25 Pages

United States Department of State
Bureau of Oceans and International
Environmental and Scientific Affairs
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Dear Jan:

Attached please find a copy of the U.S. comments on most of the tranche two papers prepared under the aegis of the OECD/IEA Annex I Experts Group (Emissions Trading, Electricity Sector, Competitiveness, Innovation for Sustainable Transport, and Marine Bunker Fuel Taxes); we anticipate sending our remaining comments on Monday. Overall, we believe that these papers show considerable progress from the first iterations of late last year; in most cases, we believe that the schedule we approved will be appropriate, and the documents will be in a form suitable for release at the March AGBM session.

We do have several significant concerns on some of the papers. In particular, we note that several of the papers are still only in outline form – and we do not believe it will be possible prior to the AGBM session to have developed, reviewed, corrected and finalized versions of these texts. We expect that our session in two weeks will address this matter – but wish to register our strong view that these documents have a full country review, and be accepted by governments prior to their release.

Please contact Ms. Susan Wickwire of my office if you have any questions regarding the U.S. comments. We look forward to our discussions on these papers at our session early next month.

Sincerely,

Jonathan C. Pershing

UNCLASSIFIED U.S. Department of State Case No. F-2012-40055 Doc No. C05577182 Date: 03/24/2015

Emissions Trading Paper
U.S. Comments
January 24, 1997

I. General Comments

The United States finds this paper to be extremely well done. It has been well crafted, takes account of the majority of the concerns we had expressed in our comments on the previous iteration, and overall, attains a standard of which the Annex I Group can be proud.

The definitions of terms "baseline", "cap" and "allowances" seems somewhat inconsistent through the text. For example, "Baseline" has been used in a different sense by many parties to connote a historical emission basis. The confusion, in part, arises because the baseline concept has relevance for both cap + (allowance-based) trade, and credit-based systems. That is, a baseline could be a pre-existing (historical) emission level against which emissions reductions are measured. An historical baseline emission trend can be used to determine the amount of emissions allocated. See Specific Comments below for recommended clarifications to definitions.

The role that trading can play in reducing potential carbon leakage problems should be discussed in the paper. Although trading itself does not cause leakage, it can reduce carbon leakage. Leakage is created whenever reduction strategies pursued in one region result in an increase in emissions in another region. Leakage is mentioned in only a few lines in the paper (e.g., p. 21, ln 37; p. 23, ln 4); there is essentially no discussion of it. Draft text is offered for introducing a discussion of leakage in the paper (See Specific Comments for p. 28 below).

A few factual errors regarding descriptions of the U.S. SO2 trading program require correction (e.g., p. 10, ln 34; p. 25, ln 23-25; p. 33, ln 3-4, etc). The section on "Links to Other Policies and Measures" (pp. 25-27) seems out of place. This section is best located after the section on "Who Trades/Possible Participates", because the "Who Trades" section provides a good transition to the related discussion of policy linkages.

Appendix 2: This Appendix provides a good start on summarizing cost results. However, it is highly selective about which model results are cited and provides insufficient discussion of some studies to summarize their results and significance.

Specific Comments

p. 4, line 28. To clarify definition, replace "constraint on emissions," by more precise wording "an emission limit."

p. 4, lines 25-27: This is an overstatement. There are other approaches to realizing environment benefits besides constraints; e.g., emission taxes. An overall constraint on emissions is one approach to controlling global total emissions. Constraining emissions from each participant automatically constrains the total of all participants. Hence, replace the sentence beginning "An overall..." with: "A constraint on total emissions from each participant is needed for there to be an incentive to trade."

p. 5, lines 1-6. This definition of the word "baseline" is both confusing and at odds with how it is commonly used by many others; i.e., as a historical basis (whether a single base year or some measure over a series of years, perhaps adjusted), which will lead to semantic confusion. We suggest rewriting the sentence beginning with "The baseline .." as follows: "The baseline could be a pre-existing (historical) emission level against which emissions reductions are measured, a future projection ...."

p. 5, lines 16-17, A major distinction should be made between the allowances initially prescribed in the agreement before trading and the net allowances available for emissions after trading and banking.

p. 5 , line 17. add new sentence at end of paragraph, "An historical baseline emission trend can be used to determine the amount of emissions allowed."

p. 5, line 21. Please make it clear that a baseline used to establish an emission level against which emissions reductions are measured need not be legally-binding, although a legally-binding baseline might be perceived as more credible. On line 21 after word "fixed," add nor "legally-binding."

p. 6, line 6, see comments on p. 4, lines 25-27. Change first sentence to read: "Placing constraints on emissions by each party is one major option for controlling global emissions and is a necessary provision to create incentives for trading."

p. 6, line 20-21, "Allocation . . . as it 'may' involve some redistribution of wealth."

p. 9, lines 22-42, and page 10, lines 1-7. These lines include language that evaluates and is critical of "borrowing." As noted in the November 25 U.S. comments on the first draft paper, this sort of language is acceptable if all the concepts get scrubbed with pro's and con's. It is inconsistent to evaluate just one concept from a set.

