

APPROACH TO CHESAPEAKE BAY LAND USE POLICY TASKS

Introduction

The Chesapeake Bay Watershed Agreement (Agreement) was signed in 2014 and established goals and outcomes for the restoration of the Bay, its tributaries and the lands that surround them. One of the goals specified in the Agreement is land conservation – to conserve landscapes treasured by citizens in order to maintain water quality and habitat; sustain working forests, farms and maritime communities; and conserve lands of cultural, indigenous and community value. This Approach to the Chesapeake Bay Land Use Policy Tasks document will assist EPA in achieving their land conservation goal and advancing the restoration and protection of the Bay watershed. Specifically, this document addresses the Land Use Options and Evaluation Outcome in the Agreement which states:

By the end of 2017, with the direct involvement of local governments or their representatives, evaluate policy options, incentives and planning tools that could assist them in continually improving their capacity to reduce the rate of conversion of agricultural lands, forests and wetlands as well as the rate of changing landscapes from more natural lands that soak up pollutants to those that are paved over, hardscaped or otherwise impervious. Strategies should be developed for supporting local governments' and others' efforts in reducing these rates by 2025 and beyond.

The three options discussed in this document identify approaches to evaluating policy options, incentives and planning tools that could assist the Chesapeake Bay states in continually improving their capacity to reduce the rate of conversion of agricultural lands, forests and wetlands as well as the rate of changing landscapes from more natural lands that soak up pollutants to those that are paved over, hardscaped or otherwise impervious. See Appendix A for a list of policy incentives and tools that were used to guide these tasks.

To facilitate the process of identifying and evaluating such options and tools, the Chesapeake Bay Maintain Healthy Watersheds Goal Implementation Team (GIT), which houses the Land Use Options and Evaluation outcome, identified three tasks and requested that Tetra Tech develop an approach for conducting these tasks:

1. Conduct a professional survey of local government and interest groups to identify which policy options, incentives, and planning tools have been most effective at reducing land conversion rates, and to determine if additional information and tools, such as an online repository of effective land-use policy options, incentives, and planning tools are needed to achieve a reduction in land conversion rates.
2. Conduct a comprehensive review/study to determine the range of existing land-use policy options, incentives and planning tools currently being implemented at the local and state level.
3. Create an online repository of such examples (of studies identified in Task 2) to serve as a user-friendly knowledge base, including studies and reports of the costs, benefits, and effectiveness of such examples.

The information provided below describes Tetra Tech’s recommended approach for undertaking the three tasks described above. The discussion for tasks 1 and 2 address primary and alternative approaches as discussed in kick-off calls and includes preliminary cost and schedule estimates. One approach has been recommended for task 3.

Task 1 – Approach for Conducting a Survey of CBP Stakeholders

For this task, we have provided a recommended approach including alternative options. The recommended approach includes two phases of work for designing and implementing a survey of Chesapeake Bay Program (CBP) local government partners and interest groups (stakeholders). For each phase, we describe the approach and alternative options CBP may wish to consider. For each option, the potential costs for implementation are presented. Where it is appropriate, we also describe options for CBP staff to carry out much of the data collection work, with guidance from Tetra Tech or a professional survey research firm.

Tetra Tech’s market research and program evaluation experts (Tetra Tech MA) have been conducting academic-quality data collection for clients for over 30 years. Our survey research lab in Madison, WI has a dedicated, full-time Lab Manager, experienced Survey Team Lead staff, and a pool of experienced interviewers, well qualified to deal with a wide range of topics related to energy, environment, transportation, and other issues. Tetra Tech conducts more than 10,000 telephone interviews annually, as part of client surveys. Tetra Tech’s Survey Lab has the specialized software and capability to field web and mail surveys, as well as in-person and on-site data collection. Tetra Tech also conducts thousands of self-administered surveys, including web-based and mail surveys. We employ experts in the design, programming, and implementation of surveys in each of these different modes.

Approach

Tetra Tech recommends a two-phase approach for conducting a survey of CBP stakeholders. The two phases are presented below:

- An initial qualitative research phase to collect information from selected organizations to better define the criteria for determining success of programs to reduce land-use conversion, the factors that make policy options, incentives, and planning tools effective, and the contexts in which they are effective.
- A second quantitative phase to determine preferences of the state and local governments and interest groups represented in the CBP for policy actions, incentives, and planning tools to be used to reduce land-use conversion in the Chesapeake Bay area.

Preliminary Steps

It is important to note that Tasks 2 and 3 defined by the Land Use Options Evaluations [Management Strategy](#) (i.e. review existing studies to identify land-use policy options, incentives and planning tools currently being implemented at the local and state level and create an online repository of the studies identified) are important precursors for implementing the two-phase approach for conducting the survey of CBP stakeholders. The information from Tasks 2 and 3 will be used to identify candidate organizations for the Phase 1 in-depth interviews and to help structure the in-depth interview guide.

Phase 1: Initial In-depth Interviews

This first phase of data collection is to better define the questions to be included in a survey of state and local governments and interest groups. The in-depth interviews will be conducted with selected organizations identified in the literature review (Task 2 established by the Land Use Management Strategy). Organizations will be selected, based on their prior use of policy options, incentives, and planning tools to reduce land-use conversion and a watershed area and context similar to the Chesapeake Bay area.

