State Environmental Policy Act (SEPA) Implementation Working Group Report to the Climate Action Team

DRAFT FOR CAT REVIEW (October 10, 2008)

Note: this is the second draft of the SEPA IWG report, which is provided to the CAT for its October 14-15 meeting. This version incorporates two rounds of comments by SEPA IWG members. IWG members have not yet reviewed this version of the report not has it been copy edited. The SEPA IWG will provide a final draft of this report for inclusion in the CAT report by October 31, 2008.

1. INTRODUCTION

In accordance with the CAT's charge, the SEPA Implementation Working Group (IWG) has developed products and recommendations in order to provide guidance for local and state agencies on how to incorporate climate change considerations into SEPA analyses (see Appendix A for the SEPA IWG Scope of Work as set forth by the CAT). Our work focused on the directive to "ensure that climate change considerations are fully incorporated into governmental decision-making, resource and development planning, permitting and approval." This addresses the broader recommendation to "analyze greenhouse gas emissions and mitigation options early in decision-making, planning processes, and development projects."

In other states and on a federal level, we have witnessed climate change policy under SEPA-like statutes being made on an ad hoc basis through piecemeal litigation or through piecemeal precedent set by individual environmental reviews negotiated between individual applicants and individual lead agencies. In neither case has there been consistency or predictability. Our aim is to diminish the potential for litigation (and to provide consistency and predictability) by giving state and local agencies the tools and framework they need to fully incorporate climate change considerations into their decision-making. Through these recommendations, we seek to provide assurance to government decision-makers and project proponents that proposals will be assessed under a predictable climate change framework which will help us meet our state's greenhouse gas reduction requirements.

The SEPA IWG recognizes that only part of the future GHG reductions mandated by Washington State law is likely to be implemented through SEPA-related mitigation. Much of the eventual future reductions will likely result from multi-state, national or international "cap and trade" provisions, carbon taxes, or other Washington State laws that may not be tied directly to the SEPA process. Until these programs are adopted and implemented, SEPA may play an important role in filling the gaps in existing regulations and enabling Washington State and its political subdivisions to address the threats that greenhouse gas emissions and the climate changes they are causing pose to our people, our property, our economy, and our environment.

2. IWG PURPOSE, GOALS, PROCESS, and REPORT OVERVIEW

2.1 Purpose and Goals of the SEPA IWG

There is currently no specific guidance in Washington State on how to address climate change under SEPA. Thus, a key task of the SEPA IWG was to develop recommendations to ensure that consideration of climate change is specifically included in the SEPA processes and documents. The products and recommendations that were developed clarify how state agencies, local governments, and the private sector should analyze, disclose, and mitigate greenhouse gas emissions and the effects of global warming on actions under SEPA.

The IWG also considered the ways in which SEPA can be leveraged to provide incentives for "climate friendly" plans, policies, and projects. Our recommendations here focus on the most promising actions for encouraging climate friendly development.

2.2 SEPA IWG Process

The SEPA IWG met numerous times between late May and September, including four all-day meetings and four telephone conference calls. Several IWG members and technical support staff worked on sub-groups that focused on discrete issues between meetings. The subgroups compiled a wealth of existing information and formed preliminary recommendations for decision by the entire IWG membership. Almost all IWG members contributed to the work of at least one sub-group and many members contributed to multiple groups. The tremendous energy that individual members put into this effort enabled thoughtful and well-informed discussion at IWG meetings.

The IWG strove to find solutions that could be broadly supported by members, and it occasionally took "straw polls" to gauge the level of support for particular options. The IWG was not, however, a consensus body, and it had written procedures for making decisions through formal voting and getting a "sense of the group" through straw polls. A number of votes taken at the SEPA IWG's September 30, 2008 meeting are reflected in this report.

There are many issues that the SEPA IWG did not fully address or resolve because of the constraints of time, the complexity of the issues, and the many aspects of SEPA that are affected by considerations of climate change. For example, the SEPA IWG did not fully develop an approach for conducting SEPA threshold determinations and what the standard (or standards) of significance for projects and non-projects should be. The IWG did, however, focus this and other discussions on key sets of questions and options that provide direction for future work.

Nearly all members would have liked to have much more time to focus on the questions that we addressed, and some felt that the process was too rushed to fully consider all of the implications of our decisions. In a number of places throughout this document, including the recommendations section, the IWG identifies important areas for further work—mainly by Ecology and its stakeholders—as the effort to provide clarity on how to address climate change under SEPA continues.

The SEPA IWG recognizes the work undertaken by the other IWGs and related processes (Transportation, Land Use, Building Green, Beyond Waste, Forestry, and Agriculture) will overlap with the SEPA IWG's work and that there may be areas of crossover that will need to be addressed as each group's recommendations are put into action.

2.3 Overview of this Report

This report first describes the products that the IWG developed and how those products can be used by the private sector and government decision-makers to help navigate through the SEPA process. The report then describes the recommendations that the IWG is presenting to the CAT for its consideration.

The next part of the report discusses four substantive focus areas:

Measurement and Disclosure:

- Developing guidance and tools for measurement, disclosure, threshold determination, and EIS, if required, from project and nonproject actions.
- Analyzing approaches for making SEPA threshold determinations for greenhouse gas emissions.

Mitigation Strategies:

- Compiling information about possible approaches to mitigating impacts from GHG emissions and identifying knowledge gaps, including overall effectiveness and costs of the various potential means of mitigation.
- Determining which mitigation options are appropriate for which sources of emissions.

Leveraging SEPA to Promote Climate Friendly Development:

- Identifying opportunities to promote climate friendly development, rules, and regulations through SEPA-related incentives and disincentives and upfront planning.

Assessment of Project Vulnerabilities to Climate Change:

- Determining next steps for using the SEPA process to address adverse impacts of project and nonproject actions resulting from the intersection of the proposed actions and changes in environmental conditions that are predicted to occur as a result of climate change (e.g., proposing a highway in an area predicted to be inundated by sea water in the future because of global warming).

In each of the areas, the report addresses what we learned, including our information gaps. Each area identifies key issues that generated discussion by the IWG but did not result in any recommendations made by the IWG either because of incomplete information, disagreement among members, or because of inadequate time to make a decision. Each area also includes comments made by IWG members when reviewing drafts of this report, which should be topics for further discussion by Ecology and its stakeholders.

The report concludes by describing the IWG's recommendations for future work.

3. PRODUCTS AND RECOMMENDATIONS OF THE IWG

Below is a list of key products and recommendations that the IWG developed through its process. The products listed are resources for further policy development by Ecology and its stakeholders. The actual products are included as Appendices C-I.

3.1 Products

- Descriptive list of emissions sources: This descriptive tool lists 16 different categories of emissions sources and describes what types of emissions fall into which categories. The list contains both direct and indirect sources of emissions. As described later in this report, as a future task, Ecology should develop clear guidance to indicate which emission source categories should be carried through the SEPA process (i.e., disclosure, quantification, threshold determination, and mitigation) for representative types of SEPA proposed actions.
- Initial list of criteria for making "pragmatic" decisions about what to measure: This initial list includes criteria for guiding the selection of which sources it makes sense to measure for various types of projects and non-projects. Ecology can use these types of criteria to develop clear guidance to indicate which emission categories should be measured through the SEPA process for typical types of actions.
- Compilation table of measurement tools: This comprehensive list identifies many of the tools that currently exist for measuring greenhouse gas emissions and preliminarily assesses some strengths and weaknesses of each tool. The list also contains information about where each tool can be accessed for use by decision-makers. This table can be used by local and state agencies as a reference guide for the existing measurement tools and general guidance on which tools may be appropriate for what purposes.
- Mitigation Options Matrix: This product identifies a variety of mitigation options and links these options to the different categories of emissions sources. The matrix can be used by project proponents and government agencies to determine appropriate mitigation for specific proposals.
- Measurement Case Studies/Examples: Using hypothetical case studies, this product analyzes how SEPA's analysis of climate change impacts can apply to different types of project and non-project actions. The example cases can assist project proponents and government agencies in working through "real world" examples.
- Analysis of Threshold Determination Options: This set of products describes and assesses options for statewide consistency in setting a significance standard, and different options for the types of standards that could be used. It includes descriptive, graphical, and case study materials. This information will be useful for further developing an approach to threshold determination, whether that is done at the state level for a statewide standard or by individual state and local lead agencies.
- Roll up Matrix: This product combines much of the information into one matrix. It lists types of projects and non-project actions, the likely emissions sources arising from the actions, possible tools for measuring emissions, and appropriate mitigation options. The matrix also shows the current gaps in knowledge or tools. Project proponents and government agencies can use this tool as a reference guide for analyzing specific types of projects under SEPA.
- Incentives and Disincentives for Climate Friendly Development: This product lists and describes ideas for using SEPA-related incentives and disincentives to encourage climate friendly development. This list might be utilized by elected officials and other policy

makers as potential ideas to help Washington meet its greenhouse gas reduction requirements.

3.2 Recommendations

As a preamble to the SEPA IWG's recommendations, the IWG notes three key shared principles:

- The SEPA IWG generally supports the concept of upfront nonproject SEPA review of climate change planning, based upon adequate standards, to reduce greenhouse gas emissions and to eliminate duplicative project-level SEPA review.
- The SEPA IWG does not intend for any of its recommendations or ideas to unintentionally impact existing categorical exemptions under SEPA. Any desired changes to categorical exemptions put forward by the group or any of its members will be made explicit in the text of this report. The IWG did not address categorical exemptions in depth or focus on whether they should be expanded, reduced, or remain the same.
- The SEPA IWG acknowledges that it is equally important to provide clarity and predictability for treatment of both project and non-project actions or proposals under SEPA.

The IWG presents the recommendations below for consideration by the Climate Action Team. Except where explicitly referenced in a recommendation, the IWG did not make a decision about whether policy and materials should be set forth as resources, guidance, rules, or statute.

Recommendation 1—Clear Guidance and Revised Checklist: Ecology should revise the environmental (SEPA) checklist and provide guidance to assist in the evaluation of greenhouse gas emissions from both project and non-project proposals. Guidance would include:

- Clear guidance on which of the 16 categories listed in Appendix D should be included for typical types of projects and non-projects. The guidance would give lead agencies the discretion to apply any combination of the 16 source categories for exceptionally complex proposed actions outside the range of "typical" SEPA actions.
- Clear guidance on how each of the 16 source categories should be handled at different stages of the SEPA process (e.g., determination of any applicable exemptions, disclosure, quantification, threshold determination, mitigation, and future monitoring/reporting) for representative types of projects and non-projects.
- Incorporation of external resources for determining which of the categories to measure and potentially mitigate for projects and non-projects (e.g., current activity in California and Massachusetts; IPCC guidance, ISO, etc.).

A draft outline of Ecology guidance is included in Section 8 of this report.

Recommendation 2—Regularly Updated Materials and Coordination: Ecology should regularly update and distribute the reference materials developed through the IWG related to emission sources, assessment tools, and mitigation options. This is particularly important in the case of new emerging tools, which could be useful for greenhouse gas emissions assessment under

SEPA. In updating the tools reference materials, Ecology should coordinate with other state and local lead agencies, SEPA proponents, and the public that are looking at tools for similar purposes to help achieve statewide consistency in tools used. A future task includes the review by practitioners of the tools matrix developed by the SEPA IWG.

Recommendation 3—Emissions Tool Development: Ecology should work with other state and local lead agencies, SEPA proponents, and the public to develop and/or identify basic tools for recommended use within the SEPA process to make assessments predictable and not overly burdensome. Any tools developed should be effective, easy to use, and be useful for "typical" SEPA applications. These tools should be regularly updated as the state of knowledge in the field changes. In particular, the IWG recommends that easy-to-use tools, both qualitative and quantitative, be identified and/or developed in the following areas:

- VMT forecasting and GHG tailpipe emission factors for on-road traffic for large and small projects and plans,
- Embodied emissions,
- Loss of sinks and greenhouse gas reductions through the use of sinks,
- Reduction in space heating and electricity use for residential, commercial, and industrial buildings, and
- Mitigation effectiveness.

Recommendation 4-Use of Qualitative Analysis: The SEPA IWG recognizes that easy to use tools are not currently available for estimating future emissions from all sources, and it may be some time before adequate tools are available. We also recognize that quantitative evaluation may not be practical or warranted for some types of proposals (e.g., small, routine projects). Therefore, the IWG recommends that applicants be able to conduct a qualitative analysis of greenhouse gas emissions in cases where a) adequate tools do not exist, b) criteria outlined in SEPA guidance requiring a quantitative evaluation are not met, or c) there is an established alternative to quantification (e.g., a "green list"[1] or programmatic analysis of the proposed action). Qualitative tools may include check lists, decision trees, stream-lined assessments or screening tools where assumptions and approximations dictate that the results are qualitative in nature. Ecology should provide guidance on 1) qualitative standards, 2) when qualitative analysis is acceptable and 3) what constitutes an acceptable qualitative description of emissions.