p. 10, ln 33-35 -- the statement beginning with "Recent market values (roughly $60 per ton) ..." is dangerously misleading, because it does not acknowledge that there were many forces at play that contributed the fall in allowance prices: low demand relative to supply; an array of low-cost compliance options (fuel switching and blending with low-sulfur coal); deregulation in the rail transportation sector, etc. (See explanations offered by researchers Ellerman (1996) and D. Burtraw (1995). Citations -- Burtraw, Dallas, "The SO2 emissions Trading program: cost savings without allowance trades," Contemporary Economic Policy, April 1996. Burtraw, Dallas, "Trading emissions to clean the air:

exchanges few but savings many,", Resources, Winter 1996, No. 122. Ellerman, A. Denny; and Juan-Pablo Montero, "Why are allowance prices so low" An analysis of the SO2 emissions trading program," MIT_CEEPR working paper, 1996 (forthcoming).

p. 12, line 1-3 -- discussion could be more clear here if one were to discuss the certainty of the emission coefficients and emissions data for NOx as high quality, but with uncertain GWP values (due to multiple effects of tropospheric ozone formation) versus the case of N2O where the emissions coefficients have large error margins but the GWP is better known.

p. 12, line 22-43: in your discussion of compliance and data quality needed for trading, consider that under legally-binding limits, a Party is liable for all of its GHG emissions, whatever the accepted method of estimation -- if a Party can document reductions from what it is allowed, could it not then trade that surplus?

p. 12, lines 44-46: this discussion limits flexibility and cost effectiveness

p. 14, line 4-14: move this paragraph earlier into the discussion.

p. 21, lines 21-27, should also mention that opening trading to firms reduces market power problems (paper mentions this in pp 28-29 discussion of market power, but the point should be made here as well).

p. 21, lines 26-27, assertion that inclusion of many private sector participants would increase demands on monitoring and verification systems is questionable. It should be given further explanation, including discussion of types of monitoring systems would be most affected and how this problem could be overcome; otherwise, this assertion should be dropped.

p. 22, lines 1-15: reorder the sentences in this paragraph to present the concepts more clearly -- the information is here, but seems convoluted as presented.

p. 25, lines 23-25. The statement beginning with "There is a high liquidity ..." is incorrect. Currently, there is low liquidity or at best sufficient liquidity. See Ellerman (1996) and D. Butraw (1995), and also U.S. General Accounting Office (GAO), Allowance Trading Offers an Opportunity to Reduce Emissions At Less Cost, GAO report, GAO/RCED-95-30, December 1994.

p. 25, line 41. Policy links are not limited to links to regulations and standards. Change "regulations, or standards" to "regulations, standards, or voluntary agreements."

pp. 25-27. consider relocating the entire section on Links to Other Policies and Measures forward to p. 23, before the section on Administrative and Transactions Costs.

p. 26, lines 1-5: these sentences seem contradictory: one reads " since few GHG regulations" exist; then the next reads "many domestic measures. But isn't it true that, in the operational sense, trading systems usually require some form of regulatory framework, albeit perhaps different from traditional regulatory system. Sentence needs to be rewritten to address the apparent contradiction and to clarify its meaning.

p. 26, line 15, change "tax and standards" to "tax, standards, and voluntary agreements."

p. 27, line 8, replace "them" by "their."

p. 27, lines 26-28, how would such a constraint relate to a trading system? Purpose of trading is to provide flexibility to reduce emissions where marginal costs are lowest, rather than by setting an artificial constraint. Delete.

p. 27, line 34, this concept needs more explanation.

p. 28+. Introduce new text on leakage in the section, "Other Issues." The arguments might be presented as follows: . Carbon leakage that takes place whenever reduction strategies pursued in one region result in an increase in emissions in another region (SAR, Group III report, chapter 11, section 11.6.4, page 423-426).

Trading itself does not cause leakage. Leakage may occur under a system of emission constraints without trading or where countries are not fully committed to pursuing CO2 abatement measures. In these situations potential leakage problems could be substantial. For example, under a system of emission constraints without trading there may be some leakage within countries with emission constraints, particularly from countries where the constraint imposed by an emission cap is much greater compared to countries where that constraint is less. Even if there are emission constraints with trading for some countries, and not others, there is likely to be "leakage" to countries without constraints, but that is a problem with emission constraints, not trading per se. Trading will reduce emission leakage. Trading will help reduce the disparities in the level of constraint imposed on countries having very different emission caps. Also, to the extent that non-participating countries (those without an emissions constraint) can be encouraged to enter into the trading process, trading will provide incentives for non-participating countries to pursue CO2 abatement measures, thereby discouraging leakage. In this regard, Joint Implementation projects can create credits in countries without emissions constraints and therefore help to reduce leakage.

p. 28, line 2 and throughout this discussion, replace "barriers" with "obstacles" or "impediments" or "difficulties"

p. 28, lines 3-4, delete sentence "A wide range...". The obstacles identified do not cover a wide range.

p. 28, line 5, delete "also", as no obstacle has yet been identified.

p. 28, line 8, replace "will attempt to" with "would."

p. 28, line 11, add: "On the other hand, the cost of purchasing GHG units could strengthen movements to implement previously unpopular measures at home."

p. 28, line 12, replace "The" with "One".

p. 29, lines 10-11, rewrite for clarity: "or to drive prices up by hoarding GHG units."

p. 29, line 21, insert "to": "likely to develop."

p. 29, lines 24- 25, grammatical fix: "are given below. These would not necessarily be separate options; they could develop together."

p. 29, lines 26-27, rewrite for clarity: "countries that have emissions constraints trade or barter these commitments among themselves."

p. 29. Section on Phasing.

