

COLORADO BUREAU OF LAND MANAGEMENT

SOCIAL CLIMATE VULNERABILITY ASSESSMENT

SUMMARY OF FINDINGS – REVIEW OF BLM DOCUMENTS AND PLANS

LOOKING BACK TO MOVE FORWARD: ASSESSING INTEGRATION OF CLIMATE CHANGE INTO COLORADO BLM MANAGEMENT DOCUMENTS

Our team conducted an extensive review of documents (“grey literature”) produced by the Colorado BLM in order to understand how the BLM is incorporating climate change into planning and policy documents. Our goal was twofold: first, to establish a baseline understanding of how the BLM is currently integrating climate change into planning documents, and second, to inform our work on other aspects of the broader assessment to ensure their validity and applicability within existing management frameworks. Here we present the condensed findings of this project. For a more detailed narrative – as well as to see other products of the full vulnerability assessment, see our full report, found [here](#).

METHODS: ANALYZING RESOURCE MANAGEMENT PLANS, DRAFT DOCUMENTS, AND RESOURCE ADVISORY COUNCIL MEETING MINUTES

To get a better view of existing planning and policies, we compiled, coded, and analyzed a database containing over 18,500 pages, drawn from four main types of documents: field office resource management plans (RMPs), the proposed resource management plans (PRMPs), final environmental impact statements (FEISs), appendices associated with those plans, and meeting minutes from resource advisory councils (RACs). By including the analysis of RAC meeting minutes, we also hoped to gain perspective on how, and if, diverse stakeholders – including local operators, scientists, BLM staff, and others – discussed climate change, climate stressors, and the resources public-land dependent communities rely upon.