Recommendation 5—Guidance Regarding Mitigation: Ecology should develop guidance on the effectiveness of mitigation options. The guidance should also develop criteria for assessing newly identified mitigation strategies. In addition to information on the effectiveness of strategies, (i.e., how many tons are mitigated), guidance would ideally include the following information:

- Cost and cost-savings from each strategy, and

[1] A "green list" could contain types of projects that are pre-determined not to have climate change impacts and may produce net benefits to climate. For projects contained on the list, project proponents may be relieved from some or all aspects of SEPA analysis for climate change or some or all mitigation requirements.

- Criteria/approach for assessing "new" strategies not already in the guidance.

This guidance should be regularly updated.

Recommendation 6—Develop Approach to Threshold Determination. The Department of Ecology should develop an approach to threshold determination under SEPA that has the following characteristics:

- A requirement that all lead agencies establish a significance standard;
- The development of a statewide standard of significance that is available to lead agencies should they choose to use it;
- The option for lead agencies to develop their own standard, subject to "sideboards"[2] set by the state in guidance, rule, or statute;
- The development of approaches for applicants to qualitatively obtain a Determination of Non-Significance (DNS) for climate impacts (note the relationship to qualitative analysis described in Recommendation 4); and
- A linkage between the significance standards and the statewide greenhouse gas reduction requirements.

The above components of an approach to SEPA threshold determination are based on a plurality or majority of votes cast by IWG members (the outcomes of these votes are included in Appendix B). Even though the characteristics described above were favored by a plurality or majority of members, IWG members still held a range of views on some key points that would benefit from further discussion by Ecology and its stakeholders. These are:

- The degree to which threshold determination provisions should be set in guidance, rule, or statute (the term "sideboards" was used to encompass all three possibilities). The IWG did not decide on this issue.
- The degree to which the state should provide sideboards to constrain lead agency discretion in setting a significance standard other than a statewide standard. Although it was not an option that achieved a plurality of votes, many members felt that the state should not constrain lead agencies' efforts to set their own standards. Some felt that flexibility would allow lead agencies to innovate and experiment and inform a "learning by doing" approach statewide.
- Whether there should be a "phasing in" of state requirements and sideboards in threshold determination. The state could begin with a more flexible approach (possibly including no state requirement that lead agencies set a significance standard) and refining it into a more consistent statewide approach over time.
- The specific type of quantitative significance standard. The SEPA IWG analyzed a number of different types of quantitative significance standards, and the two types of standards that generated the most discussion were 1) a percentage below business as usual and 2) a strict volume approach (e.g. tons per unit). However, the majority of IWG members voted for something other than a strictly percentage-based or volume-based

[2] The SEPA IWG struggled with the right word to describe limits or constraints placed on lead agency discretion without implying that these would be in the form of state guidance, rule, or statute. The IWG used "sideboards" as a working term for this concept. Members suggested other terms as well, including "constraints,""benchmarks," "criteria," and "parameters."

approach. Instead, the "sense of the group" was that a hybrid percentage-volume approach or a "menu" approach was promising.[3]

- How to link the stringency of significance standards to statewide greenhouse gas requirements and whether to do this for both a statewide standard and as part of the sideboards for lead agencies that set their own standards. Although the SEPA IWG recommended a conceptual linkage between threshold determination and the state requirements, it did not address any questions about how to operationalize it. One key question is how much greenhouse gas reductions to expect from new development versus existing development.
- Similarities and differences in the approach to threshold determination for projects vs. non-projects.

Recommendation 7—Conceptual Ideas for Leveraging SEPA: The SEPA IWG recommends four conceptual ideas to the CAT as promising approaches for using SEPA-related incentives or disincentives (i.e., "leveraging SEPA") to promote climate friendly development. The IWG has not fully discussed or endorsed specific approaches for implementing these ideas—this is an area for future work. Some of the ideas may require legislation, but the IWG does not recommend legislation at this time. Rather, it asks the CAT to support these ideas in concept without asking the CAT to endorse any particular version of them.

We identify one additional idea to the CAT as an area for further analysis by Ecology and its stakeholders.

The ideas are summarized below; more in-depth descriptions—along with additional comments from IWG members—are included in Appendix C. These ideas are put forth based on a majority vote of IWG members; the level of IWG member support for each is also summarized in Appendix C.

The IWG recommends the following four "leveraging SEPA" ideas:

- *Neighborhood, District-Level Exemptions*. SEPA would be amended to authorize jurisdictions to provide a "neighborhood, district-level exemption." This would be for municipally designated areas within UGA's, where property owners agree to comply with statutorily set minimum sustainable development standards. The standards could require compact, connected, walkable neighborhoods, with good jobs ratios, open space, a wide variety of uses, transit supportive residential densities; and high performance buildings and infrastructure. Any exemption should be clearly tied to achieving total GHG and VMT reductions to document or demonstrate effectiveness and ensure credibility. Also, the exemption language will need to be carefully drafted, and would include specific statutory criteria to address the full range of environmental impacts." This exemption could be a new statutory section, or RCW 43.21C.229 could be revised to incorporate this approach. Alternatively, RCW 43.21C.240 could be utilized, with or without amendment, to accommodate this approach.

[3] Under a menu approach, the state would develop a menu of possible standards and lead agencies could adopt the menu or use it as source for selecting one or more standards. It is described in more detail in Section 4.1.2.

- *Upfront SEPA*. This idea would allow cities to elect to designate a subarea for more compact commercial, residential, mixed use or industrial development ("Subarea"). If the city: 1) designates the Subarea; 2) conducts thorough SEPA review (EIS) of the Subarea which is a maximum build-out analysis that identifies mitigation steps to address significant environmental impacts (including climate change impacts); and 3) adopts as new Subarea development regulations that incorporate and require the climate change mitigation and any other mitigation identified in the Subarea SEPA review that is not already addressed in development regulations, then all subsequent development in the Subarea would be required to implement the climate change measures and would be exempt from any project-level SEPA or SEPA appeals. Ideally this approach would be an improved form of Planned Actions with an upfront funding mechanism. SEPA Planned Actions, RCW 43.21C.031, with an upfront funding mechanism, or RCW 43.21C.240 might be utilized to preclude project-level SEPA review.

- *Voluntary Mitigation List and "Green List" Projects*. This idea involves programs for GHG emission mitigation or mitigation measures which, if included in a project proposal, could provide certainty that greenhouse gases (GHG) impacts are addressed, and thus fully or partially exempt the project from further GHG reduction requirements. For example, specific mitigation measure and programs could be included on a "Green List." "Green List" mitigation measures (or mitigation types) would be considered a positive contribution to the State's efforts to reduce GHG emissions, and as such would exempt projects from further mitigation measures. Additionally, aspects of projects or programs may have mitigating effects, and as such would be given a mitigation value that would reduce or eliminate the need to further address GHG emissions through mitigation.

- *Regional Planning*. This idea involves developing and adopting a regional or statewide Climate Change Plan (GHG Reduction Plan) that would identify the broad direction of the state's or region's approach to reducing emissions. As part of that Plan process, a state-wide EIS on GHG emissions, impacts, and mitigation would be prepared and could then be adopted into local plan-level EISs. The state-wide EIS would be prepared anticipating its use for regional and local planning SEPA analysis. The state-wide/regional plan could identify regional targets and identify alternative ways that local agencies could translate the regional targets into local plan-level and project-level environmental analysis and significance thresholds.

The IWG recommends further analysis of the following "leveraging SEPA" idea:

- *Future Vulnerabilities/Adaption Measures in Environmental Impact Statements*. Over and above the SEPA IWG's Recommendation 8 to incorporate considerations of vulnerabilities and adaptation in the SEPA checklist (see below), the IWG suggests further analysis of the idea of incorporating these considerations into other aspects of the SEPA process. Specifically, the ideas to be analyzed are:

    - Amending the SEPA rules to require an analysis of the adverse impacts of global warming on the proposed action as part of an EIS.
    - Amending the SEPA rules to require that EISs must include and analyze an alternative that would be minimally affected by the adverse impacts of global warming.

- Requiring reopeners or contingent mitigation for uncertain, but high cost impacts.

Recommendation 8—Analysis of Future Vulnerabilities in Checklist: Ecology should revise the environmental (SEPA) checklist to incorporate analysis of how predicted changes in the existing environment due to climate change, combined with proposed actions, may create additional impacts on the natural and built environment. Ecology should also provide accompanying guidance on how to conduct this analysis. The required analysis should be based on readily available tools and resources and not require applicants to conduct new studies. As components of this recommendation,

- The state and local governments should continue to fund and synthesize research into the anticipated regional effects of climate change;
- Ecology and other agencies should provide guidance on how to evaluate and mitigate the effects on the natural and built environment of predicted changes in the existing environment due to climate change, combined with proposed actions as part of SEPA review. Ecology and other agencies should clarify the responsibilities of lead agencies and applicants in this analysis;
- Ecology and other agencies should make tools and resources available to applicants to support the required analysis; and
- Ecology should amend the SEPA checklist to require analysis of the vulnerability to climate changes of the proposed action, future adaptations that may be required to address those vulnerabilities, and the impacts of those adaptations. Key resources and sectors to be addressed are[4]:
    - Water Availability (changes in participation patterns)
    - Water Quality (particularly temperature)
    - Urban Infrastructure (including potential for increased storm water runoff from increased flooding)
    - Energy Supply and Demand (due to decreased water supply and temperature rise)
    - Forests (health, productivity, fires, diversity)
    - Agriculture (particularly irrigated and dryland areas)
    - Air Quality (increased ozone, particulates, allergens)
    - Impacts due to Extreme Weather Events (flooding, windstorms, droughts, heat waves)
    - Coastlines (direct and indirect impacts from sea level rise)

Recommendation 9—Taking into Account Lead Agency Resources, Capacity, and Constraints: As the CAT and Ecology develop SEPA and climate policy, they should take into account the implementation resources, capacity, and constraints of the range of jurisdictions implementing SEPA. The IWG has identified several related items in the "Future Work" section of its report that should be further addressed by the CAT, Ecology, and/or stakeholders.

[4] This list is drawn from Summary of Regional Impacts of 21st Century Climate Change (from February 2008 CAT Interim Report)

Recommendation 10--Training: The state should provide training and funding for training for lead agencies and applicants implementing SEPA and climate provisions. An estimated cost for training could be based on the cost of recent state-wide storm water training.

Recommendation 11—Advisory Committee: Ecology should address future work described in the recommendations above and the highest priority issues described at the end of this report in the "Future Work" section with the assistance of an advisory group and invite members of the IWG to participate. This committee may have sub-committees or working groups that focus on particular sectors (e.g., transportation) or issue areas (e.g., threshold determination).

4. FOUR FOCUS AREAS

4.1 Focus Area 1: Measurement and Disclosure

This area of the IWG's effort focused on SEPA's traditional processes for identifying, measuring, and reporting environmental impacts and how these processes will apply to the climate change impacts of a proposal. Elements of SEPA that fell into this category (not all of which were fully discussed by the IWG) include: categorical exemptions, the environmental checklist, SEPA threshold determinations, and the content of environmental impact statements (EIS).

Through our focus in this area, the IWG was able to categorize emissions sources, identify numerous quantification/calculation tools, and discuss options for agencies on what constitutes "significance" (for the threshold determination) in the context of climate change.

4.1.1 What We Learned

A. We expect that measuring and documenting climate change under SEPA will involve the following steps:

1. Identification of the proposals to be evaluated

- The types of proposals subject to climate change analysis could be the existing realm of non-exempt proposals under SEPA, a smaller subset of this list, or a broader list that includes some otherwise exempt proposals. The SEPA IWG did not make a decision or provide a recommendation on which proposals should be subject to climate change analysis. It may depend in large part on what constitutes "significant" environmental impacts in the context of climate change.

2. Identification of the types and sources of greenhouse gas emissions

- Both project and non-project actions can affect greenhouse gas emissions. Therefore, effective use of SEPA to assess climate impacts may encompass both the "broad, enabling (top-down)" and the "sector-specific (bottom-up)" emission reduction strategies that the CAT finds equally necessary. Comprehensive planning is an example of a "top-down" approach whereas

approval of an individual development project is an example of a "bottom-up" approach.

