# APPENDIX D. MEETING SUMMARIES

## First Advisory Meeting Summary

**October 28, 2019**
**9am – 1pm**
**Lacey Community Center**

The first advisory meeting for Commerce's scoping of a new decision support tool for critical areas and land use planning was held on October 28, 2019. We had 23 people attend the meeting in person, and another 20 who joined us via Skype. Participants spanned state agencies (18), federal agencies (2), local governments (12), consulting firms (2), and other organizations (9). The meeting included an introduction to the project and role of the advisory committee, a presentation on Commerce's vision for the tool, and a discussion of needs, priorities, risks, and potential barriers for the tool.

We received a lot of excellent ideas and input from our advisors on what should be included in the model, which we have summarized in the following sections. We will continue to add to these ideas and information as we receive comments, responses to our end user survey, and conduct interviews. This will become the basis for a summary of needs and barriers for the tool (to be submitted to our funders in December) and it will ultimately be included in our prospectus for development of the tool.

### Commerce's Vision for the Tool

We began the meeting with an introduction to the project and Commerce's vision for the tool. The introduction included information on the background and need for the tool, our funding source, goals for the project, potential applications, the role of the advisory committee, and goals for the first advisory meeting. Then we presented some of our ideas for how the tool could work to integrate maps from multiple sources and provide decision support functions for assessing land use planning alternatives, including a mock-up of a potential application of the tool for assessing and quantifying ecological and land use impacts of expanding a critical area buffer. We concluded the presentation with some discussion of potential applications of the tool by different kinds of end users and the questions they might be interested in using it to answer. Our PowerPoint slides for the presentation can be found on our project website (linked below):
https://www.ezview.wa.gov/Portals/_1991/Documents/Documents/First%20Advisory%20Meeting%20Presentation.pptx

### Needs and Priorities for the Tool

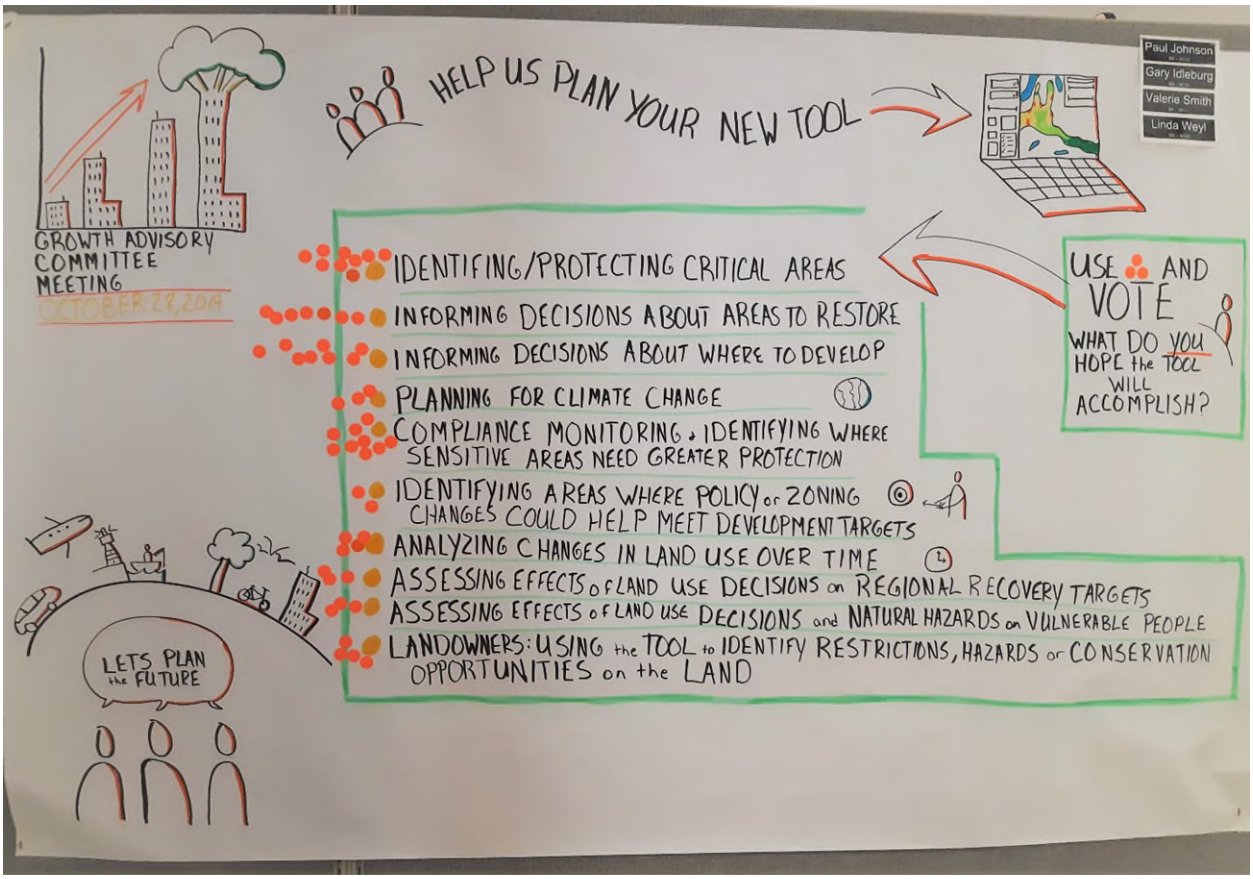
#### General Uses for the Tool

We started off our discussion about needs and priorities for the tool by asking participants to vote on their top three uses for the tool from the following list (top choices noted here in green):

- **Identifying/protecting critical areas (10)**
- **Informing decisions about areas to restore (8)**
- **Informing decisions about where to develop (9)**

- Planning for climate change (4)
- **Compliance monitoring and identifying where sensitive areas need greater protection (10)**
- Identifying areas where policy or zoning changes could help meet development targets (3)
- Analyzing changes in land use over time (6)
- Assessing effects of land use decisions on regional recovery targets (4)
- Assessing effects of land use decisions and natural hazards on vulnerable people (4)
- Landowners: using the tool to identify restrictions, hazards, or conservation opportunities on their land (5)

Each of the four top choices received approximately the same number of votes, suggesting that they are all equally high priorities for stakeholders. However, the other choices also all received votes, with the number of votes distributed relatively evenly between them. The total votes were evenly split between the top four (37) and the remaining options (36). This shows that all of those other choices are also top priorities for certain stakeholders. The top choices were heavily weighted towards conservation and recovery actions, which was reflected by a majority of participants from conservation or resource management organizations. We will continue to prioritize as we collect additional data through our survey of local planners, and expect that the top priorities may fluctuate to more land use and GMA decisions.




