
34 analysis of satellite observations. We have the opportunity of putting together viable
35 satellite data sets from the 80's and continuing on to 2020 and beyond. But, I'm
36 concerned that resources are not available to ensure the integrity and usefulness of these
37 observations. Worse still, if resources are squandered on projects that yield definitive
38 results in 2-4 year, we stand to lose the possibility of building such long term data
39 records. Once lost, we can't recover them. Is such a thing possible? Yes. If it weren't
40 for efforts by a handful of individuals, myself among them, we would have lost the
41 TIROS(N) data in the late 80s. For lack of funding and expertise, NOAA was unable to
42 recover the TIROS(N) data from it's aging archive and came close to dumping it. Sure
43 the document promises to take a balanced view of the 2-4 year type of projects and the
44 longer perspectives, but how? 30-years of experience tells me that the 2-4 year projects
45 gain attention while the long term projects get pushed to back burners until ultimately
46 they are starved to death by the pressing needs of the 2-4 year projects.

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2 Having said all this about the 2-4 year projects, I note that at least with regard to the areas
3 that I'm familiar with, the gains identified in the document as coming about in 2-4 years,
4 i.e., they're followed by (2-4 years), are utterly ridiculous. It will be many years,
5 possibly decades, before we realize some of the predicted gains. We simply do not have
6 the manpower, the resources, and most significantly, we have not created the knowledge
7 that would allow such breakthroughs.

8
9 If there was ever a need for government oversight, climate monitoring and predicting
10 climate change is clearly one of those needs. It requires long term, steady support. And,
11 while promises of financial rewards from accurate climate forecasts abound, the reality is
12 that climate research isn't likely to improve anyone's bottom line. On the other hand, the
13 knowledge gained through the research might lead to strategies that will ensure our
14 survival.

15 **JIM COAKLEY, OREGON STATE UNIVERSITY**

16
17 Page 14, line 3: To assist the general reader, it would be helpful to have a summary box
18 indicating the key scientific findings about climate change—how the greenhouse process
19 works, what humans are doing to the atmosphere, etc. In that this is describing a
20 Presidential Initiative, it would seem essential to present the fundamental reasons that this
21 issue has garnered such attention. As it reads, one wonders why all the attention to this
22 matter.

23 **MICHAEL MACCRACKEN, LLNL (RETIRED)**

24
25 Page 14L9-14 - Oceanic heat uptake is missing from this list. It seems to be as important
26 as climate sensitivity in term of controlling the transient climate response. Recent papers
27 by Levitus et al. have made observations available.

28 **RONALD STOUFFER, GFDL/NOAA**

29
30 Page 14, line 9: To really understand what is implied, it is essential to provide not only a
31 basic understanding of the issue, but also a discussion of what is meant by the term
32 "uncertainty" and indications of how uncertain the findings are. Simply quoting the NRC,
33 which also failed to explain what is meant by the term uncertainty, is not adequate.

34 **MICHAEL MACCRACKEN, LLNL (RETIRED)**

35
36 Page 14, lines 21-22: The interdisciplinary research that the NRC called for and that ties
37 everything together does not seem to be present in the draft research plan. One part of
38 tying things together is necessarily an assessment process that evaluates the relative
39 importance of uncertainties about the various parts of the issue.

40 **MICHAEL MACCRACKEN, LLNL (RETIRED)**

41
42 Page 14, lines 25-26: The Plan contains very little of the "research at the regional and
43 sectoral level" that is called for by the NRC. Such efforts were undertaken as part of the
44 National Assessment process, and this attempt to do this should be built upon rather than
45 ignored in this plan.

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1 MICHAEL MACCRACKEN, LLNL (RETIRED)

2
3 Page 15, all; The emphasis on data availability is crucial to independent validation and
4 ensuring reproducibility in climate modeling. The goal of making climate data sets
5 available to all interested scientists and decisionmakers is excellent.

6 KENNETH GREEN, FRASER INSTITUTE

7
8 Page 15: The February 14, 2002, “New Approach” to the challenge of global change
9 states (tab 5, p. 24) that “on June 11, 2001 the President announced the creation” of the
10 U.S. Climate Change Research Initiative (CCRI) to “study areas of scientific uncertainty
11 and identify priority areas of scientific uncertainty and identify priority areas where
12 investments can make a difference.” The document added:

13
14 The CCRI promotes a vision focused on the effective use of scientific
15 knowledge in policy and management decisions, and continued evaluation
16 of management strategies and choices.

17
18 The CCRI will improve the integration of scientific knowledge, including
19 measures of uncertainty, into effective decision support systems and will
20 adopt performance metrics and deliverable products useful to
21 policymakers in a short time frame (2-5 years).