Consider extending discussion to include potential problems with phasing. For example, with phasing there can be a potential for creating an unanticipated inter-temporal supply-demand imbalances of allowances. For example, some argue that for the U.S. experience with SO2 phasing has created a situation where Phase I plants hold a supply, while Phase II demand does not yet exist. There may be lessons from other countries as well.

p. 29, line 37, add sentence: The effectiveness of national institutions should be evaluated to determine whether they are sufficient, or whether international institutions would be necessary.

p. 30, line 6, delete "necessarily" - there is no need to qualify this statement.

p. 30, following line 29. add new bullet, "works together (e.g., in synergy) and effectively with other policies and measures (such as voluntary agreements), even for countries or parties within a country who do not engage in trading."

p. 33, lines 3-4, ".. aim of (Phase I) of the SO2 .. " note: phase I targets coal-fired, Phase II extends to all fossil fuel units 25 MW or greater.

p. 33, lines 24-25, delete the sentence.

p. 33, line 47. We question the use of "complicated" in describing a "phased approach." This sentence is evaluative and without substantiation. Recommend deleting the sentence.

Appendix 2: p. 39, lines 4-6: a price instrument does not necessarily lead to similar welfare benefits in all cases. This sentence should be qualified, say by adding the word "potentially" before "can lead to" in line 5.

Appendix 2: p. 40, lines 17--28: Providing a little more detail about the results of this study would be useful beyond the two sentences in lines 26-28.

Appendix 2: p. 42, lines 9--16: Results are only mentioned for the OECD Green model, but the Model Comparison project used a number of models (e.g., Manne and Richels; Edmonds et al.). Some brief summary should be given that indicates the range of results across models and how the cited results relate to that range.

Electricity Sector Paper
U.S. Comments
January 24, 1997

I. General Comments

The paper tries to do too many things given the limited time available to complete the final paper. In addition, it continues to exhibit weaknesses in its analysis framework. The U.S. reviewers feel strongly that adequate coverage of the study elements and their complex interrelationships within the context of restructuring requires a more specific analysis than suggested in the outline.

The current extended outline is not detailed enough to assess how the author plans to carry out a credible analysis capable of meeting the standards of the AIXG study content for a common action project paper. It is not clear, for example, how the study plans to assess GHG emission reduction potential and economic effects, and to address the rationale for common action.

The U.S. proposes, therefore, that the Secretariat place the paper on a separate track from the other tranche II project papers, and that it be released separately in accordance with the following proposed review schedule:

Mid February Develop and send forward for expert review an elaborate proposal outlining the details for a more specific analysis. This proposal should:

- outline in detail the analytical framework the study intends to employ for integrated assessment of the four related policy areas (at the very least, some sort of conceptual framework should be constructed);
- provide a detailed draft table of contents, including subsections (of similar detail as the table of contents in the trading paper outline)
- for each study element, provide a detailed description of how the study plans to establish rationale for common action, assess (qualitatively and quantitatively) GHG emission reduction potential and economic effects, and implementation issues
- for each study element, indicate the specific case studies that will be used to support the analysis

End-February Secretariat receives expert review comments

Mid-April First full, "integrated" review draft

1st June	Second full, integrated review draft
July	Release paper at AGBM-7

We believe this proposal will ensure a more precise course of analysis for this important paper and maximize the extent to which the paper can benefit from a significant contribution to its development by U.S. and other country experts before review drafts of the full paper are distributed.

The following are general comments on specific study elements:

Subsidy Reform

The analysis should be founded on precise (i.e., non-abstract) definitions of subsidies. In addition, the study should:

1) include a reinterpretation of the conclusions of the previous subsidy case studies (i.e., Decision Focus study, and Jorgensen study) to account for potential impacts of electricity restructuring;
2) utilize any new research findings on (qualitative or quantitative) estimates of carbon emission impacts of subsidy reforms, given expectations about marginal fuel choices in a restructured market; and
3) collect available information on state and local government energy taxes and supports.

Market Reform

The Tranche I studies made it clear that market reforms, including subsidy reforms, intended to improve economic performance can decrease or increase carbon emissions, depending upon national circumstances and how they are implemented. This report needs to deal directly with the implications of this conclusion for policy formation. For example, limiting reform to only those changes that reduce carbon emission would not necessarily achieve the broad goal of well-functioning markets that has been the primary impetus and basis for support for market reform. Similarly, a harmonized approach in which all participating countries adopted the same reforms would, presumably, result in uneven emissions outcomes with distinct winners and losers, despite an overall emissions reduction.

Renewables

The material in the renewables section includes sweeping unsubstantiated claims and is often vague. In some instances, we believe it misrepresents the facts and is simply illogical:

- Sweeping and unsubstantiated: "Often, it is the lack of suitable legislation or an inability to enforce the existing rules that accounts for the poor penetration of renewable energy technologies into the market." (pg. 14, ln. 16-18)

- Vague: It is not clear what the social and environmental barriers discussion (pp. 13-14) is trying to achieve. We question what is meant by "difficulties in the planning process" or "lack of guidelines."

- Misrepresenting the facts: the bullets under "technical and economic barriers" list absolute and relative high capital costs as a "barrier," (pg. 13, lns. 14-16) but fail to note that electric renewables are often not cost-effective on a lifecycle basis.

- Illogical: Unpriced environmental externalities associated with carbon-based fuels are labeled an economic barrier.(pg. 13), while environmental externalities associated with renewables (e.g., noise, pg. 14) are labeled an environmental barrier. What does the phrase ". . . renewable energy technologies internalize a greater proportion of their externalities" (pg. 15, ln 19) mean?

