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December 17, 2001

Mr. Reid P. Harvey
U.S. Environmental Protection Agency
Office of Atmospheric Programs (Mail Stop 6204N)
1200 Pennsylvania Avenue, NW
Washington DC 20460

Submitted via email to harvey.reid@epa.gov

Dear Mr. Harvey,

The American Petroleum Institute (API) is a national trade association representing 400 companies engaged in all aspects of the oil and natural gas industry. We are pleased to submit comments to assist in preparing the *Third U.S. Climate Action Report* in response to the November 15, 2001 Federal Register request for public comments (66 FR 57456).

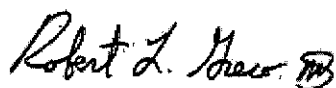
In many respects, the draft *Third U.S. Climate Action Report*, being prepared in accordance with U.S. obligations under the UN Framework Convention on Climate Change (UNFCCC), provides a constructive report on U.S. climate action and reflects the National Research Council's (NRC) 2001 review of climate change science. The draft *Climate Action Report* identifies many of the difficulties in evaluating the potential for climate change and the resulting positive or negative impacts, as well as the implications of these important uncertainties for the development of a constructive climate policy.

Particularly important for a report to the UNFCCC covering the potential impacts on the US, the current draft generally reflects a critical NRC conclusion that "one of the weakest links in our knowledge is the connection between global and regional projections of climate change." (Chapter 1, page 6, lines 36-37) As discussed in the attached Specific Comments, however, parts of Chapter 6 go beyond this "weakest link in our knowledge" in projecting regional climate change impacts, and these sections should be revised.

The draft report provides very constructive observations on the apparent variability of climate over the past century and, importantly, the ability of our economy and our society to respond to apparent climate changes or climate variability through adaptation. As noted in the draft report, our ability to adapt depends critically on the strength of our economy. Past behavior demonstrates that adaptation is a realistic and important element in any long-run response to the issue of climate change, and the draft U.S. *Climate Action Report's* discussion of adaptation is constructive and appropriate.

If you have any questions regarding API's attached specific comments, please feel free to contact me or Russell Jones (202-682-8545 or jonesr@api.org).

Sincerely,



cc: Jim Connaughton, Council on Environmental Quality

**API Specific Comments on the
Draft Third U.S. Climate Action Report
For Submission to the UNFCCC**

December 17, 2001

Specific Comments

Chapter 1 – Introduction and Overview

Page 3

The section on science offers a realistic and constructive assessment of the state of climate science and reflects the National Research Council (NRC) report on *Climate Change Science*. It is important that this section retain its discussions of the current state of uncertainty in many aspects of our understanding of climate science.

Page 4, lines 4-8

This briefly refers to “demographic trends of over 275 million residents.” A key demographic trend that is not referenced in this introductory section is the large role immigration plays in US population trends. It would be useful to include the fact that US immigration is among the largest or is the largest allowed by any UN Framework Convention on Climate Change (UNFCCC) Annex I country. This generosity not only impacts our population trends, it also impacts our emission trends.

Page 6, lines 41-44.

The first sentence in these lines is inconsistent with the second sentence, most likely because of a missing word (“not”). These lines also should reference natural climate variation. The following wording might address both of these issues (suggested new text is in ***bold italics***).

- “Predicting the potential impacts of climate change is limited ***not*** only by the current inability to accurately predict climate at local and regional scales. It is also limited by a lack of understanding of the sensitivity of many environmental systems and resources, both managed and unmanaged, to climate change ***as well as the difficulty in separating natural climate changes from those changes related to human activities.***”

Page 7, lines 7-8

The important observation that “any direct effects of climate change on our economy as a whole are likely to be minimal” is supported by existing and new research and should be retained in our submission to the UNFCCC.