- The sources of emissions that are most relevant to measure and disclose under SEPA vary widely across proposed actions. As a result, the IWG considered, but decided not to develop, a short list of "essential" sources that would be measured for every action. Instead, the IWG proposed the list of 16 emissions sources (see Appendix D) and an initial list of criteria for making pragmatic decisions about what to measure (see Appendix E).

- Specific quantification of emissions may not always be necessary to consider the impacts of a specific source. For example, it is possible to know qualitatively that the production of certain building materials will result in greater emissions than production of other building materials (e.g., production of steel materials versus production of wood materials).

3. Quantification/consideration of emissions through use of calculation tools or assessment protocols

- Technical resources, including a variety of computerized modeling tools and published emission calculation methods, are available to assist SEPA applicants and lead agencies to quantify greenhouse gas emissions.

- However, the IWG recognizes that the required labor effort to calculate each of the 16 emission categories listed in Appendix D varies greatly, depending on the complexity of the proposed action. The IWG has concluded that the extensive labor effort for a typical small-to-medium sized SEPA applicant to use existing tools to calculate GHG emissions makes it impractical to rely on existing tools for those small sized projects. Therefore, as described in Recommendation 3, the IWG recommends that a new, simple set of GHG emissions tools should be developed to assist typical small-to-medium sized projects.

- New emissions models for particular types of projects are continually being developed and the state-of-the-art quantification models are rapidly changing.

4. Consideration of different degrees of measurement rigor at different stages of the SEPA process

- The IWG recognizes that measurement can occur at different stages in SEPA, such as at the point of determining eligibility for an exemption, during threshold determination, and during an Environmental Impact Statement Study. The group discussed that each of these stages likely requires a different level of measurement rigor and that measurement at one stage may be carried forward to other stages. For example, if there is an extensive analysis of greenhouse gases emissions from a project conducted at an initial

stage (e.g., threshold determination), then this analysis may not need to be repeated at a later stage (e.g., EIS).

- The group also discussed that simpler methods of evaluating GHG emissions could be appropriate at earlier stages in the SEPA process (e.g., determining exemption status), with increased rigor for threshold determination, and an EIS evaluation requiring the most detailed evaluation.

B. What We Learned About Determining Significance of Environmental Impacts for Project and Non-Project Actions:

- A "threshold of significance" is a standard or set of criteria that represents the level at which a lead agency finds a particular environmental effect of a project to be significant. If the proposed action exceeds the significance threshold then the SEPA applicant has two general courses of action: 1) before the significance determination is made by the lead agency, offer voluntary mitigation to reduce emissions to below the threshold and thereby avoid the need for an EIS; or 2) prepare an EIS giving a detailed assessment of the impacts, after which the lead agency may use its SEPA substantive authority to require mitigation.

- Agencies in Washington are not currently required to adopt numeric thresholds of significance for specific environmental impacts nor does Ecology currently provide guidance on setting a standard numeric threshold. Having a consistent numeric significance standard for greenhouse gas emissions in the state would be ground-breaking.

- Although agencies in Washington are not currently required to adopt numeric thresholds, Washington State does have a common standard for significance set forth in WAC 197-11-794 that all agencies and jurisdictions use (and has been adopted by Washington courts):
    - "Significant" as used in SEPA means a reasonable likelihood of more than a moderate adverse impact on environmental quality.
    - Significance involves context and intensity (WAC 197-11-330) and does not lend itself to a formula or quantifiable test. The context may vary with the physical setting. Intensity depends on the magnitude and duration of an impact. The severity of an impact should be weighed along with the likelihood of its occurrence. An impact may be significant if its chance of occurrence is not great, but the resulting environmental impact will be severe if it occurred.
    - WAC 197-11-330 specifies a process, including criteria and procedures, for determining whether a proposal is likely to have a significant adverse environmental impact.
    - In WAC 197-11-330(3), the Department of Ecology has laid out further requirements for determining whether a proposed impact

will be significant or not. See also WAC 197-11-060(4) which identifies criteria for evaluating impacts.

- A majority vote of the SEPA IWG endorsed a linkage between a SEPA significance standard and the state greenhouse gas emissions reduction requirements in RCW 70.235.020. This means that these state requirements should be considered in determining whether a proposed action meets the threshold of significance.

4.1.2 Key Discussion Points

What types of proposals must be reviewed for climate change impacts?

It was an operating assumption of the group (but not a decision) that all proposals that were not exempt under SEPA would be subject to review of climate change impacts.

Some IWG members expressed concern that a broad approach to climate analysis—that is, analyzing projects that would currently be exempt from SEPA analysis—would mean that current categorical exemptions and flexible thresholds would no longer apply. They advocated that proposals subject to climate change analysis should mirror those proposals subject to SEPA analysis for other environmental impacts. One member cautioned that a broader approach would not garner support from local government. Another noted that analyzing emissions from projects that would otherwise be exempt "could literally add hundreds of extra reviews a year" and that he did "not believe that the mitigation that would result from these reviews would outweigh the costs of implementation."

If there is a "green list" of projects that are not subject to the standard approach to SEPA measurement, what should be on the list?

In Recommendation 6, the SEPA IWG recommends the development of approaches for applicants to qualitatively obtain a DNS by, for example, being on a "green list." Some members raised concerns about this approach and others suggested projects that should qualify for the list.

One IWG member commented that a "green list" approach may inappropriately reward or penalize projects through the SEPA process. This member advocated that determination of what projects should be exempt should be completed through the normal process of determining statutory or regulatory exemptions.

Another participant felt that long term forest management for lumber that is used for building houses should be on any green list because it will sequester carbon for a long time in the houses.

What sources of emissions should be measured? What aspects/characteristics of projects and non-projects need to be quantified or otherwise assessed for climate change impacts?

Sixteen direct and indirect sources of greenhouse gas emissions were identified and subsequently considered in a handful of "test cases" (see Appendices D and H). This exercise and subsequent

discussion focused on the importance of considering the level of effort (cost, difficulty, etc.) of evaluating a specific type of emission from a specific proposal and comparing this to its contribution to climate change impacts.

The group discussed considerations and criteria for lead agencies to decide whether and how various sources of greenhouse gas emissions must be addressed for each proposal under review. The group also discussed that the list of emissions (for the purpose of SEPA review) may differ from those addressed for inventory and reporting requirements.

Some members of the IWG favored narrowing the list of emissions so that only certain emission sources need be considered for SEPA purposes (i.e., the "Scope 1" and "Scope 2" items under the WRI protocol). Other IWG members thought that the list should remain expansive but that not every project would require consideration of all sources on the list. The IWG was unable to reach consensus about how (or if) the list should be narrowed at some point in the future. As represented in Recommendation 1, as a future task Ecology will develop clear guidance about how each of the 16 emission categories should be considered at different phases of the SEPA process (i.e., disclosure, quantification, threshold determination, and mitigation) for representative types of SEPA proposed actions. This guidance would encourage the lead agency to use its discretion to select any of the categories for exceptional SEPA actions that are outside the range of typical projects.

There was disagreement among members on the adequacy of tools to measure certain sources of emissions described in Appendix D, including:

- Measuring construction emissions, at least with respect for linear transportation projects;
- Measuring loss of sinks; and
- Measuring indirect and cumulative effects at the project level.

Members also raised questions about the value and feasibility of estimating embodied emissions. One member asked what the value of estimating these emissions is and said it would be better to developing a list of best management practices and energy conservation measures that can be implemented on projects to reduce emissions. Another member noted that the issue of disclosing and mitigating for embodied emissions will be very controversial.

IWG members strongly disagreed about whether it is appropriate to count indirect emissions for purposes of SEPA. Even among members that suggested counting indirect emissions, there was disagreement about which indirect emissions should be counted. One member raised the concern that VMT trips may be considered indirect and therefore not counted. She noted that, for some projects, VMT trips will be the largest source of greenhouse gas emissions. This member felt that any VMT trips created by a proposal should either: (1) Not be considered an "indirect" impact, but a "direct" impact or (2) No distinctions between considering direct or indirect impact to be included in guidance or recommended by Department of Ecology. An additional member noted the WAC 197-11-060(4)(d) requires consideration of direct and indirect impacts, thus indirect impacts of a proposal cannot be excluded under SEPA under current law.

Other opinions expressed by individual IWG members on the "what to measure?" question included:

- Advocating that SEPA only address emissions not addressed through another mechanism; in this view, emissions that are managed through another regulatory or market system should not be analyzed under SEPA nor should they be added to the total emissions calculated against a project when making a threshold determination.
- Including consideration when doing measurement of whether there are any offsetting benefits as a result of a proposal, such as avoided or displaced emissions.

What criteria should be used to make "pragmatic" decisions about what to measure?

The initial list of criteria meant to inform agencies about what sources of emissions to measure (see Appendix E) were:

- Has the source of the emission for this proposal been addressed (analyzed and mitigated) in another SEPA document, or local, regional, or state plan?
- Can the source be credibly measured or assessed (quantified or otherwise) with the tools/information currently available?
- Can the boundary (scope or scale) of the emission be determined?
- What is relative importance (regionally, nationally or globally) of the contribution of this emission source to climate change impacts?
- Can the proposal be modified to avoid, minimize or otherwise mitigate its contribution of this emission source?

Some IWG members advocated striking the fourth criterion from the list ["What is the relative importance (regionally, nationally or globally) of the contribution of this emission source to climate change impacts."] One of these members said the criterion does not fit with how the term 'significantly' in SEPA has been defined.[5] The member said that if a showing of national or global impact was required, few EISs would be prepared. Other members thought that opposition to the criterion may come from confusion about what it means and said the criterion looks at the impact from the sources as a category rather than from emissions from an individual action. For example, if employee commute distances are a relatively large contributor to climate change impacts nationwide, then they may need to be measured as part of the SEPA process.

To what extent is double-counting a concern?

The SEPA IWG discussed the potential for double-counting on a number of occasions, but did not develop a specific approach for addressing it. The IWG discussed that some of the sixteen emissions categories listed in Appendix D will cause "double counting," because the emissions would be generated by a separate upstream or downstream entity that might be subject to its own emissions reporting and emissions reduction requirements.

There were a range of views about the extent to which double-counting should be of concern for the measurement aspects of SEPA. One member said that double-counting is an issue that would

[5] The member said this definition includes the examination of at least two relevant factors: (1) the extent to which the action will cause adverse environmental effects in excess of those created by existing uses in the area, and (2) the absolute quantitative adverse environmental effects of the action itself, including the cumulative harm that results from its contribution to existing adverse conditions or uses in the affected area.

confound many of the steps in the SEPA process for GHG reductions (disclosure, quantification, threshold determination, and mitigation). For example, should a SEPA applicant be required to include double-counted emissions from a separate entity in its SEPA emission inventory used to compare to a quantitative significance threshold? Similarly, should a SEPA applicant be required to mitigate double-counted emissions for which the separate upstream entity is already required to mitigate its own emissions through a non-SEPA requirement such as the WCI cap-and-trade program?

Other members felt the concern over "double counting" of emissions was more relevant to mitigation considerations rather than consideration of significant impacts under SEPA. This is because the impacts of a specific proposal (i.e., the contribution of emissions from the proposal) can be measured, evaluated, and disclosed regardless of whether the emissions have been "reported" or partially mitigated for in another project or planning document.

What technical resources–including calculation tools-can or should be used to assist lead agencies in quantifying greenhouse gas emissions?

A comparative list of available calculation tools was developed by the group. Characteristics of the tools included in the matrix include:

- Useful for greenhouse gas inventories
- Useful for greenhouse gas prediction and forecasting
- Measures greenhouse gas reductions from mitigation activities
- Measures greenhouse gas sinks
- Applicable for project level review
- Applicable for non-projects

Many of the tools encompass more than one characteristic and, therefore, may be more suitable for SEPA purposes.

Members also discussed other desirable characteristics of a tool and/or information that would be useful to have about a tool:

- Accuracy/effectiveness
- Ease of use
- Cost to obtain/use the tool and appropriateness of the costs to the jurisdiction using the tool
- Breadth of the coverage
- Standardization (e.g., Does it use standard methods? Are users able to consistently apply it?)
- Level of effort to adapt the tool to Washington State
- Consistency with other state tools/methods (e.g., state inventory)
- Predictive ability to estimate prospective emissions

There was a "sense of the group" that simple but effective calculation tools need to be developed for use by lead agencies and/or applicants. This is a key recommendation of the IWG.

One member cautioned, however, that measurement is a complicated issue that requires sophistication, and often times the simpler the tool the more crude and inaccurate the measurement can be. The member said that legitimate concerns about inadequate resources in some jurisdictions for handling new climate change requirements should not drive the IWG towards a simplistic approach.