22
23 However, the draft strategic plan lacks any prioritization of the research listed for
24 the CCRI research and states (p. 15) that the “CCRI programs will produce” such
25 deliverables in a 2-4 year time frame rather than the “2-5 years” range noted by the
26 President last February. We are concerned about this failure to prioritize and that even a
27 2-5 year time frame may be unrealistic.

28
29 Chapters 2 and 3 of the draft covers the CCRI areas and provide an extensive list
30 of “Research Needs” with a list of “Products and Payoffs” or deliverables. However,
31 there are no priorities established in the draft for the research and related deliverables.
32 Indeed, all seem to have the same priority. Further, except in the case of the North
33 American Carbon Program (pp. 19-20) and in the case of scenario development (pp. 46-
34 47), there are also no timetables for the deliverables in Part I. This is in contrast to Part II
35 (which is intended to address long-term needs), where in the case of many “Products and
36 Payoffs” there are numerous instances of a schedule for each deliverable, some of which
37 are also 2-4 years.

38
39 In the case of scenarios, the draft states (p. 46) that a “specific set of scenarios” to
40 address “relevant policy and resource management questions—at the national, regional,
41 and sectoral levels—will be developed in collaboration with stakeholders” and it even
42 indicates how the scenarios will be used. The time frame assigned is two years. It adds
43 (p. 47) that reports “summarizing insights relevant to the questions posed by the
44 decisionmakers and regional/sectoral resource managers, along with an analysis of the
uncertainty, will be written” also in two years. It is unclear whether these two “2 years”

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1 will run simultaneously or consecutively. Preceding these descriptions and statements of
2 “2 years” is the following (p. 46):

3 CCRI scenario development will go beyond past scenario activities such
4 as those of the IPCC. Decisionmakers, resource managers, and other
5 stakeholders will be engaged to help identify the types of scenarios that
6 could be used to provide them with timely and useful information. The
7 CCRI will develop logical and internally consistent scenarios with input
8 from the full range of relevant stakeholders, which potentially include
9 environmental non-governmental organizations (NGOs), industry
10 representatives, natural resource managers, government agencies, and
11 research scientists. It will undertake independent analysis to extract up-to-
12 date information on projections for key variables (e.g., demography;
13 technology characteristics and costs; and economic growth and
14 characteristics) and the relationship of key driving forces to environmental
15 change (e.g., land use and land cover) and adaptive capacity. The CCRI
16 will coordinate its scenario development plans with the new IPCC
17 scenario efforts. The IPCC may be interested in adopting some of the
18 CCRI scenarios or combining CCRI and IPCC efforts.
19

20 However, the draft fails to explain the process for such “input” and coordination
21 and how long it will take, although the draft lists (p. 42) as “Products and Payoffs” the
22 selection of a “set of potential policy questions that require information support from the
23 climate change community through stakeholder/scientist interactive dialogue” to
24 “influence the development of scenarios (6 months).” To our knowledge, the U.S. Global
25 Change Research Program (USGCRP) has not, since its establishment in 1989,
26 undertaken to obtain “input” from the “range of relevant stakeholders” that include EEI
27 and our members. The USGCRP did not seek public input in publishing the “Our
28 Changing Planet” report on the USGCRP under the 1990 Act. The lack of such
29 experience in gaining public “input” would certainly make it difficult to accept the two
30 “two-year” time frames noted above for the scenario “Products and Payoffs.”

31 As to coordination of “scenario development plans with the new IPCC scenario
32 efforts,” we bring to your attention an article in the November 27, 2002, edition of the
33 “National Post” (published in Canada) that is headed “Leading economists want a full
34 review of the UN’s 100-year economic models for climate change, which they say
35 contains ‘material errors’ that invalidate temperature forecasts.” The article states:

36 A vocal group of economists around the world – including some of
37 the leading figures in the field of global economic modeling – believe the
38 core economic analysis behind the United Nations climate change
39 initiative is based on seriously flawed modeling principles. If their
40 analysis is correct, the central specific tenets of global warming, including
41 the 100-year carbon emissions forecasts and temperature increases, are
42 likely grossly exaggerated.

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1 Contrary to popular belief, the theory that the world is heading for
2 major temperature increases over the next century is not primarily a
3 scientific issue. The main framework for long-term predictions that
4 temperatures could rise up to 4.5 degrees between now and 2100 is based
5 in large part on economic models, not science models. But according to
6 many economists, the economic models used by the IPCC contain what
7 are described as “material errors.” These technical errors, which include
8 what might be deliberate use of inappropriate exchange rates and
9 unbelievably high growth rate assumptions, have major implications. The
10 possibility that the central economic foundation for global warming might
11 be riddled with errors will be brought before the IPCC Bureau next month,
12 according to Dr. Rajendra Pachauri, head of the IPCC. In a letter to Ian
13 Castles, an Australian economist who believes the IPCC’s economic
14 forecasts are widely off base, Dr. Pachauri said he planned to initiate a
15 “full consultation” to get to the bottom of the issue.