Page 8, lines 22-23

These lines briefly introduce the *U.S. National Assessment* undertaken by the Clinton administration. Given the National Research Council’s finding regarding the weakness of regional impact projections, which is at odds with the detailed listings of regional climate change “impacts” contained in the *U.S. National Assessment*, it is important to include caveats to any regional impact material drawn from the *U.S. National Assessment*.

For example, the existing sentence from lines 22-23 should be modified to reflect the NRC cautions about the regional distribution of climate change (see for example, page 3, lines 37-39). The following suggestion is one way to introduce the needed caveats (suggested new text is in **bold italics**).

- ***“Even through current analyses are unable to predict with confidence the timing, magnitude, or regional distribution of climate change, the U.S. National Assessment provided a vehicle for extending public awareness about climate change.”***

Chapter 2

Pages 2-3 -- section on Population Profile

This section offers a number of useful perspectives on the US population profile. It might be strengthened by also noting (lines 34-35) that US net immigration is among the largest or is the largest of any Annex I country. One possible source of data is the OECD. See “tables” at the bottom of the following OECD item:

www.oecd.org/oecd/pages/home/displaygeneral/0,3380,EN-document-590-17-no-12-7240-590,FF.html

Page 12, lines 41-44

An important element in the evolution of the US transportation system is low US population density. According to *OECD in Figures 2001* (Demography table, page 6), the US has a population density 29 people per square kilometer. The EU-15 has a population on density of 116 and Japan has a density of 335 people per square kilometer. This impacts our transportation requirements as implied on Chapter 2, page 2 line 50 through page 3 line 12. The sentence on page 12, lines 41 and 42 might be altered as follows (new text in **bold italics**) to reflect this.

- ***Reflecting a low US population density of 29 people per square kilometer (compared to densities of 116 and 335 people per sq. kilometer in the EU-15 and Japan, respectively), the US transportation sector has evolved into a multimodal system including waterborne, highway, mass transit, air, rail, and pipeline transport, with a capacity for moving large volumes of people and cargo long distances.”***

Chapter 6: Impacts and Adaptation

Overarching Issue:

As the text of the *Climate Action Report* is currently drafted, Chapter 6 is the longest chapter and includes extensive discussion of a wide variety of regional impacts. And while the chapter provides some very useful information on changes during the 20th century and the role adaptation has played and may play in the future, the current extended emphasis on future regional “impacts” listed in the Clinton Administration’s report, the *U.S. National Assessment*, is inconsistent with a key conclusion of the National Research Council study on climate change, namely,

“[the] current analyses are unable to predict with confidence the timing, magnitude, or regional distribution of climate change....”

The NRC is not alone in concluding that current regional impact assessments are unreliable. According to the IPCC *Third Assessment Report* (WGIII, page 96). “[T]here is considerable uncertainty about the rate of expected change and its manifestations and impacts at the regional and global levels. Science cannot predict the climate and its impacts in Milwaukee, Mumbai, or Moscow half a century ahead very accurately, and it may never be able to do so.” The conclusions are the same about changes in the oceans. According to the IPCC (WGII, page 352-353), “[I]t is still not possible to assess regional responses to shifts in climate trends, and it is unknown if a general warming will increase or decrease the frequency and intensity of decadal-scale changes in regions where national fisheries occur.”

In fact, important elements in the draft report provide very good examples of the NRC’s concern. For instance, Figure 1 illustrates how the Illinois climate might change, but the answer is completely model dependent. As shown in current draft Figure 6.1, according to the Canadian model the climate in Illinois becomes more like that of states South-West of Illinois. However, according to the Hadley model, the climate in Illinois becomes more like that of states due-East of Illinois. Directionally, the models give effectively **opposite** results.

Similarly, Figure 6.2b indicates that for roughly three-quarters of the regions of the country, the Hadley and Canadian models predict **opposite** changes in daily precipitation. And for the few regions in which both models project increases in precipitation, there is no agreement as to the amount of the change.