Others felt that simpler calculations or more generic assessment options (e.g., generic tables of typical GHG emissions) might apply when 1) it is too costly or complex to generate more accurate calculations for particular GHG sources, 2) for smaller SEPA lead agency jurisdictions, or 3) to provide an optional default or safe harbor.

What is the role for qualitative (versus quantitative analysis)?

As reflected in Recommendation 4, the SEPA IWG recognized that quantitative tools may not always be available or appropriate, and that qualitative analysis may be necessary as an approach for assessing emissions and making a threshold determination. As stated in the recommendation, the IWG feels that Ecology should provide guidance on qualitative approaches as well as quantitative approaches. This recommendation was approved by a vote of 19 to 1 at the IWG's September 30 meeting.

The IWG member that voted against Recommendation 4 said that emissions from a project can be quantitatively measured and that a default to a qualitative analysis undermined the rigors of SEPA analysis. Qualitative analysis invited, he said, a wide disparity of treatment of similar projects by different jurisdictions and invited litigation over the sufficiency of the qualitative analysis and resulting mitigation. He cautioned that attempting to impose a "qualitative" standard may undermine the fairness of the system and lead to rewarding particular favored projects and project proponents while punishing disfavored projects or proponents.

Part of the discussion about quantitative versus qualitative approaches dealt with the adequacy of measurement tools. Some members felt that currently-available tools could be used to quantify GHG emissions reductions—and to quantify increases or decreases in sequestration sinks—resulting from project or nonproject proposals for the vast majority of future projects and non-project actions typically subject to SEPA. And, these tools could do so with a level of accuracy adequate to define significance and develop mitigation measures. In this view, the accuracy of these tools for GHG emissions is likely the same as the accuracy of similar models that have long been used for conventional air pollutants like ozone precursors; the accuracy of any given GHG emissions model depends largely on the quality of the input data.

Other members felt that measurement tools were inadequate, and that approaches for qualitative analysis were therefore necessary. These members held the view that there currently exists no perfect tool or set of tools to assess GHG for SEPA purposes. Some members identified particular areas that were more appropriate for qualitative analysis, such as embodied emissions and carbon sinks.

What level of statewide consistency for the threshold of significance can and should be established at the state level?

After considerable analysis and discussion over multiple meetings, the IWG identified and voted on six options for addressing the issue of statewide consistency in setting a significance threshold (or thresholds) for climate change impacts:

1. Implement statewide standard
2. Use State Standard or Adopt Local Standard WITH State Sideboards
3. Use State Standard or Adopt Local Standard WITHOUT State Sideboards
4. Adopt Local Standard WITH State Sideboards
5. Adopt Local Standard WITHOUT State Sideboards
6. No Required Local Standard (in discussion, those that preferred this option said they favored developing state guidance and potentially a recommended standard even though a local standard would not be required)

The resulting recommendation on statewide consistency in threshold determination is contained in Recommendation 6, the outcome of the voting is described in Appendix B, and materials describing the advantages, disadvantages, implications, and other aspects of choices regarding threshold determination are included in Appendix I. Below is a non-exhaustive list of some of the issues raised by individual IWG members regarding the approach to statewide consistency:

- Concern that a statewide standard, while it may make sense from the perspective of achieving statewide greenhouse gas requirements, would not recognize regional differences in geography, existing policies and regulations, built and natural environments, transportation systems, economic engines, supporting infrastructure, funding, and political climates.
- Concern about not fully understanding the implications of each alternative to statewide consistency.
- Concern that a stringent threshold may eliminate existing categorical exemptions.
- Concern that the adoption of an emissions "standard" within statute or rule would be a fundamental change to SEPA. The member offering this view recommended that, while appropriate and targeted regulatory laws or rules are developed elsewhere to address GHG emissions, the state provide guidance that favors a flexible approach that allows lead agencies to develop a range of actions that establish GHG reduction goals, identify specific actions and best management practices for GHG reduction, and allow for qualitative analysis within SEPA of climate change impacts.

What type of significance standard (or standards) should be used?

The IWG discussed numerous types of significance standards—including quantitative and qualitative approaches (see Appendix I). However, the IWG did not select a particular type of standard (see outcomes of voting in Appendix B). Many members favored examining a combination of approaches or investigating additional types of quantitative or qualitative standards.

One of the approaches that attracted interest at the September 30 meeting was a "menu" option that was not fully described at the meeting. The member who suggested this alternative said that characteristics of a menu approach would include:

- A menu of standards adopted at the state level (e.g., through rule or guidance);

- The availability of the menu to be adopted in its totality or as a source from which one or more standard could be adopted or used by the local agencies in threshold determinations;
- The opportunity for the addition of standards as they are developed or the deletion of standards as appropriate; and
- The opportunity to match the type of standard that is most appropriate for a given location or type of project.

The menu could include, but not be limited to, the qualitative and quantitative types of significance standards already identified by the IWG.

Below is a non-exhaustive list of some of the issues raised by individual IWG members regarding the approach to significance standards:

- Significance standards based on a % reduced from business as usual comparison or a volume standard (e.g., tons per unit) are not well suited for linear projects (e.g., replacing a bridge on existing road) or linear infrastructure improvements.
- Because precise volume determination of greenhouse gas emissions is difficult, percent reductions based on a consistent set of assumptions will be more actionable than defining a total volume amount for a project, for a significance threshold, or for mitigation.
- SEPA lead agencies should retain current flexibility and discretion in deciding when an action may have "more than a moderate impact to the quality of the environment." The statewide guidance should encourage each lead agency to: 1) balance context and intensity of the proposed action; 2) consider the wide range of proposed actions; 3) acknowledge areas of uncertainty in quantification of impacts and mitigation, and 4) respond to changes in regulation, science, and technology.
- The approach to significance standards could offer additional flexibility to go beyond a statewide minimum standard, targeting, for example Architecture 2030 or IPCC goals.
- A low threshold provides a more legally defensible basis for the use of either a percentage reduction from business as usual or a hybrid structure (percentage and volume standard)--both utilize an incentive based approach.
- A low threshold can help to make incentives for climate friendly development more attractive.
- The approach to threshold determination and the recognition of categorical exemptions should be made by the Legislature and Governor through a specific change in the law, not left to agency guidance or rule.

How would a linkage between SEPA threshold determination and statewide greenhouse gas reduction requirements be implemented?

A majority of IWG members voted to link the threshold determination approach to state greenhouse gas emissions reduction requirements (see Recommendation 6). Many members advocated this approach as a way to tie SEPA closely to the state's overall strategy for greenhouse gas reductions. However, members also acknowledged there are a number of issues to implement this linkage, including how reduction responsibilities will be allocated. For example, one member raised questions about how this linkage would translate into goals for individual jurisdictions, noting that the first step must be deciding who is responsible for reducing what amount of emissions.

4.2 Focus Area 2: Mitigation

4.2.1 What we learned

- State and local agencies with jurisdiction over a proposal are authorized, but not required, to mitigate adverse impacts. Mitigation is voluntary at the threshold determination stage. The project proponent always has the option of a determination of significance and preparing an EIS At the point of agency decisions on proposals, the agencies have authority to require mitigation but are not obligated to do so by SEPA.

- Several options that mitigate for climate change can also mitigate for other environmental impacts. For example, low impact development for stormwater protects water quality by decreasing the volume of stormwater runoff and also could decrease greenhouse gas emissions through energy conservation. Utilization of these types of strategies may offer the best potential for effective and cost-efficient mitigation of climate change impacts.

- There are a wide range of climate change strategies that are already being considered by other jurisdictions as possible mitigation for greenhouse gas emissions. Although a promising number of strategies exist, we currently have little information about the effectiveness of the individual strategies. We also have little information about the costs versus the cost savings of various strategies. These information gaps lead the IWG to recommend that Ecology publish the entire list of mitigation options without recommending specific options at this time. Ecology, along with the advisory committee, should assess effectiveness and address the cost-efficiency of various options with an eye toward developing more specific guidance at a later date.

- The CAT's recommended reduction strategies will be useful references for informing mitigation strategies.

4.2.2 Key Discussion Points

Should certain types of mitigation be preferred over other types of mitigation?

The IWG discussed whether mitigation options should be sequenced, for example, to: (1) avoid greenhouse gas emissions when possible; (2) reduce emissions that cannot be avoided; and (3) compensate for emissions that can neither be avoided nor reduced (for example, through the purchase of offsets). WAC 197-11-768 creates a sequencing definition for mitigation. IWG members had varying opinions on whether sequencing is desirable, largely because of varying opinions on the effectiveness of offsets as a mitigation strategy. Because of the wide range of opinions and limited time to discuss the issue, the IWG is not recommending a statewide sequencing approach, or an approach for using offsets.

Who is responsible for enforcement and monitoring for effectiveness?

The IWG also briefly discussed the question of who should be responsible for enforcing to ensure effectiveness of mitigation measures once they are implemented. Some members expressed concern that small jurisdictions may lack the resources and expertise for robust enforcement of mitigation required for climate change impacts.

How does cap and trade fit in?

A final discussion point involved the issue of whether capped sources within a cap and trade system should be exempt from providing additional mitigation for greenhouse gas emissions under SEPA. The IWG also recognized the possibility of confusion and/or double regulation under cap and trade and SEPA. IWG members identified these as important questions that cannot be answered now because of the uncertainty over the details of an eventual cap and trade system. However, agencies will likely need to grapple with these issues in the future, so this may be an appropriate area for future Ecology guidance.

A member raised, and the IWG discussed, the concern that mitigation measures taken as a result of SEPA would not allow entities to use the emissions reduced under those mitigation measures as offsets or credits in a future cap-and-trade program.

Should it be possible to express the effectiveness of mitigation qualitatively?

Some members felt that Recommendation 5 should include a reference to Ecology developing recommendations for a qualitative analysis of mitigation effectiveness when it is not possible to conduct a quantitative analysis. Other members felt that this should not be part of the recommendation.

4.3 Focus Area 3: Using SEPA to Encourage Climate-Friendly Development

This focus area looked at concepts that may represent important opportunities to alter the way SEPA is used in order to achieve the end goals of meeting greenhouse gas emission targets. This work focused on new incentives under SEPA rather than those that already exist. For example, the SEPA IWG acknowledged that the existing option to obtain a "Mitigated Determination of Non-significance" (MDNS) was already a powerful incentive within SEPA.

The SEPA IWG waited to address this topic until after initial work on SEPA measurement and disclosure. Consequently, the IWG spent less time on it and did not discuss or vet the ideas presented to the same degree as many of the measurement and disclosure issues described in earlier parts of this report. However, the IWG was intrigued by the general idea of using SEPA incentives and disincentives to "leverage climate-friendly development."

4.3.1 What We Learned:

- A sub-group of the SEPA IWG identified an initial list of over thirty ideas for "leveraging SEPA" and then selected six ideas to put forward to the full IWG. The full IWG voted on whether and how to recommend these ideas to the CAT; this vote became

the basis for Recommendation 7. Full descriptions of the recommended ideas, as well as a table of other ideas, are included in Appendix C.

- The thirty-plus ideas that arose from this focus area fell into the following broad areas:
    - Upfront SEPA, which emphasizes SEPA review at the planning level rather than the project level.
    - Expanded exemptions with reliance on local planning, which emphasizes exemptions for climate-friendly development in defined areas.
    - Regional planning, which emphasizes greenhouse gas emissions analysis or planning at a regional level.
    - Funding for planning, which addresses how to fund the advance analysis in the "Upfront SEPA" and "Regional Analysis" categories above.
    - Pre-approved mitigation measures, which, if included in a project proposal, would provide certainty that greenhouse gas impacts are fully or partially exempted from further greenhouse gas reduction requirements.
    - Disincentives, which are potential "sticks" to discourage actions that generate large or avoidable quantities of greenhouse gases or that would result in the loss of carbon sinks.

4.3.2 Key Discussion Points

What is "climate friendly" development?

The IWG subgroup group did not adopt a strict definition for climate friendly development. Generally, development approaches that increased densities in already developed areas with good access to transportation options, jobs, and services were considered favorable. Members mentioned some points of reference for determining what is "climate friendly" such as LEED green building standards. Others felt climate friendly development should be clearly tied to VMT and GHG reductions.

What are some of the concerns or considerations about "leveraging SEPA" ideas that should be taken into account when further developing these ideas?