The barriers framework employed (pages 12-15) is not useful because it lacks a structure to allow policy options to be meaningfully linked to it. For example, the paper suggests that consumers not buying the preferred product constitutes a barrier. Even laws of physics ("transmission losses are a major economic constraint," pg. 13, ln. 13) get labeled as "barriers." It would be much clearer to separate the discussion into three separate areas:

(1) technology readiness,
(2) relative costs, and
(3) market failures, legal barriers, and institutional barriers that might be preventing the purchase of those renewable technologies that are technologically ready and cost-effective.

This structure would allow for a clearer presentation of policy options (e.g., R&D to improve technology readiness and reduce costs; fiscal policies to change relative prices; regulatory changes to correct market failures and remove legal barriers, and other policies and measures directed at institutional impediments).

If it is necessary to use one term to cover all the factors listed above that impede the penetration of renewables, we suggest using the term "impediment" instead of "barrier". Use of the term barrier should be limited to market barriers, that is, regulatory actions and other problems that prevent the normal operation of the market, or exclude certain participants from the market; it should never refer to factors such as cost that represent market forces at work.

VAs with electric utilities

At times, the paper appears to confuse voluntary actions with voluntary agreements. Though related, the terms cannot be used interchangeably. Voluntary "actions" are the means to implementing the voluntary "agreement" that an entity has entered into with another party (typically a government).

The VA assessment framework developed for the study must be broad enough to differentiate among the types of VAs with electric utilities employed in Annex I countries. This means the study must avoid forcing the U.S. and Canadian VAs into the Netherlands model, where clear differences in underlying characteristics exist.

II. Specific Comments

Page 3, lines 31-2. The parenthetical to the title to section III is misleading; the text clearly indicates (p. 4, lines 35-36) that transmission and distribution activities are to be included, as well as "production" and "end-use."

Page 4, line 18. Propose that both electricity end-use, transmission and distribution, and generation will be covered in this study.

Page 5, 16-19 Performance evaluation should include the criteria of ease/speed of adoption of the VA program. One of the benefits of VAs is in the U.S. is that industry has accepted them rather quickly and that legislation has not been needed. A mandatory program would require implementing legislation and would likely be opposed by industry. Any proposed legislation or administrative action would also draw opposition, thus delaying implementation of a mandatory regime for years. A useful comparison is the experience with the Clean Air Act amendments of 1990. In addition, the level of participation should be quantified (e.g., by percentage of industry, or percentage of emissions).

Page 5, line 17. Suggested edit: . . . "economic efficiency, speed of adoption of VAs, level of participation, administration and compliance costs . . ."

Page 6, lines 30-34. It is not clear from the description of the EAPs that each plan is one document signed by all utilities (as opposed to the U.S. Climate Challenge program, in which each electric utility signs an individual agreement with the Department of Energy, pursuant to an MOU entered into between DOE and the electric utility trade associations).

Page 6, line 31. Suggested edit: "Each EAP is a strategic long term plan encompassing the entire electric utility sector and is aimed at reduction of greenhouse gases . . ."

Page 10, lines 5-6. The stated rationale for VA common action, "With electricity markets becoming more and more open, collaboration among utilities at the national and international levels will be key to getting real progress in this area" is not substantiated. We question why this type of collaboration is "key."

Page 10, lines 6-8. This paragraph is vague: Does it presume that greenhouse gas reduction initiatives will not be cost-effective (otherwise a "necessary margin" would not be needed)?. Our experience with the Climate Challenge program indicates that many projects taken for business reasons also have greenhouse gas reduction benefits. Please clarify taking into account this issue.

Page 10, lines 7-8. Suggested edit: "so that the necessary margin exists for utilities to carry out certain initiatives under a VA scheme that may not be cost-effective under current market structures but are critical to reducing, avoiding or sequestering emissions."

Page 11, lines 2-3. Greenhouse gas reduction projects will entail costs, but it is not true that costs will always exceed benefits and thus affect a utility's competitiveness.
Page 11, lines 2. Suggested edit: "Unless the benefits of the project exceed the costs, as in the case of efficiency improvements, this will affect the relative . . ."

Page 11, line 5. Suggested edit: "appropriate for its system and by not requiring that any particular action be adopted by a utility."

Page 11, line 13-14. An important factor for deciding whether or not VAs make sense is to analyze how quickly the VA program was adopted by the government and industry instead of only examining the time elapsed between implementation and results. As mentioned before, one can make an instructive comparison between the Climate Challenge program and the Clean Air Act amendments of 1990: it took a long time get the latter amendments adopted and they were bitterly opposed by electric utilities, as compared to the Climate Challenge program, which was quickly implemented.
Page 11, line 13. Suggested edit: "The study will consider the time required to adopt the VA program, as compared to adopting a regulatory program, the time necessary to negotiate VAs.

Page 13, line 4. replace "..from the investment point of view" with "..using traditional investment strategies." Page 13, line 4. delete the word "other."

Page 13, line 9. replace "are based on" to "are, in part, based on."

Page 13, line 12. replace "conventional" with "generation."

Page 13, lines 20-21. This is an old argument. It may no longer hold. Many transitional economies have made significant progress with price reform. This should be recognized and acknowledged, as done in the tranche I study "Financing Energy efficiency in Countries with Economies in Transition," working paper number 6.

Page 13, line 25. Need further elaboration of what is meant by statement "Transmission losses are a major economic constraint ...."

Page 13, line 38. Following this line, add a new bullet. "loads may not match well with resource availability."

