



Condition-Based Management

Frequently Asked Questions

What is Condition-Based Management (CBM)?

CBM is a management approach which supports responsiveness and flexibility between planning and implementation in natural resource management. Condition-based management allows for proposed treatments to be aligned—post-decision but prior to implementation—with current conditions on the ground. It does this by focusing on collecting the right data at the right time and selecting the right management activity to move toward desired conditions. Validation surveys completed prior to implementation will determine the current precise site conditions and the best treatment(s).

Here is how it works. At the onset of project planning, known or expected environmental conditions are examined as well as a range of possible management activities. This is done by using mid-scale and site-specific data of current conditions to propose a variety of appropriate treatments to meet the purpose and need and move toward desired conditions. This framework of expected environmental conditions, possible management activities, and likely outcomes are what is disclosed and assessed throughout the NEPA environmental analysis process. Then, once a NEPA decision is made but prior to implementation, current site conditions are confirmed where implementation is to occur. The appropriate management activities are assigned for the site conditions at that time according to the selection criteria and range of management activities in the NEPA analysis and decision. If adjustments are needed to what was proposed, these are made within the constraints of the identified and analyzed range of possible management activities and design features.

NEPA Requirements and CBM

Condition-based management is a method to meet NEPA's requirements, not to avoid or shortcut them. The increased flexibility CBM offers requires additional work in developing the proposed action, analyzing effects, and engaging the public, and is designed to implement the right treatment in the right place.

CBM projects must meet the site-specificity and public involvement requirements of NEPA. There is no get-out-of-NEPA-free card with CBM. CBM is both front-loaded (NEPA) and back-loaded (validation). The courts ultimately decided that NEPA is a procedural statute with twin aims requiring agencies to (1) consider the environmental impacts of their proposed actions and (2) inform the public that they (the agencies) considered environmental concerns in their decision-making process.

It is incumbent upon the Forest Service to provide enough site-specificity in the proposed action, existing conditions, and effects analysis in order to comply with NEPA. A CBM project needs to define and analyze the effects from a range of management activities for defined site conditions in the project area. Using common

and easy-to-measure selection criteria (e.g., stand density, level of mistletoe, amount of invasive species) and filters (e.g., vegetation type, critical habitat, nesting habitat) to delineate site-specific conditions for proposed management activities are ways to establish site-specificity. This also gives flexibility to implementers (for example; avoiding important new TES species habitat, putting the right treatment in the right place to move toward desired conditions, and revising stand boundaries if needed to reflect current site conditions).

The following components are recommended in a CBM project:

- Describe the rationale/reasoning for using the CBM approach for the project in the Purpose and Need section. See “When and where should condition-based management be used” section below.
- Use best available site-specific data, for example stand-level data (or data on groups of stands) to describe existing conditions.
- Define a range of treatments/prescriptions needed to move the project area toward desired conditions.
- Based on site-specific data, develop selection criteria (e.g., vegetation/habitat conditions) that will be used to determine which management activities, or range of treatments, should be prescribed, as well as habitat or other filters that will control where treatments will NOT be considered (i.e., condition-management pairings, if-thens).
- Develop design features to be used in alternatives, including those connected to the habitat and other filters described (areas you won’t treat). Include “caps” on number of acres for each management activity/treatment.
- Map anticipated treatment areas by alternative in as much detail as possible.
- Analyze the impacts/effects from the most anticipated treatments for each alternative. Don’t analyze the worst-case scenario, but the “expected,” “anticipated,” or “most likely” scenario or alternative. Clearly and carefully set out all assumptions and methods used in the analysis. Conduct the analysis at the stand or groups-of-stands scale to make the analysis as site-specific as possible. Make the ecological benefits clear.
- Be transparent with the public in identifying the agency’s expectations and anticipated scheduling/timing for implementation. Develop an estimated implementation plan in the NEPA documents and share with the public.
- Identify in the implementation plan and in the decision how the agency will conduct the required “validation” prior to implementation, such as in a validation checklist. The Responsible Official must ensure that all validation work occurs.

Science informs CBM in the proposal, in the selection criteria used, and in the proposed management activities that will be used with certain site conditions to move them toward desired conditions and make forest ecosystems more resilient to disturbances such as climate change and insect and disease infestations. CBM, as in any other NEPA, uses the best available science to determine what treatments may be needed to do so, to support your effects analysis, and relay uncertainties, but allows the flexibility to determine what is best for site-specific conditions at the time of implementation (rather than a preset prescription based on what is expected).

Why use condition-based management?

Condition-based management allows managers to make decisions with the flexibility to respond to changes in on-the-ground conditions and confirm the right treatment is prescribed and conducted at the right time. This is important because site conditions may change by the time management activities are implemented, they may

change rapidly due to disturbance, or a certain order or timing of implementation may be needed. Using a CBM approach works well when there is enough known information to conduct a reasonably detailed analysis and fulfill the twin aims of NEPA. CBM assures that the assigned management activity is responsive to any changes in environmental conditions and is the appropriate treatment to move toward desired conditions. With the focus on conducting the right treatment(s) for the current condition, more precise implementation choices can be made and there is more certainty in meeting the project purpose and need.

When and where should condition-based management be used?

The CBM management approach is best used when vegetation management activities are being assessed in a landscape where there is a need for flexibility in assigning treatments due to the potential for environmental changes over time. The rationale for this approach and the process for how CBM will be implemented is best described clearly and upfront in the project NEPA document as well as in the decision.