16 Mr. Castles, former head of Australia’s statistic bureau and
17 department of finance, sounded the alarm over the economic projections
18 last August in a letter to Dr. Pachauri. In the letter, distributed to
19 associates around the world, Mr. Castles said it is important “that
20 governments be advised as soon as possible that the economic projections
21 used in the IPCC emissions scenarios are technically unsound.”

22 It is from there “fantastic assumptions,” says Mr. Castles in his
23 letter to the IPCC, that the official modelers accommodated soaring
24 emissions growth estimates. In the emissions scenario that accompanies
25 the growth rates in the chart nearby, for example, the IPCC Special Report
26 on Emissions Scenarios (SRES) estimated that in this decade alone carbon
27 emissions would increase by 800 million tones in the developing world.
28 “In other words,” writes Mr. Castles, “the modelers assumed that increases
29 in emissions in each of the SRES developing regions would be greater in
30 the current decade than the increase for the world as a whole between
31 1990 and 2000.”

32 On the basis of these assumptions, which are “completely
33 unrealistic,” he says the SRES proposes that carbon emissions of fossil
34 carbon dioxide will increase between 24% and 46% in developing
35 countries during this decade. “On this basis, output [under this model]
36 suggests that GDP per head could rise by around 50% in both regions.”
37 That’s impossible, he suggests. It is already certain that growth of that
38 magnitude will not occur. The IMF’s latest World Economic Outlook
39 forecasts don’t even come close to forecasting such growth.

40 We understand that the IPCC Bureau at its December 2002 meeting discussed this
41 correspondence with the IPCC and that the U.S. was represented. However, we do not
42 know the results of that meeting. This is an important issue. The above article states that

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1 Castles “wants the IPCC to act quickly and not “delay reporting back until 2007 or some
2 other date.” The review “should take place immediately.”

3 We realize that almost a year has passed since the President announced his “New
4 Approach” last February, and that when he did so, he said his Fiscal Year (FY) 2003
5 budget included \$80 million “dedicated to implementation” of the CCRI and the National
6 Climate Change Technology Initiative, with half of that amount for CCRI “to be shared
7 among five agencies.” However, the relevant appropriation for FY03 has not yet been
8 enacted, it has taken nearly a year to develop the draft plan, it will not be finalized until
9 later this spring, and the budget for FY '04 will not be transmitted to Congress for a few
10 weeks. We presume that the Congress will want to consider the plan, together with the
11 budget request. In short, it is unclear from the draft when the 2-4 year, 2-5 year and 6-
12 month time frames would begin and whether the research will be fully funded by the
13 Congress for fiscal years 2003 and 2004.

14
15 EEI is skeptical about the draft establishing a 2-4 year, 2-5 year or 6-month time
16 frame for deliverables for the CCRI research needs, particularly in the absence of any
17 setting of priorities and in the context of the uncertain status of appropriations. A better
18 approach is to establish realistic milestones for such deliverables that take into
19 consideration the congressional and budgetary processes. However, even milestones are
20 inappropriate without a real effort to prioritize, taking into consideration the uncertainties
21 and research needs discussed by the NAS.

22 **FANG/HOLDSWORTH-EDISON ELECTRIC INSTITUTE.**

23
24 Page 15, lines 1-8 and 29-33: The CCRI emphasizes two issues that are crucial to states
25 seeking to address global climate change: developing decision support resources in a
26 short time frame (lines 1-8), and improving our ability to model and predict the effects of
27 climate change at the regional level (lines 29-33). Many states have already decided that
28 climate change is a serious threat to their populations, economies, and resource
29 endowments, and have produced or are developing climate action plans. However, there
30 is a dearth of tools available for states to apply as they consider specific actions to reduce
31 greenhouse gas (GHG) emissions or adapt to the likely regional impacts of climate
32 change. Existing climate models have poor resolution at the regional level, and
33 assessments to date of the likely regional impacts of climate change provide only very
34 general guidance for decision makers.

35
36 States control many policies that contribute to the effects of climate change, such as land
37 use, transportation, and development. Consequently, state officials must be better
38 integrated into decision making on responses to climate change, and they need better
39 tools to help them anticipate the regional effects of climate change and select rational
40 policy responses. The current draft of the report calls generally for doing both, but refers
41 mainly to “regional” decision makers and largely overlooks the key roles played by state
42 officials in shaping environmental policy. The role of states should be sharpened here
43 and throughout the report, especially with respect to areas such as land use in which
44 states play leading regulatory and/or policy roles.