Individual IWG members expressed some specific concerns or considerations about "leveraging SEPA" ideas that they felt would need to be addressed as ideas were further developed. A non-exhaustive list of opinions put forward by members is below:

- Local governments must analyze potential adverse environmental impacts and have greenhouse gas standards adopted into law before project level SEPA review is not required. That is how RCW 43.21C.240 works, i.e., local jurisdictions have adopted substantive standards that may take the place of subsequent SEPA review because pre-existing regulations or plans already have identified impacts and required mitigation to address those impacts. It would be impermissible under current law to allow local jurisdictions to truncate SEPA review without first demonstrating that existing regulations or plans have already identified greenhouse impacts and required mitigation to address those impacts.

- Local jurisdictions need to have shown that existing regulations (not just policies) identify and mitigate GHG impacts at the project level before local jurisdictions can avoid or reduce SEPA review at the project level.
- For "Upfront SEPA" and "Regional Planning" to work effectively, standards are needed in the Growth Management Act and other applicable state laws. The scientific uncertainty around the solutions to global warming and the need to address new environmental problems must also be addressed. There are several alternative methods for addressing these questions.
- Given the current uncertain state of what needs to be done to address global warming, the lack of comprehensive programs to address greenhouse gas emissions, and the lack of local planning, exempting development from SEPA may increase global warming more than it decreases it. Also, exempting actions from SEPA means that we will be unable to respond to the next major environmental threat. (Another member argued that the "Upfront SEPA" idea does not exempt actions from SEPA but rather moves the SEPA process upstream.)
- Effectively leveraging SEPA requires certainty in the incentives or disincentives provided. The more open-ended "leveraging SEPA" provisions are, the less of an incentive or disincentives they will be.

What are advantages of emphasizing SEPA analysis at the plan level?

Some IWG members noted advantages of emphasizing analysis at the plan level rather than the project level. A non-exhaustive list of opinions put forward by members is below:

- Analysis at the plan level is one way of providing a "safe harbor" for local governments and project sponsors. Moreover, it addresses the issue of multiple SEPA reviews for the same circumstances and is in keeping with RCW 36.70B which states that "Fundamental land use planning choices made in adopted comprehensive plans and development regulations shall serve as the foundation for project review." The legislature went on to declare that the project review process "…should not reanalyze these land use planning decisions in making a permit decision." Analysis up front is more in keeping with the intent of the legislature and provides a comprehensive, bigger-picture of how we address climate change in each of our communities, statewide.
- If strategies are to be implemented, I believe they need to be looked at the Plan level coinciding with required GMA updates. For the purpose of this report… I firmly believe that if these strategies are going to work they will have to be married with GMA requirements at the Plan level.
- Analyzing SEPA on a project by project basis places a burden on jurisdictions and developers to analyze development on a project by project basis without the expertise or necessary tools to do so.
- Regional plans may be most appropriate for VMT and transportation planning. Regional plans would be greatly facilitated by a statewide climate change GHG emission plan. Regional plans could then adopt the environmental analysis and goals from the statewide plan EIS.
- Doing the analysis at the planning level may allow the green list concept to incorporate certain categories of proposals (such as timber harvests within forests under long-term timber management commitments), or perhaps subarea plans where an EIS has already set the mitigation standards and directives that must be followed.

- "Upfront SEPA" is promising for transportation improvement projects. Because transportation projects are inherently connected with other roadways, evaluating the overall effects of an area's transportation projects and transit programs on emissions could be the most accurate way to conduct useful analyses. For projects included in planning-level analysis, project level evaluation could be streamlined.
- One of the real benefits of Upfront SEPA is to move dramatically beyond what SEPA now does by ensuring that the climate change and other mitigation identified as significant will in fact be achieved by development – in contrast to SEPA today, where whether or not to impose identified mitigation is strictly discretionary."
- Ecology is required by RCW 70.235.020(1)(b) to develop a statewide GHG reduction plan describing those actions necessary to achieve 2020, 2035, and 2050 emission reductions. An EIS may be required as part of the plan process. Both the plan and EIS could facilitate credible regional planning and upfront SEPA by identifying measurable regional goals or boundaries for regional elements of the statewide plan.

If there are incentives, should there also be disincentives?

Some concepts that were considered included both positive and negative elements (carrots and sticks). Some members of the IWG felt that incentives were a much more powerful tool for encouraging climate friendly development. At least one IWG member, however, said that the scientific environmental regulation literature indicates that incentives alone, without costs, may not affect behavior very much. Other group members proposed that disincentives may also be needed and may be the natural result of incentives. For example, if some proposals are allowed to move to the front of the permitting line due to their inclusion of climate-friendly elements, others proposals will have to wait longer.

How would these proposals be funded?

The IWG did not develop specific funding proposals. However, the group recognized that any work done at the planning level needs to be funded in order to be successful. Funding is a critical consideration should policy makers opt to move forward with any of the recommendations for incentivizing climate friendly development.

4.4 Focus Area 4: Vulnerabilities to Climate Change

4.4.1 What We Learned

- The SEPA review process includes an opportunity to analyze impacts of proposals in the context of a future environment altered by climate change. Mitigation options provide an opportunity to make sure that impacts from climate change are being considered upfront, and avoided or minimized when possible.

- Consideration of vulnerabilities requires not only an assessment of what vulnerabilities the proposal has due to a changing climate, but also what environmental effects will be

exacerbated as a result of those vulnerabilities. The purpose of this analysis is for lead agencies to improve their understanding of future impacts by incorporating an analysis of predicted climate changes. This will enable lead agencies to improve designs and prepare long-lasting mitigation strategies. Examples include protecting water from pollution even in areas prone to floods, creating wetlands that aren't inundated by rising sea level, or designing bridge footings that resist scour due to rapid snow melt or more frequent rain-on-snow events.

- There are a variety of resources available that describe the latest predictions of how the climate may change in Washington (e.g., analysis by the University of Washington Climate Impacts Group). Because SEPA is a tool to assess vulnerability to climate change, applicable resources should be made easily available to lead agencies and applicants. Particularly useful resources would be Geographic Information System layers showing predicted climate changes.

4.4.2 Key Discussion Points

IWG discussion of this issue was largely limited to it final September 30 meeting. The main points of discussion are captured in Recommendation 8 regarding the SEPA checklist and Recommendation 7, regarding further study of the idea of incorporating vulnerability and adaptation into other aspects of SEPA. Some members expressed concern that the IWG did not have enough time to talk about this topic.

5. FUTURE WORK

The Recommendations section of this report contains a number of items that the IWG proposes as future work for Ecology and an advisory committee of stakeholders. In addition to the items listed above, the IWG identifies the following additional tasks as important areas of future work by Ecology and its stakeholders. The IWG regards this work as imperative if its recommendations are to be effectively implemented:

- An analysis of whether additional approaches to minimizing burden on certain jurisdictions (e.g., small local jurisdictions) are needed beyond the existing categorical exemptions and other features currently in SEPA—and what those approaches would be (e.g., exemptions, an additional "safe harbor," or more limited requirements for measurement or analysis used to make threshold determinations). This analysis may consider questions such as the following:
    - Should the state provide financial resources to local government to amend local SEPA procedures if that becomes necessary?
    - What should be the approach for oversight of local agencies' implementation of SEPA and climate?
    - Should changes to procedures and requirements not become effective without state-committed resources for training?

    - Who will be responsible for the costs of litigation that result from climate change mitigation requirements?
    - Will climate change requirements under SEPA change the way jurisdictions are required to implement the GMA?
- Treatment of "avoided emissions" and "net emissions" within the contexts of measurement, disclosure, and mitigation.
- Development of a training plan for lead agencies and applicants to address climate change impacts through SEPA.
- Based on progress within other workgroups, potential work on integrating SEPA with other recommendations on topics such as land use and transportation planning.
- Development of guidelines for the use of planning level SEPA (non-project) to inform project GHG evaluations, including how decisions under SEPA relate to the requirements of the GMA.
- Work to clarify the relationship between threshold determination and state greenhouse gas reduction requirements.

6. ADDITIONAL IWG MEMBER COMMENTS

Some IWG members provided comments on initial drafts of this report that were not incorporated into the text of the report but provide additional perspective on the IWG's work and outputs. Those comments are captured below.

- "How does the climate change effort fit in with existing laws? What is the context of these recommendations in combination with other state mandates and laws? The Growth Management Act applies to all counties and cities in the state. More than half of these are required to fully plan under the Act. These counties and cities, and the remaining counties and cities, also plan under enabling legislation including RCW 35.63, 35A.63 and 36.70. How does the climate change effort get coordinated with these laws?"

- "For project-level review, it is important to remember the context under which local governments process permits. RCW 36.70B provides two important statements of legislative intent applicable to the recommendations of the SEPA IWG. These are:

    - "The increasing number of local and state land use permits and separate environmental review processes required by agencies has generated continuing potential for conflict, overlap, and duplication between the various permit and review processes." RCW 36.70B.010(2)
    - "This regulatory burden has significantly added to the cost and time needed to obtain local and state land use permits and has made it difficult for the public to know how and when to provide timely comments on land use proposals that require multiple permits and have separate environmental review processes." RCW 36.70B.010(3)."

- "How do the recommendations of the IWG address requirements for expeditious permit processing? RCW 36.70B.080 requires local governments to establish timeframes for permit processing. Most local governments retained the 120-day requirement of the

original legislation, and it is politically impractical to amend this. How does adding another review requirement help local government achieve processing timelines? How does adding another review requirement fit into our efforts to improve the affordable housing picture in our state? These are questions that local governments will need to grapple with should changes be made to SEPA procedural requirements."

- "I remain uncertain as to the overall context of the state's climate change initiative. It is not enough to state that we have a goal of "X" without articulating what it is we want our communities to look like, how we envision them modifying past practices and how we anticipate that they will thrive as a result. Our task may have focused on the role of SEPA, yet, can the state let us know what they want this to look like?"

- "It is well past time that SEPA be given a major overhaul. Making tweaks to it does not improve its effectiveness as a disclosure, evaluation and decision-making tool. After the efforts of the several key commissions (Growth Strategies, Land Use Study, etc.), after the adoption of the Growth Management Act and even after the adoption of new shoreline master program rules, I honestly thought that we, as a state, could muster the energy to improve our environmental review process; to orient it more in line with newer laws, newer approaches and newer philosophies. Instead, we are stuck with the 1970's attitude that somehow we can protect the environment one project at a time. I cannot identify anyone that benefits from this approach. SEPA is underutilized; and still at times it is used as a tool of obstruction. Both of these dilute the effectiveness of environmental review and the public's respect for the environmental review process."

- The SEPA IWG has done an amazing job of identifying and narrowing issues and collecting data, but it has not had the time within the very aggressive schedule it was given to work through the recommendations. In other words, we are just getting to the most important work of the group. This initial draft report acknowledges that IWG members are seeing these recommendations for the first time. More time is needed to flesh out, refine, and decide upon specific recommendations… We request that the report include an additional recommendation in which the CAT extends the duration of the SEPA IWG so that it can adequately complete its tasks." (Note: this comment was accompanied by further comments that the SEPA IWG, not Ecology, should 1) develop a draft revised SEPA checklist and measurement guidance, 2) guidance on the effectiveness of mitigation options, and 3) the treatment of avoided emissions and net emissions.)

7. ROLL-UP MATRIX

[Note to reviewers: This will be inserted later. This product combines much of the information into one matrix. It lists types of projects and non-project actions, the likely emissions sources arising from the actions, possible tools for measuring emissions, and appropriate mitigation options. The matrix also shows the current gaps in knowledge or tools. Project proponents and government agencies can use this tool as a reference guide for analyzing specific types of projects under SEPA.]

8. ECOLOGY GUIDANCE OUTLINE

SEPA Guide to Addressing Climate Change

Technical Assistance for Lead Agencies, Applicants, and Reviewers

1. **Forward – *(from Jay Manning?)***

2. **Purpose, Introduction and Background**
    a. Why use SEPA to address greenhouse gas emissions?
    b. What are the impacts associated with Washington's emissions?
    c. What is the connection to other strategies addressing climate change?
        i. Overview of how SEPA fills the regulatory gap (using graphic timeline)
        ii. Climate Change legislation
        iii. Climate Action Team strategies
        iv. Western climate Initiative
        v. State and Regional Climate Change Plans
    d. What types of climate change impacts are associated with projects and non-projects?
        i. Impacts from proposal's direct and indirect greenhouse gas emissions
        ii. Additional "vulnerability" impacts from proposal from changing climate conditions
    e. When should climate change impacts be addressed?
        i. Non-Project (including phased review, rules, etc.)
        ii. Project

3. **Brief Overview of SEPA Process (with links to handbook, rules, and statute)**

4. **Identifying Types of Proposals that Impact or are Vulnerable to Climate Change**
    a. Project and Non-project
    b. Non-exempt projects and non-exempt agency actions
    c. Placeholder for phased review, exemption issues, "green list", approaches in statewide plan, etc.