Some situations that indicate when and where CBM may be applicable include:

- When site conditions are dynamic and unpredictable due to reasonably foreseeable environmental stressors, such as insect and disease outbreaks, invasive plant encroachments, and climate change.
- When implementation may take place over a long period of time after the decision, such as in larger, landscape-scale projects.
- Where existing or current data is sufficient to predict effects and outcomes from treatments, but additional site-specific surveys may be needed to confirm the precise current conditions and assign activities at the time of implementation.

These situations are independent of each other and all of them do not need to be present for the potential use of CBM. Condition-based management is not needed when site conditions are predictable and site-specific information and field data are robust and comprehensive for fine-grained analysis. It is recommended that you don't use CBM if it's not needed.

How does condition-based management work with adaptive management?

Adaptive management (AM) and CBM both account for environmental analysis with responsiveness and flexibility; however, with AM, adjustments to management activities occur after their initial implementation and are based on monitoring results. If the action is not having its intended effect, it is modified to improve outcomes. With CBM, appropriate management activities are determined prior to initial implementation based on field reviews which validate the current location-specific resource conditions. A CBM project can incorporate AM, but it is not required.

Adaptive management has an official definition and can be found in 36 CFR 220.3: *"A system of management practices based on clearly identified intended outcomes and monitoring to determine if management actions are meeting those outcomes; and, if not, to facilitate management changes that will best ensure that those outcomes are met or re-evaluated."*

Condition-based management includes proposing and analyzing a suite of management activities to be applied across the project area where there are specific resource conditions. Field reviews prior to initial implementation confirm specific site conditions that guide selection of the most appropriate treatments to move resources toward desired conditions.

Both CBM and AM provide the flexibility to respond to changes in environmental conditions, either before (CBM) or after (AM) initial implementation. AM changes the treatment after initial implementation and monitoring, whereas CBM allows reassignment before implementation. Both approaches must meet the requirements of NEPA, must document the reasoning for using them, and must analyze the effects from proposed treatments. If AM is used explicitly, NEPA requires that the effects from both the initial activity as well as the adaptive management activity be analyzed.

How is condition-based management different from programmatic NEPA analysis?

Most often, programmatic NEPA analysis refers to broad or high-level NEPA reviews that address the general environmental issues relating to broad policy or strategic decisions. As such, programmatic NEPA reviews generally do not authorize on-the-ground activities or implementation of projects but provide large-scale analyses to which subsequent NEPA for site-specific management activities can be tiered. Programmatic NEPA analysis is commonly used for development or revision of land management plans.

The scale of some CBM projects share some of the large-scale nature of programmatic plans, but differ in the level of action that the decision commits to and the specificity of the effects analysis. CBM is used in project-level NEPA analyses, often for larger projects implemented over a longer time period, and is not meant to cover all future needed management activities. The CBM project NEPA analysis and decision will analyze and authorize on-the-ground management activities. As a result, the NEPA analysis for a project using CBM must be specific enough to address issues associated with the proposed action and satisfy NEPA's site-specificity and sufficient analysis requirements.

How do you analyze environmental effects for a condition-based management project?

To support informed decision-making and demonstrate sufficient analysis, the environmental analysis must examine current conditions as well as the anticipated effects from the suite of management activities being proposed in the project area. The analysis must disclose the selection criteria or detailed site conditions that trigger the specific treatments to apply and the thresholds for those treatments. It must analyze the potential environmental effects from the management activities expected to be implemented.

There should be a sufficient level of certainty about the suite of management activities that will be needed for any expected site conditions and their potential effects. While there is flexibility in actual treatments, the level of uncertainty should be addressed by applying basic effects analysis best practices, such as:

- spelling out any assumptions,
- clearly disclosing analysis methodologies,
- incorporating the best available science,
- focusing on the significant issues, and

- clearly spelling out cause-effect relationships.

The upper-bounds effects analysis should provide sufficient clarity and be as site-specific as possible by describing and mapping where activities are expected to occur, the specific design features to be applied, and how locations and treatments will be prioritized.

The effects analysis for condition-based management should disclose the process by which site-specific conditions will be verified prior to implementation (validation).

What sort of public involvement is required or appropriate before a condition-based management decision or implementation?

Public involvement cannot be deferred to the implementation phase for CBM projects. Along with the site-specific disclosure and analysis aim of NEPA, CBM projects need to inform the public prior to decision and to aid the decision. Additional public involvement is encouraged during a CBM project's validation and implementation phases. Implementation plans can help outline the appropriate level of treatment and inform public involvement.

- Condition-based management benefits from additional public interaction by building understanding of this management approach and trust in its implementation. Use of a collaborative or stakeholder group, like those common with Collaborative Forest Landscape Restoration Program projects, is not required for all CBM projects. However, certain NEPA authorities may require a collaborative process. Because of the increased flexibility built into CBM, there should be an emphasis on transparency and accountability with Tribes, stakeholders, and the public. Of course, it is always good to build public support for your project.

What does the validation phase of condition-based management look like?

Condition-based management adds the step of subsequent validation to the project management triangle. After the decision but before implementing management activities, validation entails:

- assessing/confirming the current site conditions with interdisciplinary surveys,
- selecting the appropriate management activities based on the analyzed selection criteria, and
- confirming those site conditions and the potential effects from those activities are accounted for in the environmental analysis decision.

CBM provides the flexibility to account for a variety of site conditions and a range of management activities if they are analyzed in, and their effects disclosed within, the NEPA document. If conditions change within the scope of the analysis (i.e., the selection criteria and range of treatments still apply), there is no need to consider a SIR or new NEPA. However, any conditions encountered, management activities needed, or effects identified which were not analyzed and disclosed in the initial analysis may require supplementation and a new decision.

Below is a diagram of the steps involved in validation prior to implementation.