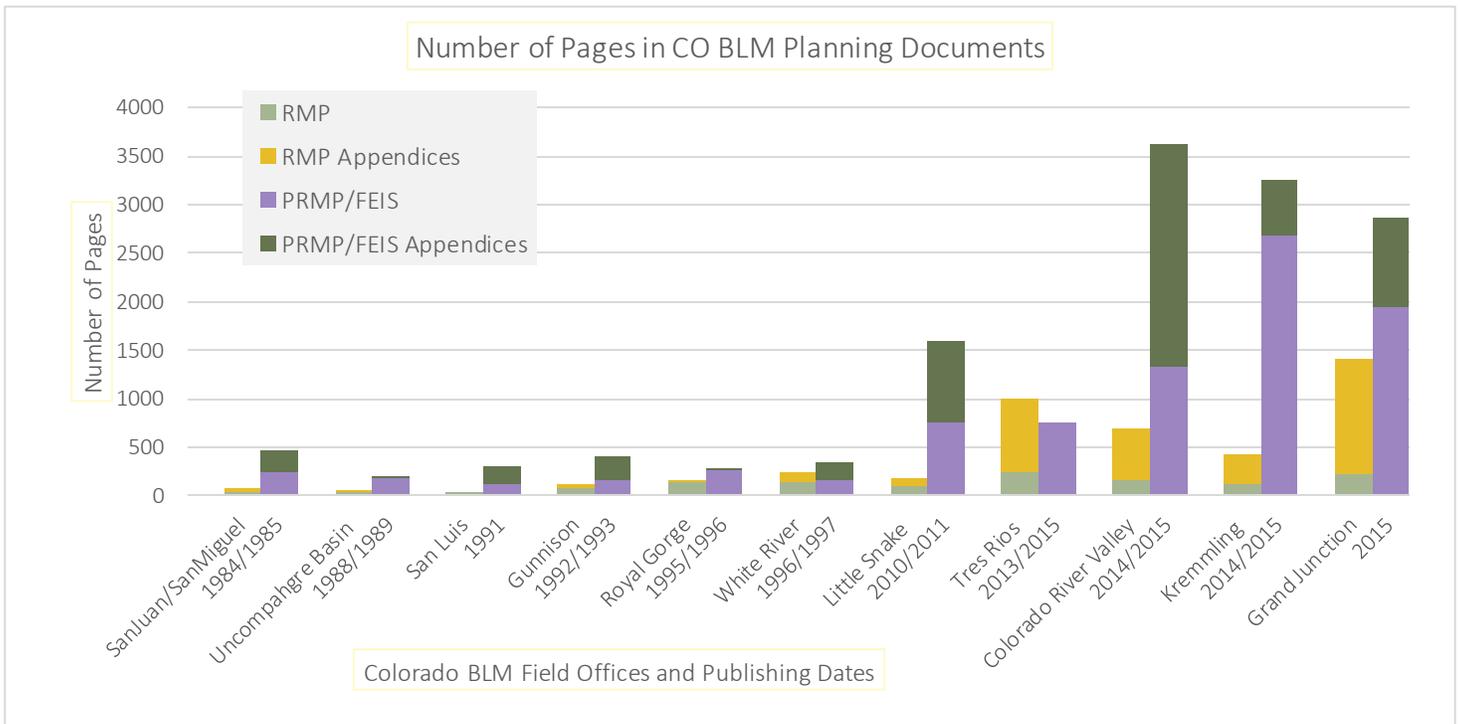


Figure 1. Number of pages in Colorado BLM field office planning documents from oldest published (left) to most recently published (right).

ENGAGING WITH CLIMATE CHANGE: UNEVEN RESULTS

Analyses of Colorado BLM documents found that while some field offices engage with issues relating to climate change, the translation of these into official planning documents is uneven and sparse. Indeed, only two of the five RMPs finalized since 2010 explicitly mention climate change more than a handful of times (see Table 1). Moreover, analysis of the proposed RMPs show that while some field office staff members may be making efforts to address the issue, discussions of climate change largely vanish once final reports are prepared. At the same time, RAC meeting minutes also show an uneven picture, with discussions of climate change being rare in all but a few cases. More importantly, many of the instances in which climate change is mentioned across the documents examined contain only cursory or formulaic mention of the issue, and do not delve into the broad range of uncertainties, vulnerabilities, and dynamic ecosystem changes likely to take place over the next century.

Field Office	Year final RMP published	Counts of Explicit Climate Change	
		Proposed RMP and FEIS	Final RMP (with appendices)
Colorado River Valley	2015	164	2
Grand Junction	2015	78	28
Kremmling	2015	305	3
Tres Rios	2015	40	50
Little Snake	2011	50	0
White River	1997	0	0
Royal Gorge	1996	0	0
Gunnison	1993	0	0
San Luis Valley	1991	0	0
Uncompahgre Basin	1989	0	0
San Juan & San Miguel (now Uncompahgre)	1985	0	0
TOTAL		637	83

Table 1 - Explicit mentions of climate change and related terms across Colorado field office resource management plans and preliminary drafts.

EXISTING MANAGEMENT CONSIDERATION OF CLIMATE-SENSITIVE RESOURCES AND IMPACTS

While consideration of climate change may be uneven, when it is considered it is often through the lens of climate-sensitive resources and climate-related impacts (see Figure 2). Overall, vegetation ranks as the most commonly discussed climate-sensitive resource, followed closely by issues relating to water availability in streams, ponds, snowpack, and soil. Unsurprisingly, drought – including

**GREY LITERATURE REVIEW
RESEARCH QUESTIONS**

- 1) How is climate change currently being integrated into BLM planning documents in Colorado?
- 2) What types of climate-sensitive resources and climate-related impacts are commonly discussed?
- 3) Are land-based livelihoods being considered in the context of climate change?
- 4) How is the BLM currently planning for variability?

associated heatwaves and increased wildfire tendency – also ranks high within climate change related passages, both due to its capacity to dramatically alter ecosystem functionality and its ability to necessitate financially (and politically) costly management activities such as increased monitoring, reductions in resource access, and wildfire control. Although discussed less often, a handful of BLM documents also noted the link between climate change and increases in plant and wildlife disease, as well as infestations of beetle and other pests that have and continue to dramatically alter forest composition in much of the state.

MISSING PIECES: CONSIDERATION OF LAND-BASED LIVELIHOOD VULNERABILITY

Given the limited discussion of climate change, it is perhaps unsurprising that consideration of the climate vulnerability of land-based livelihood activities – such as livestock grazing, outdoor recreation activity, and tribal land uses – was largely absent from the documents and plans examined. Livestock grazing, a highly climate-sensitive and potentially ecologically impactful type of resource use, is more often associated with discussion of climate change than other livelihood activities. However, in most cases the focus is not on the vulnerability of livestock operations themselves, but rather their potential impacts upon vegetation and land resources during periods of climatic extremes as well as the methane and other greenhouse gases produced by cattle digestion. Recreational and tribal land uses are discussed