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1 **KENNETH A. COLBURN, NORTHEAST STATES FOR COORDINATED**
2 **AIR USE MANAGEMENT (NESCAUM).**

3
4 Page 15, line 7-8: This notion that deliverables useful to policymakers, presumably
5 meaning more useful to policymakers than provided by present understanding, will be
6 provided in 2-4 years seems really audacious (so requiring really substantial resources) or
7 reflects a misunderstanding of what is understood and how this information can be used.
8 There needs to be much more of an elaboration of what decisions the policymakers are
9 interested in having information for and how this all might work. Also, an indication is
10 needed as to what form the information will be provided and how the presumed products
11 and deliverables will be synthesized and reviewed.

12 **MICHAEL MACCRACKEN, LLNL (RETIRED)**

13
14 Page 15, line 11: Specifically, what is “critical decision support information”? Please
15 provide some examples of what it is and what decision might be affected. In that the US
16 *Climate Action Report 2002* is the official position of the US Government (at least it was
17 submitted to the UN as such), it would be useful to understand how anything in this
18 report would be affected by what is intended to come from the CCRI.

19 **MICHAEL MACCRACKEN, LLNL (RETIRED)**

20
21 Page 15, Line 29: The emphasis on developing decision support systems that utilize
22 scenarios and comparisons, and use models to forecast regional and local impacts is
23 based on flawed logic. With a permanent inability to predict the future, scenario planning
24 is inherently subjective, while climate modeling is insufficient to product local or
25 regional impact assessments in any meaningful way. Combining the two lines of
26 research can only generate scary scenarios of regional impacts (without a rigorous
27 attachment to reality) that will be used to galvanize political action under “the
28 precautionary principle.”

29 **KENNETH GREEN, FRASER INSTITUTE**

30
31 Page 15, Insert between “high quality,” and “homogeneity” on line 27:
32 traceability to national and international standards and ideally the International System of
33 Units (SI),

34 **NIST, HRATCH SEMERJIAN**

35
36 Page 15: To be included in the CCRI, a program must both produce significant decision
37 or policy- 18 relevant deliverables within a short timeframe; and contribute substantively
38 to one or more of the 19 following activities: 20

39
40 The short term emphasis of the CCRI is fundamentally misconceived, in my view. The
41 nature of the remaining uncertainties in climate change science are not of the sort that can
42 be couched in terms of "deliverables," especially "deliverables" that can be completed in
43 a 2-4 year time frame. Yet, it is the basic scientific uncertainties that most complicate
44 planning. The emphasis instead, in the short term, needs to be on finding effective ways
45 to begin the process of preventing climate change, or reducing its magnitude (through
46 reduction of greenhouse gas emissions). We already know enough to determine that such

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1 actions are justified, and the additional uncertainty removed in the 2-4 year time frame is
2 unlikely to have much impact on policy. Hence, I would suggest a long term emphasis on
3 basic science, with the short term aimed mostly at accelerating research into ways to
4 reduce emissions of CO₂ and other greenhouse gases.

5 **RAYMOND PIERREHUMBERT, THE UNIVERSITY OF CHICAGO**

6
7 Page 15, lines 4-6: **(10-ES)**I'd emphasize the CCRI goal, with italics. And in line 8, say
8 "...to meet this goal"

9 **HP HANSON, LANL**

10
11 Page 15, line 18: **(11-E)** The beginning of this line is strange, because it implies that
12 there will be programs developed that will then be considered for inclusion in the CCRI.
13 Maybe this will happen, but it is still a strange way to put it. Why not simply say: "CCRI
14 programs will both produce..." ?

15 **HP HANSON, LANL**

16
17 Page 15, Line 29: The emphasis on developing decision support systems that utilize
18 scenarios and comparisons, and use models to forecast regional and local impacts is
19 based on flawed logic. With a permanent inability to predict the future, scenario planning
20 is inherently subjective, while climate modeling is insufficient to product local or
21 regional impact assessments in any meaningful way. Combining the two lines of
22 research can only generate scary scenarios of regional impacts (without a rigorous
23 attachment to reality) that will be used to galvanize political action under "the
24 precautionary principle."

25 **KENNETH GREEN, FRASER INSTITUTE**

26
27 Page 15, line 35 to Page 16, line 5: It is amazing that the US National Assessment, which
28 was as endorsed by the NRC report as the IPCC report, is not referenced here (given the
29 call for regional and sectoral activities). It is also amazing that the *US Climate Action*
30 *Report—2002* is not referenced here, as it is the official USG position statement on the
31 climate change issue and USG policies.

32 **MICHAEL MACCRACKEN, LLNL (RETIRED)**

33
34 Page 16, line 4: The phrasing of point 1 does not make sense. The information sought in
35 point 2 has virtually no influence on the range of estimates in global average surface
36 temperature that has earlier been indicated as a key uncertainty (why point 2 is a key
37 issue needs to be more clearly indicated). The question in point 3 makes little sense—the
38 question is how much will the climate change, as one really cannot separate the direct
39 change and feedbacks.

40 **MICHAEL MACCRACKEN, LLNL (RETIRED)**

41