5. **Initial Screening and Evaluation of Emissions**
    a. Sources of Emissions
    b. Quantification and qualification of emissions
    c. Calculation tools
    d. Protocols for non-quantitative assessment
    e. Use of a Climate Change Worksheet to accompany SEPA's *Environmental Checklist*

6. **Considering Mitigation**
    a. Nonproject
    b. Project

7. **Making the Threshold Determination**
    a. Recommended significance standard
    b. Alternative approaches for significance standard
    c. Mitigated Determination of Non-significance (MDNS)
    d. Determination of Non-significance (DNS)
    e. Determination of Significance (DS)

8. **Analyzing Alternatives in an EIS**

9. **Post-SEPA Agency Decision Making and Applying SEPA Supplemental Authority**

    a. Overview of SEPA supplemental authority process
    b. Applicable SEPA policies
    c. Agency responsibilities
    d. Using MDNS
    e. Using DNS
    f. Using EIS

Appendices

A. Sample summary of climate change impacts for use in SEPA documents
B. Roll-up matrix of sources of emissions, calculation tools and generic emission tables, and mitigation options
C. SEPA Checklist Greenhouse Gas Emissions Worksheet
D. Additional Information Links

APPENDICES

Where products are to be included in appendices, but aren't included in this version of this report, links are provided to a draft versions on the Ecology website. Note that some of these products have already been updated, and the most recent version will be included in the final report.

Appendix A: SEPA IWG Scope of Work

See: http://www.ecy.wa.gov/climatechange/2008CATdocs/IWG/sepa/050908_sepa_scope.pdf

Appendix B: Threshold Determination Voting

Below are the outcomes of the September 30 IWG meeting votes on four threshold determination topics. This voting is reflected in Recommendation 6.

A. *In regards to statewide consistency in setting significance standards, what should the state require lead agencies to do?*

The IWG conducted two rounds of voting. In the first, members were asked to select their one favored choice. In the second round—after discussion of the outcomes of the first round—members were asked to identify both their first and second choices.

Response Option	First Round (20 members voting)	Second Round (37 votes cast for 1st and 2nd choices)		
		1st choice	2nd choice	Total of 1st and 2nd choices
1. Implement statewide standard	3	1	1	2
2. Use State Standard or Adopt Local Standard WITH State Sideboards	**9**	8	10	**18**
3. Use State Standard or Adopt Local Standard WITHOUT State Sideboards	2	6	3	9
4. Adopt Local Standard WITH State Sideboards	0	0	2	2
5. Adopt Local Standard WITHOUT State Sideboards	0	0	1	1
6. No Required Local Standard*	3	3	2	5
7. Don't know/Can't decide at this point	3	0	0	0

Note: Choices 1-5 would require lead agencies to set a significance standard.

*During discussion, those voting for this choice said they preferred an approach where the state would play an active role in providing guidance about options for standards and possibly even a model standard—even though there would be no requirement that lead agencies set a standard.

B. *If there is some type of statewide standard (required or optional), what type of standard should it be?*

Response Option	Number of votes (21)
1. Percentage-based (e.g., % reduction from business as usual)	2
2. Volume-based (e.g., tons/unit, tons/year)	0
3. Hybrid of percentage and volume	7
4. Other type of standard/combined	**10**

standard	
5. Don't know/Can't decide at this point	2

Of those that picked options #4 (Other type of standard/combined standard), nine said they were attracted to the idea of a "menu" approach that would potentially combine a number of different types of standards.

When voting on options for the type of statewide standard, IWG members acknowledged that they had already voted to provide a complementary qualitative option for achieving a Determination of Non-significance (see Decision C below, which preceded the vote on Decision B).

C. Should the IWG recommend that Ecology and its stakeholders develop approaches that allow proposals to qualitatively achieve a "Determination of non-significance" (e.g., a "green list," conformance with a climate plan, etc.) (Note: specific approach would be determined later)

- Yes: **19 votes**
- No: 0 votes
- Don't know/Can't decide at this point: 1 vote

D. Should the state link the significance standard (or standards) to the state's greenhouse gas emissions requirements in some way?

- Yes: **14 votes**
- No: 6 votes
- Don't know/Can't decide at this point: 1 vote

Appendix C: "Leveraging SEPA" Voting and Ideas

C.1 Voting on "Leveraging SEPA" Ideas

At the IWG's September 30 meeting, members voted on how to present a set of six "leveraging SEPA" ideas to the CAT. This voting is reflected in Recommendation 7. These six ideas were identified by individual participants in a sub-group of members and technical staff as the most promising ideas among a larger set identified by the sub-group. At the September 30 meeting, IWG members were asked to vote, for each idea, on whether the IWG should:

- Recommend it to the CAT as a promising idea,
- Recommend it to the CAT as an idea that is potentially promising but needs further analysis, or
- Not recommend it to the CAT

The decision of whether and how to recommend the idea was based on a plurality of votes. Below is a summary of the outcomes of the vote.

"Leveraging SEPA" Idea	Recommend to CAT	Recommend for further analysis	Do not recommend	# of Members Voting
1. Exemptions—SEPA's Strongest Incentive	**13**	6	1	20
2. Upfront SEPA	**16**	3	0	19
3. Mitigation – Voluntary Mitigation List and "Green List" Projects	**13**	7	0	20
4. Leveraging Existing Categorical Exemptions	1	7	**12**	20
5. Future Vulnerabilities/Adaption Measures	1	**10**	9	20
6. Regional Planning	**11**	5	3	19

C.2 Description of "Leveraging SEPA" Ideas Recommended to the CAT

This sub-section contains written descriptions of each of the ideas put forward by the IWG in Recommendation 7. These descriptions were written by individual IWG members, with review and some discussion by other members of a sub-group working on approaches to "leveraging SEPA." The descriptions provided here have not, however, been fully discussed or approved by the full IWG. Indeed, IWG members have raised a number of questions about each idea and specific aspects of the descriptions.

Specific disagreements with these write-ups or uncertainties about them that arose within the sub-group or full-group discussions are identified in the sub-section of each write-up titled "Areas of disagreement, uncertainty or ongoing discussion." Other, more general disagreements and considerations raised by other IWG members are contained in the "Key Discussion" section 4.3.2 of the main body of this report and noted in the text below.

1. Neighborhood, District-level Exemptions

Description of idea: Exemptions are a powerful tool for encouraging climate friendly development. They reduce project risk and costs associated with both litigation and preparing SEPA documents. When carefully drafted, they can help achieve the objectives of local government, environmental interest groups, and developers.

To utilize this strategy, SEPA would be amended to authorize jurisdictions to provide a "neighborhood, district-level exemption." This would be for municipally designated areas within UGA's, where property owners agree to comply with statutorily set minimum sustainable development standards. The standards would require compact, connected, walkable neighborhoods, with good jobs ratios, open space, a wide variety of uses; transit supportive residential densities; and high performance buildings and infrastructure. To fully leverage the exemption, it would apply to both the government's "neighborhood designation" decision and implementing development projects.

This exemption could be a new statutory section, or RCW 43.21C.229 (the infill exemption) could be revised to incorporate this approach. The revisions would establish sustainable development pre-requisites and expand the uses the exemption applies to, but limit its applicability to municipally established "districts." The language providing for a plan EIS would not apply, because more comprehensive criteria would be set for meeting the exemption.

Areas of disagreement, uncertainty or ongoing discussion: Issues raised are: 1) ensuring jurisdictions can require adequate mitigation, in cases where they have traditionally relied on SEPA; and 2) ensuring that if new issues arise, the municipality has the ability to address them. Also, the exemption language will need to be carefully drafted, and would include specific statutory criteria to address the full range of environmental impacts.

Other specific issues raised by IWG members include:

- It would be inconsistent with both SEPA and GMA to allow jurisdictions to create neighborhood designations without SEPA review being done for the original designation. Exempting both the original neighborhood designation and the implementing development projects as proposed would mean that other government agencies and the public would never have an opportunity to raise any issues related to environmental impacts of the designation or a project at any point in time. There would also be no way to assure the exemption is being used properly.
- Any exemption should be clearly tied to achieving total GHG and VMT reductions to document or demonstrate effectiveness and ensure credibility.

What this idea will accomplish: The exemption: 1) makes SEPA's approach to climate clear and predictable and reduces future litigation; and 2) is a powerful incentive SEPA has available for reducing greenhouse gas emissions and future impacts related to changing climate.

Strengths and weaknesses of idea: *See* description above, and questions to be addressed.

How this idea could/would be implemented: Local jurisdictions would implement this strategy, by designating the geographic area the exemption would apply to, in concern with property owners, and consistent with statutory criteria. Future development within the district would then be required to comply with the sustainable development standards.

Description of necessary funding or changes to statue/rules: Statutory amendment needed. No new funding necessary.

Additional information or analysis needed: Draft legislation needed to develop the details embodied in this general concept.

2. Upfront SEPA

Description of idea: Allow cities to elect to designate a subarea for more compact commercial, residential, mixed use or industrial development ("Subarea"). If the city: 1) designates the Subarea; 2) conducts thorough SEPA review (EIS) of the Subarea which is a maximum build-out analysis that identifies mitigation steps to address significant environmental impacts (including climate change impacts); and 3) adopts as new Subarea development regulations that incorporate and require the climate change mitigation and any other mitigation identified in the Subarea SEPA review that is not already addressed in development regulations, then all subsequent development in the Subarea would be required to implement the climate change measures and would be exempt from any project-level SEPA or SEPA appeals. As with Planned Actions, a verification step would occur at the project stage (e.g. review an environmental checklist to verify the project meets the description and regulations and that no unanticipated significant adverse environmental impacts are associated with the project).

Developers would be required to pay their proportionate share of the Subarea SEPA review. Ideally this approach would be an improved form of Planned Actions with an upfront funding mechanism.

Areas of disagreement, uncertainty or ongoing discussion: Planned actions are a very good idea in concept but have had some challenges in implementation. Any solution should be designed to address implementation challenges associated with Planned Actions.

Since proposals can have many impacts, not just impacts to climate, the planning phase analysis would need to address all environmental issues with subsequent development implementing those measures. Whether and how planned actions, or a similar proposal, can address unknown, but significant, future environmental impacts or scientific uncertainty over global warming and the necessary responses is a concern.

It is unclear whether this could fit in with Planned Action requirements and/or only require some minor modification.

What this idea will accomplish: This idea will encourage and support good, non-project environmental analysis, which is where we can best use SEPA to address the incremental/cumulative effects of GHG emissions. It will provide predictability to proponents and to the public. It provides more predictability about the quality of the environmental analysis because an EIS will be prepared that links implementation of mitigation between the non-project and project. Properly implemented, this idea will also help jurisdictions decide what appropriate development looks like for a particular area, given the environmental issues of that area, while non-project or project planning is in the design phase.

Strengths and weaknesses of idea: Mithun's latest analysis concludes that land use related greenhouse gas emissions could be reduced through density, compared to business as usual, as part of the movement to state 2050 desired levels. Generally speaking, the current approach (low density) reduces these land use GHG emissions by 6%, a medium density reduces it by 12% and a high density by 23%. In areas in which there is a market and a jurisdiction completes the steps, this will create a very powerful incentive for developers to step up and invest sooner than would otherwise be the case.

(Note that an IWG reviewer questioned what the baseline is for the 6% reduction cited above and stated that "business as usual must be clearly linked to the VMT and the 2050 reduction requirements.")

How this idea could/would be implemented: This idea would occur as part of a local agency's planning and would focus on a sub-area in the jurisdiction. This approach provides an alternative process from the standard SEPA process for project level environmental analysis and threshold determination. One IWG reviewer suggested that it would be linked with statewide GHG emission requirements and goals for total vehicle miles traveled in the analysis or as part of a larger plan's analysis.

Description of necessary funding or changes to statute/rules: A key challenge will be to identify the upfront funds to enable interested jurisdictions to conduct the subarea SEPA review. These measures would require initial financing/loan to assist participating cities with the upfront cost of Subarea SEPA review; this cost would be reimbursed over time by developers. Perhaps there could be some kind of revolving account that would be reimbursed as developers pay on the loan.

These measures may require amendments of SEPA provisions and rules.

Additional information or analysis needed: More work is needed to explore why current law and rule provisions allowing for SEPA at the planning state haven't been implemented as fully as envisioned.