The following summarizes input on needs and priorities for the tool that we received during discussions:

**Identifying and Protecting Critical Areas**

Identifying and protecting critical areas is a priority under the GMA and it makes sense that this would be a decision that is important to support. If only one thing could come out of this effort, participants felt the priority should be to provide a comprehensive map of critical areas across jurisdictional boundaries that is sensitive to the data quality and range of designations in local maps. This could resolve potential difficulties and high effort needed to upload local government layers each time users access the tool. This should be the base level for the project and could be used as a building block for adding functionality to assess impacts of buildout scenarios and other decisions that are occurring outside critical areas, on the response variables that planners are mandated to consider. This is important for the ability to assess impacts of land use decisions at the right scale to communicate cumulative effects on those response variables. It can also facilitate cross-jurisdictional planning where appropriate.

The other side of identifying and protecting critical areas is monitoring and adaptive management, and it applies to a specific decision that will be made periodically by all jurisdictions. Critical areas ordinances (CAOs) have already been established everywhere, and every eight years they are updated. During the update cycle, planners need to consider whether or not policy changes are needed, and if changes are made, how those changes would influence the protection of critical areas. Adding functionality to address compliance, monitoring, and adaptive management would be important.

**Assessing Hydrologic and Landscape Connections with Critical Areas**

It will be important to include the hydrologic and landscape connections to critical areas that can affect their functions, values, health, and sustainability. These connections are not normally reported for long term planning but they are very important. Planning is starting to move toward understanding things happening outside of critical areas, which is very challenging to assess. Land use and land cover changes happening outside critical areas are important to understand because they are affected by changes in critical areas and may affect critical areas. It would be useful to have a tool that could show what is happening downstream from critical areas and buffers. Validating a hydrologic index or other model output on what is happening inside a critical area versus outside of it is a process that a lot of science would need to go into, but it may be possible to feed into that using some of the work that has already been done. Protecting downstream resources is in the GMA but rarely followed, and having this information in a way that allows that question to be asked could prevent that.

Planners and consultants could use the tool for identifying mitigation sites, monitoring cumulative impacts, and developing habitat connectivity and corridors for critical areas. It gets us out of site by site planning and shows the connections to the whole system, which is incredibly powerful. It doesn't take too many steps back to see that people are talking about land use and how it plays out, but almost no one understands regulations, other local government programs that protect habitats, and what actually happens. There is a lack of knowledge about how the big picture plays out.

**Buildout Scenarios and Buildable Lands Analysis**

There was a lot of interest in using the tool to assess the impacts of buildout scenarios, and to assess impacts of protection versus development scenarios. It would be useful to include interactive data layers which have defined, quantitative linkages/relationships to response variables which people care most about (e.g. BIBI, salmon productivity, streamflow/hydrology) and can be used to assess cumulative effects over time of buildout scenarios. There is an assumption that if critical areas are buffered they are

protected, and some planners (incorrectly) believe that if development is not occurring in the buffer it is not having a negative impact. Additionally, some urban areas where planners presume that it is okay to increase density because there are no critical areas present are extremely important hydrologically. At the permit scale, more pressure is put on protection decisions when high density zoning is in place, and it is difficult to preserve critical area buffers when exceptions must be allowed for reasonable use and other factors. The tool should be able to inform these land use decisions that occur outside critical areas by linking them with their effects on critical areas, hydrology, and other variables.

The tool should piece together what has already been done in terms of land use and zoning and allow the user to look at different ways to do it in the future. For example, it could show the effects of continuing with a given land use or zoning on watershed functions based on the amount of impervious surface on different sized lots, and those numbers could be changed to evaluate alternatives. This would allow planners to evaluate standards and policies along with their connections to landscape processes and the health of watersheds and the region. In this way, the tool could help to inform policy and zoning changes, such as where upzoning or downzoning should occur to accommodate development while maximizing critical area protection.

A tool that allows users to assess development scenarios should also help protect other important resources from development impacts, in addition to critical areas. For example, the tool could be used to prevent local jurisdictions from burying (and losing) their valuable sand and gravel (aggregate) resources. It could also help protect culturally and archaeologically significant areas from development.

**Linking Tools and Databases**

Many models and databases already exist and are waiting to be used, but we are missing a platform for linking them. This tool should be that platform. Models would need to be linked in a way that recognizes that not every piece of ground has the same ecological or development value, so that planners can prioritize and differentiate between priority sites. One way to approach this could be through a decision framework similar to the one used for the Puget Sound Watershed Characterization (PSWC), which ranks or values areas most suitable for restoration or development based on watershed functions. For each watershed, PSWC shows areas where it is imperative to protect (i.e. groundwater recharge areas or discharge areas into wetlands), then it shows which areas would be appropriate to focus development because they are least important for watershed functions. Within our tool, more specific models could then be linked with the results to show how development scenarios in the identified development areas would affect critical areas and other ecological factors. A lot of existing biological and physical information could be plugged into those models to assess a range of potential impacts. The models included in the tool should also provide a way for local jurisdictions and other end users to decide their own priority criteria.

**Normalizing and Standardizing Land Use Effects**

An important use of the tool should be to normalize or standardize the way we talk about and track land use effects, creating a time and space context. Normalizing the effects of land use decisions over an entire watershed or jurisdiction would be very helpful and would become a common ruler to apply around Puget Sound and compare one watershed/jurisdiction to another. This could be of enormous really big benefit to scientists as well as planners. It could help answer questions for endangered species protection, such as finding opportunities to help Chinook salmon and orcas. It could also be used for

recovery, restoration, and alternative futures. For example, you could experiment with moving your mixed use area to the middle of the watershed, then have an index (such as a Hydrologic Condition Index) that tells you the normative condition of the watershed if that decision were implemented. As a planner, that would be great because you could then tell your decision makers what will happen if they put industry in that area. Normalizing the ecological functions would allow users to see the linkages between changes in land use, watershed functions, critical areas, and ecosystems, and it could also start to get at the no net loss concept. Historical imagery would have a role in validating the effect of changing conditions on response variables.

**Cumulative Analysis and No Net Loss**

The tool should show the cumulative effect of land use decisions over time and help communicate that information to decision-makers. Cumulative analysis on a county or city-wide basis could show how much has changed cumulatively over the eight year planning cycle and as a time step series. Then planners can use that information to inform decisions about how to change land use activities or zoning. Analysis of cumulative impacts (and analysis of other elements like compliance and monitoring), could then be rolled up to track large scale changes over time and see how the region is doing on its priorities and no net loss. For compliance monitoring, the tool could be used to measure no net loss of shoreline and critical areas within the SMA and GMA. By comparing critical areas with actual use, the tool could help determine if critical areas regulations and shoreline master programs are actually protecting critical areas and achieving no net loss. This would require images or land use data layers from multiple years.