Given the many divergent results from the Hadley and Canadian climate models, it means little that in some circumstances these two models indicate similar impacts. The highlighting of such circumstances was one of the problems with the *U.S. National Assessment* report. What is important is that both the NRC and the IPCC conclude that current models are unable to predict with confidence the nature of regional climate changes.

Overall, it is important that the *Third US Climate Action Plan*, which will be submitted to the UNFCCC as an official report in accordance with our treaty obligations, reflect the best available science and not contain a broad listing of specific regional impacts in which there is little confidence.

To achieve this end, Chapter 6 should be significantly shortened and structured around the NRC conclusion. While many of the categories of impacts covered in Chapter 6 might remain to demonstrate the broad and comprehensive U.S. approach to the climate issue, the individual discussions should be significantly shortened. At the same time, the current draft of Chapter 6 contains much good material. The remaining comments on Chapter 6 offer suggestions on how the chapter might be shortened.

Pages 1-3 – Overview

Page 1 of this overview provides a very useful perspective on the wide range of climates in the U.S. as well as the role of different elements of US society (from building standards to medical systems) that contribute to the dynamic adaptation that occurred

during the 20th century *prior to* concern about global climate change. This material is very useful and relevant.

Page 2, line 17

For readability, there should be a paragraph break with the beginning of the sentence in this line.

Page 2, line 18

This line should refer to “Articles 4.1(b) and (e)”, not “sections 4.1(b) and (e)” of the UN Framework Convention on Climate Change.

Page 2, footnote 1

With the reduced emphasis on specific regional climate change impact possibilities, this footnote probably should be deleted. If retained, it should be shortened, made consistent with the NRC material, and relocated to the text in the middle of page 3 (see following comment).

Page 3, line 27 through Page 4, line 28

These lines should be extensively re-written to highlight the following main points:

- The NRC conclusion that “[the] current analyses are unable to predict with confidence the timing, magnitude, or regional distribution of climate change....” (from Chapter 1, page 3)
- Develop new text to describe existing Figure 6.1 and using the divergent modeling results to illustrate the NRC’s concern.
- Develop new text to describe existing Figure 6.2b and using the divergent modeling results to further illustrate the NRC’s concern.
- Keep existing text discussing events of the 20th century.

Page 4, line 30 through page 5 line 17.

This provides useful information regarding shorter-term climate change and probably should be kept.

Page 5, lines 38-45

An important question that needs to be asked regarding the content of the *Third U.S. Climate Action Report* is, what level of reliance should be placed on the regional impact findings of the Clinton Administration’s *National Assessment* in light of the IPCC’s and National Research Council’s conclusions regarding our current inability to do meaningful regional climate modeling? If the IPCC’s and NRC’s conclusions are to be taken seriously, then highlighting the regional climate results from the *National Assessment* would present inconsistent and unreliable research to readers and the UNFCCC.

The existence of the *National Assessment* effort is duly noted in Chapter 9. Considering the goal of condensing this Chapter without presenting unnecessary or conflicting material, lines 38-45 and Tables 6.1 and 6.2 should be deleted.

Pages 6-10 – Climate Change Interactions with Agriculture

In general, the agriculture provides important and useful information. However, page 9, lines 15-21 are vague and the emphasis on “all else being equal” circumstances runs counter to the frequent references to adaptation in this chapter. The “all else being equal”

statement may be a traditional analytical reference point, but as a practical matter the agricultural sector has proven itself to be highly adaptive, so the "all else being equal" perspective simply is not useful. Lines 6-10 should be deleted.

Pages 10-14, Climate Change Interactions with Forests

The section begins (page 10) with useful introductory material including the many ways human activities may impact forests.

Page 11, lines 6-8

These lines cover results from a single model and describe "changes that climate change could have on forests...." Does this "could have" result really have a strong enough basis for inclusion in a report to the UNFCCC? If not, the text should be deleted. There are numerous other examples of specific regional "results" being provided in Forest section. Again, if the NRC and IPCC conclusions about the reliability of regional modeling is to be taken seriously, these regional results don't belong in an official US report to the UNFCCC.