Page 15, lines 1-7. Although no actual policies that would promote penetration of renewables are identified, the text suggests one likely focus on eliminating or changing numerous legal, environmental, and safety requirements (e.g., "Legislation may be needed to . . .", ln. 3, pg. 15). Pg. 15, lines 1-7 imply that existing generic regulations have one-way impacts. Limited access to the grid may reduce renewables opportunities, but opening up the grid might also expose renewables to new competition. Safety regulations may add some costs to renewables production, but add costs to other types of generation as well. Is there reason to believe that removing safety regulations would benefit renewables vis-a-vis coal, nuclear, etc.?

Competitiveness Paper Outline
U.S. Comments
January 24, 1997

At this stage, we have no comments. The current outline does an excellent job of framing the issue and posing the relevant questions to address, and we look forward to reviewing a draft. We might have had some concerns about timing, but understand that the schedule for this paper has been revised to provide for release by AGBM-7 in July rather than AGBM-6 in February. Because this paper addresses effects of a previously analyzed common action, rather than an action per se, we anticipate that the analytical framework may diverge somewhat from the standard agreed framework; it may be useful for experts to use this meeting to discuss the degree to which such divergence is necessary or desirable.

Innovation for Sustainable Transport Paper
U.S. Comments
January 24, 1997

I. General Comments

The second draft paper is much improved in clarity of purpose and in its presentation of the material. It includes a broader coverage of measures to encourage and guide local transport initiatives, which had incomplete coverage in the first draft. It presents a broad survey of the literature on demand management and technological innovation in vehicles and fuels, and ways to encourage innovation. The material presented is primarily narrative and descriptive in form, and it is difficult for the reader to determine which of the options are considered to have the greatest possibility of success, and which have the potential for quantitative reductions in GHG reductions. More discussion of the serious political, cost and technical constraints on implementing many of the options, and, to the extent possible, more quantification of the expected reductions, would enhance the value of the report. There has been some improvement in organization and focus, however, there remain areas in the paper where further work would be beneficial.

The introductory section "Context" needs to be more concisely presented. The main justification for focusing this study on behavior and technology innovation is lost because the discussion does not include the key points needed to set the tone for the overall paper. A recommended fix is outlined below (see page-by-page comments).

In the discussion of local transport initiatives, the paper seems to struggle with trying to provide a coherent and concise statement of how national governments and international agencies can promote innovation at the local level. It then has difficulty identifying areas of common action. This problem arises, in part, because the paper does not always clearly distinguish among the innovative behavioral and technology initiatives of local government initiatives, on the one hand, and unilateral "national" level policy and "international" common action policies on the other.

The paper needs to lay out clearly the limits of its conclusions and recommendations regarding common action. For example, conclusions on local transport initiatives are limited for several reasons -- (1) the speculative nature of translating locality-specific case study results into generally applicable findings/conclusions; and (2) the very different results from similar kinds of innovative efforts (e.g., nearly 10 to 1 differences in the GHG % impact of local transport pricing schemes discussed in 4.2.1, page 5. lines 16-21).

In the discussion of benefits of common actions, the U.S. reviewers express concern about the tendency for the discussion to shift towards "standardized technology" without acknowledging the limits to standardization. For example, in the case of vehicles,

standardized vehicle technology is only helpful where cars cross national boundaries (e.g., U.S.-Canada or within Europe), but less applicable between U.S. and Europe and for economies of scale which can be achieved within many countries' own national boundaries. The paper needs to note the limits to standardization and avoid overselling its benefits.

There is too much focus on alternative fuel vehicles which the paper generally concludes do not offer any substantial GHG reduction potential. The exception noted is biomass-based fuels such as ethanol from cellulose. However, the paper seems to completely leave out biomass-derived alcohols-gasoline blends which overcome all the traditional barriers that the paper discusses at length. To that extent that low-GHG components in gasoline can surmount some of the traditional barriers with AFVs and result in GHG emission reductions. This option should be discussed in the paper (e.g., in the main body and Appendix A, section 6). The paper should provide a much more extensive discussion of this alternative fuel option and its positive GHG reduction potential. Two sources to consider: (1) Hadder, G.R., and B. D. McNutt. 1996. "The Potential for Alcohols and Related Ethers to Displace Conventional Gasoline Components," paper presented at the Eleventh International Symposium on Alcohol Fuels, Volume One, Sun City, South Africa, 14-17, April; and (2) McNutt, B., P. Bergeron, M. Singh, and K. Stork, 1996. "Making the Transition to Large Scale Ethanol Use in the U.S. Transportation Sector," paper presented at the Eleventh International Symposium on Alcohol Fuels, Volume One, Sun City, South Africa, 14-17, April.

Parts of section 5 and Appendix G seem to express an overly negative tone in the discussion of AFV, both from the technical potential and policy perspectives. See for example, page 11, lines 17-24; pages 36, lines 5-7 and line 21; page 35, lines 12-13; and much of Appendix G (cited pages are too numerous to list). The paper needs to modify the negative tone in which AFVs are presented and discussed.

Although the report covers the problems associated with governments picking "winners and losers," the U.S reviewers feel strongly that the discussion against "picking winners" is overly negative and excessive. For example, we found instances on page 9, line 32; page 26, line 40 through to page 27, lines 1-22; and on page 34, lines 25-26. The paper does not recognize two key facts -- (1) fuel/technology choice is often driven by governments' policy objectives such as oil displacement to improve oil security, or a desire to improve local air quality; in other words, policy decisions/objectives dictate fuel/technology decisions; and (2) governments can set criteria to promote R&D through government-private sector collaborative partnerships in which the non-governmental institutions then, in turn, may pick winners.