**Finding Areas of Compatibility for Competing Goals and Interests**

Local governments are interested in a tool that can help take competing interests and requirements (such as habitat, working lands, water resources, and development density) that seem incompatible and make them compatible to try to get win-win outcomes. The big question used to be whether to do mitigation on or off site, but now planners are trying to look at the watershed scale. A tool that shows mitigation needs and requirements for development scenarios, along with opportunities to rezone areas to get connectivity, habitat, water resource benefits, protected areas of working lands, and other win-wins would be useful for comprehensive planning. It would allow planners to look at what they have to work with and plan for how to meet all the requirements over the long-term. Indices for hydrologic condition, habitat productivity, and other factors with normalized values could help show what is the best combination. Additional factors that need to be considered when jurisdictions are trying to meet their requirements will become important as they pursue new goals in the future, such as transitioning people off wells and septic in UGAs.

**Communicating the Value of Critical Areas and Ecological Processes**

This tool could be a very powerful communication tool for explaining ecological processes and why plans need to protect them. This can help inform people and avoid potential lawsuits. For current planners, an important use of the tool would be to give the average user an idea of the variables that influence land use and development proposals, for individual parcels and for larger portions of property. Linking models that can produce economic values for critical areas protection, restoration, and other land use decisions is also important because that sometimes translates better for decision makers. The tool should use science to evaluate land use alternatives in order to help identify the effects on biological elements, as well as the risks and costs and benefits for people. That information is needed for

effectively explaining these issues to elected officials. A tool that could accurately report both ecological and economic impacts for different regulatory scenarios (different CAOs or land use zoning) is exactly what is needed.

**Promoting Further Mapping of Hazardous Areas**

The tool could be useful for showing where there are gaps in knowledge regarding natural hazards. Maps may identify hazards in some areas, but that does not necessarily mean there are no hazards in other areas. Having a tool that shows how many people live in geologically hazardous areas and points out those areas of uncertainty could be used to promote further mapping and would be a priority use of the tool for the Geological Survey. Insurance underwriters and bankers might also be interested in using the tool for risk assessment.

**Supporting Planning Decisions in Local Jurisdictions**

The tool should be most useful for supporting comprehensive planning. It is important to come up with really good articulations of what the decision outcomes are so that we do not skip identifying the question and try to find the answer. This could start as a long list of the decisions that people actually make. We need to figure out what planners want to know, so we know which datasets and tools can inform those answers. If we do not articulate the decision paths well enough, then we will not be able to tell which data can support those decisions. Having fuzziness on that end would make tool development much more problematic. However, we would also like for users of the tool to be able to bring their own questions to the tool, and use the variables they think are important to try to answer them. Those questions and the variables chosen by users to answer them should also be tracked and cataloged over time.

**Bringing Together All the Information for Critical Areas Planning**

An important use of the tool should be to pull together all the known information for critical areas planning into one tool. Long range planners are sometimes scrambling for information, or missing information. The tool could help communicate the data available to assist in planning processes, which could be especially useful for smaller jurisdictions. It should also provide planners a way to show their work and provide justification for decisions. It should integrate different sets of data used and produced by different kinds of government and allow datasets to talk to each other in a way that they have not been able to before. It can also be an important way to integrate city and county planning. The goal should be an authoritative one-stop platform that is used by all levels of jurisdiction. It should integrate countywide and other local planning policies with regional scale questions, and integrate land use planning and water planning. The tool should identify any existing data discrepancies and show which data have been verified.

Another use of the tool could be to create a comprehensive inventory of CAOs and resource recommendations, including critical areas buffer ranges for local jurisdictions (i.e. stream buffer ranges, wetland buffer ranges, steep slope or marine bluff setbacks, and prairie habitat buffers). It would also be helpful to spatially input RCW and WAC requirements and policies so that some other processes and rules are already baked in, or at least accessible, while also providing for input of local values.

**Ensuring that Best Available Science is used in Decision-Making**

The tool should be used to incorporate best available science into critical areas and comprehensive plan updates. To do this, user inputs to the tool should identify when choices for buffers and other measures are outside of best available science, and the tool may need to limit choices based on best available science. The tool could provide a normalized and standardized way of getting everyone operating on the same knowledge base. For data producers, the tool could also be a way to make sure people who need to use data they create are using it in an intelligent way.

**Structuring the Tool to Support Local Government Decision Processes**

The tool should be designed to inform revisions to (a) CAOs, (b) SMPs, (c) UGA expansions, and (d) rural zoning density. Specifically, it should help counties and cities determine whether changes in these regulations would "protect" (i.e., provide for no net loss of) critical area functions and values. This is accomplished by (a) avoiding/minimizing harm to ecological functions and (b) identifying appropriate ways to offset remaining harm. Because not all critical areas contribute equally, the platform should bin (or allow users to bin) critical areas into ~3-5 tiers to show relative priority; each tier should be associated with a different level of mitigation requirements (or in the case of hazards, different development standards). The platform should be designed from the ground up to identify and standardize efforts to monitor benchmarks and outcomes, with the intent of making future updates more successful. In short, this tool should help users understand relative priorities across the landscape and quantify the environmental "drag" and "lift" associated with development so that GMA/SMA regulations can achieve no net loss and efforts beyond GMA/SMA can work to achieve net ecological gain by focusing on priority areas.

We could use existing tools that have looked at conservation and land use planning (albeit not in a GMA/SMA context). Using their learning and understanding what those platforms do could allow us to tailor a platform to be responsive to the GMA/SMA context. We could identify data sources that have the state's "seal of approval" and set up a process for locals to submit data for that criteria-based seal of approval. In other words, we could take these tools, identify appropriate data sources to feed them, and create GMA/SMA-specific applications for their deployment.

There was some discussion on how to approach integration. This could be done through a script or algorithm, which might not be attainable. Some thought it might be a better idea to develop a guidebook that gives analytical steps to go through and guidance to take the assorted information and tools and put them together. This could start with a primary question and work down to other things. The tool could take the form of a decision tree based on best available science and what we know about how watersheds work, which breaks out into areas to restore, areas to develop, and critical areas for protection, and moves from a broad scale down to a finer scale. A decision tree would help local jurisdictions who are moving beyond regulating and planning on a site by site basis by showing the process to go through and what information to look at. The first step could be just a website with links where local governments can go to get that information, and the second step would be putting it all together. Then you can start to see what it means in terms of the watershed questions and put it on a map that then would show the best areas to take action and the effects of alternative options, like doing cluster development instead of the typical 5 acre lots in the rural county, or creating a working buffer. This could provide a basis for changing policies.