Page 12, lines 4-5.

According to this text, "what is clear is that, as the climate changes, alterations in these disturbances and in their effects on forests are possible." As defined in the existing footnote 1 on page 2,

"possible" in this report only means that the odds are about 50/50. If the science on this issue is refined only to the point of a coin-toss, does it merit inclusion in an official US report to the UNFCCC? In general, this section needs to be shortened and "coin-toss" material deleted.

Pages 23-27 Climate Interactions with Human Health

This five-page section appears to have three key findings:

- First, "[P]rojections of the extent and direction of potential impacts of climate variability and change on health are extremely difficult to make with confidence." (page 23, lines 21-22)
- Second, [S]ignificant outbreaks of these diseases as a result of climate change are unlikely because of US health and community standards and systems." (Page 27, lines 4-5).
- Third, [A]daptive responses are desirable from a public health perspective irrespective of climate change." (page 27, lines 40-41).

However, these results are easily lost in the five pages of text on climate and human health. This section should be edited to highlight these findings.

Page 26, lines 26-28

This text makes a passing reference to Figure 6.9. This Figure provides an excellent example of the importance of economic and cultural factors conditions in climate/health issues. Additionally, public health systems also are likely to be important in explaining the radical difference in disease rates on two sides of the border, and public health systems are not specifically mentioned in the discussion. The example of dengue in Texas versus the Mexican border states should be referenced more explicitly in the text. Figure 6.9 also should be retained in the final report because it clearly demonstrates the potential of adaptation in addressing some of the risks of potential climate change.

Pages 28-29 – Climate Change Impacts in Various Regions of the United States
This section and the accompanying tables (Tables 6.1 and 6.4) should be deleted. First, the types of potential impacts discussed in the *National Assessment* reports has been amply discussed in the first 28 pages of this Chapter. Second, the premise of the *National Assessment* regional results --- that meaningful regional assessment is currently possible --- is faulty as discussed earlier. Third, the existence of the Clinton Administration *National Assessment* is noted elsewhere.

Page 36, Table 6.2 – Key national level findings from the US *National Assessment*
This table appears to be pulled from the US *National Assessment* and should be replaced with a similar table that: 1) follows the organization and content of the material actually presented in Chapter 6; and 2) emphasizes the key findings covered in the Overview (pages 1-2) including the importance of a healthy economy as well as an adaptive economic and social structure that responds to changes as evidenced by behavioral changes that occurred during the 20th century.

Chapter 8

Page 1 – Figure on Research Expenditures by Country

This figure would convey the same information but be visually much more impressive if the two bars for each country were stacked rather than shown side-by-side.

Chapter 9 – Education, Training, and Outreach

Pages 2-3

These pages describe the USGCRP's "National Assessment" effort that, among other things, developed extensive material about future regional impacts of climate change despite widespread agreement that current regional climate change projections and impacts are not reliable. See comments above for Chapter 6.

While the draft description of the "National Assessment" effort does not dwell on the development of regional climate impact projections, it also does not mention caveats to such projections nor does it mention the National Research Council's conclusions on the limited usefulness of such projections.

Given the NRC conclusions, the drafters of the *Third U.S. Climate Action Report* need to carefully review this section with an eye towards possible questions about the merits of this program if the "National Assessment" effort is to receive two-pages of description in the *Climate Action Report*.

**API Technical Comments on
Chapter 5 of Draft *Third U.S. Climate Action Report*
for Submission to the UNFCCC**

Three of the data series reported in Table 5-1 (page 4) of draft Chapter 5 appear to be inaccurate, perhaps due to errors in conversion from different base years. The data of concern is identified below and also described in the attached table.