3. Voluntary Mitigation List and "Green List" Projects

Description of idea: Mitigation measures that adequately address greenhouse gases (GHG) up front are one way in which the State can create a clear path for project proponents to meet their obligations for GHG reductions. This type of mitigation strategy can reduce the administrative burden of the State while still allowing for goal attainment. By creating relatively clear and unambiguous options for compliance, the State would be incentivizing applicants to do their part to meet the State's GHG reduction requirements.

Programs for GHG emission mitigation or mitigation measures which, if included in a project proposal, could provide certainty that greenhouse gases (GHG) impacts are addressed, and thus fully or partially exempted from further GHG reduction requirements. For example, specific mitigation measure and programs could be included on a "Green List." "Green List" projects (or project types) would be considered a positive contribution to the State's efforts to reduce GHG emissions, and as such would be exempted from further mitigation measures. Additionally, aspects of projects or programs may have recognized mitigation impact, and as such would be given a mitigation value that would reduce or eliminate the need to further address GHG (a mitigation alternative list). One potential mitigation category is as follows:

> Project alternatives in design and/or construction: Includes voluntary alternatives such as LEED/Green Globe certification and strategies; construction-transportation techniques; use of recycled materials, waste reduction, local materials; urban in-fill, Brownfield development; and use of VMT-limiting elements such as high transit use and work-live space.

Areas of disagreement, uncertainty or ongoing discussion: This idea may be subject to uncertainty relative to science and policy. First, rapidly changing scientific evaluative techniques may lead to instability in the valuation of mitigation alternatives. This weakness may over or under inflate the value of such an alternative. Second, the trade-offs inherent in potential inclusions (particularly "Green List" inclusions such as on-site energy production) will need to be debated in the public arena, and, as such, will be subject to evolving community values.

Mitigation/green list and mitigation effectiveness would need to be clearly linked with any statewide GHG and VMT reduction plan or requirements.

What this idea will accomplish: This idea will accomplish two primary objectives: First, it will make SEPA's approach to climate clear and predictable and reduce future litigation. By laying out a clear path for compliance through a "Green List" or a list of project/program aspect with mitigation value, the process will be simplified for applicants. This "user friendly" framework will encourage its use.

Second, by encouraging the use of a "Green List" approach, GHG production will be reduced in the present and we will likely see a net benefit into the future.

Strengths and weaknesses of idea: This idea has several strengths. First, it provides a very clear path in which a project proponent can comply. Second, to the extent that the mitigation measures are voluntary, it provides an incentive for participation. Third, this idea also provides a catalyst for important public policy debates regarding the priorities of the State or local

jurisdiction. Fourth, the simplicity of using a "Green List" will reduce the administrative burden typically associated with new initiatives.

The weaknesses of idea are threefold. 1) As discussed above, there are questions as to the valuation of mitigation alternatives given the nature of the underlying science. 2) Also discussed above was the concern over policy considerations with specific potential "Green List" inclusions. 3) The question of at what level of government or with what guidelines the development of specific inclusions to the "Green List" or the mitigation alternative list would need to be settled.

How this idea could/would be implemented: The "Green List" and mitigation alternative list could be implemented through the checklist. That is, if a project was included on a "Green List" it would simply note that on the form. Additionally, a project proponent would denote the mitigation alternatives it was implementing along with the value of that alternative and that would satisfy the documentation requirement.

Description of necessary funding or changes to statue/rules: Could be implemented through SEPA or non-SEPA legislation

Additional information or analysis needed: Critical to this concept is the mitigation value of the specific mitigation alternative or "Green List" inclusion. The lists would need to be developed and valued prior to implementation. Amendments to the underlying lists could be made on an ongoing basis.

6. Regional Planning

Description of idea: Develop and adopt a regional or statewide Climate Change Plan (GHG Reduction Plan) that would identify the broad direction of the state/region. It can be incorporated into local planning and environmental analysis. As part of that Plan process, prepare a state-wide EIS on GHG emissions, impacts, and mitigation that can be adopted into local plan-level EISs.

The state-wide EIS would be prepared anticipating its use for local planning SEPA analysis. The state-wide/regional plan could identify regional targets and identify alternative ways that local agencies could translate the regional targets into local plan and project level environmental analysis and significance thresholds. If the regional analysis is done separately, another product/effort would need to be implemented to ensure the regional piece is done and that it is consistent with the statewide effort.

Areas of disagreement, uncertainty or ongoing discussion: There has not been a lot of discussion of this idea. This approach is a very good one in theory but can have challenges during implementation. For example, the products of regional planning could be flawed/incomplete and not provide the information that local jurisdictions need. Or local and state agencies could decide they disagree with the product and do very little or something completely different. Local/state agencies could use the information inappropriately to meet the basic requirements, without effectively accomplishing the purpose of addressing climate change. In those cases, there would be no efficiencies or effectiveness achieved.

The products of this idea could be "tested" to ensure their usability for agencies of varying size. The products would need to include good tools/direction on how to incorporate them into local planning and project analysis. This idea would benefit from some mandatory procedural "checks" to make sure they are appropriately implemented to achieve GHG reductions.

On commenter noted that he needed to give more thought to the plan consistency requirement. He had thought of this as more of a SEPA EIS product analyzing a range of climate change issues at the regional or state level, and as a product smaller jurisdictions could adopt this analysis by reference for whatever efforts they are undertaking. A consistency requirement, he felt, is a little more directive, and may engender opposition by local governments for a variety of reasons. It also could turn out to be a litigation opportunity. He felt this issue raised the larger question of what climate change specific standards, if any, will be proposed by CAT or others. Who will develop them? He said the larger SEPA IWG and CAT are or will zero in on these, and whatever outcome is reached will have to circle back to this Regional Planning piece.

What this idea will accomplish: This idea will: 1) assist local jurisdictions to address GHG emission and climate change issues, 2) help ensure that climate change is addressed at all levels of government, and 3) increase consistency and predictability for the public and applicants.

A state level plan and environmental analysis will save money by eliminating duplication. Other agencies can use the work rather than recreate it. It will reduce challenges, because once the state plan and analysis is completed and has passed any challenges that might arise, it will be a solid foundation for other jurisdictions to build on. Applicants will be happier, because approaches and requirements across the state will be more similar and predictable. Also, their proposals/permits will be more defensible and less likely to fail a challenge. The public will have more confidence in a smaller jurisdictions adherence to SEPA if the smaller jurisdiction uses the statewide documents as their foundation.

Local consideration of GHG emissions/climate change will have a greater chance of getting done and getting done correctly by jurisdictions, if they have assistance in the form of cost savings and useful information/environmental analysis. A statewide plan and environmental analysis will help us make sure we have looked at all the issues together so when local work is done it will be part of a bigger plan that makes sense and has been thoughtfully prepared to be effective.

When this approach includes regional targets and alternatives for implementing those regional targets, it would provide the middle step that connects the high level planning with local level planning and projects.

Strengths and weaknesses of idea: This activity would require no changes in laws/rules but would require substantial funding for the statewide effort. However, this idea could be incorporated into any statewide plan that might be underway. Producing the document would take some time and would be less useful, the longer it takes. However, costs would increase if we tried to shorten the timeline for completing the plan.

Creation of statewide or regional plans supports SEPA's purpose to address gaps and would be flexible to accommodate new science and tools. If implemented as intended, it would increase appropriate analysis and good proposals. It would particularly help jurisdictions with funding or

climate change/SEPA technical expertise challenges. Also, it would save agency time during planning.

Since the plan would include an EIS, some level of assurance that the plan itself has properly conducted SEPA might be inherent.

How this idea could/would be implemented: A specific agency would be assigned for developing the statewide/regional plan and preparing the programmatic EIS. (Ecology is already required to develop the statewide GHG reduction plan). The agency would coordinate heavily with current regulatory efforts to address climate change, as well as with all stakeholders. The effort would include SEPA templates/guidance for implementation (SEPA analysis) at the local level. The statewide analysis and plan would then be used during local and state planning (e.g. comprehensive planning, transportation planning, forest planning, etc.).

Description of necessary funding or changes to statute/rules: Funding would be a critical need for this effort. No statutory or rules changes would be required although they may be important to ensure the product is effective. Rule changes could include: a requirement for consistency with the plan.

Additional information or analysis needed: A well-thought out plan, that considers how this statewide/regional plan and environmental analysis will translate down to the later planning and project levels, would be essential for ensuring this product is useful and used by state and local agencies.

"Region" needs to be better defined. Does it mean one county or does it mean a group of counties that could have similar situations or similar approaches for addressing climate change? Or, a region might be a group of counties working together to translate their regional amounts into jurisdictional emission amounts and formulas for local planning and permitting (Regional transportation planning organizations or MPOs?).

B.3 Description of "Leveraging SEPA" Idea Recommended to the CAT for Further Analysis

[Note: the ideas put forth for further analysis in Idea #5 are those not already covered by the SEPA IWG Recommendation 8]

5. Future Vulnerabilities/Adaption Measures in Environmental Impact Statements

Description of idea: Studies show that Washington is already experiencing the adverse effects of global climate change. As global warming continues we will experience flooding due to sea level rise and more winter precipitation falling as rain rather than snow. Our water supplies will be reduced and we will experience many other impacts. SEPA can be used to assess and reduce the impacts of these existing and future vulnerabilities on proposed actions. This could be done by:

> Continuing to fund research into the probable effects of global warming.

- Continuing to synthesize research into the probable effects of global warming and providing information to decision makers.

- Providing guidance on how to anticipate and mitigate the adverse effects of global warming as part of SEPA review.

- Amending the SEPA rules to require an analysis of the adverse impacts of global warming on the proposed action as part of an EIS. This may already be required, but is not explicitly identified as a requirement.

- Amending the SEPA rules to require that EISs must include and analyze an alternative that would be minimally affected by the adverse impacts of global warming.

- Requiring reopeners or contingent mitigation for uncertain, but high cost impacts. Some impacts, such as what will be the future flood heights in or near our current flood plains, are unknown but will have significant adverse impacts on proposed actions. The SEPA rules could be amended to require reopeners or contingent mitigation that would require an analysis of this impact if an event occurs or when information becomes available. Or a reopener or contingent mitigation could be imposed as an MDNS or EIS mitigation requirement. For reopeners or contingent mitigation to work, monitoring would be required and a contingency plan prepared that includes identified, implementable, and effective mitigation. The contingency plan would have to be identified up front with the required monitoring.

These could be mitigation measures that if included in a project proposal would provide certainty that greenhouse gases (GHG) impacts are fully or partially exempted from further GHG reduction requirements. Or they could be required mitigation that some or all non-project or project actions would have to implement. Some options, such as funding research or the synthesis documents, could be information that is made available to action proponents and the proponent could choose to act based on the information or not.

Areas of disagreement, uncertainty or ongoing discussion: Members did not agree on whether additional SEPA exemptions or requirements are desirable. These options could be voluntary, incentives for an exemption, or required. Other questions include whether the requirement for more analysis or another alternative should only be required for non-project EISs and whether reopeners should be applied to project actions or even any actions.

What this idea will accomplish: This proposal will reduce the adverse impacts of climate change on project and non-project actions. This will increase protection for people and property and reduce future costs for proponents and the public. For example, siting a building or highway outside an area likely to be inundated by sea level rise will save lives and reduce property damage.

Strengths and weaknesses of idea:
Strengths: Since regulations do not cover many GHG emissions, requiring an analysis of the impact of global warming on the proposal, a least impacted alternative, reopeners, or mitigation would further SEPA's umbrella and gap filling role. These measures would be linked to available scientific information and methods. No particular science or tool is required, which allows agencies to retain the flexibility to use better tools. These measures could apply

statewide, achieving consistency and predictability. Litigation may be avoided, but there may be litigation over whether these requirements are being met. These ideas may increase SEPA compliance costs, but decrease operation and maintenance costs, and the need to relocate or replace a project. These ideas, if properly implemented, would better protect people and property. Reopeners increase uncertainty and may make some project actions infeasible. ***Weaknesses:*** Some options would reduce agency discretion. Some of these options will be controversial.

How this idea could/would be implemented: See the description of the idea above.

Description of necessary funding or changes to statue/rules: Some options, such as funding research or preparing synthesis reports, would be information made available to action proponents. Guidance on how to determine future effects would be a guidance document. Others would require amendments to the SEPA rules. Additional research and synthesis reports, and the guidance would require additional funding. The SEPA rule amendments may or may not require additional funding.

Additional information or analysis needed: 1. What global warming impacts should trigger the reopeners or require contingent mitigation? 2.a When would a reopener occur, after the proposal is implemented? 2.b. How would the new analysis be used? 2.c. Would the proponent have to shut down the project?