**Opportunities for Commerce and Other Agencies to Guide Local Planning Efforts and/or Use the Tool**

It was suggested that this could be an important opportunity for Commerce to guide the questions and information the agency wants local jurisdictions to be looking at during comprehensive planning, CAO and SMP updates, and for iterative decisions between updates. If the agency wants local governments to assess impacts on water quality, water quantity, habitat, downstream resources, and other important factors, this could be the place to make sure those questions are being asked and work is being shown. It may make sense to have the tool housed at Commerce, so Commerce can direct local jurisdictions to look at those factors under the GMA. The tool should also be aligned with other city, county, and state agency mandates and could be used to bring the values of other agencies into a space where they can be given due consideration:

- For Ecology, it could be aligned with SMA planning.
- For DNR, it could be aligned with no net loss on state owned aquatic lands.
- For DOH, it could be used for on site septic and derelict wells.
- For WDFW, it could be used for critical areas monitoring and adaptive management
- For grants programs, it could be used to assess return on investment for recovery projects.

Local planners often do not have enough information, or not enough good information, and having someone tell cities and counties that this is the good information they should use would be helpful. The tool could be used to inform local governments about the data that is available and how it translates to their requirements. However, a priority for local governments will also be the ability to use their own data in the platform, because local scale information is often more refined and detailed than regional datasets.

Local jurisdictions will be asking what's in it for them if they use the tool, and what's in it for them might be some kind of cover, safe harbor, or assurance that they did the analysis right and can rely on the information. If Commerce directs jurisdictions to use the tool to look at certain elements for their comprehensive plan updates, the agency could say that after some QA/QC is done and it is approved, the jurisdiction's comprehensive plan is valid. The tool could be used to document they used the best available science. Then jurisdictions could also use the tool to show their work to the public so they can see all the different reasons why it has been done this way, which are usually hidden behind the scenes. It could also allow agencies to review comprehensive plans and shoreline plans much more efficiently.

**Differences in Needs by Jurisdictions or End Users**

There will likely be differences in the priorities of users from different jurisdictions or organizations for what they want to get out of the tool. Planners in more metropolitan areas and resource-minded organizations will be most likely to use the evaluative or predictive functions of the tool. Others still do not have experts or people who use any of the available maps working on their critical areas issues, and they will need really fundamental information, such as basic identification of critical areas. Those jurisdictions will want to use the tool as more of a look up type resource. The tool should be able to answer both types of questions.

**Return on Investment for Restoration and Mitigation Projects**

Going beyond mandated protection of critical areas, the tool could be used to select or justify restoration projects and mitigation by providing information on return on investment.

**Protecting Priority Species and Habitats**

The tool should show the least or most significant areas for ecological, salmon, and riparian functions (among other functions and values). This could help guide restoration and protection efforts for those species and habitats.

**Recommendations for Land Management**

Protection and restoration actions are trying to solve problems in most cases, but there is an issue of treating symptoms but not getting to root causes of those problems. The tool could help point to potential solutions that can be applied to problems like flooding, erosion, or sedimentation. There is usually insufficient data to show exact correlation or cause, but the tool could include some kind of risk analysis that makes that uncertainty clear and provides recommendations for what can be done. For example, the tool could say we are 60 percent sure that deforestation in this watershed is the cause of a sedimentation issue, so restoration or changed land management practices in this area would help to alleviate that problem.

Some critical areas – by their nature – do not need to be protected but identified (e.g. flood hazard areas and geological hazard areas). The general public should be able to have access to this information along with recommendations on how to manage the land if located in one of these areas.

**Specific Functionality of the Tool**

Some specific functions and tools that should be built into the tool are measurement tools, slope profile elevation, filters, and downloading resulting GIS data (post-analysis) of the user's study extent.

**Next Steps for Identifying Needs and Priorities**

We will continue to compile information on needs and priorities for the tool as we receive survey responses and talk to more potential end users. We will also be researching similar products and tools, to see what tools are available and how are they being used. Developers of other tools may have useful information on the top questions that are being asked of their tools.

## Potential Risks and Barriers for Developing the Tool

We also asked our advisors to provide input on potential risks and barriers for developing the tool. There are unique challenges to consider for scoping the tool, data and model inclusion, use of the tool, tool development, funding, and maintenance. These risks and barriers will need to be addressed in our prospectus to ensure that our end product is viable, resilient, and sustainable into the future.

**Scoping the Tool**

Defining an achievable and tangible scope for the tool will be the first challenge. Stakeholders and end users will need to be consulted to learn about their needs and priorities to ensure that the tool will meet their needs. We will need to make sure that we reach out to an appropriate range of stakeholders from local governments, resource agencies, tribes, non-profits, consulting firms, and other organizations. We plan to do this via surveys, interviews, and advisory group meetings. However, even if all the appropriate stakeholders are consulted, there is still a risk that priorities for the tool could change

dramatically part way through development, due to Ruckelshaus or other factors. We will also need to incorporate the values, priorities, and science of our partners into the tool.

The tool cannot be all things to all organizations. There is a risk of trying to take on too much or trying to be overly general because too many people want too many different things. This could lead to having too many pieces and too many questions, while missing the important questions. We need to determine what local government planners want to get out of the tool, what information they are looking for, and what level of accuracy and confidence is needed. The project may need to be scaled down to address more specific responses, issues, and needs. A well-defined, tangible, and achievable initial product will need to come out of the scoping process that will be helpful for jurisdictions to answer specific questions.

The tool should include a decision framework to guide the use of information at the appropriate scales. This framework should contain a common denominator set of questions that all users need to ask. Without a decision framework, there is a risk of developing a collection of too much information that local governments will have a hard time sorting through and applying correctly. The decisions that the tool will support need to be clearly defined and stated before beginning tool development. This will allow us to focus on the right questions, data, and analysis to include.

**Data and Model Inclusion**

Analysis is only as good as the data basis. There is a risk of not having all the necessary data or fully understanding the interactions between datasets and response variables. We may not have all the data we think we have and there are many confounding factors that make it difficult to understand the relationships between inputs and outputs needed to run models. Some datasets are appropriate for regional questions while other datasets are appropriate for parcel level questions. There are also some already known gaps in datasets available for things that would be desired components of the tool, such as city and county jurisdictions' regulations and restrictions with regard to critical area and shoreline setbacks. Including this information would require additional code research and development of datasets. There is also a risk of getting 99 percent of the way there and realizing something critical was missed, and having to go to an outside source to get that one piece of information. This will need to be addressed through careful planning and research before and during tool development, as well as by developing the tool in such a way that additional data sources and linkages can be added in later. The project and budget should include analysis of data and integration throughout the project development and for ongoing updates and maintenance.

Data coverage will not be equal across the region, and uncertainty in unmapped areas will need to be communicated. For example, a natural hazard may be identified in some locations, but that does not necessarily mean that all other places do not have hazards. The tool will need to identify where there is certainty of knowledge and where there is less certainty, and be able to show where the uncertainty is. This could be done by greying out unmapped areas and flagging unmapped areas where information should be collected, or by dialog or pop up information for specific locations. This would allow the user to understand where data is not yet available and may encourage the collection of some of that additional information.