The purpose of the in-depth interviews will be to collect information from the selected organizations on:

- What policy options, incentives, and planning tools were used to reduce the rate of conversion of farmland, forests, and wetlands?
- What criteria were used to determine if the implemented actions were effective/successful?
- What specific policy options, incentives, or planning tools were most effective?
- What made these actions effective – was it being used in combination with other actions, characteristics of the affected populations, or other factors (this will help to determine how relevant these policy options, incentives, or planning tools are for the Chesapeake Bay Area)?
- What steps could be taken to improve the actions?
- What were the practical lessons learned in implementing these actions?
- How have land-use conditions changed in the years following the implementation of the policy options, incentives, and planning tools?

The in-depth interviews are semi-structured, so interviewers use a guide with a specified set of questions, but are expected to probe and explore relevant points in more detail when they arise in the interview. An in-depth interview usually ranges from 30-60 minutes to conduct.

We recommend conducting a total of 9-12 in-depth interviews. Nine in-depth interviews are recommended if an Information Collection Request (ICR)¹ is required for this data collection activity. If an ICR is not required, we would recommend 10-12 in-depth interviews be conducted, based upon the number of organizations identified from the Task 2 literature review with relevant experience in actions to reduce the land-use conversion rate in a similar watershed.

The findings from the 9-12 in-depth interviews will be summarized and provided to the state and local governments, interest groups and other relevant CBP partners and stakeholders. This summary of the

¹ The Paperwork Reduction Act (PRA) [see, 5 C.F.R. 1320] requires Office of Management and Budget (OMB) approval for executive department/ independent regulatory agency collection of information from 10 or more persons (non-federal entities). Collection of information includes obtaining, soliciting, requiring disclosure through identical questions (or identical reporting requirements) imposed on 10 or more persons. This includes sponsoring such information collection. Information collection may be in any form: questionnaire, interview guides, telephone requests, electronic, group interviews. Identical questions mean the same level of information on the same subject (not strict).

in-depth interviews will provide focused and accessible information on the questions listed above for CBP stakeholders. This summary will also help to ensure that CBP stakeholders have the necessary background information to consider and evaluate what policy options, incentives, and planning tools should be implemented to reduce the rate of land use change and conversion.

The two options for implementing the Phase 1 In-depth Interviews are as follows:

Phase 1, Option 1: CBP will hire a professional survey research firm to design a semi-structured interview guide, conduct 9-12 in-depth interviews, and compile the results into a memo report.

A professional survey research firm will have trained interviewers who are experienced in conducting in-depth interviews. This will help to ensure the required data are obtained from Phase 1. It is possible that a professional survey research firm will not have interviewers with experience in conducting research on policy options, incentives, and planning tools for reducing land-use conversion, but that is not a major problem for completing this task. For most projects, in-depth interviewers receive a briefing on the topic and on the data requirements, as well as identifying the issues on which additional probing and deeper questioning is desired. The most important experience for in-depth interviewers is in conducting this type of interview. For both this option and Option 2 below, preliminary research will be conducted to determine if any additional questions should be added to the list on page 3 or if any of these questions should be revised. The semi-structured interview guide will then be developed by flushing out the questions and adding any required sub-questions. For example, different types of policies, incentives and tools could be identified to help respondents understand the scope of the inquiry, or specific metrics could be identified to help assess effectiveness. In addition, for each question or sub-question, a series of follow-up probes will be identified for interviewers to use, as needed, to ensure that the interview captures the depth of information and insights we are seeking.

Phase 1, Option 1 Estimated Cost: \$14,500 - \$16,500

Phase 1, Option 1 Estimated Time to Complete Task: 2-3 months

Phase 1, Option 2: CBP will hire a professional survey research firm to assist them in designing a semi-structured interview guide and provide a short training session on the practice of in-depth interviewing for CBP staff. CBP staff will conduct the in-depth interviews and compile the results into a memo report.

For this alternate option, a professional survey research firm would be used to assist in the design of a semi-structured interview guide. During this step, it would be beneficial to use the Local Government Advisory Committee for a “brainstorming” workshop that could produce useful insights and results that will be helpful for designing the survey.

CBP staff will be responsible for conducting the in-depth interviews and compiling the findings into a report for review by CBP stakeholders. The primary advantage of this option is the lower cost, however, this will require an estimated 50-60 hours of CBP staff time to complete this task. CBP staff who will be assigned to conduct the in-depth interviews should participate in a training session on appropriate techniques for conducting the interviews, but for some staff, a training session may not be sufficient to develop the skills required to probe for additional information. Probing to capture rich and detailed data is an important characteristic of the in-depth interview methodology. With less experienced interviewers, the data collected in Phase 1 may not be as comprehensive and insightful. CBP staff may also lack experience in analyzing the qualitative data from the in-depth interviews, so the report may

not be as effective in drawing the appropriate conclusions and information for review by CBP stakeholders.

Phase 1, Option 2 Estimated Cost: \$5,500 - \$6,500

Phase 1, Option 2 Estimated CBP staff hours: 50-60 hours

Phase 2: Conduct a Survey of State and Local Governments and Interest Groups Represented in the CBP

Phase 2 of this subtask will consist of designing and conducting a survey of CBP state and local governments and interest groups to identify stakeholders' preferences for specific policy actions, incentives, and planning tools to be implemented to reduce land-use conversion in the Chesapeake Bay area. The survey will use a measurement technique that first asks a series of questions to identify stakeholders' experience with and perceptions of effectiveness of the policy actions, incentives, and planning tools that could be implemented to reduce land-use conversion. Following these questions, stakeholder will be asked to identify the specific actions they would like to see implemented for the Chesapeake Bay area, with additional open-ended questions to explain their preferences and reasons for supporting specific policy option, incentives, and planning tools.