- **Real GDP (billions of 2000 dollars) 1997 CAR.**
The conversion of the 1997 CAR (Table 4-3) real GDP from 1995 dollars to 2000 dollars does not appear to be accurate. Based on the attached table, the conversion should be made using a factor of 1.089822 not a conversion of 1.019 that was apparently used.

Using the suggested conversion, the 1997 CAR real GDP numbers converted to 2000 dollars would be \$8,724 billion, \$10,620 billion and \$12,270 billion for 2000, 2010, and 2020, respectively.

- **Real GDP (billions of 2000 dollars) 2001 CAR**
The data in Table 5-1 for the 2001 CAR is exactly as printed in EIA's Annual Energy Outlook-2002. However, the AEO 2002 reports GDP in 1996 dollars, not 2000 dollars as listed in CAR Table 5-1.

Converting the AEO 2002 GDP data from 1996 dollars to 2000 dollars, as indicated on the attached table, yields the following real GDP data in 2000 dollars: 2000, \$9,862 billion; 2010, \$13,163 billion; 2020, \$17,667 billion.

- **Energy Intensity (Btu per 1996 dollar GDP) – 1997 CAR**
The energy intensity data in the 1997 CAR (Table 4-3) is given in 1995 dollars, so this needs to be converted to 1996 dollars for the 2001 CAR. The conversion appears to be inaccurate. Using the data from the following table, the correct conversions appear to be: 2000, 11,893; 2010 10,562; and 2020, 9,623.

The related text on page 3, lines 11-13 is still accurate and does not need to be changed even if the suggested corrections are adopted. The observations made in these lines are accurate and relevant, and should be retained.

Error Corrections/Explanation for Table 5-1

	1995	1996	1997	1998	1999	2000	2010	2020
GDP Chained GDP Deflator Data from DOC/BEA								
nominal	7400.5	7813.2	8318.4	8790.2	9299.2	9962.7		
96\$ Chained	7543.8	7813.2	8159.5	8515.7	8875.8	9318.6		
Deflator	0.981	1.000	1.019	1.032	1.048	1.069		
Ratio of Deflators: 2000/1995 =			1.089822					
Source: DOC/BEA								
ERROR IN CONVERTING CAR '97 REAL GDP FROM 95\$ TO 2000\$ FOR TABLE 5-1								
CAR '97								
Reported Real GDP (95\$) (from CAR '97 - Table 4.3)						8,005	9,745	11,259
CORRECTED:								
Real GDP (2000\$): Using 2000 to 1995 Ratio of Deflators						8,724	10,620	12,270
<i>Apparent source of error in</i>								
CAR '2001 Draft								
Real GDP (2000\$) from 1997 CAR						8160	9934	11477
Implied Conversion of 95\$ to 2000\$ ==> apparent error						1.019	1.019	1.019
Error in converting Real GDP from EIA AEO 2002 (reported in 96\$) to 2000\$						2000	2010	2020
Real GDP (2000\$) reported in Chap 5 page 4, Table 5-1						9,224	12,312	16,525
PROBLEM: these are directly from EIA AEO 2002, Table A20								
BUT the EIA gives Real GDP projection is in 1996\$, not 2000\$								
EIA AEO 2002 Real GDP in 2000\$ would be:						9,862	13,163	17,667
Error in converting '97 CAR Energy Intensity from 95\$ to 96\$						2000	2010	2020
2001 CAR - Chap.5 Table 5-1 Energy Intensity reported from '97 CAR (as btu/96\$GDP)						11,775	10,458	9,528
1997 CAR (Table 4-3) Energy Intensity Conversion								
Conversion of 95\$ to 96\$ for BTU/real GDP calculation						1.0193636	1.01936356	1.01936356
Energy Intensity reported in 1997 CAR (in 95\$)						12,123	10,767	9,809
Conversion of 95\$ to 96\$ for BTU/real GDP projection from '97 CAR						11,893	10,562	9,623