Additionally, there may be differences between what is protected in the code and what is actually occurring on the ground, whether that is due to exceptions, variances, illegal building or clearing in

critical areas, or other factors. Some of these activities may be permitted and others may not. There is a range among counties and local governments on how well they are implementing critical areas ordinances. If models are based on the critical areas ordinances as they are written, there is a risk that some areas might be shown as a buffer in the tool, but there may still be activities occurring in that buffer that affect other variables. Special circumstances or underlying permit factors may be affecting what is displayed on a larger landscape or county wide map. Whether the models reflect reality or code will need to be defined, as will other assumptions inherent in the models. Assumptions around the relationships between, for example, expanding buffers (land use) and water quality or other response metrics which are realized outside of the actual buffer (i.e. hydrology, fish, etc) will need to be validated or documented in order for the scenarios to have value for decision-making. The tool itself will need to properly differentiate between science and policy.

For datasets that are defined by varying policies or definitions, we need to make sure the user knows which definition they are looking at. For example, definitions of impervious can vary by jurisdiction and by code. Even within the same jurisdiction, the definition under the zoning ordinance may be different from the stormwater definition. It needs to be clear what definition is being used and where it came from. This can be done through metadata and more explicitly for each dataset linked to through the tool, and users will have the option to upload their own datasets if they want to use a different definition.

We also need to make sure the tool uses the best and most up to date data available. This can be partially achieved through data sharing methods where datasets are maintained and updated by the originating agencies and organizations according to their own update schedules. However, we will need to ensure that those agencies continue to maintain and update their data, and that it remains compatible with the tool. We can also allow for users of the tool to share their own datasets to use in the tool if they have a better or more up to date data source for their jurisdiction.

We need to acknowledge that no tool is ever going to be perfect. As with most scientific models, there is a risk of Type II error (or a false negative conclusion showing that there is no effect or change when there really is). There is also a risk of Type I error (or a false positive conclusion showing a change or effect when there really is none). The tool and its models should build in mechanisms to minimize the risk of these types of errors and to show when they might occur where possible. The tool will also need to be transparent about its limitations, and the limitations of all datasets included.

**Use of the Tool**

The target end user and their needs and desires for the tool will need to be clearly defined as a business case. We will need to assess how using the tool will result in better decisions, and there is a risk that profit-driven decisions may prevail over GMA-BAS-driven decisions despite development of the tool. Even among local planners, there are likely to be user differences. Planners in more metropolitan areas and more resource-minded organizations will be most likely to use the predictive functions of the tool. Other planners will need very fundamental information on what critical areas are and where they are located. Some jurisdictions do not have experts or people who use the available maps and tools for critical areas planning, and some planners still do not know what or where the critical areas are in their jurisdictions. Those users will be using the tool as more of a look up type resource.

The potential for citizen use of the tool could be complicated and risky. We have received a range of opinions on whether or not this tool should be made available to the public, and what controls on access and use should be built in. There is much concern about how hard it will be to explain the tool and its appropriate uses to the general public, and that this may not be the best tool for citizen science. However, there is also a risk that lack of transparency might heighten distrust of government, and that a lack of public knowledge and understanding of critical areas issues will ultimately work against protection goals. With proper training and explanation of the standards and requirements that need to be followed for critical areas protection, the tool could be a very effective way to allow the public to go in and see how hard it really is to make land use decisions that balance all the competing goals. More thought is needed to carefully consider the implications of public use of the tool and strategize how to address the risks identified. Some possibilities include limiting public use of the tool to a controlled environment during comprehensive planning meetings, building bumpers into the tool to limit use to appropriate analyses based on scale, best available science, and other factors, blurring or shading out answers when the scale changes, developing an access login to share data and use the tool, providing public training programs, or simply developing written disclaimers with well-developed terms of use conditions as are seen in most agency web maps and tools.

Whether it is used by the public, or only by local governments, agencies, and other organizations, there is a risk of misuse. There is concern that planners often do not understand all the data they are provided with or how it should or should not be used. Some data is appropriate for regional questions and other data is more appropriate for parcel level questions. It will be critical to ensure users understand the data that is included in the tool and its appropriate use, as well as what the tool does and does not do. Many analyses would need to be kept at the appropriate scale (for making watershed or sub-basin level decisions) so that they cannot be misused to justify site specific development or changes in critical area protections. Otherwise people may try to use the tool inappropriately at the property level. Bumpers and bounding ranges could be programmed into the tool to prevent this type of misuse. For example, if a person wants to move a critical area buffer on their property, the tool should apply that change at a threshold where you do see effects (i.e. the sub-watershed scale), so the person is not misled into thinking the tool can predict effects at the site level. A related risk is that not all potential users of the tool will understand technical jargon related to the tool. Consideration will need to be given to how best to simplify the tool to make it accessible, without simplifying it too much. A Puget Sound wide training program should also be developed for the tool, both for the public and for local governments.

Depending on how the tool is designed, there is a risk that the tool could be used to rationalize buffers that are narrower than best available science dictates. Bumpers and bounding ranges could also ensure the values that can be explored in the tool (for buffer sizes and other measures) are consistent on best available science. If implemented in this way, this could provide the additional benefit of ensuring that best available science is incorporated during critical areas updates. If the tool itself becomes best available science, there is a risk that the Hearings Board will not see it that way. They will need to be brought into the fold on this project at some point as well.

The other major risk related to use of the tool is that there will be a lack of local adoption and buy in. There is concern that local governments will not want or trust a tool coming from the state level with federal funding. Many previously-developed planning tools have been deemed inappropriate or inapplicable by local jurisdictions because the scale of the data used is too coarse or not accurate enough. In order for development of the tool to be worthwhile, it will need to be used and relied upon

by local governments to inform GMA/SMA decisions. Allowing local governments to use their own data within the framework of the tool if they wish to would be a way to help ensure that the tool can meet the needs of local governments. The tool will also need to provide transparency about the accuracy and confidence in the information. Another way to promote use of the tool by local governments would be to develop it in a way that provides safe harbor and assurances that if they use the tool they did their work right.

**Developing the Tool**

Successful development of the tool will depend primarily on getting enough funding. We currently have only secured the first year of funding to scope and begin to design the tool, and there is a risk attached to that funding and whether it continues. Tool development is likely to be very expensive, costing millions of dollars, and the cost will likely exceed the original amount requested in our NTA. Other tools, such as the Zillow interface, have been developed to solve much simpler problems with a lot more money. After we determine the features to be included in the tool, we will need to produce a more accurate estimate of the cost for developing it. We will need to pursue additional funding sources, potentially through NTAs and from the legislature.

Finding the right software packages and co-opting them for our purposes could also help to keep development costs down. We have identified and reviewed several software packages for decision support tools that have already been developed with millions of dollars of investment, and we will need to assess the feasibility of incorporating those frameworks into our tool. This will help prevent us from trying to reinvent the wheel. The other software-related challenges may be related to database interoperability and securing enough processing power to operate the tool efficiently.