The survey will also provide opportunities for respondents to comment on the potential outcomes and the criteria that should be used to determine whether the implemented tools are successful in reducing land-use conversion in the Chesapeake Bay area.

Because the population of state and local governments and other stakeholders in the CBP is quite large (200-300 per state), the preferred approach for conducting the survey is to hire a professional research firm to design and implement a web-based survey so all eligible CBP stakeholders can be invited to complete. The alternative options include CBP working with a professional research firm to design a web-based survey that will be implemented by CBP staff, as well as a telephone survey of a scientifically-selected sample of CBP stakeholders, implemented by a professional survey research firm. These three different options for designing and implementing the survey are presented below, with advantages, disadvantages, and estimated costs for each option.

For any of the options listed below, an ICR may be required, since the survey will ask the same set of questions of more than 9 respondents. CBP or EPA will need to determine if an ICR is required for this step. If an ICR is required, there will be an additional level of effort (LOE) (either by a professional survey research firm or CBP staff) to prepare and submit the required documents and 4-6 months of additional time will need to be added to project timeline.

Phase 2, Option 1: CBP Hires a Professional Research Firm to Conduct a Web-based Survey of all CBP Stakeholders.

The recommended option for conducting the survey of CBP stakeholders is a web-based questionnaire, designed and administered by a professional research firm. The professional research firm will also analyze the data and prepare a report for the CBP. To analyze the survey data, preference ratings for each of the policy options, incentives, and planning tools will be compared. The preference ratings for different types of stakeholders (such as local government, state government, and NGOs/interest groups)

can also be compared. Open-ended responses will be coded to identify the reasons given by stakeholders for their preference ratings.

Implementing a web-based survey will require email addresses and a contact person for each of the CBP stakeholders who will be invited to complete the survey. The advantage of a web-based questionnaire is that all eligible stakeholders can be invited to complete the questionnaire, since there is very little additional cost for increasing number of respondents. The field time for a web-based survey is also relatively short.

Implementation of the web-based survey by a professional research firm will ensure that best practices are used for survey implementation and “trouble-shooting” while the survey is in the field. For example, the professional research firm will prepare an email invitation to send to all CBP stakeholders and will have a toll-free number that CBP stakeholders can call with questions or concerns about how to access and complete the questionnaire. Any email addresses that are found to be incorrect or not working will be followed up, to ensure that as many CBP stakeholders as possible receive the invitation to participate in the survey and all comments received from stakeholders outside of the completed surveys will be rigorously recorded and tracked. A professional research firm will also be well-equipped to process and prepare the survey data for analysis, as well as analyze and report the survey data.

One potential disadvantage of a web-based survey is that it is self-administered – no interviewer is available to help respondents understand and respond to survey questions. As a result, the questions must be carefully designed and tested to ensure that all respondents are able to understand and interpret the questions in a consistent way.

Phase 2, Option 1 Estimated Cost: \$35,000 - \$40,000

Phase 2, Option 1 Estimated Time: to Complete Task: 2-3 months

Phase 2, Option 2: CBP Hires a Professional Research Firm to Assist in Designing and Testing the Questionnaire and CBP Administers the Survey and Analyzes the Survey Data.

For this option, CBP would be responsible for implementing the survey. A professional survey research firm (or survey researcher) would be hired to assist in the design and testing of the survey, ensuring the questionnaire is ready for implementation by CBP staff. CBP staff would be responsible for analyzing the survey data, using a data analysis software package of their choice.

For this option, it is most feasible for CBP to implement the survey on-line, using a web-based survey software package of their choice. Conducting a telephone survey would require a prohibitively large investment of time by CBP staff.

The primary advantage of this first alternate option is the lower cost, since CBP staff will be responsible for programming and implementing the survey, as well as analyzing and reporting the survey results.

Phase 2, Option 2: Estimated Cost: \$10,000 - \$12,000

Phase 2, Option 2: Estimated Time to Complete: 2-3 months

Phase 2, Option 3: Hire a Professional Research Firm to Conduct a Telephone Survey of a Sample of CBP Stakeholders.

CBP could develop a contract with a professional survey research firm to design and pretest the questionnaire, and implement 300 telephone interviews with a randomly selected sample of CBP stakeholders. Because there are a large number of CBP stakeholders (200-300 per state), a sample of CBP stakeholders would be selected for a telephone survey, since the number of respondents is a major factor in the cost of a telephone survey. A sample size of 300 stakeholders is recommended, because survey estimates, such as the percentage of respondents who favor implementing a specific policy option, will have a 90 percent confidence interval of approximately +/- 5 percent. If more or less precision is required for parameter estimates, the sample size can be adjusted.

Conducting a telephone sample survey will require developing a sampling frame (a listing of all CBP stakeholders who are eligible to complete the survey with their telephone contact information), in order to select a sample to accurately represent the population of stakeholders. The primary advantage of conducting a sample survey by telephone is that an interviewer is present to help respondents understand the questions and provide responses to the survey questions. The disadvantage of conducting the survey by telephone interview is that it is the most expensive option, and it does not allow for all interested stakeholders to provide responses and inputs for selecting the policy options, incentives, and planning tools to be used to reduce land-use conversion in the Chesapeake Bay area.