II. Specific Comments

Page 3-4. There is no Appendix C. Rename Appendix F to "Appendix C." Rename Appendix G to "Appendix D."

Page 7. Preliminary findings should eventually be replaced by an Executive Summary.

Page 9, line 14. We find the word, "radical," to be a relative term, and suggest its deletion.

Pages 9 - 12. This section loses its value, in part, because of the lengthy and somewhat abstract discussion of "innovation." For example, much of the discussion on pages 10-12, including Figures 1 & 2 are too general and not helpful. To improve the focus and shorten this introductory section, we strongly recommend deleting most of text on pages 7-12 and replacing it with a simpler presentation. Figures 1 & 2 are creative, but contain too much information and are too busy to be helpful to the reader. Starting from page 7, line 18, delete the first sentence on line 18 through page 12, line 11. Replace with a more focused and concise presentation using the following basic points as guidance:

- Local government entities can accomplish substantial reductions in GHG emissions through innovations in technology, institutions and behavior, often in ways that national policies cannot.

- Because climate change is a global issue it is not reasonable to expect local governments to necessarily focus their resources and attention on global issues and international commitments.

- National governments can encourage, promote, even mandate such activity that promotes innovations at the local level that produce GHG emissions reduction.

- National governments can also achieve economies in scale (e.g., in R&D and information), and ensure they are not hindering behavioral and technological innovations at the local level that produce GHG emissions reduction.

In addition, consider combining the text describing the approach (from page 14, lines 19-31, and page 25, lines 2-8) and moving this material to the end of section 1.

Page 9, line 15. rewrite sentence "..they alone could not reverse ..."

Page 9, line 32. delete ", but not pick winners." It is not clear whose view this is. The discussion of picking winners should only be provided in the context of a discussion of pros and cons, as done later in the paper. It seems inappropriate to have this wording at the end of the sentence in this instance.

Page 11, lines 17-24. Context of statement is negative on AFVs. i.e., the discussion of "special reasons that justified, or appeared to justify," the cost of AFV technology should be rewritten.

Page 12, lines 6-11. Does not need to be a separate section, can fold this discussion over into the section on "Measures Considered."

Page 12., line 12. If recommendations for simplifying the presentation on pages 9-12 are accepted by the author, then section 3 becomes section 2.

Page 13. table 1 needs to be moved closer up to where it is first referenced.

Page 13, line 20-21. Add also "achieve economies in scale, particularly with R&D and information provision."

Page 13, line 21. Indeed the point about R&D may be true, but it may be best not to pick R&D as a winner at this stage. Suggest deleting sentence beginning with "Indeed ..."

Page 13, lines 23-26. This requires more specifics to be drawn from pages 23-24 and 37-38.

Page 18, line 31 This paragraph begins with a discussion of policy packages but ends with a focus on charges. Should the sentence read "subject to charges that are part of a policy package?" Does the 10-20% refer only to charges or to overall policy packages? If it concerns charges only, then how does this result relate to the discussion on page 15, lines 16-21?

Page 20. The discussion of implementation issues in section 4.5 is misplaced. This discussion should be focused on national and international/common action implementation issues not local government implementation issues.

Page 23, lines 1-3. Seems to be downplaying potential disadvantages. Add sentence, "If local circumstances are not adequately taken into consideration, inappropriate policy could be replicated that may later be found to be ineffective, resulting in increased emissions due to lost opportunities for reduction from alternative policies and measures."

Page 23, line 24. change "minor" to "potentially major."

Page 23, lines 4-12. This text is duplicated on page 37, lines 12-20.

Page 25. Section 5. This section does not make the case that national and international programs are particularly appropriate because of the technology R&D economies of scale benefits they can effect.

Page 25. Missing from Figure 3 are -- coal-fired ethanol (discussed on page 31, line 21); electric vehicles in coal-fired regions (page 31, lines 6-7); and low-GHG gasoline vehicles (e.g., biomass-based gasoline blends). For completeness, they should be added to the figure, or at least noted where they might fall relative to the hierarchy of options already shown in the figure.

Page 25, line 21. Says fuel cells and electric vehicles are "fully demonstrated," but this is inconsistent with statement on page 27, lines 10-12.

Page 26, line 5. Add to the sentence ", such as LPG, CNG, methanol from NG."

Page 26, lines 6 and 8. It is not clear which specific characteristics are being referenced.

Page 26, lines 36-38. We question the highlighting of the passages "give a clear signal", etc? This is not the practice throughout the paper. Suggest deleting underlines.

Page 27, lines 10-12. This is not consistent with page 25, lines 21-22.