There may be challenges with data integration and getting maps, models, and other datasets to link and be able to talk to each other effectively. Automation should not be programmed until the workflow is proven.

Another risk is that IT could drastically change within the 3 to 5 years that it will take to develop and implement the tool. We currently have a gap with IT knowledge on how to implement this tool and will need to get their input on the project. The OCIO will be able to help with this as well.

**Maintaining and Updating the Tool**

The tool and the data it relies upon will need to be sustainable. Data should be shared and maintained on a common platform. Allowing agencies and organizations to share their data with the tool rather than uploading it would make it available and allow for those organizations to easily update and maintain their own data as needed. Many organizations already follow a schedule for updating their data and maps, but we may need to find ways to ensure that other datasets are updated frequently enough to be useful in the tool, and that updated versions remain compatible with it. Using the state open data sharing platform would help to make sure authoritative data is available and used, and we plan to work with the OCIO Geospatial Program Office to reuse what the state is currently developing in a data sharing platform for this tool.

Data included in the tool will need to include a service date or expiration date, and information on when the last update occurred. We will also need to consider succession planning and how to solve problems

with broken links and turnover with agencies that produce the data. The tool will need a way to handle cases when data is not available.

Even if the data can be self-maintained, the platform will need an owner who can update the tool itself. We currently are discussing four years of potential funding, and what happens in year 5 is not yet known. There is a risk that there will be no owner or maintainer at the end of the NTA. We will need to assess internal support for owning the tool at Commerce and at partner agencies. Long-term funding and a committed long-term steward will be needed for repairs, maintenance, and updates to the tool.

There will need to be capacity to update and expand the tool based on what works and what does not work along the way. Machine learning or AI could be used to gather analytics from the users of the tool to see the most commonly asked questions, most commonly used data, and other information. This would allow us to supplement the information in the tool based on what questions cannot be asked because of data availability, and take out the things that people do not use. It will likely be best to start small but leave room for all of the other things to be added in later. However, there is also concern about the potential to take on too much technical debt.

**Next Steps for Identifying Barriers for the Tool**

We will continue to compile information on risks and barriers for the tool as we receive survey responses and talk to more potential end users and tool developers. We will also be researching similar products and tools, to see what tools are available and how they may be incorporated. Developers of other tools may have useful information on the risks and barriers that they have encountered in their experiences.

## Next Steps

Our next step is to send out a survey to local land use planners and other end users to find out more about their needs and priorities for the tool. We will also be researching similar products and interviewing developers of other similar decision support tools. As we receive survey responses and conduct interviews, we will continue to add information on needs, priorities, risks, and barriers for the tool, and we will submit a summary of this information to our funders in December 2019. Our research of similar products will inform us on what other tools are available that could be used as an example for our tool, included in our tool, or potentially co-opted to fit a GMA/SMA context.

We will present the results of our surveys, interviews, and research at the next advisory meeting, which we plan to hold in January 2020. This meeting will include a more technical discussion on how to meet the needs and priorities identified using existing data and models, how to adapt other tools to fit this context, and how to address and overcome the potential barriers and risks.

# Second Advisory Meeting Summary

**February 11, 2020**

**9am – 1pm**

We had a good turnout (31 participants) and lively discussion at our second advisory meeting on February 11, 2020. We began the meeting with an update and presentation on our progress since the first meeting, which included identifying end users' needs and priorities for the tool via an online survey, developing a conceptual design for how the tool could be structured to meet those needs, and researching similar products and contractors that could be used to build the tool. Throughout the presentation, we received important input from advisors on technical considerations. Following the initial discussions, the group wanted to focus on discussing how the project should be phased, so we adjusted our initial plan for the meeting to accommodate this discussion. A copy of this report and other materials can be found on our project website:
https://www.ezview.wa.gov/site/alias__1991/37570/library.aspx

**Recap of Commerce's Progress and Conceptual Design for the Tool**

We received a robust response from land use planners on our end user survey, which showed an overwhelmingly positive response to ideas for the tool, provided information on the key land use goals of local jurisdictions, the limitations that prevent them from fully utilizing existing tools, and the functionality that would be most useful to include in our tool. Our conceptual design seeks to structure the tool to meet those needs and provide the most important functionalities requested. It includes a web mapping application that brings together spatial data needed for critical areas planning and allows querying and filtering; a landscape prioritization tool that shows the best areas on the landscape for development, protection, and restoration based on multiple criteria; and a scenario assessment tool that would allow users to explore the impacts of zoning/buildout, regulatory, and restoration scenarios on variables related to critical areas, watershed health and land use. We have reviewed approximately 30 similar products so far and we talked briefly about the two platforms we have identified to date that could be used to integrate the models and data needed to build the proposed tool: 1) Envision and 2) Ecosystem Management Decision Support System (EMDS).

For more information, please see our PowerPoint presentation:
https://www.ezview.wa.gov/Portals/_1991/Documents/Documents/Second%20Advisory%20Meeting%20Presentation_final.pptx

**Discussion**

Our discussion included a conversation about data considerations such as coverage and quality, scale, user weighting, and regulatory vs. non-regulatory planning elements. We also discussed some advisors' experiences with integration software such as Envision or EMDS, the format of the proposed tool, and how development of the tool should be phased to achieve the overall goals.

### *Data Considerations*

Each of the variables to be included in the tool will need to be examined for data coverage. We were advised that there would be a lot of patches needed for missing data, which could be a lot of work. There was also some concern about the interoperability of different data sources and differing update schedules. We will need to address completeness of the available data.

Some models (i.e. Hydrologic Condition Index) are highly calibrated, whereas other data sources are not. Data have varying quality and validation and there will be tradeoffs in using some data sources and not others. There will need to be guidance on which data are used (and of which quality). If alternative or not best practice data is used, it will need to be justified. Consideration will also be needed regarding the ability for users to assign weights to variables in an analysis. This feature should include guidance, and models that are more calibrated should get more weight. We are envisioning that long-term comprehensive planners would guide this process and drive the weighting. We need to make sure there are protocols (i.e. based on best available science) but we also want it to be transparent enough to allow resource agencies and others to be able to play with it.

One of the key questions is and will continue to be scale - the different data sources are appropriate at different scales. Questions come at different scales and data comes at different scales, so you can't ask some questions of some data. The tool would likely be less useful to answer questions at the parcel scale and more useful at a larger scale (i.e. subwatershed scale). There was hope that at the parcel level, the tools would have already informed the zoning, which may or may not translate into results on the ground due to permitting processes and exemptions.