Phase 2, Option 3 Estimated Cost: \$45,000 - \$50,000

Phase 2, Option 3 Estimated Time to Complete Task: 3-4 months

Other Considerations

In the notes from the kick-off meeting, there was a discussion of designing a survey that supported statistical significance testing and a high response rate to produce trustworthy results. For the survey of CBP stakeholders, a high response rate and trustworthy results can be achieved by following the best practices for questionnaire design and survey implementation. For statistical significance tests, the results of the survey can be analyzed to determine if some policy options, incentives, or planning tools have significantly higher preference ratings than others. For this type of statistical significance testing, we will be using a difference of proportions test to determine if the differences between specific policy options or other actions are statistically significant.

For any of the Phase 2 survey options, there is a possibility that an ICR will need to be prepared and submitted to OMB for approval, prior to initiating the data collection. This process may require an additional 4 months of time, as well as additional effort to prepare the required forms and information for the ICR. The additional time and effort to prepare an ICR have not been included in the time or cost estimates provided above.

Task 2 – Review to Identify Existing Land Use Policy Options, Incentives and Planning Tools

CBP is interested in approaches to determine the spectrum of existing land use policy options, incentives and planning tools currently being implemented at the local and state level. Tetra Tech has developed four research approaches as options for accomplishing this task:

1. Comprehensive research
2. Non-comprehensive (i.e., targeted) research
3. Literature and internet research
4. Discussions or interviews with select stakeholders

Each of these are discussed below in the order of decreasing LOE. It should be noted that less LOE does not necessarily correspond with less quality or less relevant policy examples. The comprehensive approach is more likely to identify a greater number of relevant examples than the less costly options. However, all four approaches are expected to identify relevant examples. The fourth option involving discussion and interviews with policy experts is likely to be the most efficient approach since the experts interviewed would point the researchers to relevant information much faster than a comprehensive review of all watershed local governments.

The approaches (1 and 2 below) with higher LOE do provide some advantages. By contacting local governments with a variety of demographic characteristics, the resulting list of policy examples is likely to represent a greater diversity of options. Approaches 3 and 4 could be biased towards policies that are well-accepted by the general public. These approaches may also be biased towards communities with more financial resources (i.e. funding for outreach on successful policies) or other demographic characteristics. In other words, the characteristics that make a policy well-known by those in the field or easy to find on-line may not necessarily be the reasons that make that policy successful. If identifying less popular but still successful approaches is important to the overall goals of this research, then the comprehensive and targeted approaches may warrant greater consideration.

All four options assume that the researchers will first have a discussion with CBP staff and other knowledgeable Bay watershed organizations to help identify the most innovative policy options, incentives and planning tools currently being implemented at the local and state level. The options also assume that at least one conference call will be conducted per subtask, and all support contractor staff will attend. These tasks could be conducted by CBP staff or contractor staff. However, the discussion for Task 2 assumes that CBP would hire a support contractor to carry out the activities described below.

Option 1: Comprehensive Research

A comprehensive review would involve initiating contact with about 1,800 governments (all state and local governments) within the Chesapeake Bay as well as 10 communities outside of the watershed, focusing on areas near a large estuary. Information would be collected on state and local government land use policies, and these policies would be evaluated to identify those that are most successful and relevant to share as examples for other communities to consider. The resulting policy example database may not contain examples from all of these governments. It is anticipated that some governments may not have relevant examples or may not be able to share information in a timely manner.

To ensure quality results, this approach requires an organizational structure and metrics (e.g., criteria such as efficacy, cost-effectiveness, transferability, etc.) as guidance for identifying successful policies from a long list of examples. Tetra Tech proposes that a pilot review be conducted to identify several (3 to 5) policy examples. These examples will help inform an interview template, metrics for ranking policies, and an approach for ranking policies according to their relevance and land conservation achievements. Drafts of these materials will be provided to CBP and discussed via conference calls before proceeding with the full review and evaluation.

The full review will involve organizing a team of support contractor researchers familiar with local and state government policies. This team will likely be composed of five to six support contractor staff. The technical lead will train the team on use of the interview template, types of relevant policies, and the overall goal of the review and evaluation.

To ensure that contact with all local and state governments in the watershed is attempted, the support contractor will develop a database of local and state governments within the Chesapeake Bay watershed through available spatial datasets (starting with Bay Program and affiliated data). The local and state governments will then be divided up and assigned to team members. The research will proceed as follows:

1. Each local government in the database will be contacted at least once by phone. If a local government staff member with knowledge of land use policies can be reached on that first call, then the support contractor will pursue an interview with staff at that local government. If the local government cannot be reached for an interview on the first call, the support contractor will leave a detailed message. If that local government returns the call, the support contractor will continue to pursue an interview as available LOE and project timeframe allows. The support contractor should be able to document state policies through phone contacts and on-line information and will pursue any phone contacts until the necessary information is obtained. A similar approach will be used for the communities outside the watershed. On-line research will precede (and could potentially supplant) contact by phone to the extent it offers greater efficiency.
2. The results of the interviews will be compiled in an Excel spreadsheet. The information entered in the spreadsheet may include policy name, type of policy, website for more information, metrics (as developed under the Pilot Review), and any other relevant information provided by each local government.
3. The support contractor will review the information provided and rank the policies based on the ranking approach developed under the Pilot Review. Up to fifty policies will be identified that either ranked highest based on relevance and success, or appear relevant and successful but require more research before they can be ranked highly.
4. The team will then divide up those policies and re-connect with the local government contacts to gather more information.
5. Following this round of research, the support contractor will review the spreadsheet and resolve any major information gaps that remain.