Other "Leveraging SEPA" Ideas Identified by the SEPA IWG

See table at:
http://www.ecy.wa.gov/climatechange/2008CATdocs/IWG/sepa/summary_of_sepa_iwg_bucket_3_draft2.pdf

Appendix D: Sources of GHG Emissions that SEPA Can Address

The following table lists various sources of GHG emissions and compares how each are considered in related policy forums.

GHG Emissions 6 Kyoto Gases (CO2, CH4, N2O, HFCs, PFCs, SF6) *	Definition and Examples	CAPCOA Guidance *CEQA*	King County Draft *SEPA*	MA *MEPA*	The Climate Registry *Reporting*	CAT Interim Report Feb. 2008 *Addressed in Recommendations*
D-1. Direct Construction	Generators and equipment exhaust, this includes off-site haul trucks during construction	Yes	Yes	?	Yes	Yes
D-2. On-Site Mobile Sources and Company-Owned VMT.	Mobile sources operating within the Proponent's facility. Company-owned vehicles traveling off-site.	Yes	Yes	Yes	Yes	Yes
D-3. Stationary Sources and Direct Facility Emissions	Space Heating and industrial emissions. On-site combustion processes from company-owned equipment.	Yes	Yes	Yes	Yes	Yes
D-4. Fugitive Emissions	GHG emitted from points other than tailpipes, vents, stacks, or other locations that can be collected. E.g., landfill gas emissions, gas pipeline fugitive losses, enteric emissions from livestock.	Yes	Yes	Yes	Yes	Yes
D-5. Direct	Livestock methane, land clearing, planting, harvest, fertilizer application, and on-site	Yes	maybe	?	No	Yes

GHG Emissions 6 Kyoto Gases (CO2, CH4, N2O, HFCs, PFCs, SF6) *	Definition and Examples	CAPCOA Guidance *CEQA*	King County Draft *SEPA*	MA *MEPA*	The Climate Registry *Reporting*	CAT Interim Report Feb. 2008 *Addressed in Recommendations*
Agricultural Emissions	manure handling.					
D-6. Forestry Conversion and other land or Aquatic Vegetation Disturbance	One-time soil-carbon emissions during land clearing, and permanent annual loss of CO2 sink following removal of trees or vegetation.	?	Yes	?	No	Yes
D-7. Direct emissions from maintenance activities	Emissions from landscaping and maintenance equipment, chemicals	Yes	Yes	?	Yes	Yes
I-1. Extraction of Purchased Materials	Off-site mining, timber mining/extraction, petroleum products (e.g. fuel and plastic products) for products and materials that are purchased by the proposal.	Yes	Yes	?	Optional	Yes
I-2. Processing of Purchased Materials	Off-site energy used and emissions from processing raw materials or end products purchased by a proponent (e.g. cement, metals, plastics, wood, fuel).	Yes	Yes	?	Optional	Yes
I-3. Transportation of purchased materials by Non-Company Owned Transport	Delivery of purchased raw materials to the proposed facility by non-company-owned trucks, and shipment of produced product from the facility by non-company-owned trucks, trains and ships.	Yes	Yes	?	Yes, some	Yes

GHG Emissions 6 Kyoto Gases (CO2, CH4, N2O, HFCs, PFCs, SF6) *	Definition and Examples	CAPCOA Guidance *CEQA*	King County Draft *SEPA*	MA *MEPA*	The Climate Registry *Reporting*	CAT Interim Report Feb. 2008 *Addressed in Recommendations*
I-4. Employee Commute VMT	Tailpipe emissions from employee commuting	Yes	Yes	?	?	Yes
I-5. Other Indirect VMT	Traffic from associated development, indirect change in traffic pattern, customer VMT (vs. company owned), associated public services (parks, emergency response)	Yes	Yes	Maybe **	No	Yes
I-6. Purchased electricity	Off-site emissions from fossil-fuel power plants that provide electricity to the proponent.	Yes	Yes	Yes	Yes	Yes
I-7. Water Use and Wastewater Disposal.	Energy used to provide water and dispose of polluted water. GHG emitted from off-site pump stations and water treatment plants for water used by proposal. GHG emitted from off-site sewage lift stations and POTWs used to convey and treat wastewater from the proposed SEPA facility. This includes fugitive methane from POTWs. It does not include biogenic CO2 emitted from POTWs.	Yes	Yes	Possibly combined with Energy	Yes	Yes
I-8. Solid Waste	Off-site emissions from off-site solid waste disposal (construction, agriculture, general trash, food). Includes tailpipe emissions from trucks and trains used to collect refuse and haul it to the disposal site and	?	?	?	optional	Yes

GHG Emissions 6 Kyoto Gases (CO2, CH4, N2O, HFCs, PFCs, SF6) *	Definition and Examples	CAPCOA Guidance *CEQA*	King County Draft *SEPA*	MA *MEPA*	The Climate Registry *Reporting*	CAT Interim Report Feb. 2008 *Addressed in Recommendations*
	off-site emissions from pre-processing of solid waste (e.g., transfer stations), and fugitive methane emissions from solid waste landfills. It does NOT include biogenic CO2 emissions from solid waste disposal facilities.					
I-9. End-use emissions from use of proponent's products sold to others	Use and disposal of products sold by the proponent to consumers, industry etc. This could include emissions generated from combustion of fuels manufactured or distributed by the proposed facility.	Yes	Yes	No	optional	Yes

Greenhouse gas - a gas that contributes to the greenhouse effect by absorbing infrared radiation
CFC, chlorofluorocarbon - a fluorocarbon with chlorine; formerly used as a refrigerant and as a propellant in aerosol cans; "the chlorine in CFCs causes depletion of atmospheric ozone"
Carbon dioxide, CO2 - a heavy odorless colorless gas formed during respiration and by the decomposition of organic substances; absorbed from the air by plants in photosynthesis
N2O, nitrous oxide – naturally emitted by bacteria and also by agricultural practices, industrial processes and fossil fuel combustion
HFC, hydrofluorocarbon - a fluorocarbon emitted as a by-product of industrial manufacturing
Perfluorocarbon, PFC - a powerful greenhouse gas emitted during the production of aluminum
Sulfur hexafluoride, - a colorless gas that is soluble in alcohol and ether; a powerful greenhouse gas widely used in the electrical utility industry

"Direct" emissions generally means generated onsite
"Indirect" emissions are generally generated offsite and some are considered "embodied emissions"

Concept of "net emissions" (emissions minus offsets or creation of carbon dioxide sinks) is evaluated during consideration of mitigation options

** Massachusetts policy acknowledges that some projects will have sources of emissions not explicitly covered by transportation, stationary sources and energy consumption. They may require additional modeling of emissions on a case-by-case basis.

Appendix E: Initial list of Criteria When Considering What Emission Sources to Evaluate:

Final Draft

8/08/08

Sub-bucket Group: Karin Landsberg and Annie Szvetecz (revisions), Jim Wilder, Hilary Franz, Dan McGrady, Mark Kulaas, Fred Greef, Ann Farr, Patricia Betts

Guiding Principle:

Does the level of effort (cost, difficulty etc.) of calculating a specific type of emission from a specific proposal outweigh its contribution to climate change impacts? ("de minimus" issue)

Criteria for Considering Sources of Emissions to be Measured (project and non-project):

1. Has the source of the emission for this proposal been addressed (analyzed and mitigated) in another SEPA document, or local, regional, or state plan?
2. Can the source be credibly measured or assessed (quantified or otherwise) with the tools/information currently available?
3. Can the boundary (scope or scale) of the emission be determined?
4. What is relative importance (regionally, nationally or globally) of the contribution of this emission source to climate change impacts? (*e.g. indirect transportation emissions might be a relative minor part of a proposals' emissions but cumulatively they are a major GHG source for Washington. Also, direct or fugitive emissions methane and nitrous oxide could be lower in total contribution of a proposal but they're higher in greenhouse gas potency than Co_2*)
5. Can the proposal be modified to avoid, minimize or otherwise mitigate its contribution of this emission source?

Points to Consider in Determining What Gets Measured:

a. What gets quantified or otherwise evaluated gets considered, managed, and potentially mitigated by agencies with jurisdiction.
b. For project proposals, should the lead agency or the applicant be responsible for calculating a specific type of emission?
c. Can Ecology or lead agency provide guidance to the applicant on how to do the analysis?
d. The applicable mitigation could be broad, programmatic (such as requiring additional GHG emission reporting).
e. The carbon sink part of mitigation (net emissions) is more complex, more speculative, with less definitive science, especially in the agricultural arena. This may require different metrics such as wetland acreage loss with 2:1 substitutions or transfer of development rights (TDR) on similar soil and climate types, or afforestation acreage to compensate deforestation on

similar soil/climate type. Ecology statewide rollup may be the place to require net emissions calculations from GHG carbon sinks, with optional use of Ecology models for the SEPA checklist.

f. Should we assume all GHG emissions are adverse impacts (not necessarily significant impacts) that must be disclosed. Then set some reasonable parameters such as readily available, credible and not speculative science.

g. Can we allow flexibility for lead agency to go beyond a "minimum" GHG assessment that Ecology guidance or new Ecology exemption rules prescribe?

h. Can the future content and format of the GHG measurement worksheet or checklist questions address the following?

- Does this information facilitate the threshold determination by lead agency?
- Does this information help fill the regulatory gaps and identify the regulatory overlaps?
- Is it easy, fill-in the blank reporting?
- Provide certainty and consistency for proponents?
- Understandable, and do-able at the project or non-project stage?
- Applies to variety of typical SEPA actions?
- Allow for initial mandatory analysis to use best available and credible science but be flexible for future updates to model and source data. This may lower the tier and increase future reporting and analysis requirements?
- Does it provide an accurate or "fair" picture of a project's impacts?
- Does this adequately address the "cumulative" nature of climate change impacts?
- Will the scope of emissions enhance or reduce mitigation opportunities?
- Prevents option of choosing less GHG rich material or preventing more GHG intense activity.
- Will this assessment of emissions help agencies with jurisdiction reach state GHG reduction goal since the goals are based on total GHG emissions?

Appendix F: Compilation table of measurement tools:

See:
http://www.ecy.wa.gov/climatechange/2008CATdocs/IWG/sepa/082808_2a_tools_matrix.pdf

Appendix G: Mitigation Options Matrix:

See:
http://www.ecy.wa.gov/climatechange/2008CATdocs/IWG/sepa/082808_3c_ghg_emissions_mitigations.pdf

Appendix H: Measurement Case Studies/Examples:

H.1 75-acre Timber Sale:
http://www.ecy.wa.gov/climatechange/2008CATdocs/IWG/sepa/082802_testcase_timber.pdf

H.2 Box Store:
http://www.ecy.wa.gov/climatechange/2008CATdocs/IWG/sepa/082802_testcase_box.pdf

H.3 Relocation of Business:
http://www.ecy.wa.gov/climatechange/2008CATdocs/IWG/sepa/082802_testcase_business.pdf

H.4 County Comprehensive Plan:
http://www.ecy.wa.gov/climatechange/2008CATdocs/IWG/sepa/082802_testcase_ccplan.pdf

H.5 Port Expansion:
http://www.ecy.wa.gov/climatechange/2008CATdocs/IWG/sepa/082802_testcase_port.pdf

H.6 Transportation Test Cases:
http://www.ecy.wa.gov/climatechange/2008CATdocs/IWG/sepa/082802_testcase_trans.pdf

Appendix I: Analysis of Threshold Determination Options

I.1 Options for Significance Standard (Narrative):
http://www.ecy.wa.gov/climatechange/2008CATdocs/IWG/sepa/082808_4c_sepa_threshold_standard_app_a_draft.pdf

I.2 Options for Significance Standards (Graphic):
http://www.ecy.wa.gov/climatechange/2008CATdocs/IWG/sepa/080827_4a_standards_decisions_thresholds.pdf

I.3 Test case worksheet for types for threshold options:
http://www.ecy.wa.gov/climatechange/2008CATdocs/IWG/sepa/082808_4b_threshold_applied_test_cases-1.pdf

I.4 (Draft) Sub-options for Addressing Significance in Statewide Standard, Framework, Safe Harbor, and Procedural Option:
http://www.ecy.wa.gov/climatechange/2008CATdocs/IWG/sepa/082808_4d_suboptions_matrix.pdf

I.5 Analysis of implications of approaches for statewide consistency:
http://www.ecy.wa.gov/climatechange/2008CATdocs/IWG/sepa/092608_significance_chart.pdf

I.6 Project Emissions Thresholds Comparison:
http://www.ecy.wa.gov/climatechange/2008CATdocs/IWG/sepa/090808_project_emission_examples_for_threshold_discussion.pdf