There was some discussion of assembling the data and developing an index. There are many different approaches to indexing and there are implications tied to how data are assembled and weighted. We were advised to determine which index to use before getting too far down the road. A focused process meeting could have high value for eliminating some of the options to what is feasible so that only those items are included in the scope. However, this would likely need to be done when the project gets started since the data sources to be included need to be known prior to having a deep dive discussion on indexing. At this stage, we would be interested in learning which items cannot be linked. We have determined that these types of data can be integrated and it has been done at other scales, and we are hoping to be able to scale up some of this work that has already been done. Based on the models and ease or complexity of integrating them, the approach may need to be phased if they cannot all be linked at once.

Where the tool will be housed is yet to be determined, and there was concern about having a third party vendor own the data. It was suggested that everything needs to be owned by the state and be located on the state systems. However, an example from Puget Sound Partnership shows that we can just create an agreement that the state owns the data even if it is managed by a third party.

### *Data Inclusion*

We discussed inclusion of indirect effects of land use on critical areas and ecosystems. Currently, local governments are protecting critical areas in a black and white process, and generally not at the watershed level. Features and processes are not identified in the GMA or SMA, so important areas (i.e.

for watershed sustainability) are often not protected or restored. Our tool should include the health of processes, not just the health results for the watershed, and this will need to be explicit in the guidance. Regulatory changes may be needed to require planners to consider landscape processes in a way that shows the benefits and consequences of actions. However, these broader policy and legislative changes would require proof that there is enough evidence that watershed planning should be included in requirements and development should not occur in certain areas. Commerce tries not to set regulations, but developing this tool and working through scenarios may help leaders in the field develop better solutions and processes and recommend those processes to other jurisdictions. This could go a long way toward showing the importance of watershed planning and normalizing analysis between jurisdictions, even in the absence of regulatory change.

While regulation may be needed for full integration of critical areas and watershed planning into planning processes, there may be ways to nudge planners in the direction of best planning outside of regulation. Some of our local government advisors asked for guidance on how to protect these processes and carry that over to improve protection of critical areas and ecosystem services. We need to be clear about what is regulated, but also show best practices and other things that can be done to improve watersheds and the environment. This information should be provided before land use decisions are made. A calibrated, validated tool (i.e. Hydrologic Condition Index) can help users understand the health of the watershed and the effects of changing development density. Cost-benefit analysis is also important to understand the costs of development, including impacts to watershed processes and ecosystem services. Local governments need land prioritization tools cooked and ready to use. By including these processes, the tool can help address the Puget Sound-wide target for reducing loss of critical areas and other ecosystem services through individual land use changes at the local level.

There was some concern that the diagram we showed for the landscape prioritization tool does not capture protecting and restoring watershed processes due to regulatory definitions. Our diagram included “minimize impacts on watersheds” under “protect sensitive areas”, which was not intended to imply a regulatory definition that would preclude non-regulatory elements such as this one, so we may need to restructure that diagram to make this more clear. It was suggested that we add another box to the second line for protecting watershed processes.

Another thing that was a priority for our local government advisors was maintaining connections in open space. These can include habitat, grasslands, and agriculture. They would like the tool to show that these connections are important, and would like guidance on including them in comprehensive plans.

For monitoring whether or not regulations and tools are working, the tool should report on the benchmarks that are needed. For critical area regulations, the benchmark that really matters is a ratio of how much change is occurring within critical areas as compared to outside critical areas.

Several attendees expressed interest in including archaeological and cultural resources in the tool as a risk that should be avoided when prioritizing areas for development. This is a request we received via our end user survey as well, and it has been noted as an element to be incorporated if the necessary data can be provided.

### *Integration Software*

We are currently identifying vendors that have the capacity to build the proposed system and those that have done similar work at other scales or in other areas, to provide assurance that this type of tool can be developed by the available contractors, using platforms that already have been built. We brought up two examples of integration software that that could be used to build the proposed tool, so our discussion centered around those two examples: Envision and EMDS. However, there are other software tools that could be used as well. We have sent out a Request for Information (RFI) to identify additional contractors and platforms that could be used to build the proposed tool, which will be open through March 15.

Several advisory committee members have had some experience with Envision, especially related to its applications in Kitsap and Skagit Counties. Kitsap County had a good experience with it overall and it brought a lot of value in bringing all of the players to the table, but was a long-term process. They found that it was difficult for people to use, but that may not have been due to the software itself. Their application was also not developed as a plug and play interface for end users, so building a well thought out custom front end for our tool should alleviate much of that difficulty. Their other concern was that their application was mostly a logic model and less based on science. We will be reaching out to Skagit County for information on their experience.

A few other advisors have been through the EMDS development process. They had really good things to say about the software, including that it is open source and has been used from national to local decision making. EMDS is ramping up in Washington, including an application by the Tulalip tribes. We will be linking up with that group to see how they are trying to leverage or decide on indicators. The results another EMDS application with which advisors were familiar matched well with people's perceptions of the landscape. The process was about people coming together and deciding what to analyze or show, so the way the results were used had more to do with stakeholder values than with the tool itself (i.e. farmers not wanting to build riparian buffers).

Transparency will be important to decision makers and we need to avoid anything that would look like a black box. Users need to be able to see what is driving the index. In our discussions with platform developers, we have been asking about these issues with transparency and whether they can be developed in a way that allows data to be parsed out and assessed. EMDS also has capability for uncertainty analysis.

We discussed the learning curve required for users to be able to learn to use this type of decision support tool effectively. The heavy lift will be in building the models, which would be done with assistance from a contractor with that expertise. Vendors have told us that training people to then go in and change variables or data sources in the models will be much less difficult, and this was echoed by advisors who have experience using some of these platforms. We will need to have staffing in place to institutionalize the software.

It was suggested that we ask each vendor for their software level architecture so that we can understand how the platforms are built. Ease of importing and connecting data will also be a high priority. We will receive some of this information through our RFI and additional research, but a more detailed comparison of software architecture will need to be completed later on when we actually go through the vendor selection process.

For product and vendor choice, we will need to consider maintenance and durability, as well as who the vendor is and who their user base is. There is a risk of code branching. There is concern that the project would outgrow anything the vendors have already created. One thing to look at when choosing a product or vendor is how healthy and long-term the organization is. It is likely that we would be able to contract directly with the developer of the platform we are using. It was also suggested that we might look to other states or entities that might be interested in co-collaborating or investing in this project.

### *Tool Format*

There was a discussion on the format of the tool and whether it would be more useful to have a web-based application or an ArcMap extension. Our plan is to develop a web-based application, but with capability to download data pre- and post-processing for further analysis in ArcMap. Our end user survey suggested that most planners would like a primarily web-based tool. This will allow users who do not have ArcMap software or GIS expertise to use the tool. There was some concern that users (i.e. small cities) who do not have access to ArcMap may not have the data needed to use the tool, but we do have a substantial amount of regional data from agencies that can be built in and used in the tool even when more localized information is unavailable. To provide value to some of these small jurisdictions, the tool will need to be populated with enough data that it can be used even when no additional user-provided information is available. This would allow users to access resource agency information even when local information is unavailable.