The draft report will document the review process, the full list of policies identified, and the ranking approach. Report appendices will likely be used to document the full list of policies. Then, the report will review the top ranking policies in more detail. The policies will be discussed according to general types, using specific examples to highlight strengths, lessons learned, and options for other communities to consider. Exceptional policy cases or unique policy types will also be highlighted. Differences in strategies based on population size, location in watershed, and other characteristics will be considered as topics for discussion within the report.

The support contractor will discuss the draft report with the CBP via conference call and then develop a final report based on verbal and written comments received. Deliverables will include the draft and final reports. Table 1 provides the hours estimate for Option 1.

The advantage of the comprehensive approach is that it will identify a wide diversity of options and may identify an innovative land use policy that was previously unknown outside of a local government. This approach would also be less biased towards popular approaches than Options 3 and 4.

Table 1. Hours estimate for Option 1, Comprehensive Research

| Subtask | Hours |
|------------------|--------------|
| Conference Calls | 80 |
| Pilot Review | 40 |
| Full Review | 5,090 |
| Draft Report | 420 |
| Final Report | 50 |
| Total | 5,680 |

Option 1 Estimated Cost: \$568,000

Option 1 Estimated Time to Complete Task: 24-36 months

The schedule for Option 1 will depend on the start date and time of year that the governments are contacted. If the review period occurs during the summer or holidays, then more time may be needed for contacting government offices than during other parts of the year.

Option 2: Non-Comprehensive (i.e., targeted) Research

A targeted research approach would involve selecting a sample of local governments to research within categories of demographic, geographic, or other characteristics. The goal of this research would be to select about 180 local governments (approximately 10 percent of total) within the Chesapeake Bay watershed as well as 10 communities outside of the watershed, focusing on areas near a large estuary. These governments would be contacted for information. The resulting policy example database may not contain examples from all of these governments. It is anticipated that some governments may not have relevant examples or may not be able to share information in a timely manner.

The targeted approach will follow a process similar to the one outlined above for the comprehensive approach. A pilot review will be conducted to identify several (3 to 5) policy examples. Then the support contractor will develop an interview template, metrics for ranking policies, and an approach for ranking

policies according to their relevance and land conservation achievements. Drafts of these materials will be provided to the CBP and discussed via conference calls before proceeding with the full review and evaluation.

The research team will likely be composed of about four support contractor staff, and the team will be trained on use of the template, types of relevant policies, and overall goals of the research. Similar to the comprehensive approach, the support contractor will develop a database of all local governments within the Chesapeake Bay watershed through available spatial datasets. Relevant categories for local governments will be developed and may include state, relative population size, physiographic region (coast, piedmont, mountains), and type of local government (city versus county). Once categorized, the support contractor will select a similar number of local governments that fall within category. The selected local governments will then be divided up and assigned to team members.

The research process will follow Steps 1 through 5 as outlined under the comprehensive approach (Option 1). While much fewer policies will likely be documented, the draft report documentation will follow the same conceptual approach as outlined for Option 1. The draft report will document the review process, the full list of policies identified, and the ranking approach. Similar to Option 1, high ranking policies will be highlighted and trends across categories discussed.

The support contractor will discuss the draft report with the CBP via conference call and then develop a final report based on verbal and written comments received. Deliverables will include the draft and final reports. Table 2 provides the hours estimate for Option 2.

By taking a targeted 10 percent sample of all local governments in the watershed, this approach aims to reduce the cost of identifying and reviewing policy samples. While this approach is likely to identify fewer successful policy examples, it provides a more efficient approach than Option 1 and would still involve researching a diversity of governments with the potential of identifying a wide variety of successful policy examples.

Similar to Option 1, the schedule for Option 2 will depend on the start date and time of year that the governments are contacted. If review period occurs during the summer or holidays, then more time may be needed for contacting government offices than during other parts of the year.

Table 2. Hours estimate for Option 2, Non-comprehensive (Targeted) Research

| Subtask | Hours |
|------------------|--------------|
| Conference Calls | 70 |
| Pilot Review | 40 |
| Full Review | 930 |
| Draft Report | 210 |
| Final Report | 50 |
| Total | 1,300 |

Option 2 Estimated Cost: \$130,000

Option 2 Estimated Time to Complete Task: 9-12 months

Option 3: Literature and Internet Research

This approach will focus on identifying relevant policy examples through internet and literature searches. Instead of researching individual local governments, as in Options 1 and 2, the support contractor will conduct searches in literature databases and internet search engines using relevant policies as search terms. The list of policy options, developed during initial discussions with CBP, will then be used to guide the research and selection of search terms. When identifying land use policies to document, the research will work towards identifying examples within the Chesapeake Bay watershed or communities that are within a similar watershed in the U.S. The goal will be to identify about 50 policy examples and document them in a spreadsheet. These examples will be reviewed and ranked in terms of relevancy. Information gaps will then be addressed for high ranking or uncertain examples.

The draft report will document the review process, the full list of policies identified, and the ranking approach. Similar to Options 1 and 2, high ranking policies will be highlighted and trends across categories discussed.