Page 26, line 40 through page 27, lines 1-22. U.S. reviewers strongly object to the tone of this discussion. The discussion on this page against "picking winners" is off-base and overly negative. For example, the discussion begins by stating that "in most cases the government has decided which fuel or technology to promote ..." It is followed by a comment that such policies (presumably based on picking a winner) "may or may not be cost-effective." It goes on to say "for policies to be of interest ..., they need to avoid picking winners." Lines 8-17 further elaborates on reasons why picking winners is to be avoided. Lines 18-22 tries to offer a counter-argument, but it to quickly turns negative. The U.S. reviewers recommend that much of the text beginning in page 26, line 40 through to page 27, lines 1-22 be redrafted. The problem here may be that the paper does not recognize two important points. The first is that governments generally do not decide which fuels/technologies to promote absent a clear policy objective. For example, the sentence on page 26, line 40 could well be written as follows: "In most cases, governments sought to achieve a specific national or local policy objective (e.g., oil displacement to improve national oil security or the objective of improving local air quality). The choice of policy objective(s) then dictated which fuels/technologies offer the greatest opportunity for achieving the objectives." The second is that governments can set criteria to promote R&D through government-private sector collaborative partnerships in which the non-governmental institutions then, in turn, may pick winners. In fact, the paper itself is inconsistent on this point
by later noting the U.S. PNGV program which is clearly "picking winners."

Page 30, lines 15-16. Add, "For most governments, incentives are linked to a specific policy objective (e.g., national oil security, local air quality improvement) and the chosen technology (such as certain AFV designs) emerge from the policy objective.

Page 30, line 17. Delete, "The simplest way" and replace with "One way." There isn't anything simple about applying a carbon or GHG tax on fuels.

Page 30, line 39. sentence could begin with "If GHG emission reduction is a key government objective, then countries ...." It is important to include this qualifier to

emphasize that it is the policy objective that drives the technology choice (not vice-versa).

Page 31. The categorization of GHG mitigation of alternative fuels misses the fact that replacement fuels can be used in conventional fuel blends (e.g., cellulosic ethanol could be blended into RFG).

Page 34. Section 5.4 is a good discussion of market entry barriers but then section 5.5 is not well connected to it. In fact, section 5.5, similar to section 4.6, is not well supported.

Page 34, lines 25-26. Reword sentence to eliminate the "should not" negative tone.

Page 35. Barriers: Initial lack of diversity in product offerings is also a barrier to AFV introduction.

Page 35, lines 12-13. The U.S. reviewers, strongly object to the overly negative tone of this sentence which is suggesting that policies "force" AFVs into the market. Policies don't and can't "force" vehicle users to accept anything they do not prefer. Policies can influence preferences or remove barriers that hinder adoption of alternatives. We suggest that the sentence be rewritten.

Page 36, lines 5-7. This passage has an overly negative tone and is not accurate. Delete lines 4-7. Governments are typically motivated by specific policy objectives, such as oil security or air quality improvement; government motivation is not a response to lobbying groups as suggested by the sentence.

Page 36, line 21. Refer to concerns expressed about lines 5-7. Similar concern expressed about line 21. Delete line 21.

Page 36, line 30. Consider combining with line 26 (i.e., R&D and demonstration).

Page 37, lines 12-20. This text is duplicated on page 23, lines 4-12.

Page 39, line 7. replace "failed" with "done poorly."

Page 46, line 7. Needs to be relabeled as Table 3.

Page 48, lines 1-4. This is a strikingly positive statement about AFVs, which makes it inconsistent with the generally negative tone on AFVs in the text and in Appendix G.

Page 49, lines 26-27. Inconsistent with discussion on page 25, line 21 that says fuel cells and electric vehicle are "fully demonstrated."

Appendix G: Page 73, line 17. Add methanol to the sentence, so that it reads -- "are LPG, CNG, methanol, and ethanol"

Appendix G: Page 73, line 23. The 10% reported is not consistent with the 2% cited on page 74, line 41. The 2% is a more reasonable estimate derived from a more elaborate analysis than the 10% estimate. It appears the 10% estimate was derived from the simple calculation: 30% displacement times 40% equals 12% which is about 10%. This 10% number is then dangerously misleading. Furthermore, the difference between the 10% and the 2% can not be explained by induced driving alone. Wherever the 10% estimate is reported in the main body text, it must be very carefully qualified, as an uncertain and high estimate or perhaps as an "upper bound" estimate.

Appendix G: Page 74, line 7. change "transport fuel" to "motor fuel.

Appendix G: Page 74, line 41. This 2% is a more realistic estimate.

Marine Bunker Fuel Taxes Paper
U.S. Comments
January 24, 1997

I. General Comments

This draft is a significant improvement over the first draft. It recognizes some of our earlier concerns about the impacts of the proposed tax. The current draft acknowledges that the traffic reduction resulting from a fuel tax would be larger than the energy efficiency improvement. It further concludes that traffic reduction, to the extent it occurred, would have an adverse impact on many countries, especially those seeking to ship agricultural and manufactured goods abroad. It recognizes that a bunker tax could be easily evaded unless it were implemented globally, not just in Annex I countries. In a number of instances, the report acknowledges that data and analysis of certain issues are lacking and would need to be developed.

Although the paper provides a good starting point for the examination of bunker fuel tax issues, it does not credibly address the case for common actions. This is because its conclusions on the effect of a bunker tax are compromised by potentially serious weaknesses in the assessment of the effects of oil price increases and bunker fuel taxes. The few studies in the literature on price elasticities for marine freight have produced a very wide range of estimates (as noted on page 18, line 19). There also remains great uncertainty how world marine demand might grow (page 10, lines 18-23).

The very large price elasticities estimated so far do not seem reasonable given that, regardless of bunker fuel prices, ships remain the only practical transport mode.