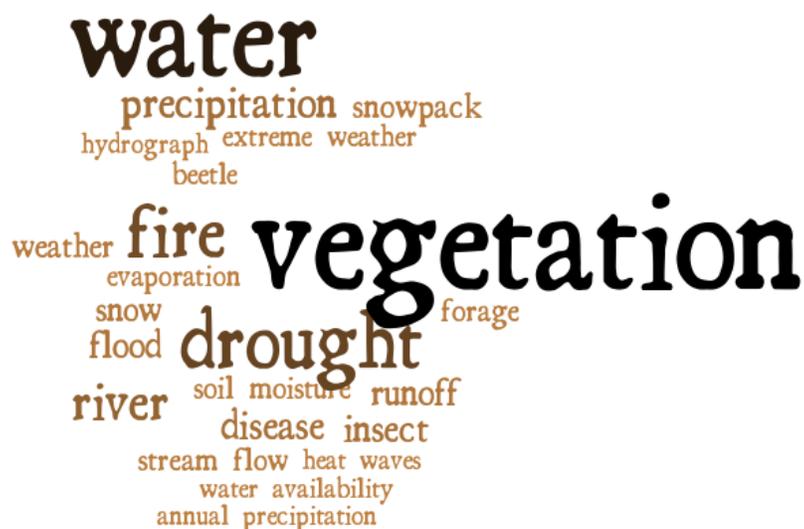


Figure 2. Word cloud produced from counts of passages within RMPs, drafts, appendices, and RAC meeting minutes in which climate change impacts on resources are considered. Size of word corresponds to frequency of occurrence across all documents, with issues relating to vegetation, water, drought, and fire being the most prominent.

much more rarely in association with climate change, and even then are only cursorily examined in terms of how they will be impacted by changes in snowpack, streamflow, vegetation patterns, and effects on wildlife. As with livestock grazing, recreation is considered a potential threat to resources and ecosystems, or, in the case of off-highway vehicle activity, as a source of greenhouse gases. Across all documents, no clear management plans or goals aimed at addressing the vulnerabilities of public land-based livelihoods could be found, nor could any adaptation plans related to climate change interactions with public land users more broadly.

PLANNING FOR VARIABILITY: POTENTIAL FOR LEVERAGE IN FUTURE CLIMATE ADAPTATION EFFORTS?

Despite the minimal inclusion of climate change in planning documents, the dynamic nature of the resources the BLM manages suggests the need for further adaptive measures be put in place, so as to both protect ecosystem resources during times of particular vulnerability and to help field office managers to anticipate periods of increased risk. Currently, these include provisions like the ability to suspend permitted uses during periods of drought or following wildfire, or to enact wildlife management practices when range conditions may prove unable to support current or future population numbers. In this way, field offices are already adapting their practices, to some degree, to existing climate variability, and have policies in

place – mainly designed to protect resource conditions – that may be increasingly important as climate change intensifies. At the same time, these practices and procedures – including the careful work of implementing them across different user groups and coordinating agencies – may prove a useful entry points for discussion and development of policies that position the agency to better deal with the likely increases in variability and extremes that climate change will bring to the state.

LOOKING AHEAD: IMPROVING THE ABILITY OF BLM STAFF TO INTEGRATE CLIMATE CHANGE INTO PLANNING EFFORTS

Given the minimal inclusion of climate change in BLM planning documents, there is a need for increased attention and integration on the part of state and field office management and staff,

consulting scientists, and community stakeholders. However, without top-down guidance from DOI and BLM headquarters, it seems that such work will have to be undertaken through a more bottom-up approach – one that incorporates the issues, needs, knowledge and values of the communities for which public land access is a critical economic and cultural asset. As part of this process, efforts should be undertaken to more clearly and comprehensively consider the potential feedbacks between land-based livelihoods, climate change, ecosystem condition, and BLM decision-making. Scenario planning workshops and similar activities could prove particularly useful, both for identified critical linkages to BLM-managed resources vulnerable to climate stressors, and to help the diverse actors cope with the uncertainties associated with establishing management policies and practices. Whatever the methods, however, the BLM’s complex land stewardship mission means that – with or without a plan – field office managers have been and will continue to cope with the interactions of unpredictable climate and weather and natural resources, and thereby, the communities that rely upon them.

If you have questions, comments, or require further information, please visit the project website (<http://nccsc.colostate.edu/project/colorado-bureau-land-management-social-vulnerability-assessment>), or contact:

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