The support contractor will discuss the draft report with CBP via conference call and then develop a final report based on verbal and written comments received. Deliverables will include the draft and final reports. Table 3 provides the hours estimate for Option 3.

One potential disadvantage of this approach is that the results will be based on readily available information and may not capture the breadth of successful policy options. This approach is also less likely to identify a new or lessor known approach compared to the other three options.

The schedule for Option 3 will depend on the start date of the work but would be less variable than the other three options due to less direct communication with government staff and the need to adjust based on vacation or holiday schedules.

Table 3. Hours estimate for Option 3, Internet and Literature Search

| Subtask | Hours |
|------------------|------------|
| Conference Calls | 40 |
| Review | 600 |
| Draft Report | 160 |
| Final Report | 50 |
| Total | 850 |

Option 3 Estimated Cost: \$85,000

Option 3 Estimated Time to Complete Task: 6-8 months

Option 4: Discussions or Interviews with Select Stakeholders

The final option involves interviews with policy experts to document known examples of successful land use policies. The support contractor will develop a list of organizations and agencies to contact for recommendations on policy examples. The interviews will include EPA’s Smart Growth Office regarding land use approaches in the Great Lakes watershed or areas near a large estuary, such as the Gulf of

Mexico, Maine, and Puget Sound. The interviews will be conducted by 2 to 3 support contractor staff. Following each interview, the policy examples will be documented in an Excel spreadsheet. Once the interviews are completed, the spreadsheet will be reviewed and information gaps identified. Additional information will be gathered through personal communication or internet research.

The draft report will document the research process and the full list of policies identified. A formal ranking will not be conducted. However, the policies will be reviewed, and those that stand out as particularly successful or innovative will be highlighted. Policies across different geographic areas or population sizes will be compared and contrasted in the report.

The support contractor will discuss the draft report with CBP via conference call and then develop a final report based on verbal and written comments received. Deliverables will include the draft and final reports. Table 4 provides the hours estimate for Option 4.

The primary advantage of this option is the low cost. While few policy examples will be identified compared to Options 1 and 2, the policy experts and other stakeholders would act as a filter and may direct the support contract to policies that would be difficult or time-consuming to identify by other means. This option may result in an overall greater quality of information if the interviewees are able to direct the support contractor to information that is not readily available through an on-line search.

Similar to Options 1 and 2, the schedule for Option 3 will depend on the start date and time of year that the stakeholders are contacted. If the review period occurs during the summer or holidays, then more time may be needed for contacting stakeholders than during other parts of the year.

Table 4. Hours estimate for Option 4, Discussions and Interviews with Select Stakeholders

| Subtask | Hours |
|------------------|------------|
| Conference Calls | 40 |
| Review | 380 |
| Draft Report | 100 |
| Final Report | 50 |
| Total | 570 |

Option 4 Estimated Cost: \$57,000

Option 4 Estimated Time to Complete Task: 4-6 months

Other Considerations

The LOE presented above is based on past project and experience and best professional judgment. The time spent on the research can be tailored somewhat to the resources available. A lower LOE would generally result in fewer number of policy examples identified and reviewed.

CBP may wish to consider a combination of Options 3 and 4 to take advantage of both on-line and stakeholder information sources. Some efficiencies would likely result if Options 3 and 4 were combined, especially within the conference call and report subtasks. One additional option would be to

expand Option 4. Given that Option 4 already involves some internet research to fill information gaps, this option could be revised to include a brief on-line search with a relatively small additional LOE.

Task 3 – Online Repository of Policy Examples

CBP is exploring approaches to develop an online repository of studies and reports of the costs, benefits and effectiveness of such policies, incentives and planning tools to serve as a user-friendly knowledge base. As a precursor to developing an approach to this task, based on discussions with the CBP staff, Tetra Tech conducted an on-line search for policy example repositories and search tools. The following search terms were used:

- Conservation cost-effectiveness
- Conservation incentives clearinghouse
- Conservation incentives database
- Land use policy database
- Environmental policy database
- Policy database
- Searchable database
- Searchable database tools
- Land use policy tools
- Land use tools
- Land use databases
- Environmental search tools

Search terms specific to cost or benefits resulted in many individual reports and websites, but not tools used to identify those examples. Tetra Tech focused on finding a variety of tool designs that provide policy examples that could be used as a template to develop a tool more specific to costs, benefits, and effectiveness of policies. See Appendix B for a list and description of on-line tools that Tetra Tech identified for review by CBP. CBP identified the two preferred on-line repository/toolboxes tools below for the development of a high level approach and ballpark cost options. It is assumed that CBP would hire a support contractor to develop the online repository tool. This approach and cost estimate for Task 3 only accounts for the costs to develop the online tool, not the gathering of content to populate the on-line tool.

Approach to Develop an Online Repository of Land Conversion Rate Policy Options, Incentives and Planning Tools

A web-based repository of land conversion rate data is needed as a way of easily storing, presenting, accessing and viewing the data. Based on preferences identified by CBP, Tetra Tech considered two example databases that allow filtering to enable quick access to their data:

Policy Measures Database (<http://www.policymeasures.com/measures/>). The data in this repository can be filtered or searched by type, theme, category, reports, reading resources and keywords. The filtering options are presented in an attractive, easy-to-understand format. Images and type descriptions break the repository into basic groupings. Quick links to theme filtering are available on the same page. Another page uses the image and description format to break the repository into different groupings. A

third page provides a keyword search. All of the filtering/search options result in a search results page containing a list of all resulting data records which fit the search criteria. Selecting an individual record brings you to a details page which provides a summary of the record and a document download option.