The reduction in maritime freight demand observed during the 1970 oil shocks is not a good indicator of future price response. Firstly, maritime freight responses were a combination of direct price effect, as well as technology substitution and improvements in operational, much of which was already occurring (e.g., independent of price). Secondly, some portion of the decline in travel demand is attributed to recession factors. The analysis presented in section 6.1, does not separate out the direct price effects, from autonomous technology and operational improvements, and from the influence of recession on demand. To the extent the analysis does not better isolate these factors, the conclusions drawn are subject to great uncertainty and could be erroneous. This being said, a key question the study needs to address is whether or not freight responses coincident with high oil prices were causal or incidental.

A second key question that must be answered concerns the validity of the assumption that price effects observed (and estimated) for the 1970's are applicable to future responses to bunker taxes. The key issue which the paper does not adequately address is -- "does there exist a near term (2-5 year) breakthrough in shipping technology that can induce the level of responses observed in the 1970's?" It seems unlikely. Indeed, a significant

technological breakthrough would have to occur now (e.g., in 2-5 year timeframe) to begin to show effects by 2020. Study researchers are challenged to reveal what potential technological breakthrough in shipping is on the horizon, where bunker taxes could induce accelerated innovation.

Any conclusions drawn regarding the effect of bunker fuel taxes on marine traffic are, therefore, subject to great uncertainty.

The report acknowledges that "A bunker fuel tax could be easily evaded by bunker suppliers and ship operators, unless it were globally implemented as part of a general carbon tax," and "Alternative measures could reduce GHG emissions with less likelihood of evasion." It would appear that the bunker fuel option may not be well-suited as a policy action.

II. Specific Comments

Page 7, line 5. There is a typo "in 1990 in was."

Page 7, line 32. Although it is correct to acknowledge hat there may be a differentiated level of consequences, it seems inappropriate to take the leap to say "international redistribution may be necessary." We recommend the sentence starting on line 31 be deleted.

Page 9, line 9. Where is evidence of shift in sales towards the U.S. Figure 1 seems to suggest a comparable 'rate' of growth for OECD Europe and North America. Consider revising Figure 1 on page 9 from an area graph to something that more clearly shows what regions are increasing their bunker fuel sales. Since the discussion on line 14 focuses on the 'rate' of growth in world bunker demand, it would be better to show 'rate' information by using a bar chart format.

Page 10, line 24. Can not draw a conclusion from just the information presented in lines 18-23. What were assumptions used in these analyses that might explain why results differ so greatly. Perhaps at best we can say there remains great uncertainty in how world marine demand might grow.

Page 10, "1 percent to 4 percent" range on bunker fuel demand to 2020; this is an enormous "conceivable" range. Does it include the expected increase in the share of oil that is imported in North America over the forecast.

Page 11. Figure 2. A bar graph displaying percentages of maritime freight traffic for selected years might indicate that in recent years crude-product imports have not been a major contributor to the increase in bunker fuel requirements. Acknowledging this highlights the importance of the expected future level of crude-product imports in developing bunker fuel demand estimates.

Page 12, define "RoRo Cargo"

Page 12, line 16: change "team" to "steam"

Page 12. Figure 4. This figure is difficult to read. Consider creating larger quarter-page sized figures to improve readability.

Page 17, line 12-13. Need to add a qualifier to this statement, acknowledging that it is non known with certainty how much of the changes in shipping operational practices occurred directly as a result of high prices compared to change in operational practices that were occurring anyway.

Page 18. It's unclear how it was determined that the reduction of bunker fuel demand during the "oil crisis" years could not be explained by GDP changes. High oil prices during these years were coincident with significant reductions in U.S. oil demand (and some increases in domestic supply) which in turn translates into reductions in volumes imported (requiring bunker fuel consumption). Is the elasticity symmetric, i.e., do price decreases result in increases in bunker demand? The very large price elasticities estimated so far do not seem reasonable given that, regardless of bunker fuel prices, ships will remain the only practical transport mode. Also note the recovery in bunker fuel demand after each of the price shocks of the 70's. How can this be explained without reference to economic (and oil production) conditions in the oil importing nations. Energy savings from operational responses to higher bunker fuel have a limit. Assuming all collinearity problems can be dealt with, elasticity estimates based on two periods during the 1970's, which reflect operational improvements, should not be used as a basis for estimating potential fuel savings to 2020. Additional operational savings may become increasingly expensive if they are possible at all. The econometric estimates tell us nothing about potential future improvements to the capital stock now that we've gotten rid of all the steam turbines. At the extreme, if no improvements were possible then increasing bunker prices will have no affect on ship efficiency.

Page 18. The regression shown in Figure 7 is dangerously misleading. Post oil shock recession played a role in reducing travel demand, simply because there was less volume to move around. The current regression analysis is overly simplified and assumes away recessionary effects, which if accounted for would probably flatten out the regression line. One model improvement is recommended, i.e., -- account for the effect of recession by adding GDP growth rate a RHS variable. Since the relationship shown in figure 7 on the RHS is such an important aspect of the analysis conclusions, we feel the author needs to do a careful assessment of the causal factors that affected traffic per GDP, before specifying the econometrics.

Page 20. The technologies/practices listed in Table 3 are probably not additive. Slow steaming for example, may reduce the potential savings from anti-fouling paint and wind resistance.

Page 21. Are there more energy efficient technologies waiting to enter the market in response to a rise in bunker fuel prices? Page 12 said that during the 1970's most of the efficiency gain resulted from retiring steam powered ships with diesel powered ships and that now almost none of the less efficient steam engine ships are now being used.

Page 24, line 27, For this study the most important implication of a non-uniform bunker tax might be increased carbon emissions as ships travel extra distances to pick up cheaper fuel.