### *Phasing Development of the Tool*

Tool development will need to be phased and prioritized given the number of tasks that the tool needs to be able to do. We have developed the big picture, but the project will need a convergent phase that looks at what can actually be done based on sufficient data availability and ease of development. While we plan to line out phasing for the development of the tool for the prospectus, we do not have the capacity to decide on each model and data source that should be used at this time, and that will need to be done early in the next phase with guidance from a contractor who has experience linking models and designing decision support systems. The goal of the current phase is to line out the big picture and the general functionality and variables that should be included in the tool, without deciding on the specific data sources and models that will be used to represent those variables. We had an extended discussion of how to phase the project to achieve the overall vision while getting early wins that show the value of the tool. Generally, the advice we received was to start by pulling together all the needed information, then build workflows for scenario analysis of a few specific decisions, and then build out the fully developed tool. We also discussed the roles of Commerce and other agencies in this process.

The first step should be to pull together all the needed planning data from local governments and resources agencies. The included data should include guidance on use and a seal of approval for which sources should be used as Best Available Science (BAS). Local governments want Commerce to sign off on data sources and tell them that their plan will be approved if they use that information. They need a list of the data and tools needed for planning and when they were last updated that they can then build from with their own data. There should be guidance for how to utilize those tools and processes as well, especially if they include things like watershed characterization. The first part of the web tool could be a simple interactive website that has most of the spatial data layers that local communities need for comprehensive planning at the state level, so that they are easy to get to and everyone is using the

same data. Advisors agreed that this would add value, though it would be difficult to get all the data up to date on a large scale. A central data repository would be helpful, but it would be even harder (and critical) to get commitment from agencies to update their data on a regular basis.

Aggregation of data would be beneficial and could be a great standalone deliverable for this project. For critical area data, it would be of huge benefit and an early win to get a single standardized layer of critical areas across jurisdictions and agencies that meets QA/QC standards (especially for wetlands). Common data goes a long way and would be the first step to getting common protocols for measuring and monitoring to align local and regional processes and needs. It was suggested that we could follow the standardized approach that is currently being used to update county roads layers. It was also suggested that Commerce's consolidated zoning mapping project could be used as an example for taking on wetlands or another critical area type to develop a consolidated layer of data. Those maps and data sources could be used as a building block for the scenario assessment functionality. However, the minimum threshold for this project is to get information to local jurisdictions, and getting information back from them is a secondary priority. We need to be working on a tool that benefits local governments and we have to show jurisdictions that there are dials and knobs to use before we can ask them to give us data.

It would be useful to put together sub-groups to look at the data, including specific resource agency groups and an IT group. It was suggested that Commerce doesn't need to compile all the data and can task different agencies or organizations to collect and organize data. Commerce is not the central repository but would be the integrator or coordinator. However, Commerce has a relationship with the counties that the other agencies do not have, so that will be helpful for compiling the data. OCIO suggested that the state already has a lot of the data and that platform should be the place for data repository so it is not duplicated. They have horizon plans for data at the state level that would potentially be a good forum to collect this data. Once all the data has been compiled in a repository, the tool can pull from it to do analysis.

While data consolidation is occurring, workflows could be built for how to put those data sources and models together for scenario analysis to support specific decisions, starting with those that are the most relevant or the easiest. These should consider commitments needed from different agencies, format needed, linking of data sources, and the specific tasks of users, especially focusing on county comprehensive planning (as this process would generate the more value for Puget Sound recovery than more limited planning occurring in smaller jurisdictions). Examples could be upzoning, UGA expansion, or a CAO update for geo-hazards. This step would demonstrate that we have the data and science needed to answer questions and build scenarios. We can choose a scenario (or a few scenarios) to start with as a template for the scenario analysis tool. These could use a limited number of variables and may include getting zoning and other data to work with already-validated models such as the Hydrologic Condition Index to provide a valid scientific output that can generate buy in for the model. These test runs with a few different models would show that the project is achievable.

To summarize the phasing advice we received more succinctly, data collection and analysis of a few questions could be done simultaneously during the first phase, and then the second phase could expand this work into a more developed tool. We will need to begin by understanding the available data and

what is useful for critical areas and land planning, and compiling that information in a place where it is usable for everyone. We can simultaneously work with a consultant and a few local jurisdictions to build workflows for how to integrate those data sources to answer questions and assess scenarios. Then we can choose one or two scenarios with sufficient data and models to build out as a template for the scenario analysis tool. Once the value and feasibility have been proven, we can continue to build out the tool's functionality.

**Next Steps**

Because the focus of the meeting shifted and we didn't get a chance to have all of the technical discussions we had originally planned, we requested that advisory members with input on the discussion questions (below and on the linked handout) send us their comments via email by February 28, 2020. Depending on the input received, we may schedule a follow up call to discuss the feedback and make sure we have captured everything. We also plan to send more information on architecture and phasing out to the group via emails in the coming weeks. Feel free to send us other input via email as well, and we are also happy to have individual calls.

We will be using the information gathered through this meeting and other efforts to write a prospectus for tool development. We plan to have the first draft completed in April, which will be sent to advisors for review. We are also looking for partners (technical advisors, policy advisors, user advisors, etc) to show that we have support in this endeavor, and we would like to include that information in our prospectus as well. Please let us know if you would like to partner or be otherwise involved in the development process.

**Discussion Questions:**

1. Does our proposed conceptual design make sense and meet needs? Is there anything that should be added or changed?
2. What are the challenges with linkability of tools and maps? What are the work-arounds?
3. How do we know when links are not working and how can this be managed?
4. Are there any considerations for how to handle calculated data vs. raw data?
5. Are there any other technical considerations for designing the back end?
6. What are your lessons learned about front end design?
7. How do we get buy in from end users?
8. How do we maintain the tool?
9. Where should it be housed and who should own it?
10. Do you know of any funding or partnership opportunities?

**List of Participants**:

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|---|---|
| Charlene Andrade | Department of Commerce |
| Shannon Brenner | City of Tacoma |
| Jennifer Burke | Puget Sound Partnership |

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|---|---|
| Christina Chaput | Thurston County |
| Lowell Dickson | Department of Natural Resources |
| Chris Elder | Whatcom County |
| Hugo Flores | Department of Natural Resources |
| Julie Jackson | Department of Transportation |
| Keith Folkerts | Department of Fish and Wildlife |
| Josh Greenberg | Skagit County |
| Greg Griffith | Department of Archaeology & Historic Preservation |
| Laura Hodgson | Department of Commerce |
| Colin Hume | Department of Ecology |
| Paul Inghram | Puget Sound Regional Council |
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| Stephen Stanley | Department of Ecology (ret.) |
| George Wilhere | Department of Fish and Wildlife |