National Association of Realtors (NAR) Land Use Initiative Memo Database

(<http://www.realtor.org/topics/smart-growth/nar-land-use-initiative-memo-database>). The data in this repository can be searched by keyword, issue, date of report and state. This approach is actually a subset of the Policy Measures Database.

For this task, we recommend a simple approach to development a tool similar to the Policy Measures Database. The on-line tool would be composed of four primary web pages:

1. **Introduction Page:** The purpose and objectives of the Land Conversion Rate Database would be introduced and 4-6 major types of land use data filters would be presented. These could be presented as simple links, descriptive links, or descriptions with images.
2. **Search Page:** The search page would provide instructions and would allow 4-6 additional filters to be used such as categories, types or keywords options.
3. **Results Page:** The results would be presented in a list or a grid. A title and a brief description would also be presented. Clicking on the title would navigate to the details page.
4. **Details Page:** The details page could include a summary of the record, links to related fields, contact information and additional data. It might also contain a link to a report or policy document.

Tabs across the top of the page would allow navigation between pages. There could also be a panel to the left or right of the main body of the page that would provide other informational links.

The application will be web-based and developed in a standard framework, such as .NET with a model-view-controller (MVC) pattern. A database such as Oracle or SQL/Server would be needed to house the repository data which would be loaded from an Excel spreadsheet. There may be documents to be accessed which will need to be stored on the file server and associated with the repository data.

A kickoff meeting would be held for the stakeholders and the contractor which composes the Integrated Project Team (IPT). A core project team that works closely with the contractor would also be established. The development team would be introduced to the stakeholders and objectives would be discussed. A high-level schedule will be reviewed and will clearly indicate the development schedule being followed. Obligations of the stakeholders will be clearly defined and noted on the schedule.

Weekly and monthly progress reports will be required. They should contain costs, milestones, risks/mitigation strategy issues encountered/corrective action taken and impact, tasks completed, progress on tasks and upcoming tasks, action items and outstanding questions. An updated schedule will be provided at least monthly.

Requirements gathering will be done with the core project team and the contractor. Requirements mentioned in the SOW will be the starting point. The requirements will be organized and documented and provided to the core project team for review. They will be refined based on client feedback. Requirements that fit within the scope of the project will be determined and approved.

Once the requirements have been approved, a website and database design will be developed. Mockups of the user interface will be developed and the contractor will walk the core project team through the mockups, focusing on the process flow. The mockups will be refined based on the client feedback.

Frequent demonstrations should be requested during the product implementation process. The application should be developed using an agile approach that allows the core project team frequent hands-on experience as the application is developed. Feedback should be incorporated into the next release of the application.

User Acceptance Testing (UAT) will be provided before final approval of the application. The IPT will have 2 weeks to thoroughly test the application. The system will be deployed on the client servers. Table 5 provides the subtask titles and the hours estimate.

Table 5: Hours estimate to develop Online Repository

| Subtask | Hours |
|----------------------------|------------|
| Kick-off meeting | 8 |
| Requirements gathering | 20 |
| Design and mockups | 28 |
| Implementation | 196 |
| Application framework | |
| Database | |
| Data loading | |
| Introduction page | |
| Search page | |
| Results page | |
| Details page | |
| Test / bug fixing | |
| User Acceptance Test (UAT) | 0 |
| UAT bug fixing | 16 |
| Deployment | 8 |
| IT project management | 14 |
| Total | 290 |

Task 3 Estimated Cost: \$34,000*

Task 3 Estimated Time to Complete Task: 14-16 weeks

* This approach to develop an online tool similar to the NAR Land Use Initiative Memo Database is specified in a simple format. The database could be further enhanced with advanced search capabilities, enhanced display options, and administration capabilities to easily add, edit and delete data for additional effort and cost. If CBP plans to develop and enhance a tool that goes beyond the simple description above, future plans and enhancements should be discussed during initial team meetings and requirements gathering so that costs can be estimated that are more reflective of the desired tool.

APPENDIX A: List of Policy Options, Incentives, and Planning Tools to Reduce Land Conversion

Types of land use policy options, incentives and planning tools include traditional land conservation, such as land purchase and preservation easements, as well as other land protection policy mechanisms such as innovative land use planning and zoning (e.g., conservation zoning), transfer of development rights (TDRs) and rural economic development, financial incentives (e.g., taxes), adaptive reuse, and methods to address urban blight and facilitate infill and redevelopment within our cities and towns.

This list identifies the types of mechanisms that may be relevant to the three tasks described in the Chesapeake Bay's Land Use Options Evaluation management strategy.

Zoning Restrictions

- Forest Protection Zones
- Riparian Corridors
- Agricultural Zoning
- Conservation Zoning
- Developing zoning that discourages sprawl

Regulations

- Methods to address urban blight, such as absentee landlords or purchase and redevelopment of blocks of city homes

Law

Tax Policy and other Financial Incentives for Developers or Landowners

- Tax undesirable transactions
- Tax break for desirable transactions
- Density incentives for leaving a portion of a development site projected
- Various incentives for redevelopment or infill

Land Acquisition Programs

- Land Banks
- Conservation Easements (Agricultural, Natural Resource)

Purchase of Development Rights

Transfer of Development Rights

Adaptive Reuse Programs

- Brownfield programs
- Historic building restoration tax credits

Linking Smart Growth with Planning

- Developing a comprehensive plan that prioritizes conservation
- Developing small area plans

Websites that describe approaches in Fairfax County regarding smart growth strategies (one purpose being protection of existing open space):

<http://www.fairfaxcounty.gov/dpz/projects/reston/arlingtonpresentation.pdf>

<http://www.smartergrowth.net/virginia/fairfax-falls-church/>

Rural economic development programs

Policies to facilitate infill and redevelopment

- See Reinvest Maryland at <http://planning.maryland.gov/YourPart/773/infill.shtml>

Appendix B: On-line Policy Example Repositories and Search Tools

1. **The Land Use Law Center's Gaining Ground Information Database** (<https://appsrv.pace.edu/gainingground/>) – a free and ever-expanding online database featuring best practice models used by government to control the use of land in the public interest. It includes a collection of federal, state, and local ordinances; commentaries; research papers; research aids; and much more. Documents can be searched by topic, state, municipality, jurisdiction type, resource type keyword or in a list of all available resources.
2. **The Center for Land Use Interpretation** (<http://www.clui.org/ludb>) – this database allows the user to search via a clickable map, list of states or through a search box. The Center for Land Use Interpretation's Land Use Database is a collection of unusual and exemplary sites throughout the United States. The database is a free public resource, designed to educate and inform the public about the function and form of the national landscape, a terrestrial system that has been altered to accommodate the complex demands of our society.

Some sites included in the database are works by government agencies involved in geo-transformative activities, such as the Department of Energy, the Bureau of Reclamation, the Army Corps of Engineers, and the Department of Defense. Also included are industrially altered landscapes, such as especially noteworthy mining sites, features of transportation systems, and field test facilities for a variety of high-impact technologies. The database includes museums and displays related to land use, and one of the most thorough listings of land art sites available.

The database describes these sites, and offers links for more detailed information. In many cases information on how to visit these sites is provided, so that they may be directly experienced. The database is continuously being updated by increasing the number of sites listed and expanding the information it contains.

3. **The Growing Food Connections Policy Database** (<http://growingfoodconnections.org/tools-resources/policy-database/>) – the Growing Food Connections Policy Database is a searchable collection of local public policies that explicitly support community food systems. This database provides policymakers, government staff, and others interested in food policy with concrete examples of local public policies that have been adopted to address a range of food systems issues: rural and urban food production, farmland protection, transfer of development rights, food aggregation and distribution infrastructure, local food purchasing and procurement, healthy food access, food policy councils, food policy coordination, food system metrics, tax reductions and exemptions for food infrastructure, and much more.

The search capabilities of this database consist a general search box or an advanced search which involves selecting the policy type, topic, type of government, year, country, state, population range and any keywords.

4. **Policy Measures Database** (<http://www.policymeasures.com/measures/>) – the policy measures database is a growing collection of information related to environmental policies and measures structured into a common format. Individual policies and measures will have varied levels of

content and detail available. Registered users are encouraged to comment on measures in the system to suggest additions and amendments, or alternatively they can use the option at the Get Involved page to submit a new measure for development by the community.

Two primary filters are available to engage with the database. Measures may be searched by type or by theme. There are 4 type categories which each bring up a list of documents related to a specific topic. 10 themes and a 'list all' option are provided to allow searching or filtering of policies and measures by a given thematic area. Themes are not mutually exclusive and measures may fall under a number of those defined. Alternatively a user may use the search feature to execute a more targeted query of the system.

5. **NAR Land Use Initiative Memo Database** (<http://www.realtor.org/topics/smart-growth/nar-land-use-initiative-memo-database>) – the National Association of REALTORS® Land Use Initiative has helped state and local REALTOR® associations across the country deal with a variety of land use and Smart Growth issues. These NAR Land Use Initiative Memos include a majority of requests for analysis that have been received and commented on by the Land Use Initiative. These memos are all provided in Adobe Acrobat Format and can be searched by keyword, issue, date of report, and state.

6. **The Maryland-National Capital Park and Planning Commission Easement Location Tool** (http://www.montgomeryplanning.org/environment/forest/easements/easement_tool.shtm) – Easements can be found by moving a mouse and zoom bar on a map or by typing a place or address into an entry box. Details on selected easements are provided by finding the easement of interest and clicking on an “I” button which pulls up more information concerning the selected site. Users can also report easement violations by clicking a box and entering a message concerning the violation. Easement violations include:
 - Mowing, grading or paving, or removal of understory in a Forest Conservation Easement
 - Construction of permanent structures in either a Forest Conservation Easement or a Tree Save Easement
 - Clearing or grading more than 5,000 square feet outside an easement also may be a violation. Forest conservation requirements may be necessary, so contact the Planning Department prior to starting any activity

7. **U.S. EPA My WATERS Mapper** (<http://watersgeo.epa.gov/mwm/>) – dynamically displays snapshots of EPA Office of Water program data. The map can be changed to display streets, imagery or topography. A search box can be used for addresses or locations, rivers and streams, watershed boundaries, legacy watersheds, impaired waters, assessed waters, waters with TMDLS, beaches, monitoring stations and NPDES permitted facilities. Dropdown boxes provide additional search results with program snapshots based on different map layers, selection by impairment and water monitoring data.